A History of
American Economic Life

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Third Edition

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Even if a love of gain, the motive commonly ascribed to textbook writers, drove them to their original exertions, it would hardly explain their hardihood in facing the mingled anguish and monotony of a revision. Luckily, in the case of American economic life, a more compelling and more creditable reason for rewriting is at hand. Within the last decade scholarly research and publication in this area have been so great that it has become one of the most active fields in the larger one of American history. The establishment of the Economic History Association, the publication of its Journal, the generously sponsored activities of the Committee on Research in Economic History—all these have united with the increased interest in economic affairs flowing from novel relations between government and business to accomplish this result. New scholarship rather than "more history" is thus a justification for a second revision of this book.

I have tried to embody the results of this quickened activity in my narrative. The bibliographies at the end of the volume do not, however, reveal the total of my indebtedness to others. Through good fortune I have read many articles, theses, and books in manuscript and participated in several verbal sessions, some controversial but all friendly, on the themes of economic history. To these unacknowledged sources I owe much and I hope those who have thus contributed to my enlightenment will appreciate why it is impossible to list them all. No similar unfeasibility need make the contributions of my wife, Ruth Babson Kirkland, anonymous. She has typed the manuscript, read proof, and helped compile the index.

As I have written before, those genuinely interested in how this revision differs from its predecessors can satisfy themselves only by an examination of the text. In reorganizing or rewriting nearly three quarters of the original material, I have sought to remember that people are the prime movers in economic affairs and that they are the fashioners of the economic institutions which have always been my interest. On the other hand, perhaps overinfluenced by the preoccupations of the present and the recent past, I have tried to give new emphasis to the relationships between business and government. Lest this be regarded as a complete capitulation to the "frame of reference" dogma, let me add that I am more than ever convinced that he who would write current history cannot succeed without a knowledge of and an
emphasis upon the past properly proportioned to its longer time span. If in the writing of history we starve the past to distend the present, we will leave in the minds of our readers a picture, which for all its superficial cogency, has few elements of timelessness and proportion. That would be a grave disservice.

_Thetford, Vermont_  

E. C. K.
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A History of
American Economic Life
CHAPTER I

The Imperial Frontier

NEW SEAS, NEW EMPIRES

THE Mediterranean Sea in the fifteenth century was still the center of western Europe’s most advanced and complicated economic organization, for the trade in products from the Near and Far East necessarily flowed through it on the way to European markets. From Sumatra and Ceylon came pepper; from Arabia, India, and China ginger; from the scattered Spice Islands still farther east, allspice, nutmegs, and cloves; from Persia, precious stones; from India, indigo and sandalwood; and from the whole Orient, the precious manufactured articles of glass, silks, rugs, tapestries, and porcelains. It was a trade in luxuries, for only those goods which bore a high value in proportion to their bulk yielded enough profit to pay for the difficulty and dangers of transportation. The demand for these commodities was widespread. The upper classes of Europe needed the spices to vary if not to make palatable the coarse and monotonous fare of the Middle Ages, and the other fine goods of the Orient contributed to their comfort, their esthetic satisfaction, and their desire for display.

In the distribution of these goods, the Mediterranean area occupied the key position. To its eastern end the goods came by one of the three generally followed routes. The first was the all-land route. Slow-pacing caravans crossed the mountain passes and desert regions northwest from India, skirted the lower edge of the Caspian and deposited their wares at Trebizond, port of transshipment near the eastern end of the Black Sea. Farther to the south was a water and land route by which goods were assembled at the head of the Persian Gulf and then transported overland through Damascus to the ports of Phoenicia and Egypt. On the third route mariners from the East buffeted with the monsoons of the Indian Ocean, the offshore winds of the Red Sea, until they laid down their goods at Berenice on the African coast for transportation overland to the Nile and then down that river to the Egyptian ports on the Mediterranean. The consumers of these products were scattered throughout Europe from the Iberian peninsula to the Baltic Sea. The lucrative rôle of distributor was assumed by the city states of the Italian peninsula.
—Pisa, Genoa, Florence, and Venice, the greatest of which was Venice. But the last decade of the fifteenth century was to destroy their prosperity, was to reduce them to economic insignificance, and was to transfer their commercial supremacy and eventually their imperial power to the nations on the western coast of Europe.

This transference, which inaugurated modern history and laid the basis of national power for four centuries, was the result of the voyages of discovery in the fifteenth century. The object of the voyages was the discovery of new routes to the Far East, but the tangle of human motives which inspired them was not so simple. Some sought strange lands in which to convert the heathen and conquer the infidel. Others were driven to exploration by the intellectual curiosity of the Age of the Renaissance. But more widespread was the carnal hope of breaking the monopoly of oriental trade enjoyed by Venice and participating in its profits. Portugal took the lead. Her explorers pushed steadily down the western coast of Africa, discovered the Cape of Good Hope; and finally one of them, Vasco da Gama, in 1498 entered the Indian Ocean, struck across to Calicut, made trade agreements with the native rulers, and jammed his small flagship of one hundred and twenty tons with a freight of oriental products which paid the costs of his voyage sixty times over. Meanwhile, Christopher Columbus, financed by the Spanish sovereigns, and probably operating on the theory “Sail to the West and the East will be found,” had discovered new land across the Atlantic. Almost at once commercial primacy passed from the Mediterranean to the Atlantic, a new and greater central sea, and to the nations which had access to it. Portugal, Spain, Holland, France, and England stepped forward in succession to begin their careers as economic empires.

The purposes of each nation in creating an imperial organization had certain common characteristics which eventually were generalized and christened “mercantilism.” Although the assumptions which underlie that theory were common in the towns and small states of the Middle Ages, and today are to varying extents the stock in trade of statesmen, the golden age of mercantilism lay between 1500 and 1800. It was then that the political unification of European nations, accomplished by the benevolent despot who abolished feudal particularism, sanctified a creed of vigorous nationalism, whose primary article was the creation of national prosperity and national wealth. In the crudest form of mercantilism these were measured by the amount of the gold and silver possessed by the state’s treasury or available to it through taxation. In the course of applying and developing mercantilist doctrines, however, this emphasis upon the precious metals was often concealed and occasionally transmuted into something entirely different. It is obvious, for instance, that the nation which does not possess mines of gold and silver
within its borders is in an unhappy situation. But foreign commerce offered a means by which such wealth could be obtained in the first place and retained in the second. It was a mere matter of arithmetic. As a mercantilist writer put it in 1623: the king must compare the

Native Commodities issued and sent out, with the Forraigne Commodities received in; and if it appeare that the Forraigne Commodities doe exceed the Native, either he must increase the Native, or lessen the Forraigne, or else looke for nothing else, but the Decay of Trade and therein the losse of his Revenue, and Impoverishing of his People.

The achievement of this simple end required a complicated national economic policy. Individuals and occupations were to be encouraged by bounties and subsidies to supply the demands of the domestic consumer and provide a surplus to ship to foreign markets. High protective tariffs were to promote the same end by preventing the importation of goods. In fact the nation was to be as far as possible self-sufficing.

Unfortunately, even the most rigorous mercantilist had to admit that the national productivity of each European nation could not supply all the needs of its population. No amount of protection or subsidy could grow spices and tea in northern Europe. Yet the importation of these products involved a lamentable export of specie to foreigners. Hence European monarchs and ministers were driven into some form of imperial activity. By the establishment of trading posts and colonies, each nation could supply itself with the commodities which it could not produce in Europe. Furthermore, if it could only secure by these imperial means an exclusive control of some extra-European commodity it could sell this product to nations outside the monopoly and thus secure a flood tide of precious metals. The Venetians had done it for oriental products. That was why they were hated, envied, and imitated. Gradually as historical development altered the mercantilist theory, colonies were no longer desired merely as sources of exotic products or raw materials. They were to serve as markets for the goods which the home country, or “metropolis,” produced, and the carrying trade between the various parts of this economic organism was to be another source of national profit. By the eighteenth century the conception of a self-sufficing nation had become that of self-sufficing empire.

The absurdity of mercantilism has been ridiculed by professional economists ever since the classical exposure of its fallacies by Adam Smith in *The Wealth of Nations* (1776). To us, looking backward, its inconsistencies are easily recognizable. Carried to its logical conclusion by all nations, the foreign trade which the mercantilists so emphasized would obviously have been impossible. All nations could not have “a favorable balance of trade.” In its
day, however, the mercantilist doctrine could not be dismissed as naïve. Not a rigid theory, it was a series of tendencies altered from time to time, applied in individual cases, directed by economic events. When it was discovered that the English trade with India resulted in the export of specie to the Orient, apologists for the East India Company were able to rush forward with the exegesis that the reexports from England of imported Indian goods brought into the island a far greater stream of the precious metals from foreign countries. But these processes of general accommodation were no more successful than the ambiguities of the mercantilist doctrine in concealing the harsh fact that the European nations were animated by an aggressive economic nationalism, that they regarded the gain of one nation as necessarily the loss of another, that foreign trade was at bottom a polite form of warfare. It is no accident that in the early days of mercantilism, piracy, if thinly veiled, was regarded as a legitimate occupation for the best and noblest families, and that European nations regarded warfare as a useful means of trade promotion. It forced concessions from rivals or ruined competitors.

**The Portuguese and Spanish Empires**

Of the European nations who created overseas empires, Spain, Holland, France, and England directly affected the history of colonial America by their possessions on the North American continent. Only Portugal failed to extend her system to any portion of the territory now included within the continental boundaries of the United States. Yet it is as impossible to omit reference to the Portuguese empire when discussing American colonial history as it is to neglect the contemporaneous colonial developments in South America, Asia, Africa, and the islands of the Pacific. They were all interlocked. So too were events in Europe linked with events in every continent. For a brief moment it seemed likely that the disturbing consequences of imperialistic rivalry in this world area would be postponed. When commercial supremacy passed to Spain and Portugal after the discoveries of Columbus and the Portuguese seamen, both nations adjusted their claims to the new territories through an appeal to papal arbitration and through treaties.

The Portuguese king, assuming the title "Lord of Navigation, Conquest, and Commerce of Ethiopia, Arabia, Persia, and India," claimed a monopoly of the profitable oriental trade and substantiated his claim by creating an "empire" based upon a few ports and factories in the Far East, upon commercial treaties with the native sovereigns, and upon a naval supremacy which could wring concessions from Orientals, crush rivals in the trade, and keep open the channels of communication between the Orient and Lisbon, a city which succeeded to the proud position formerly held by Venice. In the East the Portuguese empire, however, was based upon a shallow foundation.
It was a purely commercial edifice, for Portugal neither desired nor was able to colonize the regions which the papal demarcation had there awarded her. But Portuguese Brazil, a region at first despised in comparison with the Orient, eventually was of greater value. In the sixteenth and seventeenth centuries, the commerce in sugar raised on her plantations was an important source of Europe's supply and enriched the metropolis. Early in the eighteenth century diamond and gold mines were discovered, and the latter by the middle of the century were adding annually $10,000,000 worth of bullion to the currencies of the Western World.

Meanwhile the Spanish sovereigns were turning their attention to the development of an empire in the New World. The two generations before 1575 saw it expand with almost incredible rapidity, and in that year a population of 160,000 Spaniards already inhabited the islands of the Caribbean, Mexico, Central America, and Peru. The discovery in the early sixteenth century of the extraordinary supplies of precious metals in Mexico and Peru was the factor which shaped the character of this Spanish empire. The desire for this easy form of wealth had drawn the Spanish from the islands to the mainland under Cortes and then southward under Pizarro into Peru. The news of their extraordinary success brought about the practical depopulation of the Caribbean islands. Every argument operated to emphasize the importance of the precious metals. The king derived an immense revenue, for he was entitled to one-fifth of the yield from the mines; individuals built up fabulous fortunes, and national prosperity according to mercantilist theory was in this fashion best advanced. In comparison with the gold and silver in the Spanish colonies, the spice trade of the East was a mere bagatelle. Gradually the mining industry dropped the air of brigandage which it had worn under the Conquerors: new sources were discovered, and new methods—particularly the use of quicksilver—increased the productivity of the extracting process. In 1803 the German traveler, Humboldt, estimated that the total yield of the American mines since 1493 had been 5,706,000,000 pesos. What is more, their annual production had increased through the centuries and in 1800 they were pouring forth 45,500,000 pesos, ten times the known production of the rest of the world. The tide of precious metal which came from the New World to the Old transformed European economic life by raising prices and by substituting the use of money for barter as a means of exchange.

In spite of the supreme international importance of the Spanish American mining industry, the bulk of the people were engaged in farming and in ranching. Although the former occupation produced the food supplies consumed in the colonies, it did not provide for international trade the tropical products—sugar, cocoa—in the quantities which the French and English islands later attained. Ranching, however, was a source of great wealth, for
domesticated animals, horses, cattle, sheep, and swine, when transported by the Spaniards to their American colonies, multiplied rapidly. In the great grazing districts appeared ranchers whose herds and whose wealth anticipated the cattle kings of the United States. By 1800 the returns from agriculture were greater than those from mining.

The economic development of this empire was retarded by the restrictions which hedged about its foreign commerce. That the colonists should dispose of their products in any market and buy their goods in any place was a heresy in the age of mercantilism. Commerce was inevitably confined to Spain. Within that nation, it met with the further necessity of passing through the port of Seville, the commercial capital of Castile, which was thus destined to play in Spanish history the rôle of Venice and Lisbon. By restricting this "Indian trade" to a single port, it was thought that it could be more stringently supervised and the collection of customs could be more easily undertaken. Colonial commerce was thus practically committed to the merchants of Seville and such factors as were resident there. This group soon constituted a powerful and wealthy vested right. In their monopoly privilege they followed the general practice of preferring a high profit on a small amount of goods to a small profit on extensive operations. Although this choice gave the merchants profits as high as 300 per cent, it greatly hampered the normal expansion of the colonies, for the amount of exports to the colonies was thus limited and only the less bulky and more precious objects were imported. Natural conditions of commerce, however, furnished some extenuation for the procedure. Since vessels were small and the dangers of navigation from pirates and other sources were great, trade in bulk was not attractive. It was these perils which did away with individual voyages to the Spanish colonies and led to the establishment in 1561 of fleets under the protection of convoys. This system grew in complexity until it girdled the empire. Two fleets annually put out from Spain—one for Vera Cruz, and one whose ultimate destination was Porto Bello on the Isthmus. Here a fair of forty days accomplished the exchange of goods exported from Spain for ones which the Peruvian fleet had brought up the coast to Panama and which had been transshipped across the Isthmus. This inadequate system of commerce was unaltered for practically two hundred years. The Seville monopoly was transferred to Cadiz in 1717, but it was a monopoly still. After the Seven Years' War, however, Charles III, an enlightened sovereign who attempted the re-creation of the Spanish empire, progressively threw the trade open to more Spanish and colonial ports.

Another handicap which delayed the rapid development of the empire was the difficulty of securing the labor necessary for the heavy work of mines, plantations, and ranches. The Spaniard who emigrated to the colonies
went to make money and better his fortune. Immigration from other European countries could not be utilized to secure a labor force; it was prohibited in order to prevent the contamination of the Catholic empire by Protestant heresy, and also to preserve intact to Spaniards the wealth of their empire. Under the circumstances, it seemed natural to employ the Indians, and when they proved obdurate to compel them to labor. Difficulties consequently arose. The actual enslavement of the Indian population aroused the denunciation of the Catholic Church since it hampered the work of conversion. The Church secured the support of public opinion at home and the allegiance of the Spanish sovereigns, who, under the sway of Catholic views, bewildered practical men by their devotion to spiritual rather than material ends. Indian slavery was, therefore, prohibited in 1542. Instead, successive codes of law attempted to gather them into villages, give them land, instruct them in the methods of European industry, and convert them to Catholicism. Every male Indian, however, owed a tribute, payable generally in labor or in kind, either to the crown or to the Spanish landlord, or encomendero, who was placed over him. This “encomienda” system, as it was called, was evidently patterned after European serfdom. Moreover, there was a required service in the mines in Peru and in Mexico; in this case the Indians received wages. But when in debt (which was a large part of the time) the Indian had to work for his creditor. Indian serfs were supplemented by the introduction of Negro slaves, who became the predominant labor force in the regions whose climate was suited to it—the northern coast of South America and the Spanish islands. At first the contract for supplying these slaves from Africa (asiento, or assiento) was awarded to courtiers and European capitalists who paid for the privilege, but by the eighteenth century it became a pawn of international rivalry, sought eagerly by the imperial nations of Europe.

The decline of Spain on the European continent, first openly signalized by the defeat of the Spanish Armada at the hands of the English in 1588, did not result in the disintegration of the Spanish American empire. Its actual conquest by European nations was difficult, for it lay remote from Europe, and its vital centers, Mexico City and Lima, were protected by a difficult coast and by mountain ranges. European nations were content by legal or illegal methods to make breaches in the restrictive system which surrounded it. England by the Treaty of Utrecht, 1713, secured under the assiento the right to send an annual treaty ship to Porto Bello, and the treaty limitations on her size and cargo were consistently evaded. Illegal trade between New England and New Spain flourished. In 1739 it was calculated that the English share of the trade to Spanish America was as large as that of the mother country. But although it was outwitted and harassed, the Spanish empire existed intact, pushing its missions into Texas and California, converting the
wild Indians to arts of peace, like some slow-moving organism gradually encroaching upon the wilderness. In 1762, through a deal with France, it added the indefinite area of Louisiana to its territories. So it was at the time of the American Revolution that the Spanish empire bordered the English possessions along the Mississippi.

**The Dutch Empire, East and West**

The aggressive creation of overseas empires had meanwhile passed to the northern European nations of the Atlantic coast line. Of these, the Low Countries, or Netherlands, were the first to achieve success. Even before the discoveries, geography conspired to make them a great industrial and commercial center. Astride the mouths of three navigable rivers, the Rhine, the Maas, and the Scheldt, they had access to the interior of northeastern Europe. The excellent harbors of their coast, the prevailing winds, the imminence of the sea itself, at the same time led the inhabitants of these regions to try overseas trade. The Netherlands thus became the great distributing center of northern Europe. From the Mediterranean came the annual fleet from Venice with its oriental wares. To the north, the Netherlands had access to the Baltic trade with its coarse products—timber, fish, and grain. Finally, the country itself was a region of intensive agricultural production and a highly developed industry which converted raw or semi-finished materials into valuable products. Antwerp by the middle of the sixteenth century was the richest city in the world.

Historical circumstance, however, was to center the commercial predominance of this region in the northern provinces, which eventually became the Dutch Republic. In the sixties of the sixteenth century, when Philip II of Spain, whose patrimony the Netherlands were, began his long effort to curtail the political autonomy of the district and to extirpate Protestant heresies, the northern provinces displayed a degree of national energy sufficient not only to win their independence but also to create a great overseas empire. Amsterdam, regal successor to Venice and Lisbon, became its metropolis. When Portugal became part of Spain by a dynastic marriage, the Dutch chartered in 1602 a great trading company, the Dutch East India Company, to destroy the Portuguese monopoly of oriental commodities and gave it the exclusive right to carry on trade in the eastern area lying between the Cape of Good Hope and the Straits of Magellan. Its naval and commercial invasion of this region was conducted with such efficiency and ruthlessness that the Portuguese empire in the East was practically destroyed.

The success of this procedure suggested the application of a similar device to western regions. The agitation for a West India Company was directed by one of the greatest promoters of the seventeenth century, William Usse-
linx. A cosmopolitan merchant, acquainted with the Spanish and Portuguese systems of trade, he came to Holland from Antwerp during the Dutch revolt against Philip. There was a radical tinge to his schemes for a company, since he proposed not to exploit a trade already in existence, as had been done in the Orient, but to settle and colonize America so that it might produce raw materials in exchange for Dutch manufactured products. Such proposals were not, however, to the taste of the Dutch merchants, and the Dutch West India Company was in its organization patterned after its predecessor, the East India Company. By its charter in 1621, it was given a monopoly of trade in the African and American lands surrounding the Atlantic Ocean. It at once proceeded to harass the Portuguese and Spanish enterprises in this area. Its success against the former was remarkable. On the African coast it invaded the Portuguese slave monopoly with such effectiveness as eventually to wrest from the Spanish government the assiento and in Brazil it acquired and governed the most productive Portuguese provinces until 1654. The true proportions, therefore, of the Dutch enterprises in North America can be grasped only when it is appreciated that the colony of New Netherland on the Hudson was but one project of a West India Company, which was in turn of less moment than the East India Company.

The West India Company, casting about for some gain to be derived from its domain upon the Hudson, was at first beguiled by the hope that the incipient fur trade of the region might become the profitable equivalent of the spice trade of the Indies. The European demand for furs, particularly beaver which entered into the composition of hats, was eager and extensive. The returns from this trade, however, soon proved insufficient to pay the expenses of the colony, and the directors of the West India Company planned a reorganization of the colony’s affairs which, while not injuring the fur trade, would stimulate agriculture and thus make New Netherland self-supporting. In 1629 the Company issued the Charter of Privileges to Patroons, designed to effectuate these changes through the establishment of large landed estates or patroonships. Great areas along the rivers were to be given to these patroons on condition that they transport fifty families within four years to their grants. On these patroonships the feudal arrangements of Europe were to be established. The patroon was to erect the farm buildings, equip them with tools and stock them with cattle; the tenants were to pay a rent in work or in produce and were bound to other feudal obligations. Peasant labor might be supplemented by that of Negro slaves, who would be shipped by the Company for a profit from Africa. As soon as the charter was passed and before the ordinary stockholders knew what was doing, the directors of the West India Company rushed “to get in on the ground floor” by securing large grants of the best land. The most fortunate in the scramble was
Kiliaen Van Rensselaer, a gold and diamond merchant of Amsterdam, whose patroonship on the upper Hudson surrounded the frontier post of Fort Orange, later Albany, and included a domain which at present constitutes two counties of the Empire State.

No measurable improvement in the colony resulted from these arrangements; in fact, Renselaerswyck was the only successful patroonship. The West India Company still preserved for itself a practical monopoly of the trade with the colony. All goods had to be bought of the Company, and all exports had to be loaded on Company ships. The charges for transportation and the prices for goods sold and purchased were naturally designed to yield a profit to the Company. At the same time the patroons found it difficult to secure colonists, since the conditions of land ownership on a patroonship were slightly more difficult than those in Holland. With considerable vacillation the Company entered upon a more liberal policy. The monopolistic restrictions on trade were eased and greater inducements were held out to individual colonists. The Charter of Privileges to Patroons had offered free settlers as much land as they could properly cultivate. Now other inducements were held out. The Company occasionally advanced passage money, farm implements, and cattle if the settler would return these credits in annual payments of money and produce. In 1650 land was granted to every settler in payment of a very small annual rent, a quitrent. Under such stimulus settlement proceeded more rapidly. Immigrants from Europe and other colonists came in, particularly from New England.

The growing eminence of Holland in Europe and of her empire overseas was watched with jealousy and hostility by England and by France. Both nations had embarked upon careers of mercantilist development, territorial expansion, and economic imperialism. The France of Colbert and Louis XIV discriminated against Holland by a mercantilist program and engaged her in a series of debilitating wars; the England of Cromwell and Charles II combined hostile legislation and naval activity to destroy Dutch sea power and empire. Although the Dutch Republic retained its hold in the East Indies and in sections of Africa, its colonial empire in the Western World practically disappeared when it abandoned Brazil in 1661 and lost New Netherland in 1664. The former was restored to Portugal, and England secured possession of the strategic Hudson valley.

The French Empire in the New World

By 1675 the Portuguese, Spanish, and Dutch had been surpassed in the race for economic empire by the English and French. Twenty-five years later the imperial struggle was obviously a rivalry between these two powers, and the history of the eighteenth century was to be the record of their bitter, world-
wide conflict. Yet both had started late upon their careers of overseas expansion.

The tardiness of France was due partly to geographical factors. She had a coast line and good harbors, but, in contrast to Portugal, Holland, and England, she was a continental country. Her sovereigns continually had before them the possibility of territorial expansion in Europe rather than the acquisition of colonies. Moreover, for the last fifty years in the sixteenth century, when other nations were securing colonies, France had been absorbed in a series of religious conflicts which united the disasters of foreign and civil war. But after 1600 there was domestic peace and France awoke to the advantages which empire was conferring upon Spain and the Dutch Republic. From time to time French statesmen elaborated great schemes of empire and then lost interest in their realization. It was not till the close of the century that a great empire builder appeared in the person of Jean Baptiste Colbert. The son of a merchant family, he shifted from trade to public service to become in 1662 the chief minister of Louis XIV. His aim was the creation of a greater France along mercantilist lines. At home, industry was to be facilitated by improved roads and the construction of canals. Overseas his policy included the acquisition of colonies, the construction of a merchant marine, and the building of a navy to protect the sea routes of empire. To these conceptions, so thoroughly conforming to the mercantilist philosophy that the latter has sometimes been called Colbertism, he brought a versatility of interest, a capacity for detail, a cold efficiency, and a fund of personal energy.

The empire which he and others fashioned was to be universal. In the East, it secured strategic factories in India and won a foothold in Madagascar. In the West, it obtained a place in nearly every profitable trade of the Atlantic basin. In Africa it invaded the commerce of gold and ivory, secured a practical monopoly of the Senegal gum trade, and won for its slave trade a decade’s enjoyment of the profitable assiento. Its transatlantic empire centered in the Caribbean area. French Guiana, on the coast of the South American mainland, was a convenient base from which to carry on illicit trade with the Spanish colonies. Martinique, Guadeloupe, and Haiti, on the western end of Hispaniola, islands which the fatal attraction of the silver and gold of Mexico and Peru had led the Spaniards to ignore, were acquired to supply the colonial products—tobacco, indigo, sugar—for French consumption and trade. Every factor encouraged the production of sugar. The islands had a great natural fertility. Slave labor, authorized by Colbert, led to efficient large-scale production. By liberal regulations adopted early in the eighteenth century, export and import duties on sugar were either abolished or lightened. Sugar from the French islands not only supplied France itself but even
undersold its competitors in Hamburg, in Flanders, in Holland, and at the
Straits. Imported under a treaty arrangement into Spain, it was reëxported
to Italy and Turkey. Here was a most happy demonstration of mercantilist
principles. The colonies in North America along the St. Lawrence or the
Mississippi could not match it.

Long before Colbert's time the government decided to utilize for the pur-
pose of settlement in North America the agency of the chartered company.
This device promised all sort of conveniences. The government saved ex-
 pense and obligation; private investors, generally tempted by the grant of the
fur trade, put up all the money and guaranteed to export colonists to New
France. For twenty-five years after the first was incorporated in 1603, com-
p any followed company. Most of them recruited their membership and
money from the merchants of the seaports and from the government officials
of the maritime regions and usually included some courtier as a spokesman
with the king. But they failed. Colonists were not transported and the in-
corporators did not receive their expected returns. The only thing that kept
the colony alive was the heroic labors of Samuel de Champlain, a former
seagoer from the region of La Rochelle, whose personal career as employee,
shareholder, and local representative of the various companies lends some
unity to their fragmentary history.

In 1627 Cardinal Richelieu, whose attention was momentarily attracted
to the New World, established the Company of New France or the Company
of the One Hundred Associates. Designed to be a powerful organization, its
capital was placed at 300,000 livres. Richelieu and other men of rank sub-
scribed, and the burgheurs of Paris supplanted the provincial merchants of
the seaports as the chief shareholders. The company was given a monopoly
of all trade in the province for fifteen years and a perpetual monopoly of the
fur trade. In return for its privileges, it was to have transported by 1643 four
thousand colonists of both sexes to the new colony. In spite of its favors and
privileges, the company neither made money nor settled the colony. In 1663,
when the existence of the One Hundred Associates was terminated by Col-
bert, the population of New France was about twenty-five hundred people.
The government now undertook a more direct interest in colonization. For
a time the king sent out colonists, recruiting them from the northwestern
provinces of France, but one source of immigration was never utilized. Like
his Bourbon colleague in Spain, the Most Catholic King of France desired
to protect his empire from heresy. The Huguenots of France were forbidden
to enter the French colonies. Nevertheless, by the eighteenth century a set-
tled community had been created in New France and its population before
its surrender to the English was probably 80,000 people. A midsummer canoe
voyage along the shores of the St. Lawrence and the Richelieu would reveal
nearly every settlement in the colony. Stretching back from the river’s edge lay the elongated fields of the Canadian habitants, yellow with ripened wheat. Occasionally the more pretentious house of the seigneur or a palisade or a windmill would vary the details of this rustic picture. At rare intervals came the towns of this dispersed community—Tadousac, rock-crowned Quebec, Three Rivers, and Montreal.

This voyage would suggest quite rightly that the predominant occupation of the inhabitants was the tilling of the soil. But it was a region ill adapted to a bountiful agriculture. The heavily wooded lands were reduced with great difficulty to cultivation, the glaciated soil was not rich, the growing season was too short for Indian corn. Agriculture on this imperial frontier of France was fortunate if it could raise the foodstuffs consumed in the colony. A surplus for export was impossible. The frame-work for agricultural production was supplied by the seigniorial system. Although this was a feudal arrangement naturally transferred from France to the New World, the impact of North America combined with governmental regulations modified its harshness and breathed into it a new simplicity and virility. The class of seigneurs who received grants from the king was diversely recruited. The first seigneur in Canada, Hébert, was a Parisian apothecary. Others were religious orders, military men, members of the French nobility, directors in the Company of New France, or men of substance and wealth. In return for his grant, the seigneur undertook to clear and settle it. For this purpose, he regranted the land to the Canadian peasant or habitant. This grant, running backward between parallel lines from the river, contained meadows, pasture, and forest land. Here the habitant erected his cabin, raised his hogs and his family, and passed his land down to his descendants. There were few obligations which he owed his seigneur. His grain had to be ground at the lord’s mill, but in a frontier community the construction and maintenance of a mill was a hardship not upon the peasant but upon the seigneur. There were days of service, but they were rarely required. Once a year the habitant must discharge the annual payments for his land. They were trivial. Ten or twelve sous, a few measures of grain, three or four capons, perhaps some eggs, comprised the rent of some fifty or sixty acres. The habitant of New France was infinitely better off than the tenant of the old country.

Any mercantilist would have abandoned New France forthwith if this scanty agriculture had been all that it could furnish. But it had other advantages. One was the forest wealth of the region, which could provide dressed timber of various sorts, masts and spars for the navy and merchant marine, and the naval stores of tar, pitch, and turpentine. But the colony proved to be unable to develop this resource. A second extractive industry was the fisheries. This indeed had been the first interest of France in North
America. Even before her explorers had voyaged about Newfoundland and into the Gulf of St. Lawrence, her fishermen, as well as those of Spain, Portugal, and England, had anticipated them. As the food resources of these northern waters became better known, vessels from the French fishing centers of Dieppe, Rouen, Saint-Malo, La Rochelle and smaller centers repaired thither in great numbers. The need of land bases for these various operations was early realized. To be sure the "green fisheries" were carried on by vessels which dressed the fish at sea but the "dry fisheries" needed a land base where some harbor provided an anchorage for the vessels from France, and where a beach gave opportunity for dressing and drying fish. The ownership of bases, moreover, was essential to the strategy of excluding interlopers from the fisheries and obtaining a monopoly of them for France. This was the reason for her preoccupation with Newfoundland, Cape Breton, Acadia, and why she gradually lost these outposts to her imperial rival, Great Britain.

The rôle played by the spice trade in the Portuguese and Dutch empires and by the mining of precious metals in the Spanish colonies was assumed in New France by the "hardy, adventurous, lawless, fascinating fur trade." The slaughter of the beaver and the commerce in his fur for a century and a half shaped the destiny of the colony; and in 1761, two years before France lost her Canadian colony, the total value of its fur trade was £135,000. Since the trade resulted in the extinction of fur-bearing animals, it was continually moving to areas whose resources had not been destroyed. Starting in the sixteenth century on the coast, it had reached Saskatchewan by the middle of the eighteenth. Since the fur trade also depended upon the Indian, it shaped the Indian policy of the colony. The Indian was to be converted, if possible, to Catholicism and shown the consideration of an equal. In this cosmopolitan task, the genius of the French in America was superb. They learned the Indian's language, they mastered his symbolism, they understood his racial psychology, and through marriage and relationship they mixed the traits of the red and the white races. The nature of the trade shaped also the character of the colony. Its romance, its adventure, its easy indolence, its profits were a continual temptation to abandon a settled order of agricultural and industrial life. The habitant deserted his farm on the St. Lawrence for a wigwam among the Sioux and his wife for an Indian squaw, the young men were drawn away by the gay challenge of the wild life, the ranks of the coureurs de bois never lacked recruits. Finally, the fur trade influenced the mother country and her relations with the colony. In France industries were encouraged to manufacture the goods needed in the Indian trade, regulations were passed and European markets sought for the hat makers, who depended upon the raw material from Canada. The closeness of these interrelation-
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ships kept New France dependent on the mother country. In the French colonies an American Revolution could not have occurred.

The fur trade obviously required governmental regulation. It affected the relations between white and Indian; it involved the severest sort of international competition in the New World and hence the possibility of international war; and, since the king was entitled to one-fourth of the beaver skins, it was the chief source of governmental revenue and taxation. The home government tried to solve the problems of control and profit by assigning the monopoly of the fur trade to a chartered company, but these arrangements broke down even before the dissolution of the Company of the One Hundred Associates in 1663. The fur trade was turned over to individual enterprise and gradually large fur merchants at Quebec and Montreal became the dominant figures in the trade.

Throughout most of the seventeenth century, the Indians brought their furs to the settlements on the St. Lawrence either by the Saguenay or the Ottawa River or along the Great Lakes. Montreal was the chief destination. Here at an annual fair, accompanied by the usual excesses of drunkenness and debauchery, the Indians exchanged their furs for the European goods—kettles, hatchets, knives, firearms—which were altering the character of Indian civilization. The chief Indian tribes involved in this trade were first the Hurons and then the Ottawas. These tribes played the part of middlemen. They purchased furs from more remote Indians, and since they were canoemen, they were able and anxious to transport these furs to the French settlements. By the turn of the century, this system had broken down. French traders, anxious to stimulate beaver catching and collect for themselves the profits of middlemen, had penetrated westward; competition among themselves and with the English hastened this movement. The western Indians were not canoe men and in any case wished to avoid the arduous and long trip to Montreal. The western posts of the French—Detroit, Green Bay, Sault Ste. Marie, Michilimackinac, Koministiquia—now became more important. Here the barter for furs went on, food supplies were grown or collected, and depots of Indian goods established. Only the great merchants at Quebec and Montreal possessed capital enough to purchase canoes, fill them with goods, hire coureurs de bois to transport them to the western regions and wait a year or more until those individuals traded furs and brought them back.

Although the company hold upon the internal fur trade was early abandoned, monopoly always governed their purchase and shipment to France. In order to collect his revenues from the fur trade, the king for a payment farmed out this external fur trade to associates or an individual. Although
the ferme had the sole right of transporting furs from the colony, it had to receive all beaver skins and pay for them at a fixed rate. From 1663 to 1713 there were continual difficulties. The fur trade was rapidly expanding, and the amount of furs presented was so excessive that they could not be sold at a profit in France or elsewhere in Europe. Beaver skins were burned to keep up the price and other fruitless efforts were made to limit the supply. Caught in this vise, one company of farmers after another went bankrupt and the king found difficulty in coercing merchants to assume the monopoly. After 1713 a better balance of the supply and demand for furs eased the marketing problem, but it did little to abate the successful competition of the English fur traders.

It was through Canada that the French first penetrated the interior basin of the North American continent, for from the Great Lakes, rivers and easy portages led either to the Ohio or to the Mississippi itself. Into this accessible region the Jesuits were impelled by their desire to save souls and the fur trader by his search for pelts. Then came Robert Cavelier, Sieur de La Salle. Although tracing his origin to the merchant class of France, he was not primarily interested in America as a means of money-making. Rather he was an explorer and an empire builder whose grandiose projects were dimly conceived and tragically executed. The fulfillment of his dreams came slowly in the eighteenth century as the French government experimented with the various discredited methods of colonization—wealthy individuals, chartered companies, royal enterprise. By 1750, in spite of individual failures, the beginnings of a far western empire had been planted. In the Illinois region some two thousand white settlers clustered about the forts, of which Fort Chartres was the principal, on both sides of the Mississippi. As the voyager progressed down river, a considerable interval of wilderness intervened before the French settlement at Natchez bluffs marked once again the beginning of settlements which strung along to the city of New Orleans. All told, this Louisiana region had a population in 1769 of between 8,250 and 11,500, of whom a large proportion were Negro slaves.

This western region never developed to the economic importance of New France. The Illinois country became a livestock and wheat raising district with a surplus which was sold to the posts of the Northwest and shipped down in an annual convoy of bateaux to New Orleans. In lower Louisiana, Indian corn and, to a less extent, rice were the chief cereal crops. The annual crops of tobacco and indigo, whose cultivation mercantilist sentiment commended, fluctuated extravagantly in amount. These products played a part in foreign commerce, for rice and corn were shipped to the French West Indies and tobacco and indigo to the mother country. Of course there was the fur trade, but here it was no “Peru.” The beaver pelts of the South-
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west were far inferior in color and weight to those of the cooler northern wilderness, and royal regulations prevented Louisiana from driving a salient up the Mississippi into the real beaver country. Besides beaver shipped south spoiled at New Orleans. The fur trade of Louisiana was in reality a leather trade in the skins of buffalo and deer. And here as in New France, the competition of the English traders was effective in preventing French success.

"The Sun Never Sets"

The emergence of England into commercial and overseas power was one of the most startling events of the modern era. In the Middle Ages she had played a small rôle in world commerce. Off the main track of the European trade routes, she was the destination rather than the intermediary of trade, and was the producer of raw products for shipment to more advanced economic countries. The substitution of the Atlantic for the Mediterranean worked a revolution. Midway between the Baltic and the Mediterranean, thrust out into the Atlantic toward the New World, England’s geographical position was no longer on the periphery of trade but at its very center. What is more, she had a coast line indented with harbors, and an insular position which freed her from continental entanglements. Then, at the end of the sixteenth century, flowered the exuberant patriotism of the Elizabethan Age. With the nation at this flood tide of energy, reasons piled up for imperial expansion. Some were military, some were political, many were economic. The long wars with Spain had tempted English seafarers, pirates, and buccaneers to attack the seaports of that empire around the world and had familiarized Englishmen with the riches and gain to be obtained from foreign lands and commerce. The mercantilist doctrines of national aggrandizement appealed to the young nation. Changes in the economic life of Great Britain completed the story. The substitution of sheep raising for cereal farming and the depression of certain hand industries had created unemployment. The dispersal of the gold and silver of America through Spain to Europe had raised prices and created poverty and want. The impression prevailed, therefore, that England was overpopulated and required colonies. As one pamphleteer wrote rather heartlessly of Virginia in 1614, it should be retained "if it was good for nothing more than to kill people and afford an outlet to them from here." But colonial enterprises were expensive. This difficulty was obviated by the influx of bullion. It was now possible to accumulate capital and invest it in enterprises which offered profits.

Thus equipped, England expanded her commerce and staked out her claims to empire. For the far eastern trade she chartered in 1600 the East India Company and assigned to it an eastern hemisphere from Africa to the
Straits of Magellan. In the Spice Islands, which were of course included in this vast area, the English Company made little headway against its more heavily capitalized rival, the Dutch East India Company, and practically withdrew from the region when the Dutch governor of Amboina in 1623 executed twelve Englishmen for an alleged conspiracy. This "massacre of Amboina," as the British preferred to call it, increasingly directed the attention of the Company to its trading ports and factories in India. Here the English advanced at the expense of the Portuguese, whose empire crumbled away in India before the English as rapidly as it had in the Islands before the Dutch.

In the Atlantic basin the English followed the routine which has become familiar enough. In the slave trade of the African coast English traders eventually secured a sphere of influence along the Gambia and shared the Gold Coast with the Dutch. Their most considerable success was the assiento which the English government wrested from Spain by the Treaty of Utrecht in 1713. Although in the Americas Great Britain seemed to have been anticipated almost everywhere by Spain, Portugal, or France, there were still islands to be occupied. One was Newfoundland. Basing her claims upon its discovery by the Cabots, England fought off rivals and made it a base for her fisheries. Since these American fisheries freed Great Britain from dependence upon the fishing fleets of other nations, the island became one of the most desirable colonies in the eyes of British mercantilists. "This is our Colchis, where the Golden Fleece flourisheth on the backes of Neptunes sheepe, continually to be shorne. This is Great Britaines Indies, never to be exhausted dry."

Meanwhile, various English noblemen and companies had received grants from the king and began picking up the unoccupied islands of the Caribbean area. Numerically the acquisitions were impressive. They ran from Barbados northward through the Leeward Islands, then jumped to naval outposts in the Bahamas and the Bermudas. In 1655 Cromwell, the Colbert of England, conquered Jamaica. Small as their actual area was, two factors made them of supreme value. First of all, their location imbedded in the Spanish empire enabled them to carry on a clandestine trade with its settlements and to secure from the mainland the dyewoods which furnished the colorings for the English textile industry, and mahogany and other rare woods which entered into cabinetmaking. Then the islands themselves developed into a virtual equivalent of the eastern tropics. In the late 1630's, apparently, sugar cultivation was introduced into Barbados and a few years later the islands of the Lesser Antilles and Jamaica had been transformed by its advent. Small farms gave way to large plantations, owned often enough by absentee landlords and cultivated by slave labor. The English sugar islands surpassed the
production of Portuguese Brazil and supplied the markets of Europe until the French sugar islands overtopped them in the eighteenth century. From the same islands came other tropical products, chocolate, coffee, oranges, lemons, and some tobacco. The golden stream of prosperity which flowed from the Caribbean absorbed the attention of statesmen and economists.

COMPANIES AND PROPRIETORS IN THE NEW WORLD

In spite of the contemporary attraction exercised by Newfoundland and the Antilles, the English settlements on the North American continent were destined eventually to be of greater historical importance. The English king, although anxious to substantiate his shadowy claim to the mainland, did not undertake directly the colonization of this region; rather authorized individuals or companies undertook settlement and exploitation. Naturally a variety of motives influenced Englishmen to seek these royal grants. Religious discontent and aspiration, patriotic fervor and devotion, both played their parts. But it would have been strange in the seventeenth century if the desire for economic advantage had not been a more powerful motive. “Tell them,” said Crashaw in a sermon in 1610, “of getting XX. the C. [20%]. Oh how they bite at it, oh how it stirres them? But tell them of planting a Church, of converting 10,000. soules to God, they are a senseless as stones: they stirre no more then if men spoke of toies and trifles.”

The trading and colonizing company was the means by which the first successful English colonies were planted on the continent of North America. Such associations had large powers and many advantages, they could combine the resources of individuals for the large tasks of outfitting fleets or vessels for the long voyages to the Orient or the New World, of protecting them against the depredations of pirates and enemies, of building forts and factories, and of colonizing settlers. The government, too, found it easier to regulate the activities of an association than those of scattered traders. To the companies, therefore, the government confidently entrusted powers and opportunities which it was too parsimonious or too timid to assume. England used this device with great profusion. After 1555 when the Muscovy Company was chartered for Russian trade, the company organization was rapidly extended to the old trades of Europe and the new ones of Asia and the Americas.

Virginia, the first successful colony in America, started existence as the estate of a trading company. In 1606 James I divided the North American continent between the Cape Fear River and Halifax into two zones and assigned the southern to the London Company, which after a reorganization in 1609 received the formal title of “The Treasurer and Company of Adventurers and Planters of the City of London, for the First Colony in Vir-
ginia." Two hundred and three subscribers took shares in the original company, and the number was increased by later reorganizations. Thirteen of these shareholders—noblemen, capitalists, various London companies and merchants—were investors in the Muscovy Company, and one hundred and sixteen were members of the East India Company.

The payments which the shareholders made to the Company were invested in goods for the colony, the recruiting of colonists, and the employment of vessels for transport. When the commodities or "supply" arrived in Virginia, they were placed in the "magazine," from which they were issued for the maintenance of the settlers. The products which the settlers raised were on their side placed in the "magazine," transported to England, and the proceeds of their sale were to provide the profits for the shareholders. In short, Virginia was to be a "plantation," owned jointly by the Company and conducted by its overseers, and upon it the colonists were to have for a time a status like that of servants or employees. The products from which the Company hoped to make money were those esteemed by the mercantilists. The discovery of gold and silver might make this a second Peru. From its forests would come naval stores to free Great Britain from dependence upon foreign imports, from its mines iron and copper to supply her metallurgical industry, and from its fertile acres the tropical products—spices, wines, dyes, and fruits. In the twentieth century the recital of these hopes seems bizarre. In 1607, however, the resources of Virginia were not accurately understood, and the commodities drawn by other nations from their colonies were naturally taken as grounds of legitimate expectations. As a moneymaking scheme, the whole project was an experiment.

Georgia and the settlements of the Pilgrims at Plymouth and of the Puritans at Massachusetts Bay were the other colonies established under the auspices of the company system. They were not pure instances of commercial enterprise. Georgia was chartered in 1732 and its trustees were less animated by the acquisitive instinct than they were by the religious and charitable movements of the Age of Walpole. The Massachusetts colonies, settled over a century earlier, soon deviated from the mercantile or plantation type. They were located in the northern territory which James I, when he was partitioning his American claims in 1606, assigned to the Plymouth Company. In 1621, the survivors of that organization, together with many interested in the Virginia Company, secured incorporation from the king under the title of "The Council established at Plymouth in the County of Devon, for the Planting, Ruling and Governing of New England in America." This concern secured rights to fish, trade, and colonize in the domain between the fortieth and forty-eighth parallels and extending from the Atlantic to the Pacific Ocean. Within this territory the Pilgrims settled at Plym-
outh, but in order to get there they had to enter into an agreement with a
group of London merchants. Each emigrant to America was counted as
owning one share in this enterprise and so was each contributor of £10. For
seven years the colonists were to be provided with supplies purchased by
these funds; for seven years all the products of the colonists were to be con-
tributed to a common fund. The agricultural products would keep the
colonists alive, the fish and fur would be marketed in England for a profit.
By 1624 some seventy London capitalists had invested £7,000 in the enter-
prise. Here were all the aspects of a plantation of the Virginia variety. For a
shorter time the same generalization was true of the settlers around Mas-
achusetts Bay. They had come thither under the auspices of individuals who
had secured a grant of land from the New England Council and in 1629
a charter from the king establishing them as the “Company of Massachu-
setts Bay in New England.” Externally its forms corresponded to those of the
first Virginia Company, which had introduced this method of colonization
some twenty years before. In practice the later company never adopted any
of the plantation measures of its predecessors.

The company plantations in America were failures from the business point
of view. They brought no financial rewards to the investor in their stock.
The Virginia enterprise dissipated contributions raised from its cajoled and
harassed investors or from other sources and in 1621, three years before its
charter was taken away, it was calculated that over £100,000 had been risked
in the enterprise without the slightest return of interest or principal. This
sum was a staggering one for its day. Nor was the investor in the Pilgrim
community more happy. After the plantation had struggled along for a few
years without returning dividends, the merchants in despair offered to can-
cel their claims and in 1627 an agreement with some of the leading colonists
resulted in the discharge of these obligations for £1,800. Considering their
original investment, the London capitalists were heavy losers. It is impos-
sible to draw up a balance account for the Massachusetts Bay Company. For
the company, in spite of its structure, did not undertake the management of
trade or land on a joint-stock basis.

One reason for the failure of the company system was the inadequacy of
the invested funds, large as they were, for the task in hand. Before such settle-
ments could be made to pay there had to be a heavy original investment and
then the exercise of patience by the investor until a gradual development
yielded profits. A second flaw in the company plantations was their land
system. Everywhere the cultivation of the soil or the pursuit of other occupa-
tions under the direction of a remote company proved impractical. In Mas-
achusetts Bay it was never attempted. In Plymouth it had sterilized the col-
ony for three years. Unmarried men hated to grow supplies for men with
wives and children, the energetic hated to contribute to the feeding of the lazy. Accordingly in 1623 the settlers were given individual holdings. In Virginia, the arrangements of 1609 had provided that at the end of seven years the resources of the company, including a dividend of land, should pass into the hands of the shareholders. Even before the year of division, 1616, the military governors of that colony had given small tracts to settlers in return for a small rent in produce. Soon after, private ownership was introduced in a variety of fashions. Every shareholder was entitled to 100 acres in the first division of the lands and 100 additional acres when the first had been settled; every settler who had come to the colony at his own expense before 1615 and every tenant and servant of the Company before that date received 100 acres; every shareholder was entitled to a headright of 50 acres for every emigrant he had transported to the country; and the same headright was given to any immigrant to the colony or to any one who had sent or carried over another person; and certain associations of shareholders had been granted large holdings in the expectation that they would settle and occupy them.

Until the establishment of Georgia, no more company plantations were made in British North America. Colonization was now undertaken under the proprietary system, by which land was assigned by the Crown not to a corporation but to an individual or a group of individuals known as proprietors. The rights and obligations of both grantor and grantee were modeled upon English precedents, particularly those existent in the County Palatine of Durham, which is mentioned in many of these American grants and which was in the Middle Ages a creation for the frontier of England. The grantee was given practically complete possession of his province. It is a little startling to consider that William Penn could sell, mortgage, lease, devise, or convey in trust the whole of Pennsylvannia, but it was true. The proprietor in his turn owed a quitrent for his holding to the king. In the cases of the Baltimores and the Penns, it was merely nominal—Indian arrows or beaver skins; in the case of the Carolinas, there were to be some financial payments. These landlords should be regarded as investors in large estates from which they hoped to receive some income, usually through the transfer of their land to actual settlers. The purchase price, if one was set, would constitute one return, and then there were the quitrents which the settlers owed to the proprietor just as the latter had owed them to the king.

The first successful application of the proprietary system to an American colony was Maryland. Among the motives which influenced Sir George Calvert, later Lord Baltimore, to found that province, worldly ones played the more important part. Calvert was an inveterate colonizer. He had been the recipient of various Irish plantations; he was a shareholder in the Virginia
Company, a member of the Council of New England, and had attempted to establish a colony in Newfoundland. After a charter for Maryland had been secured from the Crown in 1632, Calvert’s descendants ran the province in a fashion designed to increase the family income. Most of the proprietorships, however, were associated with nobles or gentlemen of the English Restoration days. Carolina was the first. In 1663 Lord Ashley, enlisting seven fellow politicians into a group of proprietors, obtained from the king a grant of the territory southward of Virginia. Their aim was commerce, but the overcrowding of Barbados incident to the change from small to large plantations furnished color to the theory that emigration from that island to the mainland could be easily encouraged and would be profitable to the proprietors. At the same time two of the participants in this transaction, Sir George Carteret and Lord Berkeley, engaged the favor of James, Duke of York, who had just received New York from his royal brother Charles as a feudal holding, and emerged as proprietors of the territory at present comprising the state of New Jersey. Their claims to this region underwent bewildering metamorphoses, and the territory eventually passed into the hands of two groups of associates, among whom was William Penn. Some years later, in 1680, Penn petitioned the king for a more “plantable” land in America in consideration of “the debts due to him and his father from the Crown;” and in the same year he received the land which became known as Pennsylvania. This recital of the colonies actually established under the proprietary system does not do justice to the interest displayed by Englishmen of position in American land. A whole array of unfulfilled grants and projects increase the evidence that many noblemen and others in England looked to the New World as a means of recouping their fortunes or increasing their income through the creation and exploitation of great estates in land.

The returns to proprietors from their holdings were usually as feeble as the earnings of the colonizing companies. This was true of the quitrents in the Carolinas and in New Jersey. In Pennsylvania and Maryland a real effort was made to make the quitrent a source of revenue. Although the Penns were never consistently successful, they collected between 1700 and 1779 £63,679:8:3½ and were fortunate at the time of the Revolution, when the assembly abolished the proprietary rights, in receiving a gift from that body of £130,000. In Maryland the most efficient system in the colonies was devised, and the Baltimores drew a considerable income from its operations. By the middle of the eighteenth century they were receiving over £4,000 annually, and by 1774, on the eve of the Revolution, the return was £8,518:6:2.

During the Revolution the feudal exactions in every colony were joyfully abolished by the colonial legislatures or allowed to lapse in some more quiet fashion. The reason for their previous failure generally lay in the difficulty
of making a rent roll, creating a tax-collecting body, and in the opposition of the people. In the Jerseys this popular hostility was fed by immigrants from New England, who were accustomed to an unhampered freehold. When suits for quitrents were brought against Elizabethtown settlers in 1745 a pamphlet war followed in which the antiproprietary party uttered equalitarian sentiments: "No man is naturally entitled to a greater proportion of the earth than another; but tho' it was made for the equal use of all, it may nevertheless be appropriated by every individual." This was the defiance of the frontier.

**Land Systems in the British Colonies**

The success of companies and proprietors as means of colonizing depended in the last analysis upon the attractions which America held out to European settlers, and the cost and difficulty of transferring one's self, one's family and one's possessions from the Old to the New World. The climate, the products, and the occupations of the colonies were all great factors in inducing immigration. Equally fundamental was the land system worked out in the English colonies.

In the New England colonies of Massachusetts, Connecticut, and Rhode Island, the land was transferred from the state to private owners through the successive establishment of new towns by town proprietors. A group of individuals proposing settlement would petition the general court, or legislature, for a grant; a committee of that body would lay off the grant—often a township six miles square—and this land would then be conveyed to the petitioners or proprietors. There was no fixed limit to their number. Dedham was granted to nineteen proprietors; Hadley to fifty-nine. The proprietors would thus become the actual owners of the soil. In the early period there were no quitrents or financial payments to the state, for the state did not regard the land as a source of revenue. The Puritans, moreover, were determined to be "the supreme lords of their own lands" and disliked the distinction between landlord and tenant. The first obligation of the proprietors was to lay out the town with its common, its burying ground, its school and church lots, and the town plots of the proprietors. Then they divided the arable land and made such arrangements for the joint use of the woodlands and pasture as were necessary. Upon the proprietors devolved the necessity of constructing roads, securing the erection of a gristmill and sawmills either through financial aid or through grants of land, arranging for the defense of the town if it were on the frontier, and providing for the construction of a meetinghouse and the employment of a permanent minister. Although this system of community settlement was favored by the religious and social organization of the Puritans, it operated independently of religion.
THE IMPERIAL FRONTIER

to induce immigration into New England. There alone in the American colonies could one secure an unencumbered holding.

In the eighteenth century a secular breeze dissipated the religious atmosphere of New England. The land system was affected by the concerns of the new time. In the towns already laid out the changed order was reflected in the attitude of the proprietors toward the land which had not been divided at the time of settling the town. Since population had grown denser, this undivided land now had an increasing value and the original proprietors or their heirs saw fit to claim exclusive possession against those who had settled later in the community and who demanded either an equal distribution or the right to be classed also as proprietors. There were town meetings, quarrels and lawsuits, concessions and arbitrations. The original proprietors or their descendants were generally victorious.

In the laying out of new towns there was also a breakdown of the old social-religious-economic system. In Massachusetts the first breach occurred when townships were laid out to be granted to soldiers who had served in the Indian wars. By 1762 Massachusetts was actually auctioning her western townships to the highest bidder. The change was complete. The same tendency operated in Connecticut and in New Hampshire. These new grants were not occupied by actual proprietors. They were purchased by colonial speculators and land jobbers who hoped to make money from the appreciation of land values. The anomalous spectacle now appeared of a town proprietor owning shares in many townships. Salesmen peddled proprietors' rights through New England and neighboring colonies and occasionally carried them to England. As the century wore on, speculation became a fever, infecting the whole community from merchant to minister. One of the greatest plungers was John Nelson, a wealthy West Indies trader of Portsmouth, who owned proprietorships in forty-six townships in Vermont and New Hampshire. For the moment these land boomers overreached themselves. The proprietors had no notion of becoming settlers, and they had difficulty in stocking their land with others, in spite of the bonuses which they offered for settlement. Since the conditions of the grants could not be fulfilled, petitions poured in for a postponement of requirements, and where this was not granted the townships returned to the original grantor, the colony.

In the southern colonies an entirely different land system had appeared. Indeed, under the régime of the Virginia Company, all the future methods of landholding had already originated. Of them all, the headright became the most important. The process of interpretation and of fraud made more generous even this liberal device. No matter how often an inhabitant of Virginia crossed the ocean, each voyage counted for fifty acres, captains on vessels received fifty acres for each passenger and seaman, each member of the
crew swore out fifty acres for himself as an immigrant. One man would serve as an excuse for repeated grants. Thus an indentured servant would provide fifty acres to the captain whose vessel carried him, fifty acres to the merchant who purchased him, and fifty acres to the planter who purchased him from the merchant. Finally the granting of lands was made more simple, if not more honest, when the clerks in the office of the secretary of the colony simply made out headrights from lists of names and sold them for one to five shillings apiece. In extenuation of this chicanery, it must be understood that no other method of acquiring public land existed until the direct purchase by money or tobacco was authorized in 1705. A liberal interpretation of the headright system was necessary in order to contrive a flexible and adaptable land system. His headright secured, the owner would locate his acres on the unoccupied land of the colony, apply for a survey at the surveyor's office, and finally register his grant with the secretary. The settler now had two requirements to discharge. He must seat his grant and must pay an annual quitrent. The former requirement was easily discharged by building a ramshackle cabin on the plot, by allowing the cattle to browse through the woods, and by planting an acre of tobacco or corn which might in after years be choked by weeds.

The headright system of land acquisition was adopted in the other southern colonies. Lord Baltimore used it in Maryland. The first settlers were sent out with the promise that each planter who paid his own way would receive 100 acres for himself, 100 acres for his wife, 100 acres for each adult servant, and 50 acres for each child under sixteen years of age. Although at the close of the century purchase was substituted for headrights, they persisted in the frontier regions of the colony. In the Carolinas the proprietors devised an elaborate system of headrights. In Georgia a township system was soon effaced, and the debtors who were transported thither were given fifty acres which they could not alienate and immigrants of other sorts were given large land grants. All of these grants were subject to quitrents which were designed to yield revenue. In the proprietary colonies the proprietors usually reserved areas for themselves which they intended to grant to others or conduct for themselves as manors. These large estates were to be worked by tenants. In Maryland some of the manors were temporarily established, but the great manors of the Carolinas which were to be bestowed upon an American order of nobility remained a paper proposal.

This southern system had many contrasts with that of the New England colonies. Its character was individualistic rather than coöperative. Its method of "indiscriminate location" led to a greater confusion of boundaries and to a more scattered and dispersed settlement than the township. The size of holding was larger in the southern colonies than in New England. This last char-
characteristic was, however, due as much to the agricultural methods and crops of the South as it was to the land system.

The land systems of the middle colonies blended those of their northern and southern neighbors. When New York became an English colony it was required by the peace treaty to preserve the property rights of the Dutch settlers, whether in patroonships or in smaller allotments. The former arrangement apparently appealed to the English officials, for they proceeded to create large manors which rivaled their Dutch predecessors; nine were successful, each having privileges like those of the manor in England. The township system in that colony was both Dutch and English, for the New England township had been transported thence by emigrants to Long Island and Westchester County. The same emigration had carried the town to the Jerseys, where headright and proprietary reservations were already in existence. The Pennsylvania land system was one of the most interesting and important in the colonies, and one of the most chaotic. It was in a continual state of alteration and development. In his first scheme, issued in 1681, Penn reserved for himself one-tenth of every 100,000 acres, the "proprietary tenth." The remainder was disposed of on varying conditions. He offered for sale at the price of £100 and a small quitrent large estates of 5000 acres, and then he granted for a quitrent smaller estates of not more than 200 acres, with 50 acres for each servant brought in and 50 acres to the servant when he became free. A township system whose area and division differed from those of New England was later developed and partially applied in the central and western portions of the state.

In the eighteenth century a distinctly new method of land acquisition appeared. Pennsylvania attracted a great flood of immigration, and these immigrants, Scotch-Irish and German, were ignorant of the local customs and without money. Pressing to the newer regions, they settled upon the unoccupied lands on the frontier or reserved lands and exhibited an obstinate indifference to regular land laws. The Scotch-Irish were apt to appeal to Natural and Divine Law to justify their doings. Invading one of the proprietary manors, they alleged "it was against the laws of God and Nature that so much land should be idle while so many Christians wanted it to labor on and to raise their bread." Of course force could be used to dispossess trespassers, but there was an obvious injustice in such action unless recompense was made for the settlers' improvements. By the middle of the century the Pennsylvania land office recognized these squatters' rights by providing that the colonist who settled upon unappropriated land, built a cabin, cleared away the forest, and grew crops was entitled when the land was surveyed to his holding upon payment of the regular purchase money. This custom of pre-emption was carried by the stream of population which left Pennsylvania
into new lands to the south and west. It is significant that during the Revo-
lution Virginia and North Carolina enacted preemption laws which were
applied to the land claimed by these states west of the Appalachians.

** Immigrants, Bond and Free**

In the seventeenth century the immigrants who settled this available land
came largely from England, though other nations contributed ingredients to
the colonial population. The causes in England which stimulated this exo-
dus were naturally various. But through every migration can be detected the
operation of economic factors. No demonstration is necessary to prove this
in the case of such company colonies as Virginia or such proprietary under-
takings as the Carolinas. New England represents the most considerable
challenge to this generalization, for here the religious motive has been
generally assigned as the reason for settlement. This impression has been
deepened by the terminology of an age which conducted ordinary business
operations in the biblical language of the King James version. When this
allowance has been made, it must be recalled that the Mayflower Pilgrims
gave as one of the reasons for their migration the difficulty of making a liv-
ing in Holland. The second stream of immigrants into Massachusetts took
its recruits from the southern and eastern counties of Great Britain. These
were the counties which were undergoing a profound economic transforma-
tion in the early seventeenth century. Here the enclosure movement had be-
gun early, here wages were low, and the important textile industry which
was carried on as an adjunct to agriculture entered in 1625 a period of pro-
longed depression. Gentry and laborers were alike affected by these economic
displacements and were ripe for emigration to escape their difficulties. Such
considerations reënforce the earlier observation of the shrewd John Smith, "I
am not so simple to think that ever any other motive than wealth will ever
rect there a commonweal or draw company from their ease and humors at
home to stay in New England to effect my purposes." The distinction be-
tween New England and the southern colonies was not a sharp one. In both
cases settlement was stimulated by the economic advantages of the New
World and the economic disadvantages of the Old.

The financial outlay for removing to the new colonies was something not
to be undertaken lightly. Some notion of the transportation costs can be de-

erived from the arrangements of the Virginia and Plymouth plantations,
where the price of a share was deemed equivalent to the costs of transporta-
tion to America. In the former company, the shares were priced at £12:10
and in the latter at £10—a price to be multiplied at least three to four times
for the modern equivalent. Although the costs were later reduced, the aver-
age passage to Virginia throughout the seventeenth century was £6. Under
such circumstances only the well-to-do could emigrate, and they were the class least likely to feel the necessity for leaving home. But, if they were to prosper, the colonies needed large numbers of people willing to do hard manual labor. Only in this way was it possible to exploit the resources of a country which was well supplied with everything except a native population to be enslaved.

This dilemma was met in a variety of fashions. The English government attempted to send over convicts. Some of these were political prisoners and no moral delinquency destroyed their usefulness, but the arrival of other varieties met with colonial protest and hostile legislation. Upon his arrival the convict was indentured or apprenticed for a period of years to an employer under an apprentice system which was somewhat similar to the arrangements that had been utilized in England to train craftsmen and to prevent idleness and unemployment.

This system of indentures became extremely important to America when applied to a different class of immigrant, the indentured servant. In the colonies these were of two varieties: those who made some arrangement with a master or master's agent before departure for America, and those who were carried over by shippers and then sold their services on arrival to pay the passage money for themselves or their dependents. The provision of servants became a regular business. At one end were the legitimate agents who collected servants and sold them either to wealthy emigrants to America or to merchants in England or America who sought them for their clients in the colonies. At the other extreme were various sorts of illegitimate activities. The poor and the ignorant were induced by false tales of the New World to commit themselves to the indenture system, and frequently boys and girls were actually kidnapped and sent off to the colonies. The best classes participated in this vicious business. In spite of these abuses, the indenture system helped to bridge the ocean for the lower classes of England. The agricultural laborer who struggled along on a wage of a few pence a day and with no security for old age, the urban artisan who rose early, wore his flesh to the bone in labor, and yet lived on bread and cheese, were enabled to escape by this means to a New World. The indentured servants were scattered through the colonies, but they were most numerous imported into Maryland, Virginia, and Pennsylvania. In the first-named colony the number of servants was for a time in the seventeenth century six times that of free men, and in Virginia the proportion was high.

In the eighteenth century there was a reaching out to new sources of immigration, and after 1725 the arrival of Scotch-Irish and Germans was a regular phenomenon. The Scotch-Irish or their ancestors had been pioneers before their arrival in America, for they had swarmed from Scotland to the
Ulster plantations which were contemporaneous with England’s colonial efforts in this hemisphere. There they fought the native Irishman very much as their offspring later fought the American Indian. Toward the close of the seventeenth century the economic life of the Irish plantations was, however, hampered by English restrictions prohibiting the export of many vital agricultural products. After 1717 when the leases came due, the landlords doubled or trebled rates. As a result the Scotch-Irish emigrated in droves to the New World. At the same time the emigration from Germany began to assume important proportions. The German immigrants to the colonies came largely from the southern states about the Rhine, the Palatinate, Würtemberg, Baden, and the German portions of Switzerland. These regions had been devastated by the armies of Louis XIV because they were a granary for his foes, and the backward conditions of German feudalism were no inducement to peasants to remain tied to lands which were periodically ravaged.

The colonizers and proprietors of lands in America sought to induce emigration from these discontented areas. The greatest promoter of them all was William Penn. Agents were sent out to stimulate German migration; and a flood of propaganda was unloosed in various pamphlets which were translated into German, Dutch, and French, and spread widely over the Continent. His *Further Account of the Province of Pennsylvania*, dated 1685, is an admirable example of this promotion literature. It dealt first with the “Produce of the Earth”—grass, vegetables, peaches, “Muskmellow, and Water Mellons,” and even the “Weeds of our Woods” upon which cattle could be grazed—then with the “Products of Our Waters,” which ranged from “Mighty Whales” to oysters; and finally with the low price and abundance of “Produce in General.” The activities of proprietors and land agents were supplemented by shipowners who employed representatives and paid commissions for every passenger to be shipped across the Atlantic. This type of solicitor, the “Newlander,” flourished in Germany. In 1749 there were one hundred and forty-three engaged in the business and they received a commission equivalent to seven dollars per head. The presence and promises of the “Newlander” anticipated the oil promoter of a later generation. He wore a gold watch chain, jingled the coins in his pocket, and exuded an air of prosperity. The New World, under his imagination, was the means by which “the maid has become a lady, the peasant a nobleman, the artisan a baron.” So devastating were the effects of his solicitation and so tainted with fraud were his performances that some German states attempted to prevent his activities.

As in the case of the earlier English migration, these later immigrants utilized the indenture or apprenticeship system to reach the New World. The German servants were known as redemptioners, although the phrase could
be applied to others as well. The tale of the hardships which these latter immigrants bore as they made the long journey down the Rhine past its innumerable interruptions, as they awaited vessels at Rotterdam, and as they crossed the ocean in small vessels with poor food and undrinkable water, has often been told by the Germans themselves. Extortion on the part of agents and ship captains added to the terrors of the journey. The fatalities in isolated instances were incredible. But considering the length of the voyage and the ignorance of methods of sanitation, it is surprising that the casualties were kept to as low a level as they were.

With few exceptions, all these were voluntary immigrants. Their number was supplemented by the immigrant who came here under duress—the Negro slave. His presence was not the result of accident or human depravity. Like the indentured white, he was brought in to supply the needed labor force. His journey was a long one. Over narrow jungle paths coffles of slaves were brought from the interior of Africa, sometimes for a distance of one thousand miles, to the Guinea coast. There chiefs bartered them off to the competing European or American sea captains. The first slaves were introduced into the English continental colonies in 1619, when a Dutch privateer sold in Virginia some slaves captured from an enemy slaver. Until the turn of the century slavery did not thrive, but after that the increase in the traffic was rapid. The ocean voyage to this country has often been described in horrible pictures. But Henry Laurens of South Carolina wrote in 1768: "Yet I never saw an instance of cruelty in ten or twelve years’ experience in that branch [the slave trade] equal to the cruelty exercised upon those poor Irish. . . . Self interest prompted the baptized heathen to take some care of the wretched slaves for a market, but no other care was taken of those poor Protestant Christians from Ireland but to deliver as many as possible alive on shoar upon the cheapest terms, no matter how they fared upon the voyage nor in what condition they were landed."

Westward Expansion

The migration across the Atlantic to America was the first phase in the western movement, and the Atlantic coast line was the first frontier of Europe. Once established in the New World, the forces of expansion could not be halted. They still operated to force the settlement into the wilderness. By the end of the seventeenth century the American coast from the Kennebec to Albemarle Sound had been filled in with settlements and the region around Charleston, South Carolina, had been colonized. The frontier had been pushed inland to the fall lines of rivers from the Hudson to the James. In the eighteenth century before the American Revolution, population had occupied the interior of Connecticut and Massachusetts, and the frontier had
encroached upon southern New Hampshire and Vermont. In the South, Georgia was founded and gradually peopled, and from the coast line of the Carolinas settlement slowly spread up the river valleys until it was halted by the belt of pine barrens which cut off the western area. In Virginia the settlers crossed the Piedmont and penetrated the Blue Ridge into the Great Valley, a remarkable geologic trough extending southwest from New Jersey and Pennsylvania into Georgia and Alabama. This Great Valley, in reality a series of parallel valleys and small ridges, is rich in limestone soils and is one of the most fertile regions in the United States. The Virginians were anticipated by settlers from Pennsylvania. In that colony, Germans, Scotch-Irish, and native Americans pressed westward through the easy water gaps, came into the Valley, and then marched southward along its course through Maryland and Virginia. When they approached its southern terminus, they spilled eastward into the Piedmont, or foothill region, of the Carolinas and then began the penetration of the transappalachian country. By 1775 there were scattered frontier stations in Kentucky and Tennessee.

This expansion repeated the phenomena of the first transatlantic colonization. The tide was drawn westward by the promise of cheap land and was driven by the rising prices of land in the older regions. The pinch of high land prices began to be felt in the eighteenth century. In 1732 the Penns raised the price of their lands from £10 for 100 acres and 2 shillings quitrent to £15½ and a half-penny per acre; and in 1738 Lord Baltimore raised his from £2 for 100 acres to £5. In New England the land near the coast rose in value, and the proprietors’ increasing control of undivided lands forced settlement to new regions. Naturally it was the newcomers to the colonies who felt the burden of this stringency in land, and hence the Germans and the Scotch-Irish passed over the settled areas in favor of the new lands in the West. These racial strains were peculiarly important on the frontier in Maine, New Hampshire, New York, and in the region of the Great Valley.

Abreast with the pioneer in his advance toward the frontier, came the speculator in western lands. By the middle of the eighteenth century such speculation had become a mania, and companies were formed or projected to undertake this supposedly profitable way of making money. In 1753 Connecticut investors formed the Susquehanna Company to exploit the territory, claimed under the “sea-to-sea” charter of their colony, in the Wyoming Valley of northern Pennsylvania. Stock was issued, and soon over eight hundred “wholesome persons,” including politicians and their relatives, had purchased shares in the undertaking. Actual settlement, however, was delayed by English opposition, Indian irritation, and a long conflict with the State of Pennsylvania. In the mountain region of North Carolina, Judge Richard Henderson gathered together a group of well-to-do acquaintances and rela-
tives, storekeepers, lawyers, and the like, into first the Louisa Company and then the Transylvania Company. Henderson entered into an arrangement with Daniel Boone, hunter, trapper, and explorer of romantic fame, by which the judge furnished legal advice to Boone, who was encumbered by debts, while the frontier hero engaged on his part to locate the best lands west of the mountain ranges. He was at his task as early as 1764, but it was not until 1775 that the group of proprietors purchased from the Cherokees 20,000,000 acres of land, the larger part of which lay between the Kentucky and the Cumberland River, for £10,000 in goods and money. They then hired Boone and others to trace out the Wilderness Road which led through the “high swung gateway” of Cumberland Gap and then north into Kentucky, where the grant lay.

The projects of speculators in the middle colonies were legion. From Virginia came the Ohio Company of 1747, which included prominent Virginians and important financiers of Great Britain who petitioned for a grant of 500,000 acres on the upper Ohio and guaranteed to settle it with five hundred families within fourteen years. In 1763 several prominent Marylanders and Virginians formed the Mississippi Company and petitioned for the modest area of 2,500,000 acres of land to lie on both sides of the Ohio River and about the eastern bank of the Mississippi. In return they proposed to settle two hundred families. The roll of the Virginia shareholders included the first names of that colony, the Fitzhughes, the Lees, and George Washington. Indeed Washington must be counted among the greatest of the colonial land plungers. He purchased claims to western lands which had been granted by the Virginian or English government as bounties to soldiers in colonial wars; he participated in land companies; he advertised his lands in the papers of Great Britain and Ireland; and at the time of his death he valued his largest holdings of western lands about the Ohio and the Great Kanawha at approximately $300,000. The possession of these western lands goes far to explain Washington’s extraordinary interest in the improvement of means of communication with this region. Or one might say that his faith in the destiny of the West accounted for both.

The activities of the Virginians had aroused meanwhile fears in Pennsylvania, where it was almost a proverb that “every great fortune made here within these fifty years has been by land.” Especially interested were the fur-trading companies that had carried on their business across the mountains. After various manipulations, there emerged in 1769 the Grand Ohio Company. This was a grandiose but significant organization. It proposed to purchase from the king for £10,460:7:3 and a small quitrent after twenty years an area estimated to contain 20,000,000 acres south of the Ohio River and adjoining the western boundaries of Virginia, Maryland, and Pennsylvania.
Handsome profits were anticipated. The organizing genius of this company was Samuel Wharton, partner in the famous Philadelphia fur-trading house of Boynton, Wharton, and Morgan. Wharton was an excellent example of the eighteenth century promoter—ambitious, skillful, and not too scrupulous. The colonial shareholders in this organization included the Whartons, George Croghan, representative of the Lancaster fur traders, Sir William Johnson, superintendent of Indian affairs, and Benjamin Franklin. To these were added the English investors. Many were included because of their political influence; other Englishmen were interested from the financial viewpoint. In fact the English were "new-land mad" and noblemen and commoners alike were all eager to make their fortunes from the lands of the New World. While these schemes were in process, the stream of settlement had already directed itself toward these western regions.

The Old British Empire at Its Height

This westward expansion helped to precipitate the inevitable conflict of the English colonies in America with those of Spain and France. Although their actual settlements were not contiguous, the paths of their outriders, the fur trader, the lumber cruiser, the fisherman, and the land speculator, had crossed. The personal ambitions of such men were the prelude to national antagonism. But the North American continent was only a portion of this battle field, for the empires of European nations were world-wide. Into this universal fabric must also be woven the dynastic and national interests of the mother countries in Europe. By chance it was in Europe that the first step toward imperial warfare took place, for in 1689 William, Prince of Orange, Stadholder of Holland, became William III of England and thus allied England and Holland against France. But it was in America that the decisive conflict, which concluded a long series of European and colonial wars, began.

In 1754 a skirmish occasioned by the rival claims of the French and the Ohio Company to the region of the upper Ohio set off the Seven Years' War (1756-1763) which embraced the West Indies, India, and the Continent of Europe. The first shot heard round the world was not fired at Sarajevo, or even at Lexington, but at Great Meadows, on the western slope of the Alleghenies. The Treaty of Paris, which closed the conflict, marked the zenith of English achievement. For all practical purposes the French lost India, and in the New World Great Britain at last secured substantial territorial acquisitions. Their location is significant. She dropped the possibility of acquiring in the West Indies the islands of Guadeloupe and Martinique; instead she secured on the mainland Florida from Spain and Canada from France. She turned away from the possibility of acquiring tropical islands, already mar-
velously developed in the production of sugar, and chose to annex an undeveloped wilderness in the temperate zone. This decision marked an important step in an evolution which traced back at least to 1607. At that time the design of the Virginia Company had been narrowly mercantilist. As a trading company, it imitated its contemporaries in a desire for bullion and exotic products. Now in 1763 the British government, abandoning such conceptions, had annexed territory for future development and markets. The immediate and pragmatic tests for successful mercantilism had been sublimated into a long-time imperial policy which neglected, for the moment, practical considerations.

The outcome of this imperial rivalry had apparently been an overwhelming success for the British empire. But only a reckless generalizer would thoughtlessly apply the word "success" to any imperial system. A reasoned judgment must take into account the aims of imperial activity, the whole extent of empire, and the time when the judgment was pronounced. If treatment of the native be the test of success, the Spanish and the French empires would be judged more successful than the British colonies. If the whole rather than a part of imperial activity be considered, the failure of France in New France must be balanced against its success in the sugar islands. And finally 1763 is only a date in a chain of development. In 1783, when the American Revolution had successfully converted the thirteen British colonies into an independent United States, the Spanish colonies to the south, still loyal to the mother country, might well be judged a more successful colonial enterprise. Such considerations ought to dispel the illusion that the victory of the English over the French was a matter of the inherent characteristics of either nation. A more profitable explanation can be found in the geography and history of each nation and her colonies. France was a continental power, continually tempting inland by European prospects, and subject internally to economic, social, and political grievances which it took the cataclysm of the French Revolution to remedy. Great Britain was an island nation to which transoceanic interests became vital, and the national economic organization of which, compared to that of her rivals, was distinctly modern. Finally, on the frontier of empire in North America she had a colonial outpost—geographically compact, relatively populous, economically diversified—while the colonial empire of France was a vast, sprawling territory, inhabited by a small population scattered from Cape Breton to New Orleans and living under a simple and primitive economic régime.
CHAPTER II

Production in the British Colonies

IN CONTRAST to the industrial and commercial maturity of European nations, the colonies in America were in their economic youth. They were a new country. Extensive manufacturing, therefore, was out of the question. They lacked laborers skilled in industrial technique, the capital for creating a complicated industrial structure, and a populous market. Rather they turned for their livelihood to such of their natural resources as could be exploited by comparatively unskilled labor without a heavy investment of funds and as could be exchanged in some overseas market for the commodities which they could not produce themselves. On every side there was opportunity. The New World encouraged the fur and timber trades by its forest resources, the fisheries through the proximity of “inshore grounds” and “offshore banks,” and agriculture through the untaxed fertility of its soils. That these extractive occupations of the colonies were in approximate harmony with the mercantilist ideas of the day, which regarded colonies as a source of needed raw materials, was indeed a happy coincidence.

The Fur Trade

The European demand for furs was insatiable. The fine peltries were a badge of distinction, worn by royalty and nobility, by university officials, and by the rising merchant classes. The coarser skins entered into the clothing of the lower classes. To satisfy these demands the fur-bearing animals had already been hunted and trapped in the great northern regions of Russia and Siberia, and so rapid had been the exhaustion of the supply that by the later eighteenth century the Russian traders had crossed Bering Strait and pushed down the northwestern coast of North America. Meanwhile the French, the Dutch, and the English commenced their inroads from the Atlantic coast line, and with such success that the supply of furs from the eastern half of America had shifted the fur markets of Europe from the east to the west. Vienna, Danzig, and Lübeck gave way to London, Amsterdam, and Paris.
PRODUCTION IN THE BRITISH COLONIES

To these European cities the wilderness west of the Appalachians was bound by a chain of many links. In the English trade of the mid-eighteenth century, for instance, a London merchant would dispatch on credit to some Philadelphia trading house a supply of Indian goods; guns, gun-powder, straids—an Indian blanket, preferably in gay colors, like "Deep Blue or Lively Red"—linen and calicoes "of the brightest and flourishing colours," lace, thread, ribbons, women's stockings "red, yellow, and green," kettles, traps, jew's-harps, metal tools, bells, whistles, knives, rings, jewelry, and looking glasses. After the all-important item of rum had been added at Philadelphia, the goods were carted inland to the storehouse of the firm at Lancaster. From these supplies the trader to the West would secure upon credit the goods which he needed, and pack-horse trains of twenty horses, belled and saddled with loads of one hundred and fifty pounds, would carry them over the trails from the Susquehanna to the forks of the Ohio. At strategic points in the West there were minor storehouses at which the Indians could trade, or from which the goods could be moved to the Indian villages or councils. This relationship, running from London to the Falls of the Ohio, could be duplicated with a change of western terminus many times over in Pennsylvania and New York, or in the Carolinas and Georgia.

These colonies, with the Hudson Bay region, became the center of the English fur trade in North America. As in New France, the trade had first been conducted along the coast by English fishermen and voyagers. Then the new colonies from Plymouth to Virginia had taken it up. But as early as 1616, the Indians were penetrating to the Great Lakes for the peltries which they exchanged in the East. The fur trade, thus moving westward, became the property of those colonies which had access to the interior of the continent, into which the French were already penetrating from other directions.

Toward the close of the seventeenth century the French fur trade in Canada was enfiladed by English competition. The threat from the north was the "Governor and Company of Adventurers of England Trading into Hudson's Bay." This Hudson's Bay Company secured a charter from the king in 1670, sent vessels to this remote region, and waged a thirty years' war with its French rival, the Compagnie du Nord, until the Treaty of Utrecht set the seal on English success. The menace from the south was the New York and Pennsylvania fur trade. In New York the English were the heirs to the strategic position which the Dutch had occupied on the Hudson and Mohawk rivers, which formed, with the exception of the St. Lawrence valley, the best approach to the interior of the continent. The Dutch frontier post, Fort Orange, became the great English fur center, Albany. Like the Dutch, the English were allied with the Iroquois, who, since the furs of their own region were soon exhausted, acted as middlemen in transferring the furs.
of the "Far Indians" to the English traders. To maintain this rôle it was more advantageous for the Iroquois to seek alliance with the English than with the French, and also it was necessary to keep the former from a direct trade into the West. New York traders, therefore, did not penetrate into the remote western regions. Fort Oswego, constructed in 1722 at the southeastern corner of Lake Ontario, was their farthest post. Even its establishment alarmed the Iroquois, for it opened up a direct trade with the western Indians. The Pennsylvania traders, however, had invaded the Ohio valley. At first the French had abandoned to them the area east of the Maumee Wabash route, but by the middle of the eighteenth century they sought to make the whole Ohio basin French by fortifying the French Creek Allegheny line. The value of the annual fur business in the northern district, roughly north of the Potomac and Ohio rivers, was estimated in the 1760's at £180,000.

In the South, the traders of the Carolinas and later of Georgia found access to the West around the tip of the Alleghenies. They spread with great rapidity. Within thirty years after the founding of the Carolinas one trader penetrated to the mouth of the Arkansas, and later they reached the Ohio and planned to invade the upper Mississippi. Charleston, South Carolina, remained the center of the trade, but in the eighteenth century Augusta became its western entrepôt. From that place in 1740 two thousand pack horses made the journey into the interior, and five vessels carried cargoes worth between £20,000 and £30,000 down to Charleston. Annual exports of more than 200,000 deerskins were common from that port by 1730. It was a leather rather than a fur trade. On this southern frontier, the English met the competition of the French from New Orleans and Mobile, and forged an alliance with the Cherokees to keep their Gallic rivals in check, just as they had utilized the Iroquois in the North against the same enemy.

In this international competition both parties had advantages in dealing with the Indians. The French were able to arouse them against the English because the English trader was the forerunner of settlement. Forewarned by the experience of the tribes east of the Appalachians, the western Indian perceived that settlement was the beginning of the end for his race. On the other hand, the English had everywhere the advantage of offering the Indian better goods at lower prices. In the seventeenth century the Indians paid at Montreal five beavers for a musket, at Albany two; at Montreal two beavers for six pairs of stockings, at Albany one. In every product but powder the English had a great superiority. Even their rivals admitted it, as a clandestine export of English goods from New York to Montreal showed. The superiority and cheapness of English goods were due to many reasons. The French restrictions on trade to New France and the difficulties of transporting goo
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from Europe, particularly during war time when the French lacked the control of the sea, raised their prices. English goods, moreover, were manufactured more cheaply.

British supremacy in the fur trade was assured in 1763 when France surrendered her Canadian possessions by the Treaty of Paris. English and Scotch companies and merchants now clutched at the traffic in furs carried on from Quebec, but the Scotch were more successful. From their ranks emerged the great fur barons who were to rule the trade in the future. The Illinois country, however, remained the preserve of Spanish and French traders from New Orleans and St. Louis, for it was impossible to transport goods as cheaply overland to that region as it was to pole them up the Mississippi. Spain, unfortunately for England, had been allowed to retain the west bank of the Mississippi and New Orleans, the natural outlet for the great river basin.

The fur trade colored the whole of colonial life. It elevated the Indian in a twinkling from the Stone Age to the Age of Metals, and with his civilization thus disrupted, his dependence upon the trade was almost pathetic. Kettles, metal tools, and above all guns and gunpowder had become unbelievably vital. From this trade, moreover, the Indian unfortunately derived his notions of the white race. Very few responsible men of high character undertook its dangers and uncertainties. Governor Dinwiddie of Virginia characterized the traders "as the most abandon'd Wretches in the World." The exchange of furs was accompanied by a "frolic" induced by rum and lasting for days. The participants in these fracases were occasionally killed and frequently injured. Under such circumstances the barter of goods for furs was characterized by every imaginable form of low cunning and fraud. The Indians, dizzy with liquor and drugs, were imposed upon by false scales and crooked dealing. For such abuses the Indian, armed with the weapons he had obtained in the fur trade, took his revenge by an attack upon some innocent settlement. Bacon's manifesto expressed the emotion of actual settlers when it charged that the traders "buy and sell our blood."

Because of its abuses and its international importance regulation was necessary. The separate colonies attempted such measures with indifferent success. Licenses for the trade were required and some check upon the use of rum was attempted. Massachusetts established and operated fur "factories" to assure Indians fair dealing, and Pennsylvania used this device for a longer period. The intercolonial rivalry in the fur trade prevented the success of this "state rights" policy. After the Seven Years' War the English government attempted a policy of imperial regulation. It sought to draw a dividing line, variously located at different times along the Appalachian Mountains, to separate settlement from Indian territory. This line was not to be perma-
nent, but was to be moved westward as the expansion of settlement necess-
tated. Beyond this line no one could carry on the Indian trade without a
license and without giving bonds. Rules regulated the amount of credit given
to the Indian and the price of goods. The sale of rum and guns with rifled
barrels was to be forbidden. Financial burdens made impossible any such
extensive control. In 1768 the plan was reduced to a fragment, and respon-
sibility was thrown back upon the colonies. Still later an attempt was made to
keep imperial control over the Indian fur trade by including the region
north of the Ohio within the boundaries of an enlarged territory of Quebec.
This project was another futility. At the time of the Revolution no satis-
factory scheme for regulating the Indian trade had been found.

FORESTS AND POLICY

Timber, like furs, came from the wilderness of the new country, and the
timber resources seemed inexhaustible. The "Appalachian ranges and the
shore regions had the finest forest that has existed in the historical period,
outside of the tropics," wrote a later American geographer. In the North the
white and red oak were the most valuable hardwoods; but "the noble white
pine tree" of the lumberman's song was the king not only of the conifers but
of the forest. Growing to astounding size, often with a thickness at the butt
of four or five feet, its tall symmetrical trunk towered upward to a crown of
branches, and its wood, straight-grained, free from knot-holes, was easily
worked. The resources of the South were at first comparatively neglected,
but eventually the excellent qualities of its yellow pine and live oak were
recognized.

The commercial value of this remarkable forest area, however, bore no
proportion to its abundance. In fact the forest was often a hindrance. It had
to be cleared away before the ground could be cultivated, and usually these
fallen trees were destroyed in the easiest fashion. From this slaughter only
two forest products were rescued. From the pines tar could be extracted;
from the hardwoods came potash or its derivative pearlash. These latter sub-
stances were used in making soap, in treating cloth, and in other processes,
such as glassmaking. Their manufacture required no equipment more elab-
orate than an iron pot in which to boil away the water poured over the wood
ashes, or a small kiln to transform this black residuum of potash salts into
the lighter pearlash of commerce. Since both processes were the occasional
occupation of hundreds of households from Maine to Georgia, the impor-
tance of both these by-products was evident only when the totals for all the
colonies were amassed.

The commercial lumber industry followed the fall line of the middle and
northern colonies, for here water power was available to transform the tim-
ber resources into merchantable shapes. From the James River to Massachu-
setts, oak trees were fashioned into timbers, sawed into planks, or made into
cooperage—barrel staves, heads, and hoops. In New Hampshire and Maine
the white pine forests touched the sea, and the fall line, near the coast, was
easily reached by water transportation. Here the lumber industry reached its
apogee. In 1720 the Piscataqua, a tiny New Hampshire stream, was lined
with seventy sawmills turning out 6,000,000 feet a year of planks, boards,
shingles, and staves. So wasteful was the exploitation of the forest that the
industry early in the eighteenth century began its eastward migration along
the coast of Maine. Portsmouth, New Hampshire, had a new lumber-port
rival in Falmouth, the present Portland. In 1762 a great forest fire, sweeping
from New Hampshire into Maine for a distance of fifty miles, drove the lum-
ber industry even farther east. Meanwhile in North Carolina a lumber in-
dustry had grown up along the Cape Fear River.

The forests of the English colonies were also an untapped resource of those
timbers and naval products which were required for a war navy or a mer-
cantile marine in the days of the sailing ship. The white-pine region, sweep-
ing from Nova Scotia and New Hampshire to the Connecticut and the
Hudson, could furnish masts, yards, and spars; the oak forests would provide
the pieces for the frame or skeleton; and from pines, South and North, could
be bled the pitch, tar, and resin, the "naval stores" so essential in shipbuild-
ing. The melted pitch filled in the calked seams of the vessel, tar preserved
the cordage, and pitch combined with resin was used to protect the under-
water parts of wooden vessels before the days of coppering. Not only were
these products indispensable for a maritime nation, but around them hung
the mercantilist aroma.

England, in common with the other nations of Europe, depended for her
naval supplies upon the forests of the "East Country," a term which was
applied not only to the countries about the Baltic but also to nations outside
it, such as Norway. The purchase of these supplies outside of England not
only involved a distressing economic dependence and a vexatious outflow of
bullion but was liable to exactions and interruptions. The entrance to the
Baltic was controlled by the king of Denmark; war, forever breaking out
among the northern countries—"the Antipathy" of Poland and Russia was
like that "of the Dragon & Elephant"—endangered the orderly delivery of
supplies; and the northern ports were apt to be icebound for part of the year.
Early in the eighteenth century, too, the merchants of Sweden, the country
which furnished the largest portion of the product, established a common
selling agency, the Stockholm Tar Company, and placed a high monopoly
price upon the commodity they handled. At the same time the War of the
Spanish Succession put a premium upon receiving naval stores.
The British hopefully turned to America as a source of supply, but soon discovered that the profitable production of naval supplies there was retarded by a host of handicaps. The East Country was more accessible. Two or three voyages to the Baltic could be made for one to America. The cost of transportation for bulky products across the Atlantic was therefore much greater. Still this difficulty was not insuperable. In the case of tar and pitch, however, there were further problems. The preparation of the trees to produce pitch and the collection of the drippings involved both care and labor. As for tar, the methods of production even in Sweden were extremely crude. The corded pine wood was stacked in a kiln and fired, the tar, boiling onto the bottom of the kiln, was drained away into a barrel through a wooden spout. The trees produced, moreover, a better quality of tar if they were boxed or partly girdled and let stand for a while before kilning. Simple as these processes were, they required knowledge and labor. The colonies possessed neither. Knowledge, to be sure, might be imported, but the difficulty of supplying a labor force in a new country where labor was scarce and wages several times as high as in Europe had been demonstrated in other fields than naval stores.

Pressed by mercantilist ambition and military necessity, England was determined to obliterate the differential between the colonies and Sweden. One method proposed was the establishment of a company with monopoly privileges. This the colonies protested. Then Governor Hunter of New York conceived the idea of transporting Germans to his province and giving them land the rent of which would be paid in the naval stores they would produce. When the scheme collapsed through the intractability of the colonists, their lack of skill, and the wrong kind of pines, the enterprising governor was short £20,000. Meanwhile the English Parliament turned to the use of bounties for production, and an Act of 1705, after reciting the mercantilist arguments for the statute, gave a bounty of £4 per ton of tar and pitch, £6 per ton of hemp, £3 per ton of “Rozin or Turpentine,” and £1 per ton of masts, yards, and bowsprits. These bounties practically represented the differences in the cost of transportation between America and the East Country. Officials were to instruct the colonies in the technical details of production.

With alterations, bounties persisted until the Revolution. Their success was questionable. Complaints of the character of the product were frequent. The tar had a “hot and thick quality” distasteful to British shipwrights. Sand and gravel were sometimes put into the pitch to give it weight. Nevertheless, the mercantilists were gratified since the amount of pitch and tar produced in America under the subsidy was on occasion greater than that secured from Europe. In the colonies the manufacture of naval stores was dispersed, but
it reached its greatest development in North Carolina, where the presence of the long-leaved pine and the use of slave labor were factors in its success.

In the case of masts, the problem was not so much one of production as one of conservation. At first the British officials, like the native Americans, proceeded on the assumption that the supplies of such timber were inexhaustible. By the end of the seventeenth century they had realized their error. The new charter of Massachusetts in 1691 attempted to apply to that colony the English precedents of the “King’s Woods,” for a provision of the charter reserved to the Crown all trees, suitable for masts, of a diameter of twenty-four inches and upwards growing on land which was not owned by private individuals. The guardianship of the King’s Woods was entrusted to a Surveyor General of His Majesty’s Woods in America. This individual and his deputies were entrusted not only with encouraging the production of naval stores, but with protecting the reserved trees by marking them with the broad arrow of the king and punishing such destruction of these trees as they could detect. The cutting of these trees was allowed only to those who secured the proper license. The series of acts which developed this system was crowned by a statute of 1729. Applying to all colonies, it offered bounties for the production of masts, but it forbade the cutting of “any white Pine Trees” except such as were on private property.

Admirable as this attempt at conservation was, it failed utterly. Such a system might apply in the carefully ordered community of Great Britain with its limited forests; it was grotesque on a lawless frontier. Evasions were wholesale. The various acts were searched for legal loopholes. It was asserted that once a township was laid off it was private property; and the loggers proceeded to influence the laying off of unsettled townships where they might want to do their cutting. The Act of 1729 put an end to this practice. Then the lumbermen had recourse to “swamp law.” With a certain coarse humor, they threw deputies into mill ponds or stove in their boats, and depended upon the sympathies of the local law courts to return favorable verdicts in the suits brought against them. Meanwhile they hacked away at the forest. These performances on the lumberman’s frontier were none the less lawless because they were directed against the king’s representatives.

**The American Fisheries**

The natural resources of the land were supplemented by those of the sea. Stretching in a long arc from the tip of Long Island to the eastern edge of the Great Bank of Newfoundland, lay one of the finest fishing grounds in the world. The area is a shallow one, for the continental shelf underlies it and forms the famous fishing “banks”; and the cool arctic current, flowing
over it from the north, makes it an ideal home for all varieties of fish, of which the cod in colonial times was the most important. The catches of this area found a ready market in the West Indies and in European countries. There fish was a common diet for the lower classes and a delicacy for the aristocrat. The retainers of the Earl of Northumberland in the sixteenth century lived on a monotonous diet in which fish was served for three-quarters of the year; and the lord and lady of the establishment on one occasion sat down to a breakfast of “a quart of beer, as much wine, two pieces of salt fish, six red herrings, four white ones, and a dish of sprats.” The dietetic restrictions of the numerous Catholic fast days increased the consumption of a generally basic foodstuff.

Holland with its herring industry had been the chief purveyor to the European market, and its success had aroused the envy of its neighbors. Now the American grounds offered a chance of breaking this predominance, and England found mercantilist arguments enough to justify activity in this new arena of international competition. First, there was the home market. Threatened by the Protestant Reformation, which might have weakened the religious reasons for fish eating, this was preserved by legislation. In 1563 Parliament passed an act levying heavy fines upon flesh eating on Wednesday and Saturday, and, among other reasons for the measure, the promotion of the fisheries was listed. A foreign market was eagerly desired, for through the export of fish to the Catholic countries the coveted balance of trade could be increased. Finally, the fisheries were seen to have a direct connection with sea power. The fisheries required vessels, and they “have ever beeene the Chiefest Seminarie and Nurserie” of seamen for the royal navy. Every consideration, therefore, dictated their wholesale national support by bounties, rebates, protection, and national favoritism.

In American waters England had to compete not only with her European rivals but with her own colonies. In this respect the southern colonies were not offensive, for although they had access to rich fishing grounds, they preferred to make money from their fertile agricultural land. In New England, on the other hand, granite and the glacier had formed nearly everywhere a rocky land. But it had the sea. The bays and harbors of its indented coast line, the blue water at the end of every village street beckoned seaward. To trade and to fisheries, therefore, New Englanders turned from the beginning. At first they were content to tap the inshore resources of the gulf of Maine. Descriptions make the mouth water. The Reverend Francis Higginson, first minister to Salem, wrote of the codfish and “such abundance of mackerels, that it would astonish one to behold,” of the bass, “a most sweet and wholesome fish,” and lobsters, some weighing sixteen pounds, of which he was
“soon cloyed,” “they were so great and fat, and luscious.” Long before the settlement of Massachusetts Bay in 1630 the shore of that region had been dotted by fishing stations for the vessels which repaired thither from the west counties of England; and Sir Ferdinando Gorges had planted stations along the Maine coast or encouraged others to do so. When the colonists came over, these stations, often attracting English fishermen, became fishing settlements. A Marblehead fisherman said truly of the town’s ancestors who came from Cornwall and the Channel Islands, they “came not here for religion. Their main end was to catch fish.”

On the Massachusetts coast, although every port was a fishing port, a few emerged into greater prominence. In the seventeenth century Boston and Salem were the leaders. In the eighteenth century Gloucester and Marblehead displaced them. At the time of the Revolution, the latter was the great fishing port of the country. Its growth was phenomenal. In 1714 its people had “contented themselves to be the slaves that dug in the mines,” while the people of Salem and Boston made money, said the Reverend John Barnard. But this pastor determined to shepherd his flock into material well-being and, learning the details of the fishing trade from English masters, he galvanized the town into action. By 1765 it had become the sixth town in the colonies. It had two hundred acres of fish flakes for drying fish, a fleet of well over one hundred vessels employing over one thousand men, and shipped half the dried codfish of New England. Northward from the Massachusetts coast there was the fishing colony on the Isles of Shoals and then the fishing settlements along the coasts of New Hampshire and Maine from the Piscataqua to the Penobscot and beyond. This was the fisherman’s frontier, for here he came into contact with the Indian and the Frenchman; and the dangers of its life, coupled with isolation and the absence of settled government, created the typical frontier lawlessness. The arrival of a “walking tavern,” the appellation for a vessel laden with liquors, always touched off a “jamboree.” The fishing vessels of the New England colonies, however, did not content themselves with the inshore fishing grounds. Vessels had reached the Newfoundland waters by 1645 and in the eighteenth century fishing off Nova Scotia, Cape Breton, and Newfoundland was an accepted procedure.

In 1700 New Englanders exported over 10,000,000 pounds of fish, and surpassed Great Britain both in quality and in quantity. Such an outcome was not to the taste of some thinkers on economic subjects in the mother country. Not only were English fishermen practically excluded from colonial waters; even in Newfoundland they were outclassed by the colonies. This development was prejudicial to England, since it lessened her commerce and reduced the number of seamen trained in the fishing fleets. But in spite of mercantile
tirades, the New England fisheries expanded. In the decade 1765-75, 665 vessels were engaged in the New England codfishery, 4405 men were employed as their crews, and the total value of the catch was estimated at $1,300,000. In truth the fisheries were the "New England Silver Mine."

The sight of "mighty whales spewing up water like smoke from a chimney" was a common one off the New England coast, and whales washed ashore were cut up and tried out for the oil, which furnished a superior illuminant in candle or in lamp. On Long Island, such accidental whaling methods gave way to a system. In 1644 South Hampton was divided into four wards to furnish watchers on the beach. When a whale was sighted crews were sent out to harpoon him and drag him inshore, where others reduced the blubber to marketable products. Nantucket undertook this offshore whaling from the first. Masts were set up on the south shore of the island and permanent watchers were maintained. Gradually whaling on the deep took the place of these amphibious methods, and in the eighteenth century American whaling vessels had hunted their quarry over the Atlantic Ocean. Leaving the right whale to the English, French, and Dutch whalers, they sought particularly the sperm whale, which was fiercer but yielded an oil three or four times as valuable. By the Revolution the ports which were to become famous in the nineteenth century had entered upon their historic career. Sag Harbor had surpassed the earlier of the Long Island whaling ports; New Bedford had begun in a small way; but Nantucket was the real overlord of the Atlantic whaling grounds. Chiefly to these ports the whaling fleet of 360 vessels brought back its annual tribute of 45,000 barrels of sperm and 75,000 pounds of bone. But these figures are futile to convey the sweep of an industry which, as Edmund Burke put it, "vexed" the seas from Hudson Bay to the Falkland Islands, from Africa to Brazil.

The fisheries colored colonial life, as the fur trade had done. They spurred on the struggle between France and England for territorial acquisition, for land afforded a base of operations and in a day when international law was more nebulous than at present the possession of a coast justified a claim to an exclusive but indefinite jurisdiction of the adjacent waters. Hence the tenacity with which France held on to a portion of Newfoundland, to the islands of the St. Lawrence, to Cape Breton, and to Acadia, and hence the intensity with which these districts were covered by New England fishermen. The difficulty of arousing the colonies to military ardor vanished when these regions were the object of acquisition, and their ire was all the greater when English statesmen recurrently damaged colonial interests by the return of these fishing bases to France. The Peace of Paris at last broke the fishing supremacy which the French had enjoyed until the middle of the eighteenth century. Under the terms of that treaty, they retained only the small islands
of St. Pierre and Miquelon, and the right to dry fish upon certain shores of Newfoundland. So the field was cleared for the competition between the mother country and her colonies.

A NEW MODE OF AGRICULTURE

Nine-tenths of the population, however, made their living by agriculture. And agriculture was not an alternative but a necessity, since the settlers in this country had to find some means of sustaining their existence or else import food while they carried on the profitable exploitation of the country's natural resources. The importation of food was, however, an expensive process under the existent conditions of transportation, and it was folly when there lay close at hand the unimpaired fertility of the soil. So obvious was the pressure of these considerations that the organizers of a purely extractive occupation, the fisheries, had sent out laborers to grow upon American shores the supplies for their fishing vessels, and such members of the Virginia colony as were not dazed by get-rich-quick mercantilism soon saw that their colony would have to be agricultural if it were to survive. But the colonists as well as the mercantilists were not content to stop here. The colonist desired some agricultural product which could be exchanged for goods not produced on the frontier. As for the mercantilist, he thought that the emigrants to colonies might just as well have remained at home to strengthen the mother country by their presence if they did not raise products valuable to the metropolis. Colonial agriculture, therefore, had a dual purpose: first the achievement of self-sufficiency, and then the production of staples for an agricultural commerce.

Let it not be imagined that the first task was an easy one. The domestication of European agriculture in America was a process of intense difficulty. For several years after their foundation the first colonists led a life on the edge of starvation, and survived only because of the arrival of supply ships from the mother country, purchases and thefts from the Indians, or by the lucky discovery of the food caches of the aborigines. Famine coupled with disease wiped away the settlers. In Virginia, for instance, the famous "starving time" of 1609-10 reduced the few survivors to cannibalism. Even as late as 1676, so small were the supplies of wheat and corn that the governor had to forbid their export from the colony. Such an outcome in a land of potential plenty was due in part to the slowness with which an agricultural technique was devised to cope with wilderness conditions.

The settler everywhere was confronted with a primeval forest, and the clearing of the land was the first essential. This was a severe task, and it required easily a month for a man and his family to hew out an open acre for cultivation. In New England there was the further difficulty of clearing
the glaciated soil of its stones and boulders. Even when the soil was cleared, there was further difficulty in growing the European grains. Wheat, the great European foodstuff, seemed to resist acclimatization. For it a field had to be cleared of all trees and then carefully plowed. In Virginia it did not thrive on the fertile soil, for it ran mostly to stalk and little to kernel. At Plymouth the Pilgrims' attempts to cultivate it failed. Even in the later settlements of the middle colonies, where farmers grew it from the first, some other crop generally had to precede it to clear out the weeds. In short, the European past had to be modified for the New World. The European farmer had to learn the profession of the American pioneer. And in the case of the first settlers the necessary adjustment was slow, for they were not all farmers. English gentlemen, English artisans, English townsmen were dumped down on the edge of the wilderness and had to learn to live under its exacting terms.

Adaptation to American conditions involved imitation of the methods which the original American, the Indian, had worked out. The coastal Indians were not pure nomads, for they had developed an economic life based to some extent upon agriculture. In the clearing of their fields they did not always cut down the trees, but they killed them by girdling the bark of the trunk. Once the light had been let in, planting could be undertaken. On their fields, North and South, they grew a host of agricultural products which were to enrich American and other agriculture. Tobacco, sweet potatoes, squashes, pumpkins, watermelons, were American in their origin. But the greatest contribution to colonial agriculture was Indian corn, or maize as the Europeans call it to distinguish it from their corn, which is wheat. The Indians planted the seeds of their cereal in hills—four or five grains to the hill—which were five or six feet apart every way. When the corn was up "an hands length," the earth around it was loosened and the weeds cleared away. This process was later repeated, and the earth was hilled up about the stalks. When the time for reaping had come, they dried the corn in the sun and then buried it in holes in the ground. Beans were often planted in the same hill to use the stalks as poles, and between the hills "they will Plant squashes and Pompions."

The Indian methods worked themselves into colonial agriculture. To be sure, the practice of girdling and burning trees and of leaving the stumps and the roots in the fields shocked Europeans trained in a more precise agriculture. The Dutch and the Germans found it distasteful, and in New England many preferred partially to clear their land. Although such settlers avoided some of the ugly disorder characteristic of pioneering agriculture, their care was unprofitable. Indian corn, conquering at once European prejudi
dices, became the great food staple in every colony from Maine to Georgia. As a pioneering crop it was a superlative grain. Its flour could be made into more varieties of food than wheat, and it was an excellent food for livestock. Because of its hill cultivation, it could be planted among stumps and trees without difficulty; its growing and maturing season was short; its yield was large in proportion to the seed, seventy to one; and it cleared the ground for other crops by killing out the weeds with its tall foliage. Finally, it had the advantage of being distilled, and in a country without any means of transportation the valuable but smaller bulk of liquor would pay for the cost of transportation.

Although Indian agriculture might rival European in its new crops it was far inferior to the latter in many respects. The Indian made almost no contribution to animal husbandry. His only domestic animal was the dog. Horses, sheep, cattle, goats, swine, chickens, all had to be imported from Europe, and the first cargoes sent to the colonies generally included such livestock. Their transportation was a difficult matter. The smallness of the vessels, inadequate provisioning, and the long voyages led to a heavy mortality. If a vessel arrived without losses it was an occasion for great surprise. In the new country the preservation of the livestock was a problem. They were subject to depredation by Indians and wolves. The American grasses were in most cases found to be unsuitable; although they were luscious and abundant, their excessive roughage unfitted them for forage or for hay. And the supplies of grass from the fresh or salt marshes and from the natural meadows along the river bottoms were not adequate in amount.

In the second place, the Indians had agricultural tools of a very primitive character. In their planting and cultivation they used shaped sticks or occasionally wooden implements to which were attached shells or stones. Over such equipment that of the colonists represented a great advance, even though it was necessarily simple at the beginning. Since the first arrivals lacked work animals, they came only with hand tools: large and small hoes, shovels, and spades to prepare the land for seed and to cultivate the growing plants, sickles and scythes for harvesting grains and cutting grass. The importation of plows was tardy. In 1618, when the growth of English wheat on a larger scale was attempted in Virginia, only one serviceable plow could be discovered in the colony for breaking the ground. Some thirty years later there were one hundred and fifty such instruments in the colony, and this number was divided among a few owners. The Pilgrim community used hoes and mattocks for twelve years after the arrival at Plymouth. Indeed so valuable were plows that towns often paid a bounty to farmers who would buy one and who would make plowing a special occupation. Later coloniza-
tion did not, however, labor under the same handicaps. The success of Pennsylvania, even in its earliest years, demonstrated in general that the days of inexpert and primitive colonization were over. It is significant that the English in this colony from the first used plows and oxen to break ground.

Although the instruments of European colonial agriculture were superior to those of the Indians, they were exceedingly crude according to modern notions. Many of them had changed little from Roman or biblical times. The plow varied in complexity. The Carey plow was built with a wrought-iron share, that part of the plow which cuts the soil, and a wooden moldboard, sometimes plated with iron, which turned over the furrow as it came up from the share. The shovel plow was a contraption without a moldboard which stirred up the ground with a pointed shovel-shaped stick. Such plows were so badly designed that it was difficult to keep them in the earth. It required a strong man to hold the bars and often another to sit on the implement itself to keep it at work. The friction of the plow as it passed through the earth was so great that two or three horses or four to six oxen were required for its team. And all the farmer could plow in a day would be an acre, in which the furrows thrown up by the crude moldboard instead of lying flat stood on end like the “ribs of a lean horse.” This uneven surface was then leveled for cultivation by a rough drag harrow.

The methods of harvesting grain are peculiarly important, because the size of the crop depends upon the speed of harvesting. Cultivation spreads over months, but unless the harvesting is done within ten days the wheat will sprout and the oats rust. Colonial methods would have been familiar to the writers of the Old Testament. The hand sickle was still used for cutting grains. The stooping position required by this instrument was excessively fatiguing and the average worker could harvest no more than half an acre a day. The amount harvested per worker during the season, therefore, did not usually exceed five acres. Such an average is adequate for primitive agriculture, but it is a handicap in raising crops for market. At the very end of the colonial period, however, the cradle made its appearance in the middle colonies. This implement utilized the long-handled scythe and placed above the cutting blade a framework of long wooden fingers. This framework caught the grain as it was cut, and the load was then tossed aside by the mower in a heap with the stalks already aligned for gathering into a sheaf. Crude as this instrument was, it more than doubled the speed of harvesting wheat. In the threshing process the kernels of grain were dislodged from the straw and the husk by the flail, or trodden out by horses or cattle that milled around upon the threshing floor. Then the grain was tossed against the wind to blow away the chaff. It was a laborious and tedious process.
New England Agriculture

Although agriculture from Maine to Georgia had certain common characteristics derived from Indian practices and a common European tradition, the geographical and climatic conditions of the colonies were so varied and their racial and social differences so marked that agricultural distinctions between them were bound to develop.

The township of New England was more than a form of land ownership, it was a system of agricultural organization. The tiny geometry of a New England village reflected its agricultural pursuits. Its center was the village common. Today this area is a tranquil, shaded greensward. In colonial times its purpose was utilitarian, and it looked so. On its wide expanse of ill kept turf, horses and cattle were put to graze, geese roamed at will, and stray pigs, the village scavengers, picked up a precarious livelihood. The home lots around the green and along the streets leading from it varied in size from town to town and even within a single village. Perhaps an average home lot contained three to five acres. Here the settler had his house and barns, a small garden, and a yard for cattle. After the village had been plotted came the tillable land and meadows. Numerous strips were laid off in each of these areas, and the proprietors often secured their allotments by drawing lots. Since every effort was made in this division to give every proprietor a fair share of good land, these strips were located in different sections of the township. It is not to be supposed, however, that every proprietor received an equal grant. Rather the size of the individual allotments was determined by the investment which each proprietor had made in the enterprise, or according to estate. This latter preference had indeed an aristocratic ring. But apparently a large estate was favored because it had the means of exploiting these larger grants.

The agricultural methods of the township were derived from the community idea implicit in its structure, and from such practices of the manorial system of agriculture as had survived in the England with which the settlers were acquainted. Agriculture was a common as well as an individual enterprise. The town meeting, which in the early days at least was practically synonymous with that of the proprietors, had general control of the undivided common lands. From such lands any one could take timber and stone. They also furnished pasturage for the livestock, which were turned out to graze upon them under the supervision of shepherds and cowherds hired by the town. Hogs, however, always remained a problem. Many a vexatious town meeting was held to devise methods for keeping these efficient and rugged animals in check. Either they were pastured at a distance from
the town or they were compelled to wear rings in their noses or yokes around their necks. In spite of such handicaps they were all too able at the destruction of crops.

Then there were the common fields. To form these fields the individual holdings of several different proprietors were thrown together, but the crop in each holding was cultivated by its owner and was his property when harvested. These common fields were surrounded by a common fence and the nature of the crop grown in them was determined by the town meeting. The necessity for this last regulation lay in the practice of pasturing the livestock upon the stubble of these common fields after the harvest was gathered. The number of pastured animals was regulated by a series of mathematical equivalents determining the proportion between animals and acreage. In Dorchester, for instance, there were in a pasture of 480 acres “120 cow rights.” The “right” for a horse or an ox equaled a “cow right,” but goats, kids, and calves traded in at more favorable rates.

This community agriculture existed in its pristine form during the seventeenth century. In the eighteenth century it began to break down. In many ways it was economically disadvantageous. The system of allotments scattered a man’s holdings over so wide an area that a journey over a series of roads and lanes was required to reach them. The common care of livestock prevented managed breeding. The common field with its long, narrow divisions was difficult of cultivation. Although these conditions perhaps justified the destruction of the system, they do not wholly account for it. Lands were brought together through marriage, through inheritance, through exchange and purchase. The speculative fever of the eighteenth century also hastened the movement by which scattered holdings were consolidated and the common fields were fenced into individual allotments. This American enclosure movement has naturally not aroused the same attention as its more famous British prototype. It was neither so extensive nor did it create similar hardships. But the passing of the community agriculture of New England meant that the lonely farmhouse succeeded to the place of the well knit village. This transformation made possible everywhere the evils of isolation and dispersion.

Food crops in New England had a colorless history. Nearly every farmhouse had its small garden of vegetables and an orchard of ramshackle fruit trees. The apple was the favorite, for it could be pressed into cider, and a store of dried apples furnished material the year round for the apple dumplings and apple pies of the traditional rural New England diet. Farmers grew small fields of the minor cereals. Wheat, grown with difficulty along the coast, at last found a suitable home in the Connecticut valley, where there was level land, rich from the decomposition of soft rocks and river
PRODUCTION IN THE BRITISH COLONIES

deposits. Toward the end of the seventeenth century the "blast," now known as the black-stem rust, attacked this garden spot even as it had ravaged the older settled areas. Although it was nearly two hundred years before European scientists described the life of the parasite that caused this destructive scourge and discovered that barberry bushes played the part of an intermediate host, the observation of colonial farmers demonstrated the connection between such bushes and the rust and some towns and states passed legislation for their destruction. Such preventive measures were inadequate then, and by the time of the Revolution wheat had taken flight to western Massachusetts and Connecticut and to northern Vermont. Corn was left as the mainstay of New England.

The cultivation of all these products was extraordinarily slovenly. Labor was scarce and land was cheap. Under such conditions it paid to plant a field year after year to the same crop until the diminished yield demonstrated that the soil was exhausted. Then it was allowed to lie fallow and grow up in weeds until time came to cultivate it again. These alternations of use and rest were almost as futile as the first period of continuous cropping. Weeds do not restore the vital elements to the soil as rapidly as a proper rotation schedule. The care of the orchards was equally haphazard and the fruit trees were allowed to grow without pruning and grafting. Nor were the colonists willing to undertake the labor of carting and spreading their animal manure over the tillage land. In fact manure was a burden and barns and yards had to be moved to avoid the accumulated deposits.

Farms in New England, as in the other colonies, were generally stocked with a few cattle, a pair of work oxen, some sheep, and a number of swine. The hogs were turned out to live off the land or in the forest; in the fall they might be fed a little Indian corn before butchering. In the seventeenth century hay for the other domestic animals was cut from the marshes or the natural or irrigated meadows. In the eighteenth century, however, the cultivation of English grasses marked a revolution. Of these the most important before the Revolution was timothy, an English grass renamed after an American farmer. These cultivated grasses were sown on "upland" or "artificial meadows"; with careful tillage their yield was large; and they could be grown for an interval between grain crops on land ordinarily left fallow. For livestock, therefore, they introduced a superior forage; and for agriculture, they began a most rudimentary system of crop rotation.

By the eighteenth century some regional specialization in livestock production had developed within New England. Drovers of cattle were driven to Boston from Vermont and New Hampshire, and in the Connecticut valley around Springfield, Massachusetts, they were fattened for market. New England, moreover, presented unusual advantages for sheep raising, since the
large islands off the coast—Marthas Vineyard, Nantucket—, the islands of Narragansett Bay and the Narragansett country afforded protection against the forays of wild animals and of dogs. The Narragansett country, indeed, is an exotic in New England history. Situated within the angle formed by the junction of Long Island Sound and Narragansett Bay, it had a climate of unusual mildness for New England. Salt lagoons and marshes piercing the shore line made it easy to fence in natural reservations. The herbage was suitable for cattle and sheep grazing. Finally, because the region had been in dispute between Connecticut and Rhode Island, the land had not been settled under the township régime. Instead came large plantations, some of them running into thousands of acres, cultivated by slave labor. Several hundred sheep were often pastured upon one of these plantations, and animals were exported thence to the herdsmen of other colonies. This region also gave its name to a breed of famous eighteenth century horses. The Narragansett pacer was a small hardy animal, whose fleetness impressed Dr. MacSparran, a clergyman of Rhode Island: "I have seen some of them pace a Mile in little more than two Minutes."

In general, however, the livestock of New England, like that of the other colonies, was an inferior sort. The hogs were rangy animals with long tails, long ears, and long legs; and they were a match for the other denizens of the forest with whom they consorted a good share of the year. The cattle were undersized and acquired a toughness in order to survive the rigors of their exposed existence. The sheep had a staple rarely seven inches long, while that of the best sheep of England was twenty-two. Since the animals imported from Europe were poor in quality and since there was no definite knowledge of breeding in the colonies, nothing stayed the degeneration brought about by frontier conditions. Poor as her livestock types were, New England salted and barreled her pork, made some salty butter, and manufactured some cheese, of which the best was the Cheshire cheese made in the Narragansett country by the recipe which Mrs. Smith, wife of one of the planters, had been thoughtful enough to bring from Old England.

The rôle of New England, however, was not to be agricultural. Like her fur trade, the importance of her agriculture was evanescent. To be sure, in the seventeenth century she became self-sufficing, and throughout the eighteenth century miscellaneous agricultural products were shipped from her ports in the coasting and export trades. But she grew increasingly dependent upon outside sources for her grain supplies. Boston in 1700 was already importing grain from the Connecticut region; by mid-century these supplies were so uncertain that she imported from New York, Philadelphia, and Baltimore; by 1800 even the former grain-growing area in the Connecticut valley was importing its flour. The peculiar position which New England
was to occupy in the economic history of the Republic had developed before the American Revolution.

**Farming in the Middle Colonies**

In the middle colonies systems of land tenure never cut as strict a pattern for agriculture as the New England town in the seventeenth century. In Pennsylvania and in New Jersey, although proprietors and individuals to whom large grants had been given hoped to cultivate great landed estates with the aid of tenants, small holdings were so easily obtained that they became the dominant means of agricultural production. Where the township had been established, as in Long Island, parts of New Jersey, and mainland New York, its features of community agriculture soon evaporated. By 1700 the Dutch village communities, which had been laid out with home lots (or "boweries"), meadows, and common lands, began to abandon common tillage, although community rights to pasturage and woodland persisted in some cases until 1793, when a New York statute arranged for the distribution of the undivided lands to individual owners. Only in this colony did the land system retard the development of agriculture. Here the fashion of granting large estates prevailed throughout the eighteenth century. Their grantees could not find the tenants to develop them; their presence repelled the small settler. In 1774 only 1,000,000 out of the 5,000,000 acres of the province were improved.

The soil of the middle colonies was more hospitable to agriculture than that of New England. The coastal plain, with a sandy soil which could be cultivated for grass and grain crops only with a knowledge of modern agricultural methods, was of importance in New Jersey and nowhere else. As late as the Revolution a large area in the southeastern part of that colony was still uninhabited. But the Piedmont, running through the northwestern part of the state and broadening into a wider area in Pennsylvania, had clay soils which were generally of good fertility. Then there were the central valleys of New York and Pennsylvania. In the former state the Mohawk and in the latter the broad diagonal of the Great Valley had layers of underlying limestone whose decomposition had formed some of the richest agricultural land in the country.

The agriculture of the middle colonies, like that of New England, ranged all the way from the frontier agriculture of its ever shifting West to the more intensive cultivation of the areas nearest the cities. The same crops, with the trifling exception of some tobacco grown in Pennsylvania, were raised in the middle colonies as in New England. But not in the same proportions. Wheat usurped the place occupied by Indian corn. From the first it was successfully acclimatized. Before 1645 the Dutch settlers had raised it
on a commercial scale in New Netherland, and in Pennsylvania it was at once at home. As the country developed, the area sown to wheat increased, for the soil was suited to it and pests were not destructive. The latter, too, were combated by the use of winter wheat, which was sown in August and was strong enough in the following year to resist the blast. Long Island and the fertile limestone areas of the Mohawk valley were the producing areas in New York; New Jersey was an important producing state by 1750; and in Pennsylvania it had become before the Revolution "the grand article" of production. The middle colonies were the granary of North and South. The fruits of the northern colonies were joined by those fitted for a milder climate, especially the peach, which grew in abundance. Like their Puritan neighbors, the inhabitants of these more lavish agricultural regions esteemed these products for their convertibility into alcoholic beverages. "Peaches, as well as wild plums, corn, cherries, and grapes were distilled for brandy, and most people have Stills of Copper for that use." Here too the fruits were dried for later use, and in New Jersey this operation became almost a business, since ovens were used in the process.

The condition of animal husbandry resembled that in the New England colonies. The middle colonies, however, had no parallel for the Narragansett country. Stock raising here was a frontier occupation. By the eighteenth century western Pennsylvania and the uplands of Virginia and North Carolina had developed the western cattle business of the colonial days. Ranchers of these regions built up herds of more than one thousand head and pastured them on the open range of the western regions. These were the predecessors of the cattle barons and cowboys of the Great Plains. Select animals cut out from their herds were driven northward through the Great Valley. New animals were added from place to place. Finally the droves were driven down to Philadelphia to join others which had come from New York, and from the country near at hand. Often the cattle after their long drive were turned over to be fattened by farmers near Philadelphia or its satellite towns. In the summer they were generally grazed on rich meadows, and in the winter they were stalled and fed "the most luxuriant hay."

In general, agricultural methods in the middle colonies were more advanced than in the Puritan colonies of New England. In the growing of grains they followed a more careful tillage, clearing the soil more thoroughly of sticks and roots and plowing it more carefully. The natural meadows for growing grass were on occasion carefully irrigated by turning aside a stream and letting its waters penetrate the soil. A greater use was made of fertilizers. By 1750 animal manuring had been supplemented by experiments with amendments, such as lime and gypsum, which restored essential elements to
the soil. In 1730 the interest of public men and agricultural amateurs led to the establishment in Philadelphia of a botanical garden. John Bartram, Quaker botanist, was its directing genius. Bartram also established a farm on which he tried out advanced methods. He had both drained and irrigated meadows; he used red clover in rotations; he spread his fields with mud, lime, ashes, manure; he raised heavy crops per acre; and his cows, "deep-bellied, short-legged, having udders ready to burst," were a sharp contrast to the wiry animals so commonly seen elsewhere.

The general superiority of the middle colonies as an agricultural region was due to many factors. Their endowment of soil and climate fitted them for agriculture. The fairly densely settled regions around Philadelphia, Baltimore, and New York increased the value of land and provided markets. A somewhat more careful agriculture was made profitable in these restricted districts. A final reason for their agricultural supremacy was their settlement by races whose agricultural practices were more advanced and deep-rooted than those of the English. In this classification fall the Dutch settlers of New Netherland. At the time they migrated from Holland, their native country was pursuing an intensive agriculture, features of which were later to be embodied in that remarkable transformation known as the English agricultural revolution. In the New World the Dutch introduced superior grades of livestock, and their tillage methods were more thorough and careful than those of the English. In Pennsylvania the German immigration was decisive. Conservative, they refused to abandon their traditional European practices in favor of the expediencies of frontier agriculture. Searching out the limestone areas and the heavily wooded regions which seemed to promise fertility, they undertook a permanent rather than a transitory agriculture. Instead of girdling the trees, as did the Scotch-Irish and English, they felled them and then grubbed out the roots and bushes. Their care of animals was equally prudent and skillful. The cattle were housed in the winter because it kept them sleek and they required less food than when exposed to the rigors of the outdoors. And they developed the other famous breed of colonial horses, the Conestoga, named from a small creek in Lancaster County. He was not built like the Narragansett pacer, for speed; rather he was an admirable draft horse, and several pair hauled to market the Conestoga wagon, the predecessor of the prairie schooner.

From the pioneer log cabin the German farmer graduated to a substantial stone farmhouse. Near by was the Swisser barn. The first floor had the stalls for the animals. Teams could be driven into the second floor, since the barn was generally built near a slope or bank that made this possible. The second floor served for threshing, and the hay and other grass was stowed in great
mows at the side. A roof "having deep sides or pitch" gave the necessary height to this second story. These solid structures became a characteristic feature of the Pennsylvania landscape.

**Farm Labor**

Northern agriculture did not generally require the employment of a large, disciplined labor force. In New England the farmer and his sons were adequate for the majority of the seasonal tasks, and when there was a job beyond the family's capacity—the raising of a house or a barn—the neighbors turned to and made it a community enterprise. In the middle colonies the Germans did not hesitate to utilize their women in the fields—a vestige of European peasantry which struck New England observers as strange and of doubtful propriety. Under a régime of self-sufficing farming such measures were adequate. However, when commercial agriculture or specialization began, an additional hand or two was often required. To employ labor meant to pay high wages because of labor scarcity. The hired man in the colonies made twice what his colleague in Great Britain did, and he had a touchy independence which distressed European employers accustomed to subservience. Their complaints sound like those of the modern employer who attempts to keep house servants: "I must be in the fields with the hired men; nothing is done except I am there. I must not find fault with them or else they will quit me and give me a bad name. I am but the first slave on my own farm." Since land could be had so cheaply, the opportunities for becoming independent were numerous and employees rarely would accept a permanent wage-earning status. Some form of bondage seemed to be the only way to tie a permanent labor force to the land.

Negro slavery was not of importance in the northern colonies. This contrast to the South must not be ascribed to the superiority of northern principles. The Puritans of New England owned slaves, and even Roger Williams, whose liberality and broad-mindedness irritated authorities in Massachusetts and elsewhere, saw no objection to the traffic in Indian slaves. In Pennsylvania and the affected portions of New Jersey, Quaker principles were assumed to be hostile to the idea of enslavement, but William Penn, the Founder, was apparently not influenced by those scruples. He owned slaves. The causes must be sought elsewhere. The varied tasks of the small-scale northern agriculture were not adaptable to the gang labor of ignorant Africans. But even in the North conditions did not operate against the limited application of Negro slavery. The Narragansett country had at times a slave population of Indians and Negroes which varied from a third to a half that of the free whites; and in the vicinity of New York one family out of ten held slaves on an exceedingly small scale. In the first instance, the proximity
of Newport, the American center of the slave trade, was the explanation. The slave ships brought back and sold the Negroes of which they could not dispose in the more exacting southern markets.

Pennsylvania was naturally the colony which made the most extensive use of the white, indentured servant. The tide of immigration which poured into that colony laid down on her doorsteps thousands of "free-willers," "redemptioners," and other varieties of foreigners, and the scale of her agriculture made possible their utilization in the household or in the fields. Their conditions of labor were variously regulated. In some cases, of course, the indenture entered into by the servant before his departure governed the situation. The redemptioners, however, were in a different situation. They descended upon the ship captains and offered to sell themselves at the end of the voyage for the cost of their transportation. Employers, merchants, artisans, farmers would repair to the vessels for the purchase of these laborers, or sometimes middlemen or factors would take over the arrivals for sale in the city or for peddling through the country districts. Those immigrants who arrived without indenture papers were generally indentured according to the custom of the country. Details of this contract were carefully regulated by legislation. The servant guaranteed to furnish industrious labor and to avoid the vices which might interfere with the proper discharge of his duties. The master on his side promised fair treatment, food and lodging, and, on the completion of the indenture period, certain rewards. Pennsylvania legislation of 1700 declared that each servant on discharge was entitled to "two compleat suits of apparel," one new ax, one "Grubing Hoe" and one "Weeding Hoe." At the same time, under the regulations of Penn, he was entitled to fifty acres of land. The Pennsylvania servant was thus able to start out as a freeman under excellent conditions. In fact, there were immigrants with sufficient means for an independent estate who indentured themselves in order to learn the methods of the new country.

The situation of this indentured class has been variously described. Europeans who wanted to discourage emigration to the New World, or who had been brought up under conditions of refinement, claimed that the servants "groan beneath a worse than Egyptian bondage." The immigration agent, on the contrary, pictured it as a short and comfortable stage in the transition to freedom. There was undoubtedly a tendency to overwork the white servant as compared with the Negro slave. The latter was a responsibility of his owner for life, and a piece of property in which it was advantageous to prevent rapid deterioration. The former, on the other hand, was held for a short period, and there was a tendency to get as much out of him in that time as possible. The escapades of the servant were generally punished by whipping, and if he ran away he had to recompense the master for the cost of
apprehending him and serve double time as compensation for his absence. But these punishments were no better or worse than those for freemen at the same time. The legal position of an indentured servant gave him some protection against cruelty and exploitation. The courts were entrusted with the protection of his rights, and in Virginia, at least one servant was taken from his master because of the latter’s cruelty. Whatever his treatment may have been, the servant could look forward to a career of freedom and independence. His was not a lifetime of exploitation. It was this possibility which caused the great immigration of servants into Pennsylvania, Maryland, and Virginia.

ENGLISH MERCANTILISM AND AMERICAN AGRICULTURE

The products of the northern colonies had little to recommend them to eyes of the English mercantilists. They were the same as those which the mother country raised; and the possible competition alarmed the dominant landowner class of England. Their importation into Great Britain was, of course, not to be encouraged, and their importation into other parts of the empire tended to diminish by that much the exportation of English agricultural products. This grave indictment applied to all the northern colonies. But New England was in special disfavor, because her fisheries competed with the fisheries of the mother country, and because the English fishing vessels in America were supplied with provisions from the colonies themselves. In addition New England’s excessive devotion to shipping and trade worked hardship to English interests. The only compensations were a few masts and a few furs and some whale oil. “New-England,” complained Sir Josiah Child, “is the most prejudicial Plantation to this Kingdom”; and others lamented that the great immigration into New England had not been directed to regions which grew sugar, indigo, cotton, ginger, and other exotic commodities.

The British government, however, was not without hope that certain agricultural staples might be produced in the colonies with the proper encouragement. One of them was hemp. It was calculated that seven or eight thousand tons were needed annually for the ropes and rigging of the British navy, and this amount was imported, like the other naval stores, from “the sulky Barbarians” of the East Country. The Naval Stores Act of 1705, therefore, offered a bounty “for hemp, water rotted, bright, and clean, 6 pounds per ton.” So ineffectual was this reward that it was allowed to lapse. But a higher bounty, £8, in 1764, revived the policy of British aid. Various colonies assisted these grants with bounties of their own. Although the hemp plant was peculiarly sensitive to frost and required an extremely fertile soil for growth, it was perfectly possible to produce it throughout the colonies. But
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To grow hemp required a great deal of skill and a great deal of labor; neither was easily at hand in colonial days. Instructions were sent over by the English government, but the knowledge which they imparted did not supply a labor force. In spite of the high bounty, North Carolina was the only state which produced hemp in considerable quantities for export, and there the amount was not large.

The British government was even more hopeful that the colonies might supply the exotic products, particularly wines and silks, which it imported from southern Europe. There was no visible barrier to a wine industry in the southern colonies. The presence of wild grapes there was evidence that grapes would grow. Under the Virginia Company French vine dressers were sent over, and grape cuttings from Europe accompanied them. Every settler was required to plant ten cuttings, and learn the art of caring for them from the imported vine dressers. After the company régime, further efforts were undertaken. Finally wine was obtained and shipped to England, but discriminating drinkers there and in the colonies pronounced its taste inferior and judged the cause to be an ignorance of the proper methods of production. But mercantilist hopes were hard to scotch. In the eighteenth century the philanthropists who established Georgia repeated the same legislation and the same process with the same result.

With even more uneasiness the mercantilist considered the dependence of England upon southern Europe for silks. Piedmont alone drained from the Kingdom over a million dollars a year of good bullion for that product. Bounties, British and colonial, and other assorted encouragements were, therefore, directed toward removing this fatal weakness. Although the desire to plant the trees, feed the leaves to the worms, and unwind the silk from the cocoons broke out sporadically in nearly every colony, the greatest efforts at cultivation were made in the South. Virginia in 1619 passed legislation compelling every man to plant six mulberry trees a year for seven years; silkworms were imported from European countries; and the Company sent out an expert silk maker to supervise this industry. These efforts were futile. Later in the seventeenth century it was taken up by some of the wealthy planters, male and female. In Georgia, which represented a sort of last attempt to fulfill these mercantilist notions, a more sustained effort at silk culture was made. The trustees imported an Italian family versed in silk culture, gave it many privileges, and set up a public shop for winding silk where a high price was paid for cocoons. Their efforts produced silk, but at a cost of more than twice the open market price.

A new country, where labor was dear, could no more undertake with profit the production of hemp, wines, and silk, which required skilled cheap labor in abundance, than it could advanced manufacturing. The American plant
ers, however much they were berated for their obstinacy, were intelligent enough to promote the production of those staples in which they had a relative advantage.

**King Tobacco**

One of the greatest contributions of the New World to human comfort was tobacco. Its two most important varieties divided the western hemisphere between them. One of them, *Nicotiana rustica*, was a small plant, the leaves of which were used by the North American Indians as far south as Mexico. It furnishes today the shag of the French Canadian. The other, *Nicotiana tabacum*, probably originated in the interior of Brazil and spread northward and eastward through South America into Central America and then jumped to the islands of the Caribbean basin. It is this species which has predominantly met the demand of tobacco users. Three days after his discovery of America Columbus refers to the use of tobacco in his *Journal*. In a little over a century Europe, Africa, and Asia were using tobacco.

The arrival of tobacco in England, of course, long antedated the Virginia colony. Sailors introduced its use. Sir Walter Raleigh, the world's most famous smoker, popularized it as a pastime with the best people, and in the seventeenth century its use was extended from smoking to chewing and to snuff. In England, as elsewhere, the arrival of this novel plant was the occasion of a lively discussion. The most distinguished opponent of tobacco was King James. In 1604 appeared his *A Counterblaste to Tobacco*. Although it added little to the argument, its phraseology and its thought were peculiarly characteristic of the Stuarts. He asserted that tobacco's smell was a proof of its poisonous nature, and requested that his people should not imitate "the barbarous and beastly manners of the wild, godless, and slavish Indians, especially in so vile and stinking a custom." Other writers rushed to the defense of the new practice on the ground that tobacco had medicinal properties and its consumption was a pleasant pastime and a social amenity. This strange controversy can be appreciated only when the seriousness of its protagonists is understood. In the seventeenth century the use of tobacco was the moral equivalent of the present opium problem. But the dictates of morality, whether they were voiced by the English Stuarts or the Persian Khan, did nothing to stay the use of this American product. The demand for it seemed insatiable.

Since tobacco for English consumption was at first supplied from the Spanish colonies, the moralists who argued against tobacco were joined by the mercantilists who were aghast at the resulting export of bullion. By 1615 England was losing £200,000 in payment for these imports. But already a
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beginning had been made to quiet the fears of these alarmists. The cultivation of tobacco had begun in the Caribbean islands, and in 1612 John Rolfe, the famous husband of the famous Pocahontas, undertook the cultivation of tobacco in Virginia for his own use as a smoker and for sale as a cash crop in England. At once there was a revolution in the prospects of the colony. The staple for which the colony had yearned was now discovered. Virginia proved to be amply suited for the production of the new crop. The rich fertile soil of the river valleys was an ideal medium for its growth; the deep and numerous rivers—Virginia was the Netherlands of the New World—allowed ocean vessels to penetrate far inland to plantation wharfs to put tobacco on board; and there was infinite land for expansion. The crop needed an extensive area. Although less ground was required for tobacco than for wheat, and the clearing of the forest could therefore be accomplished piecemeal, the tobacco plant rapidly exhausted the fertility of the soil and had to move on to virgin regions. The careless methods of cultivation provided no antidote for these losses. The European demand furnished the stimulus to the use of these resources. Prices were at first so high that a man could make six times as much in tobacco as he could in wheat. No wonder that Virginia became infatuated with the Indian weed. The streets and market places of Jamestown were planted with it. Artisans and clergymen had their tobacco patches. It drove out the cultivation of other products, particularly wheat, and threatened to reduce the colony to the starvation of the early days. Local authorities had to pass regulations requiring each planter to raise enough grain for the support of the persons dependent upon him. In spite of these efforts, Virginia had occasionally to import a portion of her food supplies.

The Stuarts might deplore a colony “built upon smoke,” and attempt to direct its energies to other lines for moral and mercantilist reasons. It was in vain. The tobacco area was continually expanding. At first it had been confined to the banks of the James and a small district on the eastern shore of Chesapeake Bay. Eventually, however, it spread northward to new river valleys, the York, the Rappahannock, and the Potomac, and then westward along their courses. The boundary of Maryland offered no real barrier, for the settlers of Lord Baltimore’s province found their soil adapted to tobacco and the value of the staple equally enticing. Tobacco plantations arched the head of Chesapeake Bay and followed down its eastern shore until they joined with the earlier Virginia plantations in that district. Southward tobacco pushed its frontiers into the Albemarle Sound country of the Carolinas, and the settlers in this region, bred in the tobacco tradition of the Old Dominion, began its cultivation in the third tobacco colony, North Carolina. But North Carolina never rivaled its northern neighbors in colonial
times. Her tobacco development was to come later. The total of American production mounted dizzyly. In 1617 Virginia exported 20,000 pounds; in 1770 the amount exported from America was over 100,000,000 pounds.

As the producing area spread, the culture of the crop improved. The native tobacco of Virginia had been the *Nicotiana rustica*. An earlier writer expressed his dislike of it: "Howbeit, yt is not of the best kynd yt is but poore and weake and of a byting tast." This variety was, however, superseded early in the seventeenth century by the more palatable *Nicotiana tabacum* from the West Indies. As the decades went by, this variety in turn divided into categories. The first was *Orinoco*, a plant with a heavy leaf which grew best on bottom lands of extreme fertility. Its chief market was the Continent, and great quantities of it were exported for the German and the French trade. Others esteemed more highly the sweet-scented tobacco. It had a smaller leaf, a finer fiber, and burned more easily. It flourished in sandy soil, and the planters of Virginia asserted that the best area for it was the peninsula between the James and the York. North or south of this region it deteriorated rapidly. Between the *Orinoco* and the sweet-scented there were a number of varieties. But like the plantations from which they derived their names they proved to be of transitory importance.

In the early years the quality of the tobacco was frequently injured by the methods of handling it. The original colonists knew nothing of its proper culture and the new arrivals who rushed into its cultivation were equally uninformed. Under these circumstances it was difficult to build up a body of technical knowledge. The most glaring losses occurred, however, in the treatment of the crop after it was gathered from the fields. Here carelessness and ignorance deprived the tobacco of over half its value. Until 1620 it had been cured simply by heaping it upon the ground, and it had been shipped in rolls to foreign markets. The manipulation necessary in the formation of these rolls injured the leaf, and the greed of the planters who stuffed the wrappers with inferior tobacco did not improve matters. Well through the seventeenth century, Spanish tobacco was deemed greatly superior, and English smokers gladly paid the higher prices which it brought. To improve the quality Virginia eventually passed inspection laws. All tobacco was to be brought to specified warehouses for appraisal or appraised elsewhere in some formal fashion. That which fell below a minimum value was to be destroyed as unmerchantable. Further improvements, moreover, were effected by the accumulated experience of the planters themselves.

The tobacco seed was sown in January in beds in the forest. The rich forest mold furnished a fertilizer, and the trees protected the young plants from the sun. Early in May the tender seedlings were transplanted to the
fields, where hills had already been prepared for them. Experts could set out thousands a day. Then began a long, painful routine. As the plants grew, the weeds had to be kept away; the leaves had to be turned back to discover the destructive hornworm which descended in two armies a year. When the plant had reached a certain height, the tip was cut off and the later leaves were pruned away. In the absence of restrictive regulations plants of twelve leaves would grow properly upon good soil. Poor soil sufficed for eight or ten. The planter heaved a sigh of relief when the stalks could be cut. A dry day had to be chosen, for the leaves had to wilt before they were carried to the tobacco barns and hung at regular intervals for curing. The use of fire for this process was unknown and so the windows had to be continually opened and shut, depending upon the weather. After months of curing, the plants were taken down, the leaves stripped from the stalks and sorted for quality, and the finished product was packed in hogsheads whose construction, thickness, and size were all a subject of minute regulations. When the hogsheads were filled they were assembled in some warehouse convenient to the ships which plied the inland rivers. If the plantations were some distance from the water's edge transportation thither was a grueling task, for the large hogsheads had to be rolled over the rough roads. Servants, slaves, and sailors were all drafted for this arduous labor. Later an apparatus was designed by which oxen or horses could be used for rolling. While these tasks were going on, the ground was prepared for the next crop; food supplies were raised; the incidental duties of the plantation régime were discharged. Thus the production of tobacco bound together the seasons into an integrated year.

Exacting as was the mere raising of the crop, the problems of tobacco transcended agricultural methods. The availability of new and fertile lands and the capacity of a growing market to absorb supplies tempted every one into tobacco production. Once started, this momentum prevented deviation from the single-crop system. The result was overproduction and a fall in price. In 1617 it had been 5s. 3d. a pound; by 1666 it had fallen to a halfpenny. The decline over a series of years was general; but it was frequently interrupted by the most disheartening variations. The tobacco colonies vacillated from plenty to poverty. The crop of 1666 was so enormous that even a large fleet could not carry it away and it was asserted that Virginia grew enough in two years to supply the British trade for three years. Some method of reducing the supply had to be discovered. In 1630 the number of plants was limited to two thousand for every individual in a family, and the number of leaves to be gathered for each plant was limited to nine. A few years later this ration was reduced to fifteen hundred, and planters were forbidden to transfer
their allotments to each other. An unforeseen result of this legislation was to hasten the exploitation of new fields whose untouched fertility produced plants with larger leaves.

By the sixties, however, it was apparent that the individual province could not curtail production. If Virginia limited her supply, her self-denial would be undone by the wholesale production in Maryland or North Carolina. Some restraint would have to be placed upon this destructive intercolonial competition. Resort was had first to the possibility of royal interference. The king, however, proved to be uninterested. A large tobacco crop yielded large import duties to the treasury, and this royal self-interest was reënforced by that of English merchants, who enjoyed the privilege of purchasing tobacco at low prices in a glutted market. Attempts were then made at some form of intercolonial agreement. Treaties were indeed drawn up either limiting planting before a certain date or suggesting a planting recess for a year. But some party usually found it advantageous to withdraw from these agreements before their restrictions went into effect. Convinced of the futility of this procedure, the people took things into their own hands. In 1682 mobs attacked plantations and destroyed tobacco in the hills. Each planter, his own supply gone, was then eager to help out the good work by devastating the field of his neighbor. Eventually the militia had to be called out to put an end to this outbreak and some of the plant cutters were executed. Such hardships might be expected to lead to some permanent and suitable method of curtailment. But the next year prices were higher, planters basked in renewed prosperity, and the formulation of a policy was discarded. Such performances certainly justified the rather cynical judgment of Nicholas Spencer. "By my observation," he wrote, "I cannot persuade myself that either a cessation or a stint in the number of plants will effect what is intended. The work must do itself; the crop must grow to such vast quantities that no one will come to fetch it, and then the law of necessity will force them to new industries."

The Tobacco Plantation

If the plantation system can be defined as large-scale agriculture utilizing the labor of bonded workers under the direction of overseers upon a considerable area of land, the Virginia Company deserves the credit of introducing it to North America. The whole colony was such a plantation. This method of production was imitated by individual planters when the company régime gave way to private property. But throughout the seventeenth century the imitation was on a small scale.

The labor force was supplied by the indentured servant. To be sure he was expensive. His cost of transportation alone was £6, and this investment by
masters was destroyed if the servant did not survive the process of adaptation to the New World. All too often it was a fatal one, for he had to work in the hot sun at unaccustomed tasks, hewing down the forest or tending tobacco, and he had not acquired an immunity against the malarias and fevers of the Virginia coast. In the early days of the colony hardly one out of five indentured servants survived as a seasoned hand. A second disadvantage for the planter was the servant’s short period of service. Enactments which regulated the years of indenture varied, but in 1666 it was provided that male servants over nineteen should serve five years, and those under that age until they were twenty-four. Hardly had the hand become useful to his master before he was freed. Moreover the indentured servant had a tradition of freedom. He was restless, and his restlessness made him a vagrant. Interruptions to work were frequent. Whatever the drawbacks of this system, it was the only possible one. To pay wages was unthinkable. What proportion of the immigration to Virginia was composed of indentured servants it is difficult to say, but they composed certainly the larger share of the 100,000 people who had gone there before 1700.

The labor force had a further effect upon the tobacco colonies, for when the indentured servant was freed he usually became a landowner competing with his former master rather than a wage-earner. When his indenture expired the servant was entitled to receive enough grain for a year’s subsistence, two suits of clothing, and sometimes tools and a rifle. The total value of these benefactions was £10, an additional cost of the labor system. The freedman was, however, not necessarily given land. In Maryland there was a time when the freed servant was entitled to a fifty-acre grant, but this privilege was repealed. In Virginia the system was never so simple. Under the company régime and under some governorships grants of land were made to freed servants. But although definite provisions on his behalf were usually lacking, a landowner he became. Masters aided their servants to obtain land on credit or willed it to them. Or the freedmen by a period of tenancy or of wage labor accumulated money enough to purchase for themselves. With the high prices which tobacco at first brought either of these methods was easy. It is calculated that a man could easily make £12 a year on a crop tended by himself. And the price of land was low. Eventually he might even buy an indentured servant. In addition to the freedmen there were the freemen who emigrated from England and set up for themselves from the very beginning. More numerous in the early days of the colony, perhaps two thousand out of the five thousand who arrived before 1635 were in this category.

In the seventeenth century although there were some large planters the small farmer, whether a freeman or freedman, was the rule. His mansion was a decent frame house rather than a brick edifice. The size of his hold-
ing was somewhat less than 674 acres, the average area patented in the second half of the century. This plantation was larger than a northern farm, but the ease of obtaining land and the necessity of a large reserve area to be devoted to tobacco cultivation explained the difference. Much the larger share of this small plantation was still forested. But where fields had been cleared the chief crop was naturally tobacco. Its showiness must not obscure the fact that agriculture even in the South had to be self-sufficing. Indian corn was the staple cereal crop; a vegetable garden and a few fruit trees made other contributions to the table of the planter. The appearance of Virginia was faintly suggestive of New France. The plantations were laid out along the numerous rivers and stretched backward into the hinterland. There were no towns, and legislative enactments could not create them. A population as small as that of a single London parish occupied an area as large as the whole of England.

The falling price of tobacco terminated the process by which this equalitarian society had been created. It was no longer possible for the smaller planter to make the profits which had lain at the basis of his independence and had enabled him to improve his economic status by purchases of land and of servants. The pressure of competition favored the larger producers, whose small returns on large units still enabled them to carry on their planting operations. The number of servants who worked their way into the landholding class perceptibly diminished after 1660. A second factor now contributed to hasten the same development. That was the introduction of Negro slaves. Although Negro slaves had been sold in America as early as 1619, their use had been seriously restricted. As the governor of Maryland wrote in 1664 in reply to the proposal that the men of the colony import a consignment of Negroes, “I find that we are not men of estates good enough to undertake such a businesse, but could wish we were for we are naturally inclined to love neigros if our purses could endure it.” As late as 1670 the number of white indentured servants in Virginia was three times that of the Negroes, but by the end of the century the latter had become the more important labor factor. In Maryland Negro slavery exhibited an even slower growth, but by 1750 there were approximately forty thousand slaves in the colony. In contrast to Virginia, however, the Negro never displaced the white indentured servant. The importation of the latter continued steadily until the Revolution.

The Negro slave had, however, several advantages over the white indentured servant. Coming from a tropical climate, he was better immunized to the diseases of the coastal plain of the southern colonies. His period of service did not terminate abruptly as soon as he was acclimatized and trained; it lasted for a lifetime. And after him came his children who were
born into the bondage of their parents. The original cost of the slave was, therefore, but a temporary handicap. If his price were £20 it could be spread over twenty years of labor; the indentured servant cost easily £10 for a period one quarter as long. To be sure, the Negro had been snatched from the barbarism of the African jungle. In that tropical life he had not been compelled to acquire the habits of settled industry necessary for existence in a temperate zone; neither had his primitive culture equipped him with manual dexterity in the use of the tools of civilization or with a training in the performance of complicated tasks. He was a crude, clumsy, unintelligent laborer. But this handicap could be modified by time and instruction. In any case, the technique of tobacco culture had been reduced to a routine which could be superintended by overseers and mastered by the black man. The eighteenth century saw increasing arrivals of the Negro, and as a consequence the increasing importance of the large plantation. Only the wealthy planters had funds for the purchase of slaves. And on the large plantations the gangs of slaves could be worked most economically. The variety of tasks on the huge self-sufficing organisms, involving, as it did, field and house labor, hewing down the forest and manufacturing simple articles, made possible an advantageous division of labor and an avoidance of idleness which the smaller unit could not approximate. The pressure of competition began to eliminate the small producer very much as it has done in some fields of present-day industry.

The fate of the small planter varied with his opportunities and with his talents. Some sought escape by migration. There was an exodus of small planters into the provinces of North Carolina, Delaware, Maryland, and Pennsylvania; many others moved westward to the frontier. This stream of exiles was joined by the indentured servant as he secured his freedom and surrendered his job to the Negro. Those who remained in Virginia attempted agricultural specialization. Some turned to grain raising, and others devoted themselves to the growing of the finer sorts of tobacco. But this advantage disappeared as the slave became skillful. Small planters were, on occasion, able to make an adjustment to the slave régime. A few of the more talented and industrious became overseers on the larger plantations; others scraped enough money to purchase a slave, and entered the ranks of the small slaveholding class. This category was a very extensive one. A Virginia state census in 1782–83 gave interesting proportions for eight counties in which slaveholding was general. About one-quarter of their citizens held gangs of ten or more slaves; one-half held from one to nine slaves; and the remaining quarter held none. In this final category must be placed the individuals who had not been able to escape or to meet the transformation of Virginia agriculture. Hating the Negro, the involuntary cause of their deg-
radation, they had sunk into the class of the poor white. The French philosopher Chastellux thus described them at the time of the American Revolution: "Near these rich plantations, in which the negro alone is unhappy, are often found miserable huts, inhabited by whites whose wan faces and ragged garments give testimony to their poverty."

The economic classes of eighteenth century Virginia ranged from these victims of economic change—lazy, shiftless, poor, despised even by the Negroes—through the large class of the small slaveholder to the great planter at the top. The scattered plantations of this last group aggregated thousands of acres, and their slaves were proportioned accordingly. Among the largest holdings reported in the Virginia census of 1782-83 were those of John Tabb, who had 257, and George Washington with 188. This planter class had assumed the outward trappings of an aristocracy. The farmhouses of the earlier days gave way to huge brick mansions with outlying buildings and landscaped lawns. Inside they were profusely furnished. Silver plate, paintings, furniture, and books were imported from Europe to grace these establishments. Coaches, elaborately decorated and upholstered, drawn by four or six horses, carried the Virginia grandee and his family over such highways as the province could offer. And many descendants of these moneymakers pursued the polite professions, gambled at races, dabbled in culture, and ran into debt.

Rice and Indigo

Although by the time of the Restoration the Stuarts had recovered from their distress at the sight of a colony "built upon smoke," the mercantilists were still far from reconciled to the absence of other staples from America. The more southerly colonies aspired from their foundation to remedy this situation. In 1669-70, therefore, the proprietors of the Carolinas established an experimental garden which demonstrated after two years' time that cotton and sugar would not grow in the colony but that "Wine, Oyle, Silk, Indicoe, Tobacco, Hemp, Flax, and some say ginger" were promising commodities. These conclusions could hardly be regarded as scientific, for, in spite of the varied and attractive prospect they offered, the prosperity of the colony waited for years upon the introduction of some agricultural staple. In 1696 rice was introduced from Madagascar, and by the turn of the century it had demonstrated its possibilities for the New World. Thereafter its spread was rapid.

In the culture of rice the fields are not necessarily flooded, but they gain from that process. The water keeps down the weeds, fertilizes the fields, and keeps the stand from breakage in storms. Consequently the rice fields were laid out in the inland swamps which could be flooded from reservoirs and
streams. This method of irrigation was uncertain, and it did not make available the great swamps bordering the rivers of the coastal plain. By the time of the Revolution, however, rice growing had migrated to these latter regions, which a new system of tide flooding had made it possible to cultivate. The river banks were diked, and as the tide pushed back the fresh water, gates were opened and the flood let in and retained until the proper period of inundation was over. Naturally, great care had to be taken to prevent any salt water from seeping in, and frequent samples were taken. A standard routine of operations was devised. In the spring the rice seeds were planted and the water let in for the “sprout flow.” Then flows and dry hoeing alternated until there came the “lay-by flow,” which lasted for two or three months until the crop was ready for harvesting early in September. Gangs of Negroes cut the stalks with sickles and stacked them in sheaves for a brief period of curing before the difficult operation of threshing began. The process was completed when the grain was freed from its chaff, picked over, and barreled.

Somewhat later rice culture was dovetailed with the culture of indigo. If the former sought the lowlands, the latter grew best in the sandy soils which were back from the rivers. And the rhythm of cultivation in indigo was so different from that of rice that the two could furnish continual employment for the gangs of Negro laborers. The introduction of indigo was the work of a great woman experimenter, Eliza Lucas. Her father, a West Indian governor, acquired plantations near Charleston, and upon them his daughter attempted the cultivation of cotton, ginger, alfalfa, and indigo. In 1743 she succeeded in domesticating indigo; others introduced improvements and refinements; and indigo became almost immediately a staple. So overjoyed was the British government that Parliament voted a bounty of sixpence a pound. The production of the dye was a combination of agriculture and manufacturing. Both were ticklish businesses. The plant generally yielded two harvests, one in June or July and the other in August or September. The fields had to be carefully tended, and in cutting and in carrying the leaves great pains had to be taken to prevent the bluish tinge from being rubbed off. The gathered leaves were then placed in vats for fermentation; at the end of twelve hours the dye had soaked out and the water was drawn off into other vats and agitated under paddles; samples were now taken frequently, and at the crucial moment the lime water was poured in to precipitate the brewing. Finally the water was drawn off, the residuum was collected, pressed, dried, and prepared for shipment.

The production of these staples raised the eternal question of a labor force, and the answer in this case took unequivocally the form of Negro slavery. The dual cultivation of indigo and rice gave an all-year routine for a perma-
nent labor force of slaves. Moreover, the conditions of labor were such as to repel European workers. Of rice growing a European observer wrote:

If a work could be imagined peculiarly unwholesome, and even fatal to health, it must be that of standing like the Negross [Negroes] ankle and even mid-leg deep in water, which floats on ouzy mud; and exposed all the while to a burning sun, which makes the very air they breathe hotter than the human blood; and these poor wretches are then in a furnace of stinking, putrid effluvia; a more horrible employment can hardly be imagined, not far short of digging in Potosi.

The rice plantations were, moreover, in the lowlands with their swarms of malaria-bearing mosquitoes. Such a condition resulted in a large Negro mortality, but the Negro, accustomed to similar conditions in Africa, possessed a considerable immunity compared to the white man. Indeed the owners themselves by the end of the eighteenth century stayed as little as possible on their plantations in the unhealthy seasons. They fled to Charleston or to homes erected on the higher pine ridges.

The production of these staples was not confined to South Carolina. They spread across the boundary of North Carolina and extended the rice coast into the southeastern corner of that colony. It was sought also to introduce them in Georgia, where conditions were favorable. But here they met the opposition of the philanthropic trustees, who hoped to grow other exotic products, and who insisted upon small holdings and upon the prohibition of the slave trade. The prosperity of the colony was retarded but not permanently prevented by their policy. Inroads had been made upon their schemes before the charter was surrendered in 1752. After that Georgia was allowed to develop without their direction, and its coastal region soon imitated that of South Carolina.

The plantations of the rice coast differed from those of the tobacco kingdom. They were smaller, more intensively cultivated, not so dispersed. And they had a larger labor force. In the Charleston district of 1790 the average holding was over thirty slaves and the great planters counted their Negroes by the hundred. Economic classes were weighted, therefore, more heavily at the extremes than in Virginia. At the bottom was a large Negro population, which in the South Carolina of 1765 outnumbered the whites by two to one. At the top was the large planter with his estate on the shore of the Savannah, the Cooper, or the Ashley River and with the profits tumbling in. During the late eighteenth century the cultivation of these staples was so advantageous that the frugal planter doubled his capital every three or four years. The rice coast depended upon rivers, but these were so shallow that ocean vessels could not sail inland to the plantation wharfs. Consequently ports appeared on the coast line or along the lower reaches of the rivers.
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themselves. Georgia looked to Savannah, South Carolina focused upon Charleston. The latter was one of the largest and most prosperous cities in the American colonies.

In all the southern colonies the raising of livestock was an important industry. They were turned out to live off the country. This open range was extensive. Virginia by legal enactment allowed the cattle, sheep, and hogs of that province to roam at large and unmolested. The burden of protecting crops was not upon the owner of the animals but upon the grower of the crops. All areas unprotected by the rambling, lazy, wasteful, worm fences were a common grazing ground. A similar arrangement prevailed in North Carolina. Virginia became most famous for its hog products—pork, bacon, and hams. The Smithfield ham had already gained its reputation because of the method by which the hogs were fed and cured. In North Carolina, although the number of hogs was prodigious, the famous “Black Cattle” were the mainstay of the province. Herds of a thousand animals were sometimes owned by a single master. The care of livestock was simpler in these southern colonies than in the North, for the winter was not so rigorous, and shelter was unnecessary. So the animals ran wild. At intervals droves were collected and driven down to the seacoast markets, of which Philadelphia, Baltimore, and Charleston were the most important. Sometimes these herds were infected with diseases—the Spanish staggerers was the most prevalent—and then their long drives were interrupted by popular violence or provincial legislation.

No picture of colonial agriculture at the time of the Revolution which stresses the agricultural distinctions between the colonies is wholly accurate, for New England merged into New York and New Jersey, Pennsylvania dissolved into Maryland, North Carolina was the middle ground between its southern namesake and Virginia. Nevertheless, Georgia differed from Maine, New York from Virginia. On the James or on the Pee Dee the planter erected his mansion and laid out his fields for tobacco or rice and indigo; the Germans grubbed clear their fields on the Susquehanna and built their high substantial barns; on the Charles River or along the shores of Narragansett Bay the Puritan proprietors abandoned their community tillage and herding and erected more pretentious frame houses. In the East, then, there were differences. But farther inland, along the frontier of all the colonies, the pioneer was continually re-creating the agricultural life of the first settlements. To be sure, he entered upon this task with less fumbling and uncertainty. A century of experience stood behind him. Along the upper reaches of the Connecticut and the Mohawk, in the western valleys of Pennsylvania and Virginia, in the back country of the Carolinas and Georgia, in remote localities in the mountains, the settler moved into the virgin forest with his fam-
ily and a few domestic animals—"a cow, some pigs, or a full sow, and two indifferent horses." He purchased or "squatted" on a piece of land, built his log cabin, girdled the trees, planted his corn and his vegetables, and lived off the country. After four or five years of clearing and planting, he had paid for his land and graduated into the estate of farmer or planter. Meanwhile the formless frontier had pushed even farther to the west to repeat the pattern of Jamestown and Plymouth.

**Handicaps upon Colonial Manufacturing**

As the eighteenth century progressed, the English mercantilists increasingly emphasized dogmas which were on the surface hostile to the growth of manufacturing in their colonies. In brief, they insisted that the colonies had their chief value as markets for the goods manufactured by the metropolis. Manufacturing in the colonies which competed with that of the mother country must be curtailed. One reason for the new emphasis was the increase in colonial population, which was also an increase in the number of consumers. Tribute was paid to this point of view by the Treaty of Paris in 1763, which concluded the Seven Years' War. The older emphasis of mercantilism upon colonies as a source of exotic products dictated the retention of the Caribbean islands. Indeed, Guadeloupe and Martinique, the French islands, had become sugar producers *par excellence* and few other places could compete with them. They were an exceedingly desirable prize. The newer emphasis was expressed by Benjamin Franklin in *The Interest of Great Britain Considered* (1760). Retain New France, he advised. The spread of settlement to these regions will keep the American colonies an agricultural people, who, rather than manufacture their own goods, will import them from Great Britain. The English government chose the mainland colonies.

Meanwhile the new point of view had resulted in legislation by Parliament. American hat-makers had the advantage of easy access to raw material, the beaver, and freedom from guild restrictions, and they began to export their handiwork. In 1732 foreign or intercolonial trade in American-made hats was prohibited. Then there was the British woolen manufacture. It employed directly or indirectly a population 50 per cent greater than that of the colonies, and its exports constituted more than half the commodities sent out from the Kingdom. In the late seventeenth century this key industry was, however, faring ill in international competition. Since exports of cloth to France and Holland were falling off rapidly, the colonial market had to be kept open. In 1699 Parliament forbade the export of wool, raw or manufactured, from one colony to another "or to any other place whatsoever." Whatever sacrifice was entailed upon the American colonies by this prohibition was small compared to that required from certain British economic
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groups, such as the wool growers, in behalf of the woolen industry. Finally in 1750 a statute prohibited in the colonies the further erection of slitting or rolling mills, tilt hammers, or steel furnaces—all works devoted to secondary processes in iron manufacturing.

Such legislation sounds harsh. But it must be remembered that mercantilist legislation also stimulated certain colonial industries. The production of naval stores and masts had been rewarded with bounties. The Iron Act of 1759, with its prohibition of certain secondary iron processes, allowed the operation of casting furnaces and encouraged iron smelting in the colonies by admitting bar iron free of duties into Great Britain, although this favoritism aroused the opposition of domestic ironmasters who smelted British ore and the owners of English forests which provided charcoal for the British iron industry. Furthermore, even the prohibitory legislation was poorly enforced in a frontier country three thousand miles away. The colonists disregarded the hat-making, the woolen, and the iron acts when they wanted to. As a matter of fact, there was little temptation to violate this legislation, for intercolonial trade in manufactured articles was small and economic conditions in the colonies were not as favorable to manufacturing as they were in the mother country. The handicaps to colonial industry must be sought elsewhere than in British colonial policy.

The first difficulty was the comparative lack of a domestic market. Poor transportation was one reason for this condition. Along the rivers and coast, goods could be transported profitably for a great distance. But elsewhere the wilderness of the colonies was untraversed except by the most rudimentary system of highways. Even when trails had been blazed or a road built by chopping off trees and heaping dirt over the stumps, the pack horse and the wagon were the only means of transportation. Carriage rates were prohibitive except for small articles of considerable value. The rapidity of settlement, moreover, had dispersed the population of the colonies in single farms or plantations rather than concentrating it in towns or cities. There were hundreds of scattered small consumers, rather than large compact markets. As a result of these conditions, manufacturing could not concentrate near profitable sources of raw material, power, or skilled labor. It tended to remain, even for its day, rudimentary and undeveloped.

Manufacturing, again, was retarded by the absence of a labor force. Although emphasis upon this point undoubtedly becomes wearisome repetition, it requires a new insistence in this connection. Before the day of the machine, the ability of the worker was the fundamental of industry, and the emigration or settlement of those who had mastered "the art and mystery" of some occupation was necessary to carry the arts and the crafts to America. Colonies and communities were voracious in their demands for such
laborers. The proprietors of the Virginia Company solicited "blacksmiths, cooper, carpenters, shipwrights, turners, all who work any kind of metal, men who make bricks, architects, bakers, weavers, shoemakers, sawyers, and those who spin wool." In New England town proprietors or town meetings eagerly appropriated land to encourage the construction of gristmills and sawmills which were necessary for the community life and to induce the settlement of artisans. The further importance of skilled labor is attested by the almost immediate effect upon domestic industry of their arrival. The arrival of the Scotch-Irish established a linen industry along the Merrimac in New Hampshire; immigration of artisans trained in the woolen manufacture of Yorkshire made Rowley, Massachusetts, a center of better textile production; and German ironworkers carried their craft to Virginia and Pennsylvania. The industrial greatness or specialization of present-day cities or areas is due, time and again, to the impetus given by this almost accidental factor, the personal arrival of some European artisan. Important as these and other immigrations were, the effect was limited. The run of craftsmen and skilled laborers who emigrated to America was inferior; the better ones remained to exercise their talents at home.

The absence of improved means of transportation and of skilled labor was coupled with other factors to maintain manufacturing in a backward condition. The financial system of the colonies was not stable enough to encourage the hope of profit or the investment of money. And the attractiveness of other occupations was a temptation to the early capitalists and entrepreneurs. Fishing and commerce were more appealing to those New Englanders who were anxious for gain, and everywhere the limitless areas of cheap land offered profits from agriculture and speculative gains from its rise in value. The Americans, indeed, rather affected to despise manufacturing employments. The increasing use in England of pauper labor created the notion that industrial activity was associated with poverty and hence was not an enterprise suitable for the lavishly endowed New World.

All in all, although the manufacturing operations of the era before 1775 were simple, it was probably a task of greater difficulty to transplant them to America than it is today to set up the more complicated manufacturing structure of the twentieth century in India, China, or the Argentine.

In theory the colonists should have accepted these handicaps upon manufacturing with a calm resignation. The economic specialization of the colonies and the mother country with the resultant exchange of raw materials for manufactured articles between North America and Great Britain benefited both parties. Disadvantageous details, nevertheless, retarded the happy application of these general considerations. Commerce between the metropolis and the colonies involved long sea routes which could be severed by
piracy and by warfare. In times of peace the exchange of goods was acceptable enough if the value of the American shipments equaled or exceeded the value of the English. But in the northern and middle colonies, which lacked a staple to export, the attainment of a balance was a complicated affair. They sold their ships abroad, collected earnings for carrying cargoes, built up balances by indirect commerce. But on the eve of the Revolution the American colonists were heavily in debt to British creditors. Nor was mercantilist policy confined to Great Britain. Individual colonies could nourish, just as devotedly as the mother country, the notion of attaining self-sufficiency and prosperity through mercantilist legislation.

The colonies strove for industrial independence with a zeal that at times amounted almost to panic. Colonial governments passed legislation to create new industries or to resuscitate languishing manufactures. Bounties, subsidies, premiums were voted for a variety of products, among which the textiles were the more important. Virginia and Maryland dovered the woolen and linen producers with various amounts of tobacco; and the New England colonies attempted to stimulate the production of linens, woolens, and duck. When encouragement failed compulsion was adopted. Massachusetts Bay in 1655 capped a series of acts with a statute requiring the selectmen in each town to “assess” each family “at one or more spinners,” and each “whole spinner” was to produce three pounds of yarn a week over a period of thirty weeks, with a penalty for failure. In 1646 Virginia compelled each county to select children for instruction in the manufacture of textiles, and later required each county to maintain a weaver who was to weave the yarn spun by women and children. Compulsory legislation of this type was more common in the seventeenth century than later. It was designed to preserve and extend during this period of adaptation to new conditions the knowledge of those handicrafts which lay at the basis of manufacturing.

The efforts of the state were supplemented by those of individuals, often incorporated. In 1751 the Boston Society for Encouraging Industry and Employing the Poor secured a charter. Its philanthropic aim was to instruct the children of the poor in the textile crafts, to encourage manufacturing, and perhaps to make money. Such corporations were imitated elsewhere. In New York, the Society for the Promotion of Arts, Agriculture, and Economy was established to “advance husbandry, promote manufactures, and suppress luxury.” Just before the Revolution the United Company of Philadelphia for Promoting American Manufactures issued shares of stock and aspired to promote the immigration of manufacturers from Europe, to give employment to the poor, and to establish manufactories of woolen, cotton, and linen. Although the organization of these societies was similar to that of the present profit-sharing companies, their aim was not primarily the ac-
quisitive one. Like the colleges and religious corporations, they desired in a philanthropic and disinterested fashion to promote the welfare of the colonies.

**Home and Shop Production**

The texture of modern life has been so woven by the industrial revolution that its results have become ingrained in our physical and intellectual existence. To conceive of a world without the machine is well-nigh impossible. An era in which goods were produced by families in their homes, by artisans in their shops, by small mills with the crudest of simple machinery is more unreal in retrospect than the extravagances forecast for the coming centuries by writers of science fiction.

The household, making goods for its own consumption, is the primordial unit of production. The frontier conditions of the colonial era, which compelled self-sufficing agriculture, worked to the same end in industry and made household manufacturing universal. First of all, it manufactured those food products which have since passed into the domain of the factory. The head of the family slaughtered his own cattle and hogs and pickled his pork. Beef; hams, fish, and eels were cured in the smokehouse. Grain was made into meal at home. If the corn was soft, it was laboriously put through a grater, and if it had hardened, it was churned into meal by the hominy block, a pit burned in the large block of wood into which a large pestle, often suspended from a bending sapling, was pounded. Or perhaps the family had a small hand mill.

Besides meat, the slaughtered livestock provided fats and hides. The former, along with the wax of bayberries, was made into candles, which were dipped repeatedly into the hot tallow and then hung up to cool. These crude dip candles required little apparatus. A candle mold turned out a better product. The skins of domestic and wild animals were cleaned of their hair by a solution of lye ashes burned from the farmer's own trees, tanned in a brew made from the bark of the farmer's own hemlocks or oaks, and then greased into pliability by the farmer's own hands. The family then made this leather into clothing and rough shoes or moccasins. The only instrument needed was an awl to punch the holes through which the leather thread or thongs were carried.

The textiles made by the family for its own use were of the coarser sort. The fibers came from various sources. The colonial sheep industry by the time of the Revolution supplied an adequate quantity of inferior wool. Small flax patches furnished the linen fibers, and imports of cotton from the West Indies supplied this "vegetable wool." These various fibers were made into plain yarns and woven either into plain cloths or into mixed goods whose
names, if not use, have come down as a traditional inheritance. Linsey-woolsey was a combination of flax and wool popular in the northern colonies and on the western frontier. Jeans of cotton and wool was a pioneer cloth. Fustian, a blend of cotton and flax, predominated in the south. Or, if sex distinctions are more important than geographical ones, linsey-woolsey entered the clothes of women and girls, while jeans was masculine.

Of the preparatory processes in textile manufacturing, that of flax was easily the most burdensome. After the stalks had been rotted in the fields, the woody portion surrounding the fibers was mashed by a flax brake, a modified flail, and then finally removed with the swingling knife. Both operations were so laborious that they were performed by the men or boys. Then the matted fibers were handed to the women, who combed them with the hatchel, a wicked-looking instrument bristling with rows of spikes. The preparation of wool was somewhat less laborious. After a thorough washing, the tufts of wool were drawn over a card, a block studded with wire teeth, and then a second card was passed over the first to straighten out the fibers. Sometimes a combing process intervened before spinning.

Although the size of the spinning wheel varied for flax and woolen and for the nature of the yarn to be produced, the operation was identical in all cases. Upon a horizontal spindle, kept in rapid rotation by a cord or band from the large wheel, the fiber was fed from the hand of the spinner, the hand continually advancing and retreating to pull out and twist the fibers and give them some tensile strength. In its essence weaving is a simple process which the modern child learns in the kindergarten rather than in the home. At the end of a hand loom upon which threads of stout yarn had been set up as the warp, the long way of the cloth, stood the weaver. Bending over, he cast from one side to the other between the parallel strands of the warp a shuttle which carried the threads of the woof (the modern term "filler" is an excellent definition), and then shoved these threads firmly into the warp with his hands. The upper threads of the warp were then changed to the lower position and the process was repeated.

The finishing of the cloth put requisitions upon strength, skill, and care. Linen had to be bleached to bring it to the required degree of whiteness. First the skeins of yarn were whitened by soaking in warm water, washing in cold water, treating with ashes and hot water, and interrupting all these processes with wringings, rinsings, and dryings. When the cloth was made, it had to be spread out of doors and sprinkled hour after hour, day after day. Sometimes thirty or forty bleachings were necessary. Woolens were fulled and dyed. By the former process the loose and irregular product of the hand loom was given an even and firmer texture by shrinking in warm water, in which soap of fuller's earth was dissolved, and by pounding with sticks or
mallets. Dyeing, before the days of synthetic products, utilized colors from barks and plants, berries and nuts. These native dyes were often displaced by more exotic stuffs, of which easily the greatest was indigo, the blue dye. Purchased from the local store or an indigo peddler, it was mixed with urine and poured into the dye pot, which occupied a favored place by the kitchen fire. In the use of indigo domestic dyers became most expert. Applied to checks and stripes, it was woven into shirts, spreads, aprons, bedicks, and other patterns which became conventionally blue and white.

The household could manufacture its food and its textiles. The abundant forests furnished material which could be shaped for its other needs by the use of a few tools and the exercise of moderate strength and dexterity. The crude furniture of the log cabin—tables and stools and beds—has become traditional through the repetition of the Lincoln story. It was made by the family. Rakes and other farm tools, platters, bowls, and trenchers, a whole array of “dish furniture,” were burnt or whittled from wood. Brooms, buck-ets, and baskets were manufactured at the fireside. Fortunately it was a wooden age. The working of that material was a less stubborn and skillful task than the manipulation of the metals. Even here the household was occa-sonally competent.

The exercise of this parade of talents converted the American into a Jack-of-all-trades. This generalization found embodiment in man after man or, indeed, woman after woman on the frontier. Yankee ingenuity traces its origin back to the circumstances which converted the frontiersman into a Crusoe.

With the increase of settlement and the improvement of the means of communication, the processes of production which required more specialized skill or the use of simple machinery were transferred to other agencies. First came the artisans who had mastered some particular craft or calling. Often these men were itinerants. A wandering life avoided responsibilities; a young journeyman might thus seek an attractive village in which to locate; but most important of all, it was simpler in a region of dispersed homesteads to carry the skill to the product than to transport the product to the skill. The chandler arrived with his nests of candle molds; the wandering butcher came to slaughter the cattle as effectually as the wandering woodcutter the forest. Itinerant tailors brought to the making of suits a greater degree of fit and finish than the housewife. Of particular importance were the cobbler and the weaver. Shoemaking and weaving were both tasks which required great skill, and the transition to artisan labor in these occupations was hastened by their difficulty. Whatever his occupation, the visit of a wandering artisan disturbed the monotony of household life and brought to its hearth a load of gossip and a touch of the outside world.
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Unless the spell of the wanderlust were too strong, the itinerant artisan settled down to become the owner of a shop like other artisans. Here his customers might bring their material to be manufactured into finished articles or order an article made from the supplies which the craftsman had obtained by purchase or exchange. In either case, the product was "bespoke work." At the same time, when the artisan was not busy on an order or his apprentices were idle the craftsman's shop might be manufacturing "store goods" to be sold or exchanged for raw materials at the local store, peddled about the vicinity, or marketed in intercolonial trade. For cities and larger towns became genuine centers of artisan production. In 1697 Philadelphia had fifty-one manufacturing handicrafts. The craftsmen in the New World, however, never attained the dignity and organization of those in the Old. For here were lacking the traditions and the history which made the craft guilds of such great European importance, and gave them a professional competence. Under the conditions of a new country even the jealously guarded distinctions between crafts were broken down. If a weaver wished to make a living he had to become a cloth dresser and a dyer, just as the doctor had to assume the functions of the druggist and the dentist.

Colonial Mills

Certain processes of manufacture required less in trained skill than they did in heavy labor. Gristmill and sawmill were, for instance, so essential that their spread was almost as rapid as that of settlement itself. The simplicity of their apparatus assisted this extraordinary mobility. Since the rotary saw had not been invented, the sawmill utilized the long sash saw of the hand sawyers. Instead of two men, one in a pit below the log to pull down and another standing above it to pull up, a water wheel was substituted for the one and a pole for the other. Such a saw was extremely ineffective. Often it could not plow through thick trees, and hardwoods presented such a problem that resort frequently had to be made to pit sawing. Still, such mills could turn out 1,000 feet of pine lumber a day and do the work of twenty hand sawyers. The gristmill was on the same small scale. Its series of stones, at first imported from England, might turn out ten to twenty barrels of flour a week. Both sawing and milling were sometimes combined in one establishment and usually one or the other added fulling by water power. This laborious task adapted itself nicely to the simple arrangement of hammers driven from a water wheel.

The small colonial mills were housed in a structure which cost little more than the owner's dwelling. They were erected usually on the smaller streams, since the construction of large dams was an engineering and financial burden not to be lightly assumed. Sometimes an undershot water wheel
was simply placed in the flow of a stream. A labor force of two or three men, or of a father and son, could perform any of the tasks of such establishments. Over these old mills hangs the leisurely air of another day. If the stream went dry in summer or froze in winter the mill owners ceased operations and cultivated their corn or sat by the fire of the country store. For them manufacturing was incidental to farming or storekeeping. For their customers, taking grain to the mill or hauling in a few logs was a social occurrence long to be anticipated. Into the contented neighborliness of such an arrangement it is a pity that government had to intrude. But since the water power was generally esteemed a public property disposed upon private individuals, the right of regulation was not questioned. Sawmills and gristmills both charged tolls for their services (generally a proportion of the grain ground in the case of gristmills), and these were fixed by the state.

The manufacture of finished iron products in the colonies was the province of the artisan supplemented occasionally by the household. The primary iron industry, however, by which the iron ore was smelted and shaped for the use of reproductive manufacturers, was at places and at times organized in a fashion akin to the gristmills and sawmills. The iron ore was handled by a bloomery in which an open fire, driven by a bellows, melted together the ore and the charcoal fuel, the latter absorbing the oxygen elements in the ore. The resulting "bloom," containing iron of different metallic qualities, was further refined by hammering upon an anvil. This wrought iron furnished a satisfactory metal for the tools and equipment required by a frontier community. Such small-scale establishments were widely dispersed because they fed upon the iron ores which were easily available in the ponds and swamps of the coastal plain in Massachusetts, Long Island, and New Jersey. In the eighteenth century the industry moved inland and utilized instead of this "bog iron" the rock ores which were found in a wide belt extending from western Massachusetts and Connecticut southwestward through New York, New Jersey, Pennsylvania into Maryland and Virginia. Even here bloomeries were erected to serve local needs.

In places these mill industries were highly developed and poured a stream of products into colonial and foreign trade. The products of the sawmills along the Cape Fear River, the Mohawk, and the Piscataqua were not disposed of in circumscribed local markets; they entered the avenues of commerce. Such locations had the advantage of access to raw materials and water transportation. Some of these mills utilized gang saws and other improved machinery. Similar factors created a commercial flour industry along the coast from New England to Virginia. But at Philadelphia and Wilmington, Delaware, this development was most impressively demonstrated. Both cities had access to wheat fields and water transportation; and two tiny
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streams, the Wissahickon of Philadelphia and the Brandywine of Wilmington, furnished power for scores of gristmills. At the end of the Revolution these mills as well as those at Baltimore were transformed by the inventions of Oliver Evans. It was in 1782 that he conceived "the great design of applying the power that drives the millstones to perform all the operations which were hitherto effected by manual labour, viz.—from receiving the grain from the wagon or ship until manufactured into superfine flour, ready to be packed into barrels." By exceedingly ingenious mechanical contrivances the grain was carried to the top of the mill and on its first descent was cleaned and ground. Then it was again raised by a series of elevators and on its second descent, cooled, sifted, and barreled. Such establishments were unwilling to grind on toll, although state legislation tried to make them. They purchased their own grain, exported their own flour, and attempted to control through monopoly the price of their products.

The iron industry likewise was organized on a larger scale when the resources upon which it depended were ample enough to justify long-time operations, and where a market was near at hand or available through transportation. The furnace superseded the bloomery. The furnace was a conical or square brick or stone edifice, usually over twenty feet high, lined with some heat-resisting substance. Into its interior were piled iron ore, charcoal, and limestone as a flux to absorb the impurities. A water-driven bellows forced a draft through the flaming mass. The result of this blast was an iron which, although cleansed, had so high a carbon content as to make it both brittle and easily poured. The former quality was no disadvantage and the latter was an aid if the iron was to be cast into pots, pans, kettles, hollow ware, and other utensils. Such were the products of furnace operations at first. Since it lacked elasticity, the furnace iron was not fitted for the uses to which wrought iron was put. It required further refining. These processes were performed at the forge, where the sows or pigs cast at the furnace were reheated and then hammered under hammers run by water power. After the process had been repeated several times, the iron was shaped into bars or into plates by a plating forge. In turn a slitting mill would flatten the bars by rollers and slice them into rods. Plating forges and slitting mills were not common, however, in the colonies. The blast furnace and forge produced a wrought iron by the "indirect process" as contrasted to the "direct process" of the bloomery.

Such iron mills flowered into the largest industrial undertakings in the colonies. The first important iron establishment in the colonies was built in 1643 for the exploitation of iron deposits near Lynn, Massachusetts, by the Undertakers of the Iron Works. Its technical equipment consisted of a furnace and a forge, and the capital for its establishment was contributed not
only by colonial investors but by English investors as well. Workmen trained
at the Lynn works established furnaces elsewhere in Massachusetts or were
employed by existing organizations. Throughout the seventeenth century
Massachusetts was the chief iron producer of the colonies. In the next cen-
tury the industry moved to New Jersey, Maryland, Virginia, and Pennsyl-
vania, and by the time of the Revolution the Schuylkill valley region about
Philadelphia was the center of the American iron industry. Yet the great-
est establishment in the industry was in northern New Jersey. Here Peter
Hasenclever, certainly a German ironmaster and perhaps a baron, began his
operations in 1764. He incorporated his concern in Great Britain, induced
British capital to invest in the enterprise, imported some four hundred min-
ers from Germany, and constructed works which included six capacious blast
furnaces, seven forges, three sawmills, and a gristmill. This largest industrial
undertaking in the colonies splendidly exhibits the nature of colonial enter-
prise—its dependence upon foreign capital and foreign artisans, and the vari-
ety and extent of the processes which it carried on.

These mill industries had been brought to a more advanced stage of
technical development in America than in England. The sawmill was con-
structed in the colonies before it was in the mother country, and its
equipment remained superior. The flour mill, transformed by American in-
ventions, startled and awed European observers. The Lynn iron furnaces
were not surpassed in capacity by European furnaces, and Hasenclever’s
establishment maintained this tradition of equality. Yet the mill did not
 sire the factory, the distinguishing feature of the industrial revolution.

The factory system had another pedigree. Historically it developed from
the attempt to organize household or artisan production more efficiently.
The workshop and household products of certain places had become famous.
In the eighteenth century, for example, Berlin, Connecticut, had become the
center of the tinware industry, and tin peddlers carried its products to dis-
tant markets in trunks slung on their own or a horse’s back. The origi-
nal considerable German settlement in Pennsylvania, Germantown, became
an industrial community whose goods, especially stockings handmade on
frames, became famous and gave the impetus which has made Philadelphia
the center of the knit-goods industry at the present time. Lynn, Massachu-
setts, had already specialized in the making of women’s shoes. This préé-
minence was gained in part by the settlement there in 1750 of a Welsh
shoemaker who introduced superior English methods. Other communities
had collected artisans, mills, and handicrafts and become industrial centers.

In such centers, in many cases almost unconsciously, there were tenden-
cies toward the organization of production under centralized direction. Mer-
chants, for instance, operated by barter, and all varieties of products, in a
crude or semifinished condition, drifted over their counters. Some of these merchants formed the practice of putting out these materials into households or shops for conversion into finished products. Flax or wool might be spun into yarn, and yarn might be made into cloth. This putting-out system became common. Around Providence, Rhode Island, merchants had cloth manufactured in this fashion. In Lynn, by 1760, merchants were organizing the shoe industry. They furnished the artisans with raw materials, and for them the artisans, employing journeymen and apprentices and often the women and children of their families, were turning out “market shoes” rather than “bespoke” or “store shoes.” These shoes the merchant disposed of in Boston or else in overseas markets. At the same time the artisan might be developing into a considerable manufacturer. The demands for his product might be so large that he would begin employing a considerable labor force in his shop and supervising their work. Thus in the “Manufactory House” built by the Boston Society for Encouraging Industry and Employing the Poor, William Molineaux opened a spinning school in 1769. He had four hundred spinning wheels. When he found the “scanes of fine yarn” on his hands he erected

a complete apparatus, viz. working and twisting-mills for working and twisting the yarn fit for the looms, which, with two boys only, will keep more than fifty looms constantly at work, and looms for weaving, and furnaces, hot and cold presses for finishing the goods, and has fixed up a complete dye-house with large copers, etc., on the premises.

Although none of this machinery was run by power, it was set up in a single establishment, and a considerable labor force was gathered within that establishment for direction and supervision. If this was not a factory, it was a near approach to it. Meanwhile the industrial revolution had begun the transformation of English industry. But it was not until after the American Revolution that the features of this other revolution were transferred to the American continent.
CHAPTER III

The Domain of Colonial Commerce

The slant of the seventeenth and eighteenth centuries toward mercantilist doctrines overemphasized the importance of foreign trade. The pamphlet writer, the economic theorist, the manufacturer, the merchant, the statesman were all busy scrutinizing, as if they were matters of life and death, the receipts of the customhouses, the arrival and departure of vessels, and the totals of imports and exports. Such subjects were thought vital. This obsession induced an ignorance of internal trade and occasionally created a contempt for it. But as an actual fact England's internal trade in the eighteenth century far exceeded her overseas commerce. And the same generalization seems to have held true of Holland and France, the other European nations with a foreign trade and a mercantilist complex. In the case of the British colonies in North America, overseas trade probably played a greater part than domestic commerce. But even here mercantilism has destroyed the proportions of the picture by its failure to chronicle an extensive inter-colonial traffic.

INTERNAL TRANSPORTATION AND COMMERCE

The crude trails and roads of the British colonies effectively curtailed land transport and internal commerce. On very few products could producers or forwarders afford to pay the excessive charges which such journeys involved. Such handicaps were peculiarly severe in frontier regions of dispersed settlement and long distances. The Philadelphia fur traders, for instance, added 20 to 30 per cent to the prices of the goods which they shipped over the mountains to cover the cost of the transportation. Even when roads were cut through to the Ohio during the French and Indian wars, and the dispatch of pack trains from the East to Pittsburgh became a considerable business, only a few goods could be carried profitably. Iron products and salt were shipped westward; furs and whisky, valuable articles of small bulk, were brought back on the return journey.

Nearer the coast the situation altered. Here there was a relative den-
sity of population. Boston, Newport, Providence, New York, Philadelphia, Charleston, and Baltimore furnished considerable markets and impressed observers with their settled air. Around Boston there grew up a considerable land transportation, particularly in the winter when the snow remedied and concealed the deficiencies of the highways. In the middle colonies land transportation was more common. Over the route between New York and Philadelphia a regular wagon traffic in goods was started in 1732 to bridge the land barrier in Jersey between the Delaware and the Raritan. Around Philadelphia improved highways made possible the transportation of grain for some fifty or sixty miles, and the Conestoga wagon, rounded at the bottom to prevent the contents from spilling, covered with a linen top, and crammed with a diverse cargo, drove down to the urban markets. In every colony where there was a trail the peddler was both scourge and blessing. In the pack slung over his own back or saddled upon his horse was a stock of "notions": combs and brass buttons, dyes and drugs, small wooden articles. He was an indispensable distributor and middleman. But unsavory commercial practices—he gained an almost mythical reputation for cunning—impaired his usefulness. The irritation of cheated patrons and the opposition of local merchants injured by peddlers' competition led to provincial legislation for their restraint. Even in Connecticut, the traditional home of the slick Yankee trader, peddlers' fees were placed in 1765 at £20, a prohibitive figure.

As contrasted with land carriage, water transportation was startlingly cheap. In shipping wheat from the Connecticut valley to Boston it cost a shilling a bushel to cart it from Northampton, Massachusetts, to Windsor, Connecticut; thence the rate by the river to Hartford was only twopence and by river and sea from Hartford to Boston sixpence more. Thus the total freight from the farm was 1s. 8d., of which far the larger part was for the short land carriage. It is small wonder that waterways became the arteries of domestic commerce. In this respect New England was poorly endowed, for on the chief rivers, running through settled country, the fall line interrupted navigation near the sea. Without improvements, therefore, the Merrimac and the Connecticut were not successful channels of communication between the coast and the interior. In New York there was no poverty of natural waterways. The Hudson was a magnificent artery, and by 1770 well over a hundred vessels were engaged in the trade between Albany and New York. Philadelphia combined the trade following the Delaware and that following the Schuylkill and drew overland by transshipment a part of the Susquehanna traffic which flowed down to Baltimore. South of the Potomac the streams are too numerous to chronicle. A nondescript flotilla of rafts, pole boats, and small sailing vessels plied these interior waterways.
The coastwise traffic between the thirteen colonies, however, was the largest item in domestic commerce. Although its value never equaled that of the direct trade with Europe or the West Indies, it employed a tonnage in 1769 which gave it a high rank among the branches of colonial commerce. To be sure, this coast traffic ministered to foreign commerce. It collected products at a few important American entrepôts for shipment to Europe or to the West Indies, and it distributed articles imported from both these sources to scores of smaller ports. Nevertheless domestic commodities formed an indeterminable portion of the cargoes of these coastal vessels. In spite of the prevalence of self-sufficing agriculture, New England shipped to the middle and southern colonies butter, salted meats, cider, fish, and rum. New York in 1714 was sending “Wheat & Flower to Boston and Road Island as well as to South Carolina.” The Chesapeake region dispatched wheat and flour to the New England ports and to the southern plantations. The tobacco and to a less extent the rice and naval stores of the South were a return current to the northern colonies. The coastal traffic in manufactured articles was bewildering in variety and extent. Before the end of the colonial period Massachusetts was drawing pig iron from Pennsylvania for its forges and iron ore from Maryland for its furnaces, and was sending its woodenware to Maryland; Philadelphia was sending paper to all the colonies, and Rhode Island, candles and tow cloth to the South. The New England peddling instinct could not be suppressed even on the high seas. During the winter, when the fisheries were at a dead end, the fishermen loaded their sloops with a cargo of salt, rum, sugar, molasses, iron and woodenware, hats, caps, cloth, handkerchiefs, and stockings, which they peddled from place to place in the southern colonies.

BARTER, CURRENCY, AND BANKING

This commerce was retarded and confused by the absence of a stable and uniform medium of exchange. Here the colonies had run into difficulties. As soon as communities have emerged from a primitive organization, some form of currency has been designed to serve as a common measure for the relative value of different commodities and thus to remove the complexities attendant upon bartering goods. Although the purpose of money has been obvious enough there has been a continuous dispute as to the nature of a suitable currency. For centuries the precious metals, gold and silver, seemed to meet most proper requirements. In the last two hundred and fifty years, however, various forms of paper money—individual notes, bank notes, government notes, and checks—have appeared in the Occident. Until very recently it was thought that the amount of this paper currency ought to bear some clearly defined relation to the amount of gold and silver. Governments
have, therefore, promised to redeem their paper in gold and silver or in gold alone; banks have been required by law or experience to hold certain coin reserves for the redemption of their notes or for the support of their checks. Certain devices, like the clearing house, commercial practices, and above all confidence in the government or bank have contributed to make the coin reserve a fraction of the total amount of notes or checks used in business transactions.

A realization of this evolution in financial experience is necessary in order to appreciate the financial experiments of the American colonies. It was unthinkable that they should at once adopt a gold and silver currency. Supplies of the precious metals in adequate amounts for commercial transactions could be obtained only from mines within the colonies or through foreign trade. The colonies had no gold and silver mines; and it was unwise for a new country, craving development, to reduce its expenditures, export a large commodity surplus, and thus obtain the precious metals through foreign commerce. The colonies, therefore, reverted to barter. Although the transaction was clothed in a money terminology, goods were exchanged not for coin but for each other. At the store the merchant credited his customers with the products, cider, eggs, cheese, yarn, flax, and the like, which they brought in and set off against their value the goods which he gave them. College bills were paid in a variety of articles, and one Harvard student in the seventeenth century discharged his academic obligations with an old cow. This system was early modified by the use as a medium of exchange of articles other than gold or silver. Indian wampum (highly polished beads, manufactured from shells and then strung together) served for currency. Massachusetts made corn and beaver legal tender; the Carolinas used tar and rice. In eighteenth century Virginia the certificates of deposit issued by warehouses where tobacco had been appraised and stored formed the currency. The ingenuity of the colony was taxed, however, to preserve this currency at a uniform standard, since the market value of tobacco fluctuated wildly. In fact, the sudden and unforeseen changes in the value of these barter currencies were one of their many serious disadvantages.

Through the avenues of foreign trade metallic coins crept in, largely from the Spanish and Portuguese colonies; of these the Spanish dollar and its fractions were the most important. The exact equivalent of the Spanish dollar in English money varied from place to place. In 1704 Newton assayed it at the English mint as worth 4s. 6d. So avid were the colonies for such coins that legislative enactments overvalued them in the hope of enticing or retaining them within their boundaries. A result of this unusual rivalry was that the Spanish dollar had different values from colony to colony and even from time to time. Massachusetts raised it to 5s. and then to 6s; South Caro-
lina put it at 4s. 8 d., while North Carolina pegged it at 8s.; the middle colonies favored 7s. 6d. Some colonies forbade the export of this commodity to other colonies, and the chests of departing travelers were subjected to harrowing scrutiny lest they smuggle away metallic contraband.

Meanwhile some seventeenth century thinkers were toying with the idea of a paper money whose value was to be supported not by precious metals but by other forms of security—land, goods, or the personal worth of the issuers. Even in England these novel proposals met with a hearing. But the contagion of such ideas easily seized colonies which sought funds not only for commercial transactions but for investment in the multifold projects whose ultimate profitableness was undeniable. Soon a variety of experiments was under way. The first and less important form of paper currency was "bills of credit." In the issue of these bills Massachusetts was the pioneer, but at least eight other colonies followed her example by 1755. These bills of credit were the result of some emergency in the colonies' financial arrangements. Since these governments had either gone into debt or had undertaken projects for which their taxes were insufficient, they anticipated the tax returns by issuing bills of credit. These naturally were to be redeemed when the taxes were collected. The real value of such currency as measured in terms of gold and silver depended upon the confidence of the public in their redemption, which in turn depended upon the size of the issue and the nearness of the date of redemption. Since colonial governments tended to overissue and gradually to lengthen the period before repayment, the specie value of bills of credit steadily declined.

More important were the issues of colonial "loan bills." Sometimes such currency was issued by banks, if they can be called such, formed by individuals who contributed land or other property as a basis for bills which they hoped to keep afloat by their own credit, by an agreement to accept them as payment in all transactions, or by a promise of redemption at some future date. Generally the colonial governments were suspicious of such private enterprises and preferred to supply such credit facilities on their own account. In Massachusetts these loan bills were simply issued by the state on real estate or other security, and their repayment with interest by the borrowers was provided for over a series of years. Extravagant issues were made repeatedly after the first issue in 1711. In Pennsylvania the device was handled with greater skill. In 1722 the colony established a public loan bank. Among the agitators for this institution was Benjamin Franklin, whose A Modest Inquiry into the Nature and Necessity of a Paper Currency anticipated modern thinking in its argument that the currency of a nation must bear some relation to the value of its trade and the number of its business transactions and advocated the use of paper money as a flexible instrument.
of adjustment. The security taken by the Pennsylvania bank for its loans was land, double in value the amount of money loaned, and a bond and attachment upon the borrower's whole property. The debt was to be repaid in twelve annual installments with interest at 5 per cent. Not more than £200 could be loaned to any one person.

Every colony except Virginia issued loan bills. One danger of all these colonial issues was the underlying nature of the security upon which they were based. To use land, the most common form of wealth in agricultural colonies, as a basis of note issue was logical but inexpedient. No single note was secured by a specific piece of property; land could not be converted quickly into cash for the redemption of an issue. It was not until the twentieth century that the Federal Government worked out in the Federal Farm Loan Act a basis for bank loans on agricultural land. A greater defect in the colonial enterprises was the inability or unwillingness of loan commissioners or colonial officials to stay the flood of notes. In some colonies, as in Rhode Island and the Carolinas, they were poured forth without stint or limit. When the borrowers could not pay their installments, the period of repayment was extended and the payment of interest was commuted. Rascality and political favoritism corrupted arrangements already loose enough. The result was extravagant inflation.

As notes and bills of one sort and another were issued by the colonies their value declined. By 1750 in Massachusetts and Connecticut the paper currency was valued in English sterling at 9:1. Part of Rhode Island's paper money finally sank as low as 23:1. Such depreciation profoundly affected the welfare of different classes of the community. Debtors were benefited. Inflation brought higher prices for the products which they sold, and they were, therefore, more easily enabled to earn the money to discharge those obligations they had previously assumed. On the other hand persons who received a fixed income from mortgages in land, investments in securities, or payments on insurance found no increase in their incomes to match the increase in living expenses. This creditor class, whose incomes in Massachusetts the governor calculated had been halved within eight years by the inflation of the currency, naturally regarded paper money schemes as a conscious fraud promoted by ragamuffins, blackguards, and knaves. In turn, the advocates of paper money regarded its opponents as animated by a sordid self-interest. In the colonies both sides rushed into a pamphleteering war which was often conducted with great ability. From writing, the controversy worked its way into colonial politics, class interests were fanned into a flame, and the currency controversy eventually aroused the attention of the mother country.

Massachusetts was the first colony to feel the force of English intervention.
In 1740 a group of shareholders began the operation of a "Land Bank or Manufactory Scheme." It was a most unsound design. The assembly, the lower house of the general court, perhaps because composed of "notorious debtors," favored the proposal. The council and the governor were hostile to it. The struggle between them was waged without principle or quarter. The governor removed officials who advocated the land bank and forbade attorneys who supported it to practice before the courts. The debtor class, particularly in the rural districts, was angered by the opposition of the Boston merchants to the bank and threatened them with mob violence if they did not accept its notes. The battle was transferred to London, and in 1741 Parliament awarded the decision to the creditor class. It extended to the colonies the Bubble Act of 1720. This act had forbidden any joint-stock companies of the type of the proposed bank from transacting business without authorization by law. Although the demise of this bank was desirable, the procedure adopted to kill it was flagrant. The Bubble Act at the time of its passage explicitly did not apply to the colonies, and to invoke it after the commission of a perfectly legal action was *ex post facto* legislation of the rankest sort.

The application of the Bubble Act to America, however, did not forbid state issues. Alarmed by the flood of paper, Parliament in 1751 singled out New England for restraint. It forbade these colonies from issuing bills of credit and making them legal tender. As the disease of currency experimentation spread southward, the arena affected by this prohibition was enlarged. In 1764 Parliament applied it to all the colonies and provided for the gradual retirement of outstanding bills. In both enactments, however, there was a loophole allowing the issue of notes which were to be redeemed after a brief period from the proceeds of taxation.

**The Acts of Trade and Navigation**

In colonial times the welfare of America depended to a degree never since equaled upon foreign commerce. Without it, the thin fringe of settlement along the Atlantic coast could have existed—but only on a primitive and simple economic scale. A higher degree of comfort and material development would have arrived only after a longer period of self-sufficing agriculture and manufacturing. With foreign trade, on the other hand, specialization by the colonies in the products most suited to their circumstances was possible. Their natural resources could be rapidly exploited and shipped abroad in a crude or semimanufactured form in exchange for the products which were more advantageously produced in other countries. Wherever there was an abundance of material prosperity, there was foreign trade. The export of tobacco built the mansions of the Virginia tidewater, equipped them with
pictures, furniture, and plate, and supported its courtly social life. Rice and
indigo performed the same legerdemain farther south. In New England the
merchant and the shipbuilder owed their higher standard of life to overseas
trade. And the cities of Boston, New York, Philadelphia, Baltimore, and
Charleston were built upon foreign commerce. Everywhere the exchange of
goods across the water quickened and enriched colonial economic life.

The mercantilist policy of the mother country consciously mapped the
channels for this commerce and dictated the nationality of the vessels that
should follow them. Legislation of this sort had been passed as early as the
end of the fourteenth century. Orders in council of a mercantilist cast had
been issued during the reigns of the first Stuarts, but the great period of
mercantilist legislation was the second half of the seventeenth century. The
first Navigation Acts of 1650 and 1651 came during the Puritan supremacy
of Oliver Cromwell; a whole series of acts, 1660, 1662, 1663, 1673, was passed
by the Parliament of the restored Stuarts; and this maze of regulation was
clarified and summarized by the Act of 1696 in the reign of William and
Mary. At first glance it is surprising that a continuity of policy should persist
through the alternations of sovereigns supporting such different religious
and political programs. But underofficials influential in shaping this policy
were on two occasions at least adroit enough to hold office under rulers or
kings of different stripes; the economic classes benefited by this legislation
were always vocal; and mercantilism was the unquestioned formula for em-
pire building. Great Britain applied it naturally to the structure which she
was erecting in the face of Dutch and then French opposition.

So comprehensive were the statutes passed in this era to regulate imperial
trade and navigation that after 1700 there was a pause in legislation which
was interrupted only by the Molasses Act of 1733. This dealt with a specific
problem within the imperial structure. But the Peace of Paris in 1763, ending
as it did the competition of the French, gave occasion for a reorganization
of the whole commercial system. Act succeeded act in Great Britain as min-
istry succeeded ministry. This later legislation was still inspired by merca-
tilist theory. There were, however, shifts of emphasis. Markets had become
more important than sources of supply. Also Great Britain in the Towns-
hend Acts, the Grenville Acts, and the North Acts was interested less in
regulating colonial commerce than in raising money through taxation to
support a colonial system for which she believed her own finances inade-
quate.

The provisions of these various acts from 1650 to 1764 were a monument
of complex legislation, but their purposes were comparatively simple. The
first was to create a national merchant marine such as would furnish busi-
ness for shipbuilders, employment for seamen, and profits for shipowners.
Legislation from Richard II to Elizabeth had been aimed at this target. Now since the American colonies had been planted, there was a larger field from which foreigners could be excluded. At first there was no settled policy. The colonizing companies more or less enforced their monopoly against foreigners and other Englishmen; colonial governors occasionally put the clamps upon trade in foreign vessels; and the king issued orders and instructions. In 1624, for instance, James I forbade the importation of tobacco into England in “forrayne bottoms,” and since a previous order had required all tobacco, whether destined for foreign markets or not, to be brought to England, this later royal pronouncement in theory prevented foreign vessels from handling the most important export of the North American colonies. Other scattered instructions attempted to exclude them in a similar fashion from the import trade. The years of domestic confusion in England attendant upon the struggle between king and Parliament tore loopholes through such tentative measures, and the Dutch, whose success in the European trades had been irritating enough, began to invade the English colonial routes. Their vessels crowded to the ports of Barbados, Virginia, Maryland, and Massachusetts, and colonial impediments to their reception were removed.

In 1650 Parliament abruptly intervened. An act forbade all foreign ships “to come to, or Trade in, or Traffique with” any of the English colonies in America without a license. This policy of exclusion was soon inserted in the more formidable Navigation Act of 1651. In its regulations for the carrying trade, that act provided that European goods might be imported into England, Ireland, and the colonies only in English vessels or in vessels belonging to the place of production or to the port from which such goods were usually shipped. All goods from or produced in Asia, Africa, and America might be imported into the mother country or into the colonies only in ships which belonged to “the people of this Commonwealth or the Plantations thereof, and whereof the masters and mariners are also for the most part of them of the people of this Commonwealth.” Although the main object of this act was the transfer of the carrying trades from Dutch to English hands, its precise effect upon colonial shipping was uncertain. Were the people of the colonies included in the phrase: “the people of this Commonwealth”? The Navigation Act of 1660, the Magna Charta of the English sea trade, brought greater clarification. It declared all exports from and imports to the English colonies in Asia, Africa, and America must be carried in English vessels or those which had been built in and belonged to the colonies. The master and at least three-quarters of the crew of these ships had to be English. Two years later an act gave final definition to the nationality of the crew. The term “English” was to include “His Majesties subjects of England, Ireland, and his plantations.”
These acts definitely admitted colonial shipping to the privileges and monopolies, including the trade between Europe and England, accorded to the English merchant marine. There were a few exceptions, but the generalization holds true. Such an inclusion was naturally of the greatest benefit to the colonies. For the metropolis it was likewise advantageous. The plantation trade was a great stimulus to the English merchant marine, for the transatlantic journey was a long one and colonial cargoes were bulky. A larger number of vessels was therefore required for this commerce than for shorter hauls of more valuable commodities. The Commissioners of the Customs in 1678 wrote with enthusiasm that “the Plantation trade is one of the greatest Nurseries of the Shipping and Seamen of this Kingdome, and one of the greatest branches of its Trade.”

A second purpose of these statutes was to make sure that the colonial products desired by the metropolis should be delivered to her or her satellite settlements and not elsewhere. The charters of the early trading companies to Europe had contained the germ of this principle, and in America it was first applied in the laboratory of the tobacco trade. By 1621 the tobacco crop was far too large for absorption by the English market, and the Virginia Company meditated dumping its surplus in various Continental ports. This procedure was abruptly terminated by an order of the Privy Council declaring that Virginia tobacco must first be shipped to England. Other acts followed. The Stuarts were all the more eager for this form of regulation since these imported products paid duties upon their arrival in England and thus helped to alleviate the financial perplexities in which these sovereigns were continually involved.

With the Restoration this early policy was placed upon a firmer basis by enumerating in the various Acts of Trade or Navigation the products which must be shipped only to England, Ireland, Wales, Berwick-upon-Tweed (whose location on the Scottish frontier had given it an unusual political status), or the other plantations. The Act of 1660 designated as enumerated articles, sugar, tobacco, cotton, ginger, indigo, and various other dyes. Of these products only tobacco at the time was of importance to the American continental colonies. Their other products might go wherever they wanted—in the proper shipping. Later acts extended the enumerated list. Naval stores and rice were added in 1704. The latter article, however, might go directly to any European port south of Cape Finisterre. In 1722 beaver and other skins joined the group. With the readjustment after the Seven Years’ War the enumerated list was greatly extended by the inclusion of products from both tropical and temperate colonies. In the latter category were hides and skins, potash and pearlashers, iron and lumber. This was such a considerable restriction that exceptions were soon allowed. Iron and lumber might
be shipped to any place in America, Africa, or Asia, and in 1765 direct exports of colonial lumber were allowed to Europe, south of Cape Finisterre. In the previous year the American rice colonies had even been permitted to ship their product to any part of America south of these colonies. In this fashion the trade with Guadeloupe and Martinique was preserved.

This series of regulations was confronted by numerous difficulties. For one thing, Ireland and Scotland occupied an anomalous position. They were not constituent parts of the kingdom, like England, Wales, and Berwick-upon-Tweed, nor could they be regarded as colonies or independent nations. By the Act of 1660 Ireland was treated like any other plantation; but this favorable position was whittled away by later legislation. Although Scotland was generally excluded from the sacred circle of these enactments, her economic competition was so embarrassing to England that the Act of Union in 1707 joining the two nations was in part inspired by the desire to give both nations a common commercial policy. The position of the colonies was equally confusing. Since enumerated articles in the trade between the colonies paid little or no duties, the colonial consumer purchased them at a lower price than his fellow in England. An act of 1673, by levying export duties on enumerated commodities shipped from one colony to another, sought to give both purchasers similar treatment.

One explanation for this policy of enumeration was the requirements of the English market. The crying insistence of her merchant marine and royal navy amply explain the enumeration of naval stores and ship timbers. The expansion of the English textile manufacture placed a premium on dye supplies. A more varied, generous, comfortable standard of living, at once cause and effect, required the importation of tobacco, foodstuffs, and other commodities from the colonies. But enumeration was designed for broader purposes then satisfying domestic needs. Beaver skins, hides, naval stores, sugar, rice, tobacco—all were reexported. Even if they left England in their crude state, they often redressed an unfavorable balance of trade. But the mercantilist planned that these colonial products whose original cost was small should be transformed by the artisans and manufacturers of the metropolis into articles whose value for reexport was much greater than that of the imported raw material. Every one was benefited by this arrangement. English employers were given profits, and English workers employment. English merchants had the business of forwarding the products, and English shipowners had more numerous voyages. Finally, the government would collect customs which would have been lost if the products had been carried directly to the European markets. The full amount of these customs did not always accrue to the government. In order to encourage the reexport trade, drawbacks on the import duties were paid when the goods again left Eng-
land. These varied. In general, tariff acts remitted one-half the duties as a drawback, but on the most important enumerated products (tobacco and sugar) all import duties were eventually repaid. Nevertheless so dearly was this form of revenue cherished that when the carriage of rice to Europe south of Cape Finisterre was permitted, the commodity, even though it did not pass through Great Britain, paid the English import duties less the drawback.

The tobacco trade, of all the commerce from North America, best illustrated the influence and implications of this policy of enumeration. Tobacco exports to Great Britain increased enormously. As early as 1685, the revenue derived by the Crown in duties was between £100,000 and £130,000. The ocean carriage gave employment in the same year to “200 sail of ships.” In England hundreds were engaged in manufacturing pipe tobacco or snuff; and tobacco merchants, shippers, colonial planters, and English statesmen were coöperating to enlarge the European markets for the product. By the end of the seventeenth century three-quarters of the tobacco imports into England were reexported. Holland consumed 8,220,000 pounds, a quantity larger than that used by English smokers. Ireland and Germany were other important markets. Spain, whose colonies produced the best tobacco in the world, even imported the English product. The considerable exports to Sweden were regarded with special favor as a redress to England’s customary threatening balance of trade with the Baltic regions. Particular attention was paid to Russia, where a large population had a “passionate love of tobacco.”

The privilege of entering these markets was eventually won from the czar, only to be lost again. In spite of such reversals, the Continental markets grew. In the years before the American Revolution only one-fifth of the exports shipped from Virginia and Maryland were consumed in England.

The third aim of the Acts of Navigation and the Laws of Trade reversed the enumeration process. Goods destined for the colonies must be shipped thither from England. This was obvious in the case of English products, but such European and Asiatic goods as the American colonies insisted upon consuming were in general to be transported to the colonies only by way of the metropolis. The first act which formulated this principle was that of 1663. It provided that all European goods for the colonies must first be shipped from England, Wales, or Berwick-upon-Tweed in vessels legal under the Navigation Act. The purposes of this Staple Act were manifold. It was designed to give the English rather than the European merchant the profitable business of supplying the colonies with the goods which were needed; it was hoped to stimulate “the further employment and increase of English shipping and seamen” by establishing two voyages, one from Europe to England and a second from England to America, rather than a single direct voy-
age; it would increase the customs revenue through the payment of duties; and it would increase “the vent of English woolen and other manufactures and commodities” at the expense of their European competitors.

The exceptions to this general legislation prove even more precisely the sway of mercantilist motives. The direct importation of certain European articles was allowed by the Act of 1663. Salt, obtained largely from southern Europe, could be brought directly to the colonies in order that their fisheries might not be hampered in the rivalry with the French and the Dutch. Scotland and Ireland could ship provisions and horses without a detour through England. Some consideration was also shown to Portugal, which was gracefully included for many purposes within the English system because of its economic dependence. Wines from the Portuguese islands, the Madeiras and Azores, were allowed the privilege of a direct voyage. In the readjustment of the trade system after the Peace of Paris, the English ministry attempted to shift this commerce into the lines of the general pattern. A heavy duty was placed upon wines imported directly into the colonies, a low one on wines imported from England. In view of this arrangement it was hoped that the Portuguese beverages would in the future flow to the colonies by way of the metropolis. Some of the disadvantages of using England as a staple were eased by the drawbacks paid upon imported European goods which were reëxported from England to the colonies. On some foreign commodities, manufactured iron and steel, cordage and sailcloth, these drawbacks were not given. Here apparently the English government was determined to give even greater favors to its own industries.

“A MANIFEST VIOLATION ... OF SACRED RIGHTS”

Some have regarded these provisions of Navigation and Trade Acts as a triple-headed hydra. Adam Smith set the fashion as early as 1776. “To prohibit a great people from making all that they can of every part of their own produce, or from employing their stock and their industry in the way that they judge most advantageous to themselves, is a manifest violation of the most sacred rights of mankind.” Most thinking in the nineteenth century, particularly in America, took its cue from this utterance. The English colonial system was a dismal strait-jacket or a heavy shackle upon American trade. This modern condemnation would have found little sympathy, if indeed it would have been understood, among generations contemporary with the regulations themselves. To them the Navigation Acts were “the guardian of British prosperity,” a “most glorious bulwark, the best acts that ever passed for the benefits of trade.” The discrepancy of judgment is startling.

Undoubtedly these acts cost somebody something. Under their provisions
goods were not bought in the cheapest or sold in the dearest market. But Acts of Trade and Navigation prevented this halcyon form of exchange for the citizens not only of the colonies but also of the metropolis. Take the matter of enumeration. By sending his product to Europe via England, where it was burdened with customs duties and extra freight rates and commissions for handling, the colonist received less for it than he could have received by sending it directly to its destination. The balance of this simple statement, however, is at once upset by a number of compensations. Certain products, such as indigo, which had to be shipped to England, could not have been produced in the colonies without the bounty which was paid upon their arrival in England, Wales, or Berwick-upon-Tweed. In the case of these enumerated products the burden was upon the English consumer and taxpayer rather than upon the colonist. Other articles from the colonies were admitted into the metropolis duty-free or at low rates, while competing products from other nations were charged heavily. Finally, certain colonial commodities were given a virtual monopoly of the English market. The English consumer was literally compelled to use colonial tar, colonial sugar, and colonial tobacco.

In the case of tobacco the colonial producers received even further consideration. Tobacco growing in England was forbidden. James I felt that the soil of England should be put to some nobler purpose. As time went on, other considerations reënforced this policy. The Virginia planters were none too content that their product had been placed on the enumerated list, and that they had been deprived of their European markets. By 1652 Parliament prohibited the planting of tobacco in England on the ground that it tended "to the decay of Husbandry and Tillage, the prejudice and hindrance of the English plantations abroad, and of the Trading, Commerce, Navigation and Shipping of the Nation . . ." and authorized any person to enter the tobacco fields and destroy the plants. In spite of these prohibitions, however, the cultivation of the plant continued, and became a profitable business in the southwestern counties of Gloucester and Worcester. The planters threatened violence to any one who attempted to destroy their crops, and issued a defiance against the county justices who had been commanded to carry out the governmental policy. But the central government was obdurate in its devotion to the interest of colonial planters and the importers who flourished on that trade. During the Restoration such vigorous measures were taken that by the end of the century the English tobacco-growing industry had been extirpated. Fifty years later an English writer thought that the prohibitions upon iron manufacturing in the colonies "will not be a greater hardship upon them than the Prohibition of the Planting of Tobacco in Great Britain is to us."
On the surface the colonists were likewise penalized by the Staple Act of 1663 and other acts compelling them to obtain most of their European goods from England rather than from Europe itself. Such legislation normally would have extorted higher prices from the colonists than those paid by the English consumer. On the other hand, the colonial consumer was often favored as compared with the English purchaser. Certain products, notably calicoes, which could not be legally imported into England for sale there, could be shipped to the colonies. Certain British products, moreover, when shipped abroad received bounties in order to encourage their manufacture. These bounties not only were paid from the British treasury and hence were a tax upon the English people, but enabled the manufacturers to sell these articles in the colonies at a price below that obtained in the metropolis. British and Irish linens benefited by this arrangement.

Still another item operates to confuse the question of whether the colonies or the mother country was more constrained by this legislation. The preamble of the Staple Act stated that one of its purposes was to make navigation to and from England and the colonies "more safe." This was not a pious platitude. Ocean trade was subject to all sorts of dangers. The frequent wars of the period let loose a flood of privateers and warships to prey upon commerce. Protection had to be accorded to national vessels by proper convoys. Then there were swarms of pirates. One group of buccaneers infested the West Indies and on occasion used the continent, especially North Carolina, as a base of operations. In Algeria, Tunis, and Tripoli was a second nest of more professional pirates—the Barbary corsairs. Refusing to confine their operations to the Mediterranean, these penetrated on occasion to the English Channel and interfered with the tobacco ships sailing from Virginia. Intermittent punitive expeditions were dispatched against them and naval vessels had to be stationed in the Mediterranean to enforce such agreements as the corsairs could be compelled to sign. The concentration of trade routes sought by the English Acts of Navigation and Trade made easier the protection of commerce. And the cost of that protection, which was enjoyed by the colonists as well as by the English, was assumed solely by the latter.

Any discussion of the relative burden imposed by these acts upon colonies and metropolis must not overlook the fact that their results might be evaded through failure to obey them. Smuggling is a considerable and profitable undertaking even in the twentieth century. The profit was no less in the seventeenth and eighteenth centuries, and the operation was easier. Long sea voyages, unfrequented coast lines, and scanty navies facilitated the evasion of the laws. The extent of evasion in the colonies has been the subject of much murky disputation. The provisions of the acts dealing with shipping were almost never violated. There was little reason for disobedience. As for
enumerated articles, most of them were probably taken to England. But the
profits to be gained by an illegal and direct trade in tobacco to other destina-
tions were so attractive that the colonies sometimes neglected to observe the
formalities. Before the Act of Union Scotch ships and Scotch merchants had
invaded the trade. They paid good prices for tobacco; their ships easily
evaded the European patrols; and Glasgow had laid the foundations of its
future eminence as a great tobacco merchandise center at a time when the
commerce upon which it was based was prohibited. In the eighteenth cen-
tury the violation of the enumerated provisions seems to have decreased.

The regulations most frequently set at naught by the colonies were those
requiring the importation of European and Asiatic goods through Great
Britain. One avenue of evasion was the permission given to import wines
from the Madeiras and the Azores. This clause was so obscurely worded that
the colonists affected to believe that it allowed also the importation of the
wines from the Spanish islands of the Canaries. If they doubted the validity
of this legal exegesis, colonial shippers placed a few casks of madeira near
the hatchway and depended upon the customs officers to sample these and
ignore the canary wines stored below. A second smuggled commodity was
tea. In 1765 a rather generous estimate placed the colonial consumption at
1,500,000 pounds. The recorded annual imports were 150,000. The differ-
ence naturally was not grown in this country. Tea, silk, linens, brandies,
might be brought to this country directly from Holland, Spain, or Portugal
by English or American vessels which simply but dangerously neglected to
touch at Great Britain with these commodities; or else they might be se-
cured in the West Indies at St. Eustatius, St. Thomas, or Curaçao.

In spite of these evasions the Acts of Trade and Navigation so far dis-
cussed were not extensively violated. The reason was simple. In the main the
regulations expressed in the acts coincided with the natural conditions of
trade. The colonies benefited by their inclusion within the world of British
shipping; they were protected in the English market; and as for Euro-
pean goods, they would have had them from England anyway. England
manufactured most articles as cheaply as any nation in Europe, and Ameri-
cans would have imported their woolens and their hardware from her what-
ever the legislation. Even the goods not produced advantageously in Eng-
land and drawn by the colonies from Europe would probably have gone
through the former in transit. England served as a great warehouse into
which commodities from all parts of the world flowed. A vessel could obtain
at London or other ports a diversified cargo; it was spared the expense and
trouble of collecting it from all quarters of the world. Even in the nineteenth
century England still played the same rôle for America and the other new
countries of the world.
Any judgment which approaches the Acts of Trade and Navigation from the angle of the colonies only is based upon the wrong premise. The aim of such legislation was the creation of a powerful economic state and empire, and in the light of this purpose it must be appraised. After the passage of the acts undoubtedly the prosperity of Great Britain increased, and the economic importance of her rivals relatively declined. What proportion of this success can safely be attributed to England’s mercantilist legislation is uncertain. Since the other nations were following similar policies and thus theoretically canceling the advantages bestowed upon Great Britain, it would seem that many factors created the supremacy of the latter.

**Commerce with England and Europe**

Economic conditions in North America and in extra-colonial markets more than the conscious policy of the Acts of Trade and Navigation fashioned the commerce of the colonies. Their needs determined the character of colonial imports; the variety and richness of their production set the nature of colonial exports. In the mirror of foreign trade not legislation but economic conditions were reflected.

South of Pennsylvania lay the great staple-producing colonies. The Caribbean islands had sugar and molasses; the Carolinas, indigo and rice; Virginia and Maryland, tobacco. These tropical or semitropical products inevitably found their most extensive market in Europe, and their inclusion in the enumerated commodities reflected this situation. The amount shipped elsewhere was infinitesimal. By 1770 the exports from the British colonies of tobacco, of which Maryland and Virginia were the chief producers, were valued at approximately £900,000. This sum was well over a quarter of the total colonial exports. Practically all the tobacco was shipped to Great Britain. Rice, the next southern staple of importance, had a more diffused destination. Under the exceptions allowed by the Acts of Trade, half of the crop, whose total value in 1770 was £340,692, went directly to southern Europe and the West Indies. Practically all of the indigo, valued at £131,552, went to Great Britain. In return for these products, the southern colonies imported from England the manufactured and exotic products which they needed. By any test these southern colonies were peculiarly dependent upon commerce. Toward the end of the colonial period five of them, Maryland, Virginia, the Carolinas, and Georgia shipped more than half the exports and took more than half the imports of colonial commerce. And this commerce was carried on predominantly with the metropolis. In this trade, however, the values of the exports and the imports did not balance. So great was the deluge of the staple crops poured across the Atlantic that their value usually far exceeded that of the imports.
The transportation of these commodities across the Atlantic marked the greatest thoroughfare of colonial commerce. During the seventeenth century the ships, owned by merchants in London, Bristol, or other English ports, set sail for the colonies late in the fall and returned in April. They were frequently under convoy or else relied upon one another for protection. In the next century, when the menace of pirates had been somewhat reduced, convoys to the continental colonies were generally unnecessary, and individual vessels departed and arrived at more scattered intervals. In addition to flooding the main traffic lane across the Atlantic, the southern staples traveled to market by two subordinate routes. From the Carolinas and Georgia a direct trade transported rice to the Iberian peninsula and the Mediterranean, and from New York and New England rice, tobacco, and indigo were carried as reexports to English entrepôts.

Foreign trade in the colonies north of Maryland was a less simple matter. This was not because they lacked staples. Although no northern commodity compared with tobacco, the exports of wheat and bread and flour, valued in 1770 at £636,000, were the second largest item in the colonial export trade. More important than rice in export columns was fish, the typical New England staple. In 1770 the total export value of dried fish was over £375,000, and fish pickled in barrels made the sum near £400,000. If the values of the various lumber products shipped from the northern colonies had been added together, they would easily have equaled that of exported indigo; and whale products, candles, oil, and fins nearly approached the importance of this exotic dye. Furs, peltries, livestock, all ran into impressive figures.

It was the nature of these staples which complicated northern commerce. Although Great Britain accepted furs, lumber, and naval stores, she regarded most of these northern products either with indifference or with actual hostility. The depressing stricture which an English writer applied in 1690 to New England, “By Tillage, Pasture, Fishing, Manufactures and Trade, they to all Intents and Purposes imitate Old England,” was true in greater or less degree of all the northern colonies. The fish caught by New England fishermen and cured in New England ports competed in the West Indies and in Europe with the catches of the English fishermen; the wheat and flour of the middle colonies supplied southern Europe and the West Indies at the expense of British farmers; New England manufacturers provisioned the English fleets in North American waters and supplied them with nets, lines, and other equipment more cheaply than the English outfitters who should have had the business. So unwelcome were the staples of the northern colonies that the Laws of Trade failed generally to enumerate them. And yet the necessity of commerce bit home just as surely in the northern colonies as in the southern.
Southern Europe rivaled the British Isles, therefore, as a transatlantic market for these northern staples. Colonial vessels sailed directly to Portugal and Spain or, penetrating the Strait, stood off for Marseilles and Leghorn, the distributing ports of the Mediterranean and the centers of its numerous trade routes. Lumber and various food products were the chief items in this commerce. In the former category were naval timbers. These were sent frequently to southern Europe during the seventeenth century, and their shipment continued even after they were “enumerated” in 1704. Josiah Gee, English mercantilist, defended this illicit commerce. The Spanish had plenty of oaks and pines, he wrote, “but their indolent temper is such that if they can purchase what they want with money, they care not to stretch out a hand to help themselves (and I should be sorry that we should stir them up to become industrious).” More important than this ship lumber were oak planks and pine boards which were exported principally to England, and in smaller amounts to Ireland and southern Europe and oak cooperage which in 1770 constituted over half the value of the total timber exports. Oak staves, headings, and hoops were sent to England, to Portugal and to Madeira and the Azores to be assembled into the containers for their famous beverages, and to Ireland, whose butter and pickled meats were packed in barrels or hogsheads. So important were these last two trades that within a year lumber had been placed upon the enumerated list in 1764 Parliament permitted exceptions for direct shipments to Ireland and Europe south of Cape Finisterre.

Wheat and flour were the chief food exports from the northern colonies to Europe. At the middle of the seventeenth century New England exported this cereal to southern Europe as she did to other American colonies and to the islands of the Caribbean; but by 1770 New Jersey, Pennsylvania, and New York produced the agricultural supplies for export. In that year 588,000 bushels of wheat and 18,000 tons of bread and flour were sent to southern Europe. By all odds this market was the most important one in the world for the American grain trade. It was the chief one also for the product of the fisheries. To these Catholic countries with their numerous fast days New England catered with a fine distinction. The “Spring fare,” large and thick fish, were selected for this exacting market and then cured very carefully on flakes and housed in case of bad weather. When the flesh was completely dried, the fish were kept alternately above and below ground until they “became so mellow as to be denominated dun fish.” The flavor of these dunfish appealed to the sensitive palate of the Latin consumer, and the thorough process of curing enabled them to stand long transportation without decay. In 1770 two-thirds of the export of dried fish went to southern Europe.
THE DOMAIN OF COLONIAL COMMERCE

In payment for these shipments southern Europe returned certain products directly to the colonies. Fortunately the English Acts of Trade and Navigation in general exhibited a wise discretion in permitting this commerce. Thus for the cooperage sent to the wine islands the wines themselves were brought back, and for their dried fish Spain and Portugal contributed a salt which, less strong than that obtained from the Tortugas in the West Indies, did not scald the fish in the curing process.

THE CRITICAL CARIBBEAN

When the West Indies were in question, the producers, merchants, and shippers of the northern colonies were as enthusiastic as any English mercantilist, for that "great American Archipelago" was as vital to them as it was to the mother country across the Atlantic. The absolute absorption of these islands with sugar production made them a market for almost everything.

Their lumber requirements were diverse. The plantation required plain timber for the quarters of masters and of slaves and for the sugar mills. Planks, boards, shingles were shipped from the northern colonies in great profusion and even knockdown houses, cut out by American sawyers, were exported and set up upon their arrival. Sugar, rum, molasses, demanded containers. Heads, hoops, staves, were dispatched separately or in the form of hogsheads, casks, or barrels. On some vessels a cooper went along and assembled the materials into a finished product during the voyage. Shortly before the Revolution the islands took annually over 11,000,000 staves and headings and nearly 36,000,000 feet of boards.

Although it was perfectly possible for the "sugar islands" to grow their own food supplies and planters did produce a considerable amount of food truck, more money was to be made from sugar specialization. According to one writer's calculations, an acre planted to sugar would yield sufficient to purchase five acres of Indian corn. So the West Indies drew their supplies from the supplementary food areas of the northern colonies. Indian corn obtained here an outlet, and bread and flour found here their greatest market. Dried and pickled meats were sent from practically all the colonies. And then there were the fisheries. Although planters were fussy about the quality of their own fish, the New Englanders found it possible to ship an inferior quality known as West Indian or Jamaica fish for the slaves. In the eighteenth century the deep-sea mackerel joined the cod as an article of export. The products of America's fresh-water fisheries, shad, alewives, and other pickled fish, likewise rolled down to St. Kitts or Barbados. These generals of the export army were followed by a host of privates. Bushels of peas and beans, bars of soap, shoes, tallow and lard, spermaceti candles, were
crowded into vessels with live sheep and hogs, oxen for use in the fields, and horses to turn the sugar mills and "to carry the customs officers out of the way when smugglers landed their goods." In 1770 the total value of exports shipped to the West Indies was £844,000. In the same year the exports to Great Britain were valued at £1,636,000. West Indian trade was subordinate only to the commerce with the metropolis.

The West Indian islands thus exercised a pervasive influence upon the economic life of the continental colonies, particularly the northern ones, with which the bulk of the trade lay. Their demand for finished timber products had stimulated the sawmill industry, their requirements for flour and bread had advanced the size and technique of American baking and milling plants, and their effect upon agriculture was felt from the Narragansett country of Rhode Island to the wheat fields of the Shenandoah. The commodities, sugar, molasses, and rum, returned from the West Indies, in turn created industry. Sugar was refined in the northern colonies, at Boston, New York, and Philadelphia. Molasses, although widely used as a cheap substitute for sugar by American consumers, was more generally distilled into rum. In the eighteenth century this occupation expanded rapidly in Massachusetts and Connecticut. But Rhode Island was the leader in development. Rum, in turn, was a center of other wider trades. In the North its consumption increased at the expense of beer and the traditional New England cider; in southern families it appeared with increasing frequency, and it was bootlegged to the slaves. Rum was the inevitable solvent of the Indian trade. The diet of the fishing fleets, salt pork and ship bread, required rum to wash it down. Finally rum filled the columns of the African trade. The New England vessels in the slave trade could carry out 100 to 120 hogsheads of rum, and, if the instructions given to one Rhode Island captain were typical, this might go a long way: "Water yr Rum as much as possible and sell as much for the short mesuer as you can." Once his cargo of "niggers" was obtained, the captain would recross the Atlantic by the middle passage, and dispose of his black men and women in the West Indies or peddle them along the coasts of Carolina and Virginia. Only a few Negroes, either those chosen for house service or culls too poor to be got rid of, would be on board when the ship returned to Newport, the capital of the American slave trade. But the West Indies furnished the most important market for slaves, just as they were the source of the rum which bought them.

The vital and fascinating West Indian trade, however, involved the northern colonies in a severe conflict with the mercantilist policy of the British empire, for the British islands were not the only attraction in the Caribbean to the American colonies. They had rivals in the possessions of Spain, Holland, Denmark, and France. The French sugar islands, Guadeloupe and
Martinique and Hispaniola, were a peculiar temptation. The export of goods from them was not burdened with the four and one-half per cent export duty levied in all the British West Indies except Jamaica nor with the additional duties which the enumerated articles had to pay according to the Act of 1673 if carried from one colony to another. The price of tropical products in the French islands was also cheaper because of their relative advantages of production, and the French were willing to sell molasses at any price, for they disliked this product in its raw state and as rum. Besides, when distilled, it was a potential competitor of the French brandy industry. At the same time the colonial shipper and exporter discovered that the capacity of the British West Indian market for lumber, grain, and other miscellaneous commodities was limited, and that the French islands, lacking a supplementary provision area in North America, were eager to purchase such supplies of the northern colonies at good prices. As agricultural production in the American mainland colonies increased, this enlarged market in the Caribbean became even more essential. Although there was nothing strictly illegal about this traffic, it obviously aided in the destruction of a self-sufficing empire.

The economic decline of the British sugar islands in the eighteenth century drove the British planters in the West Indies to discover some remediable cause for this unpleasant circumstance. In their quest they were joined by the absentee landlords in Great Britain, who drew their revenues from the sugar plantations, and by those who made money in shipping or refining sugar. This powerful interest came to the conclusion that the trade between the British colonies on the mainland and the foreign sugar islands was responsible for the disadvantages oppressing the British West Indies. The competition of these other islands raised the price of provisions imported from North America, occasionally led to a scarcity at any price, and often compelled British planters to pay for their supplies in cash rather than in sugar and molasses. The British planters and their allies appealed to Parliament for relief. Agents from the northern colonies besieged the same body. The latter argued that a prohibition of their trade with the foreign sugar islands would lower the price of their exports, raise the price of sugar and molasses, and reduce them to a position of purveyors without independent economic or commercial life. Their explanation for the decay of the British West Indies was the extravagant and wasteful habits of the West Indian nabobs. This indicted class replied with evidence to show the value of the islands to Great Britain's trade as purchasers of slaves, machinery, and manufactured goods.

More influential than these partisan arguments was the mercantilist desire to injure the trade and welfare of France. Accordingly the Molasses Act of 1733 was passed. It did not prohibit trade with the foreign sugar islands,
but it levied upon all sugars, rum, and molasses imported thence into the colonies the following duties: ninepence on each gallon of rum, sixpence on each gallon of molasses, and five shillings on each hundred-weight of sugar. Those who violated the provisions of this act were punished by the forfeiture of the suspected goods, a portion of which was set aside as a reward to informers and prosecutors. Although the Molasses Act ostensibly compromised the controversy between the mainland and the British West Indies, it gave the actual decision to the latter. The import duties were so high as to be prohibitive. The northern colonies disobeyed the act from the beginning. They imported sugar, molasses, and rum in the most brazen fashion, and the New Englanders even dispensed with the unique talents for evasion which Colonel William Byrd of Virginia once ascribed to them: "They have a great dexterity at palliating a perjury so well as to leave no taste of it in their mouth, nor can any people like them slip through a penal Statute." The act was so generously disregarded that the price of rum in Massachusetts declined rather than increased after the imposition of these duties, and only £800 was collected annually under its provisions.

The imperial authorities ignored this disobedience because the West Indian sugar planters suddenly came to the conclusion that the real cause of their misfortune was the provision of the English Acts of Trade which compelled them to ship their sugars to Great Britain, and which consequently handicapped these sugars in the European market. Parliament attempted to redress this disadvantage. Renewed attention to the commercial illegalities of the northern colonies was, however, aroused by their painful derelictions during the wars between England and France. They persisted in trading with the island colonies of the enemy. During the Seven Years' War colonial vessels under flags of truce—the governor of Pennsylvania sold them for £20 apiece or less—carried foodstuffs to the islands and returned with sugar and molasses. When this method failed, exchanges were conducted by the neutral Dutch island of St. Eustatius and later through Monte Christi, a roadstead conveniently situated on the north coast of Santo Domingo within Spanish territory but just across from the French portion of the island. The export of provisions, whether indirectly or directly, to the French islands supplied the French troops and fleets with food and kept alive the civilian populations; on the other hand, by raising the price of provisions in North America or causing temporary scarcity, it compelled the English troops fighting the French for the benefit of the colonies to import a portion of their supplies from abroad. It was a curious situation, at once a triumph of self-interest over patriotism and a demonstration of the essential character of the West Indian trade.

In the readjustment of the British commercial system after the Treaty of
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Paris, this West Indian trade was regulated by the Sugar Act of 1764. Although this bill, like the Molasses Act, sought to hamper the French sugar islands and benefit the British, a new motive for it was the necessity of raising money for the support of the imperial establishment in this country. The importation of rum from foreign colonies into the American colonies was prohibited, and the sugar rates were left at the level of the Molasses Act. Neither of these provisions especially irritated the colonists, for they had imported through the eighteenth century most of these products from the British sugar islands. The crux of the situation was molasses. After a prolonged debate, Grenville placed a duty of threepence a gallon upon the foreign product in the hope that it would be low enough to encourage legitimate importations and so raise a revenue. The colonists insisted it was too high and continued their efforts at evasion. Two years later the tariff was reduced to one penny and applied to both foreign and British molasses. To this act and others Grenville, at the same time, resolved to give a stricter enforcement.

THE ROUTES OF NORTHERN COMMERCE

The sea routes of the commerce of the northern colonies were as complicated as the variety of their commodities. Let us start the voyage at one of the sea towns which had obtained leadership by the time of the Revolution. The greatest commercial city in the colonial world was Philadelphia. With her subsidiary ports of Burlington and Salem, she was the center of a trade in grain, meat, lumber, and tobacco. To the north was New York, shipping with the addition of peltries much the same products. But since New York did not have the rich agricultural hinterland of the Pennsylvania city, its commerce relied less upon domestic products and carried a great portion of reëxported articles from the tropical colonies. This urban concentration of commerce disappeared when the coast line of New England was reached, for her numerous harbors and colonial rivalries spawned a series of individual and colorful seaports. New London in Connecticut failed to hold that colony's trade against the inroads of New York or Massachusetts or Rhode Island. But Bristol, Newport, and Providence, on the shores of Narragansett Bay which divided and yet made Rhode Island, were independent enough to meet all comers. Massachusetts interspersed fishing centers with shipping ports, like Salem and Newburyport, and Maine had Falmouth as a rival to the Portsmouth of New Hampshire. But Boston dominated all these satellites, and in the early colonial period she had been head and shoulders above any other port in the country.

Although from any one of the northern ports there was some direct trade to Great Britain and to southern Europe, northern commerce usually fol
owed no such strait and narrow path. Rather route overlaid route, traffic
superimposed upon traffic. Sometimes our ship followed a triangular trade.
It would sail for Africa with a cargo of rum; barter this liquor for gold, bees-
wax, and slaves; return to the West Indies to exchange the slaves for sugar
and molasses; and then set out for home. Or this simple triangular formula
might be modified by the inclusion of Lisbon or Cadiz or the wine islands
on the voyage out and Carolina or Virginia or Philadelphia on the way home.
No geometrical figure can describe these trades—they were labyrinthine. And
the cargoes were as complicated as the voyages. In 1744 the sloop Recruit
loaded at Newport with bread, flour, Indian corn, sugar, molasses, salt, rum,
tar, and pipe staves—articles either produced at Newport and in the Nar-
ragansett country or else collected thither by previous intercolonial coating
voyages—and sailed for Newfoundland, where she exchanged her provi-
sions and tar for "refuse" fish. Then she beat south to the West Indies, where
she touched successively at Barbados, Nevis, St. Christopher, St. Eustatius,
shuttled back and forth between various ports on the island of Jamaica, and
finally returned home to Newport with a cargo of sugar, rum, and mo-
lasses. Such voyages involved frequent loadings and unloadings, the con-
stant exchange of goods, and an attention to small details and small advan-
tages. It was in the tradition of the New England peddler. Its superficial
pettiness, however, should not conceal the fact that in this exacting fashion
the New Englander made a living and found his high adventure. Triumph
over difficulties rang in the words which Edward Randolph, a hostile ob-
server, used in 1676 to describe the Massachusetts merchant: "It is the great
care of the merchants to keep their ships in constant employ, which makes
them trye all ports to force a trade, whereby they abound with all sorts of
commodities."

The Colonial Merchant Marine

The southern colonies had a foreign commerce, but they relied upon ves-
sels from other colonies and from England to transport their staples. The
northern colonies not only had foreign commerce but built and owned the
merchant marine which carried it. In this fashion they avoided money pay-
ments to foreign shipmasters and earned freights for themselves on the high-
ways of the sea. Shipbuilding thus joined the fisheries and commerce as an
occupation by which those colonies unendowed with staples acceptable to
Great Britain were able to secure funds to balance the debts incurred by the
importation of manufactured articles from the metropolis. It was no acci-
dent, therefore, that the first shipbuilding of importance took place in the
northern colonies. Small vessels were early built in Maine and New York,
and the first sizable boat, the thirty-ton sloop, Blessing of the Bay, slid down the ways into the Mystic River near Boston in 1631.

The resources of the New World sponsored shipbuilding. The water's edge, ocean and river, abutted on the magnificent and generous forest. White oak furnished the planking for the lower parts of the vessels and its branches were snarled into the grotesque shapes which the shipwright sought for interior timbers. The white pine, sawed into planks, was used for decking and for the superstructure. Finally it furnished the spars, yards, bowsprits, and the superb masts which were the envy of the British navy. Shipbuilding, moreover, required subsidiary manufacturing of ironwork, cordage, and sailcloth. A good share of these materials was imported, yet the colonists achieved a considerable degree of independence. To this end they dangled a round of temptations before the producer. Although Massachusetts gave bounties on hemp, Boston ropemakers had to import this product from the East Country. For the manufacturers of sailcloth New England was willing to do anything. In 1726 Massachusetts granted a bounty of twenty shillings for every bolt of canvas meeting certain specifications, and at the same time made provision for a loan from the state to a promotor of a sailcloth factory. Connecticut and Rhode Island adopted similar measures. Whether as a result of these encouragements or not, the manufacture of sailcloth was on a commercial basis before the end of the colonial period.

The standards of shipbuilding were fortunately high. Soon after the establishment of the Massachusetts Bay Colony skilled shipwrights emigrated thither from England. They passed on their craftsmanship to worthy descendants. If a tendency to slackness had appeared, it would have been cut short by legislation which the state passed for the inspection of building vessels, and by the standards of a profession to which the community awarded a considerable social prestige.

At a time when the competition of American-made vessels moved the shipwrights of the Thames to complain, it was little wonder that the American-built ship not only pre-empted its own field but invaded the markets of the world. The golden age of colonial shipbuilding was the first half of the eighteenth century. So low were the prices per ton that New England vessels were sold in the West Indies, Portugal, and Spain. But England was the greatest purchaser. In part she furnished capital. Her merchants and shippers would send over a cargo of goods, and the proceeds from their sale would purchase or build a ship. Perhaps this consignment of goods would be accompanied by ship wares, sailcloth, anchors, cordage for their new vessel. This vessel in turn would be freighted, and on its arrival in Europe or England ship or cargo or both might be sold and the process repeated. Amer-
ican shippers and merchants reversed the process. One of the complicated New England voyages might well end with the disposal of the vessel by sale at London and the credit of the sale money to the account of a New England merchant. The construction of vessels for foreign markets contributed greatly to the prosperity of the shipbuilding industry in the colonies. In turn the colonial-built vessels recruited England’s merchant marine. At the outbreak of the American Revolution, thirty per cent of the vessels in British commerce had been built in American yards.

In this profitable enterprise Philadelphia, and to a less extent New York, engaged; but New England dominated the industry. Every port, stream, and brook seemed to have ways for one ship or yards for many. Take Massachusetts. Boston was sluggish, but the coast north and south of her hummed with enterprise. Along the north shore Gloucester, Salem, and Ipswich had shipyards. By the time of the Revolution the Merrimac was a hive of shipping industry. At Newburyport, where private shipyards were supplemented by a municipal one located on the public land and rented to builders at so much a ton, there were at one time 72 vessels on the stocks; along the stream were other shipbuilding villages; and the industry had spread inland to the head of navigation at Haverhill. The New Hampshire yards along the Piscataqua turned out no fewer than 200 ships a year. The Maine yards—strictly a part of Massachusetts—produced smaller vessels. South of Boston there was building at Duxbury, Hingham, and Scituate. In some fantastic instances the industry deserted the water entirely. Sometimes a whole vessel was built miles from a stream, mounted on sledges and dragged by teams of oxen out on the river ice to unite with its native element when a thaw set in.

One explanation for the ease with which these vessels were handled was their small size. The Mayflower was "of burden about 9 score," the equivalent of about 120 tons gross register. It was a three-masted double-decked vessel, about 100 feet long. The Speedwell, which started on the same voyage, was only a third as large. Both were typical of seventeenth century deep-sea vessels. But many colonial ships were much tinier. The shallop, used in the fishing and coasting trades, sometimes had a burden of 10 tons. The ketch plying in the same trades and sailing also to the West Indies, ranged in burden from 24 to 60 tons. Although vessels by the end of the eighteenth century had increased in size, the average gross register of ships entering England from America was only 176 tons. Vessels much smaller participated in this transatlantic commerce, and the average register in the West Indian trade was 68 tons. The lines of the hull and the rigging of the sails of the American vessels were based upon the English and Dutch models with which the architect or shipwright had been acquainted. But modifications
were introduced to meet the peculiar needs of the fisheries or of the trades, to comply with taste or fashion, or to improve the functioning of old hulls and rigs. Under the impact of these conditions the eighteenth century was one of extraordinary and fertile confusion. Ships had three masts and were square-rigged; sloops had one mast, schooners two, and both carried only fore-and-aft sails; brigantines, brigs, and snows were two-masted vessels with a combination of riggings. The proportion which one type bore to another can be expressed only in the most general fashion. A ratio of three-masters, two-masters, and single-masters of one, two, and three at least has the advantage of emphasizing the general employment of the smaller vessels.

The small size of these vessels was due not to the technical difficulties of constructing larger ones but to the methods and organization of world commerce in the seventeenth and eighteenth centuries. Shipments were wisely made in small quantities, for the perils of ocean commerce dictated caution. Although the shores and shoals of the American coast line might be adequately mapped, they were not marked, and the approach to the coasts was fraught with danger. The first lighthouse in the New World was completed in Boston in 1716; but when the national government was established in 1789 there were only fifteen in the entire country, seven of which were on the Massachusetts-Maine coast. The marking of channels by buoys was most rudimentary. The toll which the unknown sea took was not so large as that exacted by the pirates and privateers who harried its surface. Indeed, the distinctions between these occupations were difficult to draw and “notorious pirates” often received covert protection from government officials. No wonder the dangers from these gentry were so great that William Fitzhugh, Virginia planter, meditating sorrowfully upon shipwreck and capture, declared a person in Virginia trade might be worth £1,000 today and nothing tomorrow. The maritime insurance underwriters thought so. Rates to the West Indies varied from 4 to 20 per cent, depending upon the chances of war, privateers, and pirates; in the Seven Years’ War, vessels from America to Lisbon unconvoyed paid insurance rates of 30 per cent.

The problem of disposing of a cargo once it reached a destination led to cautious commitments rather than large-scale adventure. There was no expeditious or accurate means of exchanging information about demand and supply, markets and prices. The carriage of letters was a personal favor on the part of ship captains. A correspondent writing to England might easily wait six months for an answer to his inquiries. Even this rudimentary system of communication might be shattered by danger or disaster. Correspondents accordingly sent duplicates and triplicates of their letters by as many vessels. More general commercial information could be obtained at
some coffeehouse or tavern. Here was a book in which ship captains or supercargoes entered such maritime news as they thought of general interest; here they deposited the latest newspapers brought from Boston, Philadelphia, Charleston, Baltimore, and New York; and here they collected such letters as were entrusted to their care. By the time such information became available to merchants and shippers it was often too late for action.

The whole of commercial exchange and mercantile life was keyed to a tempo of approximation and patience rather than exactness and efficiency. Losses in transit were large. Sugar transported from the West Indies to London lost ten per cent in wastage, differences in grading, and petty thievery. When tobacco arrived at the metropolis from Virginia, it was generally rated at a lower value than the bills of lading specified. Port fees were exasperatingly numerous. Vessels arriving in Virginia in the seventeenth century paid a “castle duty” of powder and shot for the maintenance of the forts established by the colony, a tonnage fee of fifteen pence, a fee to the governor of either twenty or thirty shillings as a commutation of what had once been mere social gifts of provisions and liquor, and finally a fee for entering or clearing from the ports of the colony. Other regulations forbade the discharge of this cargo before the vessel reached Jamestown. Such irritations would discourage the modern trader. The colonial merchant, however, accepted them as a matter of course and allowed them to color his attitude toward business and life. The dignity, stateliness, and elegance of merchant existence arose from these small-scale operations conducted perforce with a leisurely rhythm. It was an age of powdered wigs, knee breeches, silver buckles, rather than of closely cropped hair and utilitarian business suits.

**Merchants: English and American**

However different may have been the pace of this earlier commerce, its organization was a fundamental determinant of colonial economic life. Then as now the processes by which goods were marketed determined the processes of production as much as the actual technique of agriculture and industry.

Under the English imperial design it was hoped that the conduct of the trade with the colonies would be largely in the hands of the English merchants, and that no colonial mercantile class would form to share in the profits and to offer competition. This expectation was most closely realized in the tobacco trade of Maryland and Virginia. The system of middlemen which finally grew up to effect exchanges was an amalgam of various methods. Some of the English vessels sailing annually to Virginia and Maryland for the tobacco crop were accompanied by the merchants who owned them. In
other cases the conduct of business was entrusted to a supercargo, the merchant's representative, or to the ship captain.

A grave defect, however, inhered in these arrangements. There was no permanent local representative in the colony. Such a person was needed to collect the debts which the planters incurred for their supplies, and which some of them discharged with irritating tardiness. A local representative would also give advice as to market conditions—the prices which products would bring and the extent of the demand—and with him could be left for sale the products which, for one reason or another, could not be sold with profit under the conditions of the market. The colonial representative evolved to meet these needs. He started out as a debt collector with the power of attorney from an English house and he ended up as a "factor" who possessed perhaps a warehouse at Jamestown and a store there or elsewhere, and who sold goods for an English house. This factor might receive a yearly salary, or he might discharge his duties for a commission on all purchases and sales. The latter was the more general arrangement, and by the middle of the seventeenth century the ordinary commission rates were 10 per cent on tobacco and 5 per cent on all other goods. These representatives in the colonies might be native Englishmen, brothers or other relatives of the English merchant; or they might be partners of the English house domiciled temporarily in Virginia; or colonials who had assumed these trading functions and become factors for several English or colonial merchants.

So great was the commerce between the mother country and the tobacco plantations that it might have been expected that these Virginia factors would develop into great merchants. Instead they always remained inferior to the English merchant class with which they dealt. One reason for this frustrated evolution was the failure of the Virginia trader to specialize in mercantile pursuits. He lost his character as a merchant beneath the rôle of the planter, for the speculative gains from tobacco tempted him as they tempted doctors, lawyers, and clergymen into growing the staple. On the other hand, the dispersed character of the Virginia settlement, stretched along the rivers, prevented the trade from wearing a deep and fixed channel. If it had been carried on through towns rather than along the wharfs of individual planters, a large mercantile class might have grown up. The colony, realizing the situation, passed several acts in the seventeenth century to encourage the establishment of towns. Under the Cohabitation Act of 1680, for instance, each county was to purchase fifty acres for a town. Inducements of free land were offered to those who would build residences, stores, and warehouses there. All tobacco was to be carried to these towns for storage and exportation. The act fixed reasonable and just charges for its transportation and storage. All imports into the colony, including white
servants and Negro slaves, were to be landed at these towns and sold there. It is significant that such legislation aroused the apprehensive antagonism of the English merchants. But their fears were as groundless as the legislation was futile.

The English merchants had allies in the large planters, who liked to ship their tobacco directly to the English merchant and receive from him directly the goods which they had ordered. In contrast with the trader who had become a planter, these planters had become traders. They purchased the tobacco of their neighbors and furnished them with supplies. Often they ran stores in connection with their plantations. In 1687 it was said that on all navigable streams one would find from ten to thirty of these merchant planters. One of the greatest seventeenth century Virginians was a personal illustration of this interblending of function. William Byrd, the first of his name in this country, was the son of an ordinary London goldsmith. As a planter, he had land patents aggregating over 15,000 acres and he raised great quantities of tobacco. But he was also a merchant. He imported white servants for sale, he conducted a trade with the Indians, and he ran a store from which he sold goods to his neighbors.

The planter-trader or the trader-planter consigned the tobacco to the English merchant with whom he had dealings. This English merchant or “correspondent” usually disposed of the tobacco in the English market, charging a commission for his services. The proceeds were not generally returned to America but were set down in the books of the merchant to the credit of the shipper. The English merchant then purchased with this deposited money the goods which the planter and trader had ordered. These goods might be for the Virginian’s personal use, furniture, silver plate, servants “who have had the small pox;” tools, dresses, wines. A wig might be sent over for repair, or an old rapier to exchange for a new one. Byrd sent his correspondents instructions for supervising his son’s education in London and giving him a business training. Such romantic duties, however, were supplemented by orders for more practical goods which the planter-trader would sell to his neighbors: textiles, glass, lead, guns, and a parade of various notions. The English merchant thus combined several functions, for he was a selling factor, a banker, and a purchasing agent.

The operation of this marketing system excited the disfavor of both parties. The American complained of numerous irritations. The English merchant’s commissions were too high, or he had made the ordered purchases at too high a price, or he had bought goods which were unsatisfactory, or the discretion which had been entrusted to him had been executed unwisely. Another burden of colonial complaint was the question of shipping. It was occasionally difficult to get sufficient ships to carry away the tobacco because
there was no means of synchronizing the amount of crop and the amount of available shipping. The English merchants who sent out ships naturally erred in the direction of caution, for if the crop exceeded the available shipping capacities the loss would be the planters' and not the merchants', and a scarcity of ships led also to a bargaining for freights that raised the rates. As a means of escape the planters might have owned their own vessels. Few adopted this expedient. Some, like Byrd, chartered vessels in New England or secured space on ships which arrived from the West Indies. The scarcity of vessels was sometimes forgotten in the question of the rates which they charged. In addition to the regular causes for high rates, pirates and warfare and danger of weather, the collection of a cargo from wharf after wharf kept the vessels busy from late fall until early spring, while the wages of the crew increased and the vessel could not undertake other voyages. This procedure doubled normal freight rates. The rates varied. They declined from £12 a ton in 1630 to approximately £7 in 1660; in 1691 warfare raised them to £17 or £18. In some years the planter paid for transportation of tobacco half as much as he netted from its sale.

But the English merchant had his troubles. They centered largely about the credit system. Some of these credits were trivial and unavoidable. The Virginian, unacquainted with the selling price of tobacco, might order the purchase of goods whose cost would exceed the proceeds from his tobacco. The correspondent would advance the difference in the hope of reimbursing himself from a larger remittance the second year. The slowness of communication across the Atlantic and the likelihood of the loss of letters often kept the planter in the dark as to the extent of his indebtedness. Prudent planters in view of these circumstances aimed always to keep a large balance to their credit with the English correspondent. Advances of credit arose in other fashions. English merchants had dispatched cargoes of goods to the colonies only to discover the planters had no means of purchase. A credit lien on next year's crop was taken in payment. Or the planter who was in need of provisions and supplies purchased on credit with royal anticipations that the return of the next year would clear his indebtedness and release him from obligation. But tobacco was the most speculative of staples. If the crop failed, the debt was overdue. The merchant pressed for payment; the debtor might seek postponement, flee the colony, or see his property attached through legal proceedings. So strong was this debtor interest that Virginia sought to give it some protection against the presumed rapacity of creditors. Legislation, for instance, permitted a debtor to name representatives to assist in the appraisal of his estate. On the other hand, the merchant was benefited by an enactment which declared all contracts should be made in pounds sterling rather than in tobacco, whose value of course fluctuated.
bacon, citron water, games such as backgammon and chess, an English gardener, a chariot, four horses "right good or none," and a coachman "the Noted's man in England." The existence of this class of conservative, wealthy men colored colonial history, political and social as well as economic.

**Merchants and Conflict**

The significance of the position occupied by the merchant class can be appreciated from a description of their changing attitude toward Great Britain in the quarter-century between 1750 and 1775. Before that time the trade of the American colonies had enjoyed a favorable balance with the metropolis. Although the northern colonies had imported a greater value of commodities from Great Britain than they had been able to meet by exports, the overseas movement of the staples from the southern colonies had more than redressed this deficiency. But after 1750 this balance of trade swung heavily against the colonies as a whole. Great Britain's industry, already quickened by the industrial revolution, was producing a surplus; other markets in Europe were being closed by mercantilist restrictions. The great manufacturing towns, London, Bristol, Hull, Liverpool, Glasgow, Manchester, Birmingham, Sheffield, Leeds, pushed their products into the colonial field. This "American trade" now constituted from one-sixth to one-third of the total trade of Great Britain. The colonies could not pay for these imports with specie although they squeezed every possible remittance from the indirect trades with the West Indies, Spain, Portugal, and the wine islands. The only alternative was an expansion of credit, and this the British merchants, yielding to temptation, were eager to supply. Borrowing capital in England and Scotland, they extended long-time credits to America "beyond the bounds of prudence." Whereas in 1755 colonial imports from Great Britain were beginning to exceed colonial exports thither, in 1770 the balance of trade in favor of Great Britain was nearly £3,000,000.

While the American merchants were straining every nerve to meet this growing tide of indebtedness, successive English ministries attempted to follow a new colonial policy. Particularly discouraging were the new revenue measures. The Stamp Act of 1765 levied stamp duties upon legal documents of every kind, ship paper, appointments to office, licenses, deeds, bonds, leases, playing cards and dice, newspapers and pamphlets. The Townshend Act of 1767 laid import duties upon certain English manufactured goods sent to America—glass, paper, painters' colors, white and red lead, and tea.

The popular tumult against these acts is a matter of schoolboy repetition. Merchants objected to them because these duties had to be paid in gold, silver, or bills of exchange, and thus operated as a further drain upon American
specie reserves at a time when the payment for imports was difficult enough. Philadelphia merchants in 1765 complained that "the several acts of Parliament lately passed . . . have cut off from us all means of supplying ourselves with specie enough even to pay the duties imposed on us, much less to serve as a medium for our trade. If carried into execution they will further tend to prevent our making those remittances to Great Britain for payment of old debts or purchase of more goods, which the faith subsisting between the individuals trading with each other requires." The same reasoning appealed to the English merchants trading with America and their representations to Parliament were of influence in securing modifications of this legislation. Four prominent London merchants were primarily responsible for the repeal of the Stamp Act, and similar pressure led Lord North to remove some of the Townshend duties in 1770 on the ground that they were "uncommercial." The moderates among the merchants, both in England and in America, had so far prevailed.

Their alliance and their success were alike destroyed by the Tea Act of 1773. This unfortunate statute was designed to rescue the East India Company from the bankruptcy threatened by its accumulation of a huge surplus stock of tea. The state now granted it indirectly a virtual monopoly of the sale of tea in America. It was allowed to ship tea to the colonies in its own vessels to selected consignees. This arrangement undermined the existing array of middlemen, shippers, and importers and allowed the Company by direct from producer to consumer methods to undersell American competitors. The colonial merchants were aghast. They were faced by the loss of their profits in tea, and they were alarmed by the principle of the act. Other companies might receive favors for other goods—silk, drugs, spices. "America," as one merchant wrote, "would be prostrate before a monster that may be able to destroy every branch of our commerce, drain us of all our property, and wantonly leave us to perish by thousands." Moderate counsels no longer availed; the path was cleared for the activities of the radicals; the colonies drifted rapidly into the American Revolution.
CHAPTER IV

The Agricultural Conquest of the West

The American revolutionists declared their independence from Great Britain in 1776 and secured its final recognition by the Peace of Paris in 1783. As far as imperial government and domestic politics were concerned, these two dates made a sharp break with the American past. No such abrupt transition altered the economic life or organization of the colonies. Take the characteristic features of the colonial life and apply them to the days of the Republic. If extensive reliance on foreign manufactures be the test, the colonial era did not end earlier than 1830; if the considerable investment of foreign capital in American enterprises be chosen, the date comes late in the nineteenth century; if dependence upon foreign countries as markets for agricultural commodities be selected, the present year falls within the colonial era. In economic history, therefore, no single date marks the end of the colonial age. The United States continued to be a new country, and that fact influenced the nature of economic progress throughout the nineteenth century as in the previous two hundred years.

After the war, the economic life of the United States was still based upon the pioneer industries—the fur trade, the lumber trade, the fisheries, and, greatest of these, agriculture. This fundamental pursuit remained the dominant means of livelihood. It enlisted the nation’s energies and fashioned its culture and civilization. The farmer rather than the businessman was the average American citizen. A terminus to this agricultural era in American history should be placed somewhere between 1850 and 1865. The railroad, the national labor union, the iron ship, the machine, and the factory all came of age within these fifteen years and foretold a new epoch in American history. So it must be our task to understand not only the features of American agricultural civilization but those seminal conditions which were creating a new economic order within the womb of the old.

Trapper and Lumberman

The dynamic factor in American agricultural history was the conquest of the West. The agricultural domain by the time of the Revolution had
moved westward from the Atlantic, penetrated the valleys of the Appalachian ranges, and thrown an advance guard over the mountains. Before the Civil War it had spread into the great interior basin drained by the Mississippi and its confluenets, and had sent outposts to the Pacific Ocean. This victorious march pushed before it the other occupations so intimately connected with the frontier, the fur and lumber trades.

As in colonial days the fur trade sought the finer furs of the mink, the otter, the fox, the lynx, and the beaver, and conducted a more utilitarian trade in deerskins and buffalo hides. Cutthroat competition prevailed, and every greedy trader rushed in to make money while it was possible. Under the impact of their attack the fur centers of the continent were rapidly pushed to geographical or national limits. After the Revolution the fur trade for a while lingered east of the Mississippi. But after years of hunting and trapping by French, English, and Americans the yield in this area began to decline; the decade of the thirties marked the beginning of the end; and the forties witnessed the final catastrophe. Meanwhile the fur empire had moved westward into the trans-Mississippi region. In colonial times this area had been penetrated by traders, but its intensive and wholesale exploitation awaited the nineteenth century. The fur capital of this new region was St. Louis. In this city, controlling the rivers that drained the fur areas, outfits were collected for dispatch to distant posts, hunting expeditions made preparations, and all the great fur companies had their resident representatives. To it came the furs to be baled and shipped down the Mississippi to New Orleans or eastward by waterways and land carriage to New York or Canada. It was the Montreal of the West. Although in this area trade was kept alive by the buffalo until after the Civil War, the catch of fine furs was diminishing by 1840.

The international character of the trade—it involved conflicts with Great Britain, for instance, from Detroit to the Columbia—and the relations which it created with the Indians inevitably involved national regulations for its conduct. The character of the trappers and the methods of the trade both suggested the possibility of improvement. At first the government contented itself with issuing licenses to traders which could be secured only by presenting a certificate of moral character and by furnishing a bond to obey the Indian regulations. This method, however, was so ineffective that at the suggestion of President Washington Congress embarked upon the Indian trade itself. Posts were to be built by the government in the Indian country, and at these government factories officials were to give the Indian a fair price for his furs and conduct the business without the liquor and deceit which generally accompanied it. But after a history of alternating success and failure the national government abandoned this form of regulation in 1823.
One reason for this step was the inability of the government to compete with the private trader. The government factories, for instance, could not use liquor or advance credit to the Indian. A second explanation lay in the niggardly support given to the system by Congress. The factors which influenced Congress, then, were of importance. The most telling attacks were made by Thomas Hart Benton, master of language English, classical, and profane, and Senator from Missouri, where the fur traders came from. When his campaign of vilification was successful, he received congratulations from the representatives of the American Fur Company for freeing the country from "so gross and unholy an imposition." In reality the St. Louis gang rather than the country was free.

In the nineteenth century the fur traders sought to correct the instability of their trade through the formation of fur-trading companies which carried on large-scale operations. The American Fur Company gradually gained, however, a predominant position. The nearest American equivalent to the great Canadian organizations, it was the creation of John Jacob Astor, one-time German immigrant and later the builder of the first great American fortune. At first he invaded the Old Northwest and gained a virtual monopoly of the Great Lakes fur trade. Then, shrewdly recognizing the potentialities of the trans-Mississippi region, he attempted to develop the trade of the Columbia valley, but when this enterprise met with misadventure he undertook the successful exploitation of the Missouri region. During its heyday the American Fur Company was certainly a remarkable organization. Its posts extended from Mackinac to Fort Benton on the upper Missouri. On the Great Lakes it had vessels for the carriage of furs and for a subsidiary industry, lake fishing. On the Missouri, first keel boats and later a steam vessel transported Indian goods to the posts and brought back the annual catch. The ramifications of the company even extended overseas, for it purchased its supplies in England, France, Venice, and Trieste, and sold its furs from Canton to London. Through the latter the furs found their way to the Leipzig fairs, which at Easter and Michaelmas were the world's greatest fur markets. Even so powerful and profitable an enterprise could not withstand the exhaustion of resources and changes in the market. By the mid-thirties the great promoter of the trade, John Jacob Astor, had sensed its decline. In 1834 he visited England and wrote, "It appears that they make hats of silk in place of beaver." Astor returned to this country and sold out his interests in the American Fur Company. His successors and the big St. Louis traders hung on for a few years more, and then they too withdrew.

In colonial times the foreign market in England, in southern Europe, in the wine islands, and in the West Indies had stimulated a commerce in lumber and had created lumbering centers which were not mere adjuncts to
farming or means of satisfying a merely local demand. Between the Revolution and the Civil War a more important domestic market appeared. The urban industrial regions of the northern states no longer had forest resources immediately at hand; and when agricultural settlement began to overflow the treeless prairies stretching from Indiana across the Mississippi, even the farmers became purchasers rather than hewers of timber. The construction of railroads, with their demands for ties and for wooden bridges, furnished another market. An industry sprang up to meet these requirements.

Since the United States had at hand a virgin forest, apparently inexhaustible, the lumberman could pick and choose his timbers for size and for species. Except for special uses he ignored the hardwoods because they could not stand water transportation in drives or rafts, and relied upon softwoods—hemlock, spruce, and above all the white pine. In the utilization of these natural resources before 1860 Pennsylvania, New York, and Maine were the most important states. Naturally the industry clustered about waterways. They furnished the power for the sawmills and the avenue of transportation for raw material and finished product. In Maine, the Pine Tree State, the Penobscot, whose outstretched branches tapped territories from Moosehead Lake to the New Brunswick line, became the dominant river. Log drives of pine and spruce followed these turbulent waterways to the battery of sawmills on the lower river, and at Bangor the finished lumber was loaded upon ocean-going vessels. In New York the Erie Canal gave a cross-state artery and made Albany a great lumber center, while Lake Champlain, the Hudson River, and a connecting canal gave a north-and-south highway which brought down to the sawmills of Glens Falls, as to Bangor, an army of logs, still in the early fifties at least twelve inches thick at the butt. In Pennsylvania the sawmills followed the forest inland, and down the Allegheny, Delaware, and Susquehanna came huge ungainly rafts of planking or hewn timber to be sold in Pittsburgh, Philadelphia, or Baltimore.

The lumber industry, like the fur trade, moved westward. In the Northwest canny lumbermen saw a lumber El Dorado. The Great Lakes furnished an admirable means of transportation, Chicago was a growing city, the prairie markets were easily reached, and in Wisconsin and the upper peninsula of Michigan were beautiful pine trees, reminiscent of the virgin forests back east and growing upon the public domain, which could be purchased from a beneficent government with good luck at a minimum price of $1.25 an acre. The migration of the lumber trade commenced. It included the more enterprising lumber kings and the more ambitious young men; and likewise the teamsters, axmen, foremen, French Canadians, Scotch, and Irish, who joined the Germans and the Scandinavians in the new lumber camps. Even the myths of the industry were preserved. The Shanty Boy Ballads, the lumber-
man's folk song, placed in a western setting the disasters of the log drive and the sorrows of unrequited love; and Paul Bunyan and Babe, his big blue ox, the legendary heroes of the lumber camp, performed in Wisconsin and Michigan new feats rivaling those once done in New Brunswick and New York.

Down the rivers which flow into Lake Michigan and Green Bay the log drives came at the fresthet season to be gathered safely within the booms on the lower reaches where water power dictated a mill site. The timbers were sawed and then floated in scows or rafts to lake schooners which carried them to the lake markets. The Menominee, flowing into Green Bay, became the greatest lumber producing center in the world. Its annual production reached six or seven million feet, its drives turned miles of river into a solid mass of logs, and twenty-three mills poured "out lumber in an unending stream," wrote Stephenson, an emigrant from Maine, presenting "a pageant not unlike that which I had contemplated along the Penobscot from Oldtown to Bangor." Although Buffalo and Milwaukee were important markets, the great timber port of the Lake region was Chicago. Piles of lumber bordered its waterfront for miles. By 1860 neither Albany nor Bangor could rival it.

**LAND POLICIES IN STATE AND NATION**

While the fur trapper and lumberman were exploiting the West, the pioneer farmer moved in. Tempted westward like the others by the natural resources of the new region, he sought a rich fertile soil, unexhausted by years of cultivation.

> Cheer up, brothers, as we go
> Over the mountains, westward ho,
> When we've wood and prairie land
> Won by our toil,
> We'll reign like Kings in fairyland
> Lords of the soil.
> Then westward ho in legions, boys,
> For freedom's star
> Points to her sunset regions, boys.
> Aha!

In the satisfaction of this centuries-old American land hunger the conditions under which the land itself could be acquired were of fundamental economic importance.

The American Revolution wrought great changes in the land arrangements of the original states. It gave a convenient opportunity for destroying the feudal incidents to which property was subjected in the colonial era. The
payment of quitrents was erased by legislation or was allowed to lapse. This movement against irritating feudal vestiges was directed at the same time against two other features of colonial land tenure which seemed unpleasant to the radical temper of the Revolution: the customs of entail and primogeniture. These were legal devices by which property was kept in the hands of the same family for generation after generation. Entail forbade the alienation of land, and primogeniture provided that the eldest son alone should inherit the entire real estate in case his father died intestate. On this side of the Atlantic, seven colonies, mostly southern ones, mirrored in varying degrees these two features of the English land system. During the Revolution the repeal of entails and primogenitures began, and within ten years of the Declaration of Independence entails disappeared in all but two states, where they were unimportant; within twenty-five years primogeniture had everywhere followed suit.

At the same time the Loyalists, who had been so unfortunate as to embrace the losing side in the Revolution, suffered a miserable and universal proscription which did not ignore the practical advantage of confiscating their real estate. In New York confiscated royalist land probably brought $3,150,000 Spanish dollars into the state treasury; returns from the sale of such land in Maryland were more than £450,000. The seizures and sale of this land resulted in the creation of small holdings rather than large estates. New York endeavored to discourage the sale of lots of more than 500 acres, and records of some of her great estates reveal that they were sold to many purchasers. The redistribution of land brought about by the American Revolution cannot, of course, be compared with that in France during the French Revolution either in extent or in importance, and neither then nor later did large land holdings or vestiges of feudal arrangements disappear in the eastern United States. In the South great plantations still existed and landed grandees along the Hudson or in upper New York State owned manors sometimes of over 100,000 acres, and cultivated by leaseholders or tenants, at least until the anti-rent wars of the 1840’s and resulting legislation modified the system.

Long since in the seventeen-eighties the new nation had laid the groundwork of a national land policy. The ordinances then enacted and subsequent measures, modifying and elaborating them, were to apply to the national domain which came into being as a result of land cessions by the states to the central government. Seven states possessed or imagined they possessed under their original charters claims to the areas west of the Appalachian Mountains. These were Massachusetts, Connecticut, New York, Virginia, North and South Carolina, and Georgia. The jealousies of the small for the large states, the intermingling of the boundaries, the vagaries of title, and some
degree of self-sacrifice combined to compel these states to surrender their western territories to the United States. The cession began in 1781, when New York took action; it ended in 1802, when Georgia, tired out with her efforts at state administration, completed the process. The domain thus created “to be disposed of for the common benefit of the United States” has been constantly enlarged. The Louisiana Purchase, the Florida acquisition, the fruits of the war with Mexico, the Oregon territory, the Gadsden purchase have all been additions to this original nucleus. The lands of Texas alone never became a part of the national domain; they were retained by the state. The amount of land owned by individuals in these areas at the time of the acquisition was, in comparison with the total, trivial. All the rest was added to the public domain. At the present time, when private ownership in land predominates throughout the nation, it is difficult to conceive that the government at one time or another has been the owner of an estate of 1,300,000,000 acres.

The sheer immensity of these figures is apt to dwarf the importance of other land operations after the Revolution. As a matter of fact, in the West of the early nineteenth century there were extensive areas never included in the public domain, and probably only a quarter of the emigrants to the western lands before 1820 were affected by the national land policy. State holdings were more important. Western New York was an unsettled wilderness, part of which was owned by that state; but more than six million of its acres had passed into the hands of Massachusetts through a friendly adjustment. Beyond the Appalachians state holdings were extensive. Connecticut, although surrendering her claims to the national government, excluded from this cession a large area which lay in the northeastern corner of Ohio, “the Western Reserve of Connecticut in Ohio,” from which she proposed to compensate some of her citizens who had suffered from the brutalities of the Revolution. Southern Ohio was pierced by a large wedge of land driven northward from the Ohio River, known as the Virginia military lands, from which the state compensated her recruits in the Revolutionary army by land bounties. The land in the future state of Kentucky had, before its transfer to the national government, passed into the hands of private owners. Likewise North Carolina’s western territory, the future state of Tennessee, was so well settled at the time of cession that no additions were made to the public domain. And Georgia attempted to sell lands in her western territory before its surrender to the Union in 1802.

These vast areas challenged the states to devise some means of settlement and at the same time suggested to interested speculators the possibility of making money. The true American tradition of speculation in lands, dating from the colonial proprietors, was continued with new zeal after the temporary interruption of the American Revolution, and individuals of means,
singly or in company organization, purchased enormous tracts. Nathaniel Gorham, a Massachusetts merchant, and Oliver Phelps, a Connecticut-Massachusetts man whose duties as commissary in the American army had not impoverished him, in association with others bought from Massachusetts an immense area in upstate New York and then from Connecticut the residue of her lands in the Western Reserve. Meanwhile a tribe of speculators had besieged the Georgia legislature for grants in her western areas, now the states of Alabama and Mississippi. For an average price of a cent and a half an acre, that body sold “Yazoo lands” to four companies composed of western pioneers, Georgia statesmen, land speculators, and all members of the legislature but one. Before the transfer was voided for fraud, the purchasers had unloaded upon the unwary. But the prince of speculators was Robert Morris, Philadelphia merchant and famous financier of the American Revolution. By 1795 his North American Land Company had assets of 6,000,000 acres from Georgia to Pennsylvania; he speculated in real estate in Washington, the new capital, and owned lands on the St. Lawrence. Before bankruptcy engulfed him, he had made resales to Americans and to Dutch and English, for foreigners were as “new-land mad” as they had been before the Revolution.

However ephemeral may have been the fortunes of these “proprietors” of the new Republic, these men were the medium by which the lands were placed in the settlers’ hands. Generally the first step was the survey. In the northern areas it usually laid out townships which were sometimes sold whole to single speculators, or to groups of settlers who worked to establish a community life. In addition other aspects of colonization were attempted. The first agent dispatched by the English purchasers to their holdings in western New York laid out towns, surveyed and constructed roads, advanced seeds, provisions, farming tools and livestock to occasional settlers, built log cabins, sawmills and gristmills, and sold land. The New Englander, penetrating westward into New York and northern Ohio, thus found in these developments arrangements suggestive of the communal townships of his colonial inheritance. Only here the large capitalist rather than the town proprietors furnished the directing power and eased the course of settlement. The great inducement which all these western lands offered was their cheapness. Some of the resales by the Yazoo Company were made at ten cents an acre; the wild lands in the Phelps-Gorham purchase sold at the beginning of development for from one to four shillings an acre, and credit was advanced to the purchaser.

As the advance of settlers occupied these more accessible tracts and raised their prices, the policy which the national government had adopted for the public land became of supreme importance. The fundamental principles of that policy had been determined by the ordinances of 1785 and 1787. The
latter, embodying an earlier ordinance, established the political principles under which American colonization was to proceed. The public domain was not to remain in terms of permanent subjection to the mother country but, after passing through various stages of territorial organization, the new states were to be admitted to the Union upon terms of equality with the older ones. The application of this great principle guaranteed the American colonist against political inferiority and economic exploitation by a government in which he had no part.

The Ordinance of 1785 defined the land policy for the national domain. In view of the colonial dislike for quitrents and the democratic temper of the American Revolution, it naturally rejected the possibility of transferring the land to private hands under some arrangement of lease or rent. Rather the title was to pass, unencumbered with feudal fees, to the freeholder. A decision as to the methods of transfer was more complicated, for colonial practices in the northern and southern colonies had differed. Northern precedents, however, left the greater impress upon the national system. Indiscriminate location was rejected for a rectangular system of survey in advance of settlement. A base line running east and west and a principal meridian running north and south were first imposed upon the wilderness by the surveyors. From the junction of these perpendicular axes, ranges a township in width but many townships long were to be laid off both east and west and designated by a number and a compass direction from the principal meridian. Within each range the townships were to be numbered north and south from the base line. The township itself, six miles square, was to be subdivided into sections a mile square—640 acres—and these sections were numbered across the township beginning at the northeast corner in a zigzag fashion from 1 to 36. Section 16 in each township was reserved for the support of schools. Although these geometric details seem painfully artificial, under their provisions a piece of property had accurate bounds and a definite situation. Thus it was easy to locate a purchase in the wilderness and to avoid

Illustrative Diagrams:

The designated township is Township 3 South, Range 2 West, First Principal Meridian (Tp. 3 S., R. 2 W., 1st P. M.).
boundary disputes. Both these advantages facilitated actual settlement and gave a spur to speculation. Land could be transferred from buyer to seller with almost the ease of a bushel of wheat or corn. Under the provisions of this ordinance half of the townships were to be sold entire to purchasers, the other half were to be sold in sections. The land was to be sold at auction, but no price lower than a dollar an acre was to be accepted.

THE LIBERALIZATION OF NATIONAL POLICY

The Ordinance of 1785 instituted a land policy whose further development was conditioned by a quarrel between different schools of political thought, different sections, and different economic groups. On the one hand were those who urged that the government should dispose of its land prudently under somewhat severe terms, and on the other were those who insisted upon a generous land policy. The controversy between the two raged over such points as the size of the minimum allotment offered for sale, the price per acre, the terms of payment, or such larger questions as pre-emption, graduation, or homestead.

By 1820 the liberal policy had won a great victory on the first cluster of questions. The minimum purchase area had been steadily reduced from 640 acres in 1796 to 80 acres in 1820, a reduction carried still further in 1832 to 40 acres; and the minimum price had fallen from $2.00, which had been set by an act in 1796, to $1.25 per acre—a cash payment. Some few choice areas were bid higher than these minimum prices, but so abundant was the land and so united public opinion that bidding usually fluctuated about the statute price. For all practical purposes, then, a pioneer farmer purchasing a western farm in 1796 had to pay $1,280; in 1820 a beginning could be made for $100. The only reversal in this development was the repeal in 1820 of the credit arrangements granted by the Act of 1800, which had postponed one-quarter of the payment for two years and a final quarter for four years. But the fact that speculators and purchasers were in arrears to the government for a sum of $21,000,000 was an unanswerable demonstration of the unwise of credit advances.2

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2 The Development of Government Land Policy:

<table>
<thead>
<tr>
<th>Act</th>
<th>Minimum Purchase Acres</th>
<th>Minimum Auction Price per acre</th>
<th>Conditions of Sale</th>
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</thead>
<tbody>
<tr>
<td>1796</td>
<td>640</td>
<td>$2.00</td>
<td>$\frac{3}{4}$ cash (cash deposit, rest 30 da.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>$\frac{3}{4}$ credit (1 yr.)</td>
</tr>
<tr>
<td>1800</td>
<td>320</td>
<td>$2.00</td>
<td>$\frac{3}{4}$ cash, $\frac{3}{4}$ credit (40 da.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>$\frac{3}{4}$ credit (2 yr.)</td>
</tr>
<tr>
<td>1804</td>
<td>160</td>
<td>$2.00</td>
<td>$\frac{3}{4}$ credit (4 yr.)</td>
</tr>
<tr>
<td>1820</td>
<td>80</td>
<td>$2.25</td>
<td>Credit as in 1800</td>
</tr>
<tr>
<td>1832</td>
<td>40</td>
<td>$1.25</td>
<td>Cash</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cash</td>
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</tbody>
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The words “graduation” and “preemption” have at present the dull sound which attaches to dead political and economic issues. Before 1860 they aroused the enthusiasm of a crusade. Both causes were created by the rapidity with which the West was settled. The frontiersman, farmer, or speculator, confronted by the inexhaustible public domain, pushed forward, selecting the better lands. Behind in the surveyed areas he left islands of poorer land which found no purchasers, and those who desired a lowering in the price of sale saw here an opportunity for their argument. In 1854 Congress finally passed a graduation act which reduced the minimum price to $1.00 per acre after the land had been for sale ten years and made further reductions to 12½ cents for land thirty years unpurchased.

 Entirely different conditions were responsible for the preemption policy. In this case the settlers, outrunning the course of surveys, had settled upon the public domain. Actually this was indiscriminate location. In theory these squatters were criminals, for they trespassed upon land before it was open for sale. When the first townships were laid out in Ohio the military forces which accompanied the surveyors held off the Indians on the one hand and drove away the squatters on the other. Since the practice was too profitable and too deep-seated to be exterminated, Congress fell into the habit of legalizing these squatter invasions in special instances. Finally in 1841 it passed a general preemption law by which heads of families, men over twenty-one, and widows were allowed to settle on 160 acres of unsurveyed public land with the right of purchase at the minimum price when the land was placed on sale. The acts of 1841 and 1854 were but preludes to the complete victory of the liberal land party in the Homestead Act of 1862. This statute gave 160 acres in the public domain to “any person who is the head of a family, or who has arrived at the age of twenty-one years, and is a citizen of the United States, or who shall have filed his declaration of intention to become such.” The only conditions which the government as donor exacted from the beneficiary were that he make the payment of certain very small fees, and that he live upon his homestead or cultivate it for a period of five years. Thus the act was the ideological fulfillment of a long agitation and trend in American history. In practice other methods—sale, preemption, gifts to railroads, states, and veterans—long remained the chief avenues of land disposal.

 John Quincy Adams, as well as anyone, expressed the statesmanship of those opposed to this successful liberal land policy. To his mind the public land was a great national resource from the careful administration of which funds would flow, to be devoted to the well-being, happiness, and education of all the people. Such vision was unusual. Most opposition was based upon
the self-interest of two economic classes—one the landowners in the eastern states, and the other the manufacturers. The former group saw the value of its real estate injured by the cheaper and more fertile lands of the West; the latter had to maintain a higher wage level in order to recruit a labor force in the face of attractive agricultural opportunities both east and west. These and other objections to a liberal land policy were by no means confined to the Atlantic seaboard. In 1832 Henry Clay, Kentuckian, opposing the reduction in the price of public land, asserted that such a proposal would lessen the value of real estate in Ohio, Kentucky, and Tennessee and "impair the value of the property of the yeomanry of the country." So quickly had settlement made even the West East. In the same fashion the self-interest of the pioneer farmer and speculator explained their enthusiasm for a policy of cheap land. These classes, largely western, struck hands with the industrial wage earners in the East, who, although they had neither the means to go west nor the training for farming, dreamed of cheap land as an escape from the straitened conditions of their lives. Or at least their leaders were always willing to inspire them with the possibility.

At its best the cause of the liberal land policy transcended mere economic self-interest. Its proponents asserted that land sold on liberal terms or given away to actual settlers promoted a true democracy. Every man had an equal opportunity to own land and the assurance of freedom from dictation by employer or landlord. In the West such sentiments found a vivid spokesman in Thomas Hart Benton. In words reminiscent of the Scotch-Irish squatters in Pennsylvania and of the New Jersey quitrent rioters, he said, "I speak to Senators, who know this to be a Republic, not a Monarchy, who know that the public lands belong to the People and not to the Federal government." The choice lies between the freeholder and the tenant. "Tenantry is unfavorable to freedom. It lays the foundation for separate orders in society, annihilates the love of country, and weakens the spirit of independence." At the same moment in the eastern manufacturing districts the National Reform Association, an organization advocating land donations to actual settlers, was distributing a pamphlet, *Vote Yourself a Farm*. "If a man have a house and a home of his own, though it be a thousand miles off, he is well received in other people's houses; while the homeless wretch is turned away. The bare right to a farm, though you should never go near it, would save you from many an insult." Beneath the rotund balderdash of the politician and the exaggeration of the pamphleteer was the thought that only in an equality of economic power lay the possibility of genuine freedom and democracy.

It was ostensibly the purpose of the government land policy to transfer the
public domain to persons who would live upon it and cultivate it. It was not
designed to enrich speculators. The enthusiasm for the Pre-emption and
Homestead Acts was in part attributable to the hope that these democratic
measures would outwit the speculators. Yet in 1862 an English observer
wrote:

There are no statistics which show how many Yankees went out West to buy a
piece of land and make a farm and home, and live and settle, and die there. I
think that not more than one-half per cent of the migration from the East started
with that idea; and not even half of these carried out the idea.

This thought was not another half-baked generalization by a glib foreign
observer. In a sense every American pioneer farmer was a speculator. He
hoped that the price of his land would be increased by that "great western
staple, the Progress of the Country," and he often bought more land than
he could cultivate with the design of selling this surplus for higher prices.
A characteristic distinguishing the American farmer from the European
peasant has been the former's willingness to gamble on land prices and re-
coup his losses on crops through appreciation of land values. In addition to
the farmer, merchants, physicians, politicians, the small-town fry of the west-
ern movement, were speculators on a small scale in agricultural land. These
phenomena were too accepted and universal a part of American life to arouse
disfavor. It was the large speculator who became the foe of the people. They
"produce more poverty than potatoes and consume more midnight oil in
playing poker than of God's sunshine in the game of raising wheat and
corn." Here was the land monster.

Large-scale speculation runs back, of course, to the colonial era. It began
in the public domain as soon as the Revolution was over, for during the
period of the Confederation the land system had not been crystallized and
the Confederation government, frantic for funds, saw an opportunity of ob-
taining money through the sale of government land. Individual purchasers
were eager to oblige. While some like Phelps, Gorham, and Morris were
purchasing state lands, others bought heavily in the government domain. In
1788 John Cleves Symmes, a wealthy New Jerseyite, petitioned for a million
acres between the Great and Little Miami rivers in Ohio and paid no more
than a dollar an acre. In the same year the Ohio Company, composed of
former officers in the Revolutionary Army, proposed to purchase over a mil-
lion acres in southeastern Ohio at a dollar an acre or less in depreciated Con-
tinental currency. In order to win Congressional assent, they had to unite
their project with the more dubious scheme of the Scioto Associates, a group
of aggressive speculators who bought to resell to Dutch and French pur-
chasers. The calculations of Symmes and the Scioto Associates went awry,
but the Ohio Company in its purchase laid out towns, gave grants of land to sawmills and gristmills, supported soldiers, undertook the construction of forts, granted loans, built houses for actual settlers, and in short performed in the Ohio wilderness the functions which chartered companies or proprietors had carried on in colonial Virginia and Massachusetts. The records of the Company are too vague to show whether these operations were profitable.

These three enterprises were the only large sales of land authorized by Congress. Later speculative enterprises had to conform to the pattern of the national land laws. Large holdings could be acquired, of course, through large purchases at the auctions of the public land. Speculators utilized this procedure and occasionally banded together to drive away competitors and prevent competition among themselves. These gentry also were on a continuous search to find ways of purchasing land more cheaply. The Graduation Act was one loophole, and the generous provisions of this statute were consistently evaded. Congress showered a second bonanza upon the speculators in 1847, when it began giving soldiers who had served in American wars a warrant for 160 acres of the public domain and five years later made these warrants assignable. Speculators purchased such script for from 50 cents to $1.15 an acre. In Iowa the one hundred and forty largest purchases of land by military script averaged 9,860 acres apiece; one purchase exceeded 250,000 acres. Individuals or companies built up large holdings. One of the latter, the Northwest Land Company, had for sale in the fifties 450,000 acres in the western states. These speculators did not always deserve popular obloquy. Some made improvements upon their holdings; others gave credit to purchasers; their resales were usually made at small profits. On the other hand, they corrupted land offices and legislatures and by holding land off the market dispersed settlement and angered the pioneer. Occasionally these large landholders sought to cultivate rather than sell their holdings. They developed tenancy, perhaps to cope with the problem of squatters, or farmed with hired labor.

Whatever the merits or demerits of the national land system, the public domain was settled with bewildering rapidity. Census figures most compactly told the story. In 1790 the population of this young nation was confined largely to the area east of the mountains. Of the 4,000,000 people in the thirteen original states approximately 94 per cent were in the latter region; only 250,000 had settled in the West of that era. Seventy years later the census of 1860 discovered within the United States a population of nearly thirty-one and a half million. Its distribution was significant, for nearly 50 per cent of the population lived in the trans-Appalachian region. So recent had been some of this growth that less than eleven years after the gold rush there
were more people in California than there were in New Hampshire after all its decades of history.

These accretions to the population of the western states came from the same sources as those of the colonial West: immigrants from Europe and native Americans from the regions “back east.” Figures for the former movement were not kept with comparative precision until 1819–1820. Between that date and the Civil War approximately 5,000,000 aliens arrived in the United States, the larger share of whom stayed in the East. Nonetheless hundreds of thousands, particularly among the Germans, moved westward; even

![Population Growth Chart](image)

Each man represents 200,000 people

Those who did not were often attracted to this country by the magnet of cheap land. A Belgian investigator, pooh-poohing the political organization of the government as the cause of emigration wrote in 1846, “Land which is cheap, of an almost unlimited extent, fertile enough to make capital unnecessary for its exploitation, is a powerful attraction for the agricultural populations of Europe. During the nineteenth century this attraction has been more powerful than any institution made by men.” The same call moved the westward migration of native Americans. The London Spectator shrewdly observed the American West was to the state of Massachusetts or New York what North America as a whole was to Great Britain and Ireland. In other words, the European migration was but a feature and a fraction of the larger
migration which was taking place continually within the states of the Federal Union. The whole East felt the drain. Certainly the states mentioned by the Spectator compensated their losses by the growth of commerce and industry and a population swelled by urban migration and European arrivals. On the other hand, the agricultural states of the East, like contemporary European countries, feared they were being "embowelled" of their human resources. Thus the migration to the West not only built an agricultural empire there but influenced as well the agriculture of the Atlantic seaboard.

**Agricultural Pioneering**

Although there were many common features to this movement into the Mississippi basin, the agricultural aspect of that vast interior was not uniform from the Great Lakes to the Gulf of Mexico. Differences in physiography or in climate or in soil combined to mark across the West broad zones of different agricultural development. In a way the economic differentiation which had occurred east of the mountains in the thirteen colonies was extended to the larger area of the new nation. In the North the production of wheat, corn, and livestock preempted the area north of the Ohio and the Missouri rivers; the growth of other agricultural staples, of which the newest and the greatest was cotton, colored the expansion westward into the gulf states. Between these contrasts lay a mediating region which continued west of the Alleghenies the functions which northern Virginia, Maryland, and southern Pennsylvania had performed in colonial times. The Border states were not only Border states politically. Behind the party preferences and political performances of Kentucky, Tennessee, and Missouri lay an economic background which intermingled the characteristics of northern and southern agriculture.

The western domain which northern agriculture was to occupy before 1860 stretched from the Appalachian Mountains to a western limit following in an irregular fashion the hundredth meridian. The Great Lakes were its northern boundary; on the south it filtered into the Border states. It is a region drained by three great river systems, the Ohio, the upper Mississippi, and the Missouri. With the exception of the Allegheny plateau, tilted northwestward from the Appalachian regions and disappearing soon after it crosses the Ohio River, the region is one of lake plains, clustering about the Great Lakes or prairie plains, sweeping westward until they reach the area of diminishing rainfall. Its characteristics require superlatives. Most of it is comparatively level and extremely fertile. North of the Ohio and the Missouri the cause of this happy condition was the comparatively recent covering of the area by the glacial ice cap. Its action pulverized rocks whose chemical constituents are exceedingly valuable for plant life, and it laid down
this material in a thick layer whose fertility was great and not easily exhausted. Because of the nature of the land over which it spread, the glacier deposited fewer of those areas of sand and of rock which did so much to hamper New England agriculture. In the non-glaciated land of Tennessee and Kentucky the value of the soil ranges from the infertile shale soils in the east to the rich alluvial bottoms of the rivers. In places a substratum of lime approaches the surface and creates spots of almost startling fertility. In Kentucky these limestone areas were distinguished by the riotous growth of the blue grass upon them. These limestone areas have an almost inexhaustible fertility, for deep subsoil plowing continually brings to the surface elements valuable for plant life. Throughout the whole region the rainfall is sufficient for agriculture and is generally well distributed; the time between frosts is long enough for the growing season; there is an abundance of sunshine. There is hardly an area in the world better suited for agricultural pursuits.

The first farmers crossing into this region found the conditions of pioneering were the same as those of the first one hundred and fifty years of American settlement. They were penetrating a heavily wooded region. For the settlers this primeval forest at once eased and hindered existence. The fallen timber furnished material for the inevitable log cabin, for the fences which were a necessity when a mixed agriculture of livestock and grain growing was to be pursued, and for fuel. It was adapted in the West “for purposes more anomalous, where wooden pins are substituted for nails, and wells are curbed with hollow logs, where the cabin door swinging on wooden hinges, is fastened with a wooden latch, and the smoke escapes through a wooden chimney. . . . Well may ours be called a wooden country.”

On the other hand the ground had to be cleared in order to be cultivated and the American pioneer farmer became such an expert in the methods and instruments of destruction that guidebooks published for European immigrants advised them to purchase a farm already cleared, since the Yankee was three times as efficient a woodsman as the newcomer. The ax was developed to a point of efficiency equaled by few other tools. With this instrument smaller trees were notched and then brought down in a mass of entangled branches when a larger neighbor was chopped through. The whole pile was burned to add its ashes to the already fertile top soil of the forest. Or the Indian-colonial method of girdling trees might be utilized and the crop planted below the leafless branches. An area thus rudely cleared might not be improved for several years. The stumps remained to plague the plow or the dead trees stood until they fell through decay or fire.

As the farmer pushed westward he was eventually confronted by a
changed and challenging environment. The forested regions surrendered to the open prairie. There were, however, transition areas. In northern Ohio and Indiana small prairies were interspersed with the timber lands, and in southern Michigan and Wisconsin there were oak openings. These were beautiful parklike areas in which a few magnificent trees were spaced and the tangle of the forest gave way to prairie grass or low shrubbery. As western Indiana was reached the prairies became larger and finally in northern and east-central Illinois began the real prairie, which swept westward mostly treeless except for the heavy stands in river valleys and fringes along smaller watercourses. The reason for the appearance of these prairies is now believed to be a rainfall which permitted the growth of vegetation but was not sufficient to protect forests against recurrent fires. The pioneer did not have the advantage of this speculation. Bred to a forest farming of two hundred years, he believed that trees were a symptom of a “strong” soil and their absence on the prairie was a presumption of soil sterility. More vital was the upset which the prairie gave to forest technique. Material for cabins, fences, fuel was lacking. Well digging was frequently difficult, for the water lay under a lime substratum which only improved drilling processes pierced. Then there was the prairie grass. Its deep-thrust roots and closely matted surface spread a sod which was an impervious mass to the ordinary plow and was with difficulty planted to crops. All these disadvantages were heightened by the apprehension which these wide spaces with their limitless horizon inspired. They were open in winter to the unchecked winds, and it was said that the scorching rays of the summer sun maddened and destroyed the brain. As contrasted with the woods, the prairies gained an undeserved reputation for unhealthiness.

Population, however, edged out into these regions. The smaller prairies and the oak openings were first utilized. Then settlement skirted the edge of the large prairies. The ever running tide of settlers, however, gradually forced those who wished land onto the open prairie. The extension of railroads made timber supplies available. Wire fencing was introduced to enclose the fields, sod houses and barns were the temporary substitutes for the log cabin. And for breaking the soil, a heavy plow was designed to turn up a very shallow but broad furrow; it was pulled by three or four pair of oxen. In this way the grass and roots were most effectually exposed for decay. Although there were no rocks, the soil was so tough that the plowshare had to be sharpened every mile. Then the farmer planted his seed in the upturned furrow by picking a hole in it with an ax or mattock and dropping in his “sod” corn. This task would be done in the spring. The summer was devoted to building his house and fences and breaking more prairie for a sowing of wheat in the autumn. As compared to forest farming the starting of a prairie
farm was probably less expensive, although barrier enough for the needy pioneer. The breaking task required such an investment in tools and such skill that it was generally turned over to professionals. The cost of preparing an acre—approximately $1.50—was more by a few cents than the cost of the land purchased from the government. And there were the other costs of timber for fence posts, for barns, and for the farm house. But once the initial handicaps were surmounted the prairie farm was superior. The soil was richer with the accumulated decay of roots and grasses, and with its absence of stumps and trees it was cultivated with greater ease and less vexation.

Under these pioneer conditions agriculture was self-sufficing until the tardy improvement or construction of means of transportation hitched the farm to some settled area where its products could be marketed and the necessities and comforts of life could be purchased. This self-sufficient character of western life was furthered by the abundance and cheapness of the public lands. Since only the best locations were occupied, settlement was dispersed and scattered. Corn and wheat provided the chief cereals and the flour. Pumpkins and beans were grown in the cornfields, other vegetables came from the small vegetable patch tended by the woman of the family. Large herds of pigs picked up a living and after a few weeks of stuffing with corn were slaughtered for mess pork, bacon, and hams. A cow or two grew fat on the wild rye or buffalo grass, furnished milk, and on demise provided a fresh roast or smoked beef. The oxen, whose slow, prodigious strength made them superior to horses for prairie work, eventually suffered the same fate. A few nondescript sheep provided mutton and fleeces for manufacture into pioneer clothing. The labor force was the family, and a high birth rate and large families were the rule. To hire outsiders as additional help to one's sons and daughters cost money. Everyone wanted to be a landowner rather than an agricultural laborer.

Aside from a small class of professional pioneers who enjoyed the loneliness and freedom of self-sufficing agriculture, most farmers desired to be on the make. To do this, however, they had to escape from the circle of self-sufficiency and raise an agricultural surplus which could be sold off the farm. Only in this fashion could they discharge the burden of debt which their enterprise had involved, for most of them had borrowed at least part of the sum necessary for farming. Even in the West there were heavy costs in agriculture—some of them precedent to getting any crop at all. There was the journey to the new location, the purchase of the land, the expense of breaking prairie and fencing, and buying seed, stock, tools, and supplies until the crop was harvested. Perhaps these sums in the fifties, aside from land, averaged $1000 for a 40-acre farm. Eventually, of course, the price of the land would rise, comforts and the paraphernalia of prosperity appear on every
side, and the inbred optimism of the pioneer derive new nourishment from the evidences of progress. The development of commercial agriculture, with its attendant problems, was just as pressing for the Iowa pioneer in the nineteenth century as it had been for the English emigrant to colonial Virginia in the seventeenth.

The farmer, therefore, devoted himself to those agricultural staples of the North which could form the basis of a commercial agriculture. They were Indian corn and wheat. The first of these could be grown almost everywhere in the Middle West; its yields were large, and its cultivation was easy. Although corn was taken to market, it more commonly furnished the basis for less bulky products which were more readily transportable. It might be distilled into whisky, or it might be used as a fattening crop for hogs and for beef steers, which could be driven easily to market. Livestock raising was one of the fundamental occupations of western farming. Wheat, however, was the “cash crop” par excellence. It could not be grown as widely as corn and a year's cultivation of the latter grain was often necessary as a preparation of the soil. But it did not require an interval of feeding to stock, for, more valuable than corn in proportion to its bulk, it stood the costs of transportation better. Unlike corn it had a world market. Naturally the rewards of wheat growing depended upon the size of the crop, the costs of transportation, and the prices wheat would bring. With good luck in respect to these factors the farmer might discharge his whole indebtedness in one year. In 1843 a Wisconsin farmer planted three hundred acres of winter wheat. His account ran as follows:

\[
\begin{align*}
300 \text{ acres of land at } 10 \text{ s [\$1.25]} \text{ per acre} & \quad \times \quad 300.00 \\
\text{Fencing} & \quad \times \quad 300.00 \\
\text{Breaking at 14 s per acre} & \quad \times \quad 525.00 \\
\text{Seed, 1 1/2 bu per acre at 5 s per bushel} & \quad \times \quad 281.25 \\
\text{Sowing and harrowing at 8 s per acre} & \quad \times \quad 300.00 \\
\text{Harvesting and stacking at 10 s per acre} & \quad \times \quad 375.00 \\
\hline
\text{Total} & \quad \times \quad 2,156.25 \\
\end{align*}
\]

This figure was increased by the cost of transportation and other items to $2,996.25. He sold his product for $3,240.00. “Net gain (not counting for labor) 300 acres of good land, well fenced and thoroughly improved and $243.75 in cash.”

The time when the shift was made from self-sufficing to commercial agriculture varied for different portions of the western farming area. It cannot be dated precisely. But by 1830 Ohio had generally completed this adjustment, and by 1850 it was joined by the states farther west, Indiana, Illinois,
Michigan, and part of Wisconsin. As the means of transportation were more rapidly extended, the interlude of self-sufficing existence became shorter.

The change to commercial agriculture made, the aspect of the countryside altered. Observers as they moved back from the line of frontier settlement noticed that the ugly exploitation of land was mingled with symbols of a new urbanity and prosperity. The log cabin had been replaced by a frame or brick house or had been converted into a stable. The fields were cleared of stumps and better fenced. A more permanent class of cultivators had purchased the soil from its earlier possessors. The rural community altered. The French traveler Ampère thus described the "embryogony" of Ogdensburg, New York: "Imagine big streets and black mud; sidewalks made of planks, here and there replaced with magnificent flag-stones; clumps of trees which belonged but now to the primeval forest; roughly enclosed ground—lots which appear to be abandoned—they belong to some one, but are not yet cultivated—and beside these abandoned lots imagine attractive gardens, elegant 'cottages,' the most modern civilization establishing itself on land cleared only yesterday; comfort along side the rude and the unpolished; cows grazing not far from a dry-goods store in the windows of which one may see styles from the Fashion Magazines and the pictures of the members of the provisional government; bales of merchandize in the street among overturned tree-trunks; a mixture of disappearing wildness and incoming industry, a combination of the Iroquois and the Chinese."

It is unjust to condemn the agricultural practices of the pioneer in the light of modern agricultural science, but only a knowledge of that subject makes it possible to evaluate the methods of the western farmer. Although many of the conclusions reached by scientific agriculture about soil fertility and soil exhaustion seem to the layman exceedingly tentative in character, there is a general agreement that phosphorus, potash, nitrogen, lime, and sulphur are necessary for healthy plant life. Some of these elements are withdrawn very slowly from the soil by growing plants; others are rapidly depleted. They can be restored by animal manure, soil amendments, or artificial fertilizers, or by certain rotations. For instance, plants which are nitrogen producers—beans, peas, clover, alfalfa—replace the nitrogen which is so rapidly consumed by certain crops; the same end can be attained by allowing the field to grow up to vegetation whose slow decay increases the nitrogenous content of the soil. More important than the amount of these elements in the soil is their availability for the roots of the plants. Their degree of decay or solubility, the presence of parasites, diseases, and weed toxins in the soil which hamper plant growth, and the activity of favoring influences such as some bacteria—all these are vital. So rotations of crops are necessary not only to restore fertility, but to rid the soil of parasites, weeds, and even of
insect pests, whose life cycle is often closely interlocked with that of a single crop. Lime and manure are applied not only because they are plant foods, but because the former counteracts the toxins created by plant growth and bacteria and the latter improves the mechanical composition of the soil.

After all these precautions there still remain two menaces to a wise and permanent agriculture, leaching and erosion. Rain is responsible for them both. In leaching it washes from the soil the materials in solution before they are absorbed by the plants; in erosion it carries away into rivers or into the sea the surface soil itself, which contains the life-giving elements. In the days before agricultural cultivation the matted roots of trees and grasses prevented these losses, but plowing, harrowing, and pulverizing the soil for crops has destroyed this protection. The losses through erosion are staggering. According to one estimate, a tenth of the tillable land in Kentucky has been destroyed through this process, while according to another, farm land in this country equal to the total cultivated area of England has already been abandoned because of soil erosion.

For several years after the forest or prairie farm had been started rotations were ignored. In Ohio, Illinois, and Wisconsin the first arrivals turned to wheat farming and planted that cereal year after year. It was the same story with other crops. On the large farms in the Scioto and Miami valleys of Ohio, corn followed corn. In 1841 it was asserted that some of the lands in the former valley had been cultivated for forty years to this single crop and still turned out large yields. The same methods and the same result were common in the blue-grass region of Kentucky. But unless conditions were exceptional the frontier practice of planting the same crop on the same piece of land year after year led to a declining yield. The farmer was compelled either to press on in search of new lands or to adopt a different agricultural régime.

Even the pioneer eventually adopted some rotations. A common practice was to interrupt the cultivation of wheat by planting the field to corn. Such a procedure did not restore any fertility to the soil, for corn was not a nitrogenous crop. But the frequent cultivation of the field between the corn rows and the deep shade cast by the growing plant were excellent devices for cleaning the field of weeds. By 1840–50, when Wisconsin and Illinois frontier farmers were planting wheat without rotation, wheat raisers in Ohio and New York had adopted a more elaborate and careful cultivation. A field upon which peas or clover had grown was plowed in the spring and was allowed to lie fallow during the summer, disturbed by an occasional replowing. In September wheat was sown. This procedure restored nitrogen to the soil and effectively cleaned out the weeds which so overran most farms that “the crop of grain appears to be considered by them as an intruder.” But the sum-
mer fallow invited losses through erosion and placed in idleness fields which might better have been devoted to a profitable crop.

The general failure of the frontier rotation systems to replace the nitrogenous content of the soil was not remedied by the use of manure. By grazing the livestock over the fields a haphazard fertilization would have resulted. But frontier fields were rarely planted to grass, and the livestock fed for most of the year in the woods or in pastures where their manure went to waste. Occasionally, after a crop had been cut, they were turned in to graze on the stubble, but this period was short. The accumulation of manure in stables and yards was still a burden rather than an advantage to the farmer. Many barns were built over streams or banks so that the manure would not accumulate. It was often dumped into swamps or marshes where it could not offend the eyes or nostrils of the cultivator.

As a consequence of these methods the pioneer farmer has been condemned as a reckless exploiter robbing the soil of those elements of fertility which should have been conserved for posterity. This reproach is extravagant. Losses through erosion and leaching permitted by crude methods of tillage are, of course, irreplaceable. On the other hand, sulphur and phosphorus were not withdrawn from the earth in dangerous amounts, and the slow process of nature recruits the nitrogenous content of the soil. Although western methods momentarily exhausted the soil for the particular crops which were raised, that condition has not been permanent. Whether the pioneer should be censured or forgiven remains, however, an academic question. The nation had turned over its agricultural development to the competition of individual farmers. They were likely, therefore, to adopt the easiest way of making money. Under the conditions of the frontier, with its scarcity of capital and labor and its abundance of cheap land, the farmer inevitably chose to use the soil for all it was worth and then move west to repeat the process on new virgin acres. It did not pay to farm well. The patriotic defense advanced by the census of 1860 had an economic basis:

Our land is not so thoroughly under-drained, manured, and cultivated as that of England, Scotland, or Belgium; but we can, and do now, produce a bushel of wheat at much less cost than the most scientific farmer of England can by the best approved method of cultivation, even if he paid nothing for the use of his land.

But although it may have done less permanent injury than some critics assert, this exploitation of the soil resources handicapped agricultural development. It established a pattern of agricultural practices which it was difficult to alter when changed circumstances and new knowledge put a premium upon adaptation and improvement. The wasteful habits of the pio-
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neer farmer stood firm. In Wisconsin during the fifties, even when the wheat crop was unprofitable, the farmers continued to raise it through sheer momentum. The Scandinavian immigrants to that state, originally acquainted with dairy farming, swung over to wheat growing, cultivated that cereal year in and year out, and eventually found it difficult to readjust themselves to their original occupation, dairying, when the decline of wheat growing made such a change necessary. Carelessness bore the stigmata of success. Different practices were viewed with an air of contempt or superiority. A popular book on agriculture in 1860 stated: "Scientific agriculture stands today with phrenology and biology and magnetism. No farmer ever yet received any benefit from an analysis of the soil and it is doubtful if any one ever will."

THE WESTWARD MIGRATION OF NORTHERN AGRICULTURE

The complacency of the western farmer increased as he saw the magnet of his cheap fertile land drawing westward the centers of crop production. On the other hand, the eastern farmer was distressed by this invincible competition. His soils were temporarily depleted by the wasteful methods of tillage and their recovery required the employment of skill, labor, and capital.

The westward migration of crops was admirably illustrated in the case of the great cereals of the North, wheat and corn. Wheat has always been extraordinarily sensitive to the attraction of new lands. New York and Pennsylvania were the leading states during the first quarter of the nineteenth century, though even within their borders the production tended to shift westward. In New York, for instance, a decline took place in the Hudson and Mohawk valleys in comparison with the development of the Genesee country in the western portion of the state. After 1830 a further shift came when Ohio entered the list of important producers. The westward movement attained its most bewildering disorder, however, in the decade between 1849 and 1859. In 1849 Pennsylvania, Ohio, and New York were the leading producers in the order named; in 1859 not one was among the first three, for their places had been usurped by Illinois, Indiana, and Wisconsin. Conspicuous among the facts surrounding this change was the astonishing ascent of Wisconsin from ninth to third place in ten years and the absolute as well as the relative decline of New York and Pennsylvania. In 1860 the five states quarried out of the old Northwest furnished nearly half the production of the entire country. Even within these new wheat producing centers the areas were specialized. In Ohio the hilly counties along the backbone ridge which bisects the state from east to west furnished the greater acreage; to the west the wheat belt ran through northern Indiana and Illinois and southern Michigan and Wisconsin—the areas of the prairies and the oak openings.
Corn responded less quickly to the pull of western lands. It could be grown almost everywhere, and under ordinary careful tillage its yield did not decline as rapidly as that of wheat. Until the recent appearance of the corn borer, it was comparatively immune to agricultural pests. Every state of the Union, therefore, produced corn. As it spread west of the mountains it tended to occupy a belt south of the wheat zone, although both cereals were intermingled and it is difficult to delimit separate areas. The Ohio basin was its particular province. On one side were the rich river bottoms of the Scioto and the Miami, where fields of one thousand acres laid down to corn aroused the admiration of observers, and on the other were the limestone areas of Kentucky and Tennessee. Indeed in 1839 these two states with Virginia were the leading three corn states of the Union. By 1859 the balance had shifted in decisive fashion to the north. Kentucky and Tennessee had sunk to fifth and sixth positions, and the supremacy had been taken by Illinois, Ohio, and Missouri, the first and last of which were of minor importance in 1839. The leadership of the Northwest was unquestioned. Illinois raised twice as much as Tennessee. The future location of the corn belt was foreshadowed by the remarkable increases within two decades in Iowa, Kansas, and Nebraska from practically zero production to millions of bushels. Meanwhile New England and the central states had stood still or increased their production moderately. The settlement of the Northwest prairies had created a corn empire which brooked no rival, south or east.

As we have seen, corn was transformed into whisky, valuable in proportion to its bulk, or livestock, which could move under its own power to market. It seems incredible to ascribe such mobility to the hog. But the hog of the present is a far different animal from that of pioneer agriculture. The latter acquired his characteristics through freedom. Roaming the forest or the prairies, he lived on wild roots, berries, grasses, and then in the autumn grew fat on the “mast” of nuts and acorns. In this free life he acquired a rangy quality, not only from the way he secured his food but from avoiding the wild animals that sought to prey upon him. The hog of the West had a long slim body with large bones, a heavy snout with flap-ears, long legs, a thick tail, and a remarkable fleetness. He deserved his colloquial appellation of “wind-splitter” or “razorback.” Many farmers on the frontier raised annually herds of several hundred of these extraordinary animals. This wild native life, however, had several disadvantages. The hogs, unless fed in some fashion, had a very difficult time pulling through the winter, and animals fed upon mast had a flesh which was soft and difficult to preserve. Some additional food was necessary.

Corn supplied an admirable fattening crop, since it produced a clear thick pork. The pigs could be turned out into a field of standing corn and allowed
to "hog it down" or else they could be fed the gathered ears and kernels. The hog, therefore, has tended to cling to the corn belt. The distribution figures for the country mirror this association. Tennessee and Kentucky were the earlier centers of production, and other southern states, Virginia, Georgia, Mississippi, ran large totals. Between 1850 and 1860 the northward shift of the corn areas had made Indiana and Illinois the chief hog states and had induced a startling decline in Kentucky and Tennessee. Needless to say, this western competition had occasioned a similar decrease in the Northeast. In the early part of the nineteenth century the western hogs were boated down the rivers to the markets of the South or else driven overland to the East. Although large farmers might drive their own herds to market, a class of drovers developed who made the business a specialty. Only those hogs with enough vitality were selected for such journeys, and the criterion of selection was "a straight hind leg, with muscle large and full." Stirring up great clouds of dust as they moved, large droves of as many as five thousand hogs traveled slowly eastward at the rate of eight or ten miles a day. Their destination was usually Philadelphia, Baltimore, or New York, but many herds were also driven to Virginia, Tennessee, and the Carolinas. This method of transportation declined with the development of western packing houses which specialized in the curing of hams and bacon and the pickling of pork, and with the appearance of the railroads, which carried livestock directly to the consuming centers.

The beef cattle industry has always been associated with the frontier, for there were the unfenced ranges of native grasses and herbage. In colonial times the industry had thriven in the western and northern regions of New England and in the back country of Virginia and the Carolinas. When the long drive had taken the cattle near their markets, the fattening district where the animals were stumped with grass or corn intervened before the slaughterhouse. This simple formula was repeated in the beef industry after the Revolution, but in new areas. West of the mountains were the open ranges and also the new areas of corn production. It was a question, however, if the cattle industry could transfer to the new region. The animals had to be transported over the mountains to the eastern markets, and the fear was entertained that a drive of that length would cause so great a decline in the steers' weight as to make the journey unprofitable. As early as 1802, however, cattle raisers in Ohio and Kentucky were driving their stock to eastern centers. Soon all bars were down. Long drives arrived in the markets of Baltimore, Philadelphia, and New York. From early spring to the end of summer crowds of drovers, putting up each night at "drove stands," inns, or large farmhouses with cattle pens and corncribs about them, pushed the cattle eastward. On their arrival some cattle were sold at once to the butch-
ers, others to farmers located within easy reach of the city markets, who made a business of fattening the cattle on corn or hay or with the refuse from distilleries.

By 1840 the limits of the ideal zone for cattle fattening in the West were recognized. It lay roughly between the thirty-sixth and fortieth parallels. Here the animals put on those alternate layers of fat and lean which gave their meat a luscious marbled appearance. North of this boundary the flesh was likely to be lacking in fat and south the meat became stringy and the fat tallow. Within this zone the cattle were passed from West to East through a series of transactions. In the rich blue-grass regions of Kentucky and in the Scioto valley of Ohio were the corn feeders. In the late fall they turned the cattle into enclosed fields, and for four or five months fed them with corn fodder scattered daily from a wagon. A few hogs were also turned in to clean up after the cattle. In northern Ohio, on the other hand, graziers simply placed their herds on pasture land and sold them east as grass-fed animals. Whether graziers or feeders, these eastern Middle-Westerners bought their stock from the cattle raisers, who, located farther west in Illinois, Missouri, and Iowa, did not wish to drive their cattle the long distance to the eastern markets and indeed doubted the practicability of such proceedings, but had at hand the great prairie regions with their promise of unfenced range and rich native grasses. Once the cattle, collected from these different sources, had been put into condition in Kentucky or Ohio for the long drive, they were driven over the mountains by the fatteners or were sold to drovers who performed this function. Driving cattle continued long after hog driving disappeared, for the meat of the former was not so palatable when preserved or pickled.

But the extension of the railroad into this trans-Appalachian region after 1850 dislocated all these nicely interlocked arrangements. Ohio ceased to be important when cattle could be carried by rail from distant fattening regions directly to the eastern markets. The cattle industry sped westward. Illinois and eastern Iowa, the actual centers of corn production, now developed as feeding centers. At the same time the raising grounds were pushed westward across the prairie. Missouri and Iowa were suddenly supplemented by Texas. In 1850 the census had enumerated approximately 660,000 beef cattle in that southwestern empire; within the next ten years there had been a prodigious increase to 2,760,000. Its nearest rival, Illinois, had only a third of that number. Some drives of Texas steers went northward and eastward to the Middle-Western packing centers; most of them, however, interrupted their fatal journey at the feeding grounds of Iowa and western Illinois.

While these displacements were altering the geography of the cattle industry west of the mountains, the old formula of eastern decline had been re-
peated in this particular field. "It was admitted all around," a New Englander wrote in 1862, "that owing to the great facilities for bringing cattle from the far west at a low price,—cattle which had roamed on the prairies, costing the government price, $1.25 per acre, and fattened upon corn worth ten cents per bushel—we here could not compete on pastures worth $30 per acre and corn worth 75 cents." Once again eastern agriculture was defeated by the public land system and the bounty of a soil whose fertility was as yet untapped by years of exploitation.

**The Southern Staples**

The Civil War has limned too sharply the political and economic differences between North and South. The industry of the North has been set against the agriculture of the South; the wheat of Illinois against the cotton of Mississippi. As an antidote it is well to stress the agricultural features which were common to both sections. Corn and hogs were as indigenous to Dixie as to Yankeeland. Virginia ranked for a while with the leaders of the wheat-growing states. Texas was in 1860 the beef center of the nation. Finally the westward movement of agriculture, which was national in scope, created common conditions North and South on the cutting edge of the frontier and in the eastern states which felt the reaction of this western migration.

In Ohio and Alabama the destruction of the forest and the breaking of the soil was a job for the independent, energetic individual. In Indiana and Mississippi the professional pioneer, the expert woodsman, and the crack rifle shot built his log cabin in the forest, planted his corn among the girdled trees, and cleared the land for a more settled agricultural régime. Meanwhile the eastern South, Virginia and South Carolina, had undergone the throes of an agricultural readjustment similar in many ways to that in Massachusetts and Pennsylvania. But in the continually shifting area between the frontier and the East existed the valid distinctions between the North and South. The South did not base its agricultural life upon corn and wheat and livestock; it gave its allegiance to different staples. From the colonial era it inherited the cultivation of rice and tobacco, and to these it had added sugar and cotton. Finally, the cultivation of these products was carried on by a labor force unknown in the North, that of Negro slaves.

The important function of agricultural staples in the history of the South needs no reemphasis. The discovery that it could grow tobacco, rice, and indigo and market them abroad had enabled the South to pass rapidly through the primitive stages of agriculture and to develop a pretentious and materialistic civilization which had no rival except in the commercial cities and towns of the North. After the Revolution the old staples collapsed. Indigo cultivation practically disappeared, for the American indigo industry no
longer received the British bounty which had kept it alive in the face of
competition from other producing areas, and Great Britain drew her sup-
plies from the East Indies. Immediately after the Revolution rice was in
a period of transition, for the rice fields were being shifted from the inland
swamps to the stretches of land along those rivers which could provide a
tidal flooding.

The contraction of markets determined the fate of tobacco, the great co-
lonial staple. The Revolution had cut off European markets and until 1815
the tobacco trade with Europe was upset by the disasters and interruptions
incident to the prolonged warfare between France and England and to the
measure of our involvement in that conflict. After 1815 other European na-
tions, espying a revenue from tobacco, levied heavy duties upon its importa-
tion. In England the duties amounted at one time to 900 per cent ad va-
lorem. Under such stimulus tobacco growing in Europe shot ahead. At the
same time areas in the West Indies and South America and in the East Indies
undertook production. World prices were so low that cultivation in the
United States was profitable only on new lands whose untouched fertility
was a real resource in this competition. Like other crops, tobacco moved
westward, though as late as 1860 Virginia retained her lead by a narrow
margin. Still migration was not the only answer. Improvement was another,
if only American tobacco growers could produce instead of their dark and
coarse product, a yellow leaf, delicate, aromatic, finely textured. Just before
the Civil War the essential conditions were understood: a certain variety of
poor soil that starved the plant and curing by charcoal fires or by flues carry-
ing the heat through the sheds rather than by open bonfires in them. But the
bright-tobacco industry which was to rescue Virginia and North Carolina
was a post-bellum phenomenon. For the moment this staple remained infe-
rior to sugar and cotton.

Seldom has the successful production of agricultural products depended
so much upon the invention of machines or the correct use of manufacturing
methods as in the case of sugar and cotton. Sugar cane had been introduced
from Santo Domingo into Louisiana during the eighteenth century by the
French in the frantic effort to give their colony at the mouth of the Missis-
sippi some profitable pursuit. The refining of the syrup, however, was so
clumsy that it never found a foreign market. The first planter to produce
sugar on a successful and conspicuous scale was a Creole, Étienne de Boré.
In 1794 he planted a crop of the native cane, erected a grinding and boiling
mill, and employed an expert sugar maker. In the following year the critical
test occurred. A large crowd gathered to watch the concentration of the
juice, and when the crystallization of the fluid successfully took place "the
wonderful tidings flowed from mouth to mouth and went dying in the dis-
tance as if a hundred glad echoes were telling it to one another.” Boré was acclaimed as the “Saviour of Louisiana.” Presumably he derived more satisfaction from the $12,000 which he secured by the sale of his first crop.

The expansion of the sugar area affords an exception to the westward movement formula. Aside from a few plantations in Georgia and Florida and an insignificant offshoot to the Brazos River in Texas, the industry always clustered along the bayous, watercourses, and rivers of southeastern Louisiana. In this sugar district, extending only as far north as the junction of the Mississippi and Red rivers, the soil was rich and the growing season ordinarily long enough to allow the crop to mature before the arrival of the first autumn frosts. Within this restricted sugar area, the plantations bordered the rivers whose banks built by rich deposits of silt, alone furnished land sufficiently dry for cultivation. Since even these strips were occasionally inundated by floods, the construction of levees had to be undertaken. It was not as difficult a task as today, for the open valley above Vicksburg impounded the waters, distributed their flow more evenly, and lowered the level of the Mississippi freshets along the lower river. In spite of these advantages the waters would occasionally break through and destroy a portion of the crop. The natural disasters of temperature and flood, changes in cotton prices, which from time to time were so high as to persuade planters to abandon one staple for the other, and the changes in tariff duties—all occasioned extreme fluctuations in the industry’s history. Sugar production, nevertheless, marched forward. In the first decade of the century French immigrants, rushing in terror to Louisiana from the Negro insurrections in Santo Domingo, pushed the cultivation of sugar, their favorite staple, northward from New Orleans. Anglo-Americans filtered in from the East and copied their methods. The crop of 1853 produced a total of 450,000 hogsheads—over 220,000 long tons—a figure not reached again until the close of the nineteenth century.

The Cotton Kingdom

The traveler through the southern states might be impressed by rice and sugar; he was certain to be stunned by cotton. From Charleston, where the wharves were piled high “with mountains of Cotton, and all your stores, ships, steam and canal boats [were] crammed with and groaning under the weight of Cotton,” to Tennessee, where they thought poorly of Kentucky because cotton would not grow there, the crop was omnipresent. Cotton was a veritable “plague.” Only when the traveler reached the Ohio River did he find a boat which “had not a bale of cotton on board, nor did I hear it named more than twice in 36 hours.”

This “plague” had been made possible by the curious history of cotton.
Cotton cloths had first been introduced into Europe from the Orient; by 1700 the cotton industry was established in Great Britain, and later it was revolutionized by new machinery, run by water or steam power, and grouped in factories. The new rapidity and cheapness of production stimulated the market for cotton cloths, but consumer and manufacturer alike faced the shortage of cotton fibers.

Production in the United States erased this deficiency. Here in the colonial era cotton fibers had been utilized in textile production and the supply had been in part imported from the West Indies and in part grown in small patches in some of the colonies. Its extensive cultivation was checked by the difficulty of separating the lint from the seed. It took nearly a day to clean a pound of the material. A remedy might be discovered in either of two fashions. Some different variety of cotton might be discovered whose seed was less tightly wrapped in the fiber than in the green-seed, short-staple cotton, or else machinery might be invented to perform the process of separation effectively. In point of time the former alternative came first. Several planters began experimenting after 1786 with a variety introduced from the Bahamas, a “sea-island cotton.” Its fiber was longer, two inches, and silkier, and the seeds could be popped out by passing it between the rollers of the roller gin, a machine which the cotton producers of India had utilized. Sea-island cotton, however, was not the salvation of the South. Although it was grown, often on a large scale, until the Civil War, it remained a cotton crop de luxe. The plant was exceedingly sensitive to frost, its cultivation required great care, and the district in which it could be grown was confined to a narrow strip on the coast and offshore islands of Georgia and South Carolina.

The area for green-seed, short-staple cotton was not so limited. The invention of a cotton gin which could separate the seed from the lint successfully was the work of Eli Whitney, a Northerner who had come South in 1793 to teach school. Visiting a southern estate, his attention was called to the problem, and he set to work. In ten days he completed a model. Later refinements did not essentially alter the principles. The cotton was placed in a hopper, one side of which was pierced by slots too small to allow for the passage of the seed but large enough to let the wires, or teeth, set upon a revolving cylinder on the other side come through and seize the fibers. The cotton thus passed through the grating and the seeds fell to the bottom of the hopper. The lint was then removed from the first cylinder by another cylinder, studded with brushes, which ran in the opposite direction at a greater speed. Whitney took his hostess’ husband into partnership with him. They planned to establish ginning mills through the South and to charge, after the fashion of the colonial gristmill, a toll in cotton for cleaning the grower’s harvest. They proceeded too slowly. Rumors of the invention
spread, a mob broke into their shop in 1793. The principles of the gin were embodied in improved machines of rivals. The Whitney associates spent years in the law courts, but eventually the returns from their machine cancelled their expenses in defending their patent. Whatever may have been the personal misfortunes of the inventor, the South was liberated. The short-staple cotton could be prepared cheaply and easily for the market.

The South at once plunged furiously into its cultivation. In the Georgia and South Carolina coastal plains, indigo was abandoned and even rice fields were transferred to the new staple. Cotton penetrated northward into North Carolina, and Virginia tobacco planters saw in it a profitable substitute for their declining tobacco. While outriders of its advance reached the Mississippi before the War of 1812, cotton consolidated its hold upon the Piedmont of the Carolinas and Georgia. It was upland cotton. So rapid and absorbing was its progress that this region, formerly grain-growing, had to import its food supplies for a time. Then the stream shifted southwestward around the end of the Appalachian Mountains. The second war with England removed the Indian barrier to western settlement, and cotton poured into the lower South.

Here it found unsurpassed soil advantages. They lay in two areas. One, the “Alabama Black Belt,” began in south-central Alabama and curved upward into northern Mississippi. This Alabama-Mississippi district was partly forested and partly open, and its soil was a heavy black or brown loam. The second district lay along the Mississippi River and its affluents. These broad bottom lands had been built up for ages with silt carried down by the rivers. In the United States there was probably not a soil more fertile, and its depth made that fertility practically inexhaustible. Its fitness for cotton culture was further demonstrated by the tendency of the plant to grow there a longer fiber. So cotton cultivation spread northward from the junction of the Red River and the Mississippi along the river valleys and bayous into eastern Arkansas and western Tennessee. Even these conquests were not sufficient, and the migrating cotton plant moved forward to Texas. The promoters and early settlers of that region were enthusiastic about its soils. One wrote back to the effete East of Georgia that “the best lands in Alabama, Mississippi, and Louisana are far inferior to the lands of Texas.” The soil on the lands near the falls of the Brazos was “at least fifty feet thick,” and weeds twenty feet high grew upon it. With the exception of the black waxy prairie, the Texas lands, however, were not the equal of the alluvial river districts farther east. So it was that by 1850 these new areas strode ahead to superiority. Thirty years later Mississippi, Alabama, Louisiana led the cotton parade. Georgia was the first eastern state to place. Texas and Arkansas preceded South Carolina. Of the western states Mississippi alone produced over
twice as much cotton as Georgia and South Carolina together. Like wheat and corn, cotton had developed a western empire.

The place of cotton in the life of the whole nation was impressive. In 1792, the year before the invention of the cotton gin, the annual production of the country was somewhat over 6,000 bales (reckoning five hundred pounds to the bale); in 1794, the year after the invention, production had increased by 10,000 bales. From then on the increase was rapid until in 1859 production reached its highest pre-war level of 4,508,000 bales. These were absolute figures. The southern planter inclined to comparisons observed on the eve of the Civil War that his favorite staple accounted for one-half the value of our total exports; and that this figure was nearly ten times that of its northern rival, wheat and wheat flour. Or, if exports were deemed an unsatisfactory criterion, he could resort to the domestic industry of the nation. The American cotton manufactory, dependent upon the southern states for its raw material, turned out an annual product whose value was half again as much as that of wool, its nearest textile competitor, and half again as much as that of the varied iron industry of the country. In the entire world there was no rival to the South as a cotton producing area. It was the contemplation of such facts as these that inspired Senator Hammond of South Carolina to indulge in the prophecy of March 4, 1858:

But if there were no other reason why we should never have war, would any sane nation make war on cotton? Without firing a gun, without drawing a sword, should they make war on us we could bring the whole world to our feet. ... What would happen if no cotton were furnished for three years? I will not stop to depict what every one can imagine, but this is certain: England would topple headlong and carry the whole civilized world with her, save the South. No, you do not dare to make war on cotton. No power on earth dares to make war upon it. Cotton is King.

It is interesting to reflect that his defiance was uttered just three years to a day before the inauguration of a President whose election had made war inevitable, and a little over seven years before the complete collapse of a Confederacy founded upon cotton.
CHAPTER V

Slavery: The Agricultural Revolution

SOUTHERN STAPLES, PLANTATION OR FARM

The colonial era demonstrated that forced labor was the most practicable plan of exploiting a country where land was cheap and could grow merchantable staples whose production required almost year-round attention. The tobacco, rice, and indigo of the South met these conditions exactly. Now after the Revolution a movement to abandon this labor system began. The employment of indentured servants everywhere declined, and in the North, where slavery was ill adapted to a seasonal agriculture and individual tasks, the few Negro slaves were emancipated in some fashion or other. In the South there was also a movement for emancipation. It was closely interwoven with the agricultural prostration in the old staples, indigo and tobacco, and it centered in North Carolina and Virginia, where slave labor was becoming unprofitable. As late as 1832 a speaker in the Virginia Assembly declared that slavery was “the heaviest calamity which has ever befallen any portion of the human race,” and a bill which would indirectly have hastened manumission was defeated in the Virginia legislature by only one vote. It was the introduction of sugar and cotton that stilled the clamor for emancipation and whipped up the southern South to an enthusiastic support of the slavery system. Sugar and cotton could be grown at that time profitably with slave labor, for their culture, like that of rice, involved comparatively simple operations, and their year-round routine utilized the continuous labor of the slave force.

Sugar planting began in January, when fresh canes were set in the old fields. Then followed two months of incidental work, repairing roads, fixing the levees, and cutting wood. With the warmer weather corn was planted, and the summer was spent in keeping down the weeds and stirring the soil in the corn and cane fields. In September the corn crops were harvested, staves were cut and barrels made, and everything was prepared for the cane harvesting, which came late in October. This was a hectic period. Large gangs cut down the cane and others transported it to the sugar mill. Here it
was ground between rollers, and the juice was first clarified by lime and heat and then boiled again and again until it was ready to crystallize. There was a great press about all operations, because the cane had to be harvested before the arrival of the frosts. The mill, working in double shifts, set the pace for the harvesting gangs. When a frost was actually imminent, however, every place except the fields was deserted. There the canes which were to be used next year as seedlings were cut and laid in shingled formation on the ground, and the rest of the crop was harvested and strewn in the furrows until it could be carted off to the mill. By the time that these canes had been picked up and crushed, and the juice clarified it was the last of December. Then the new year stood at hand with a renewal of its routine. Here was a process carefully worked out which utilized its labor force to the full.

Cotton afforded similar opportunities. The first months of the year were devoted to preparing the fields for the planting. If necessary, new grounds were made ready by cutting the trees, grubbing out underbrush, and rolling logs. These new fields were generally planted in corn as a preparation for cotton. On the fields which were given to the staple the seed beds, three to five feet apart, were rounded up with the plow. Then came the planting season. It was generally the practice to plant as much corn as cotton. The latter was the cash crop, the former supplied the principal grain for the slaves and fed the hogs which were slaughtered for pork, hams, and bacon. The acreage of each crop was determined by the amount a hand could harvest. Just before the Civil War ten acres in cotton and ten in corn was a practical allotment for each field slave. In March the corn was planted. The cultivation of cotton began in April when the top of the seed beds was opened by a furrow and the cotton seeds were strewn in rather thickly and then covered with earth. The cultivation of these two crops was nicely interlocked. The slaves were shifted from one to the other. The cultivation of corn was simple enough, but cotton was a tender and exacting plant. The beds had to be hoed and thinned frequently, and the ground cultivated with a plow to keep down the weeds. And there were insect pests. The Mexican boll weevil had not yet invaded the United States, but worms, insects, and parasites seemed to lie in wait to attack cotton at every stage of the proceedings.

When the harvest season came, the corn was the first object of attention. The ears were picked, and the leaves were stripped and tied together for fodder. Then came the cotton. Its harvesting season was prolonged because the bolls ripened at different times—first near the center of the plant, then at the ends of the lower branches, and at the top. If the cotton were left too long in these ripened bolls, wind and rain might drag it out and dirty it on the ground. So the hands were sent through the fields as often as there was something for the picking. This process did not require strength as much as dili-
gence and skill. The cotton in each boll was held in four or five compartments. A single clasp of the fingers could clear out all the compartments. Some pickers used only one hand, but the more skillful kept both going at once. The actual amount picked by individuals increased through the years. On a Mississippi plantation in 1859 three champion pickers averaged 300 pounds a day, and the average of every one, men, women, boys, and girls, was 157 pounds. As the last statement implies, every age and both sexes worked in the cotton fields when the bolls were white. After the baskets were full they were emptied and carted away to be ginned.

Every large planter had his own ginning equipment housed in a ramshackle two-story edifice. On the first floor was an upright shaft leading to the machinery of the gin on the second floor. This shaft was spun by a long horizontal beam fitted into it at right angles, to which mules or horses were hitched and then driven around in a circular path. After the gin came the press. In this apparatus the cotton lint was placed in a rectangular receptacle, whose dimensions determined those of the individual cotton bale, and then it was crammed down by the pressure of a lid forced by a large screw, which worked through a block above the box and was turned by animal power. The harvesting and its accompanying ginning season were generally completed by December, but in the western cotton regions the fields were often white with unpicked cotton until March or April. In cotton, as in sugar, there was an all-year routine which utilized the labor force to the full.

The general characteristics of American agriculture assisted in the employment of Negro slaves. South, as well as North, found it unprofitable to follow a tiresome and careful agricultural technique. Land was plentiful, and the natural fertility which it contained should be used without questioning. So the southern planter year after year set out the same fields with cotton. The only rotation which was followed at all was that of corn and cotton. But this rotation, since it was not based upon scientific principles, was of limited value. In such wasteful practices the Southerner had an advantage, for cotton did not exhaust the soil as rapidly as the northern crops. Eventually, however, new fields had to be opened, and the old fields were turned over to an unhindered growth of weeds, brambles, and thickets. As in the North, the use of fertilizers as soil amendments was restricted. A Kentucky boy wrote later of his experiences: “In my youth I never knew manure being put on the land. When, about 1855, my father began the use of it, he was much laughed at.” Cottonseed, whose decomposition would have enriched the soil, was neglected. In 1807 the town of Sparta in Georgia had to adopt an ordinance compelling each owner of a cotton gin to remove the refuse about his machinery before May “so as to prevent its unhealthy putrefaction.” But after 1830 cottonseed and other fertilizers came into use. At the
same time better varieties of cottonseed were developed, christened with attractive names, advertised as producing large plants with heavy yields, and were sold at fancy prices. Many of these, such as the “Accidental Poor Land Cotton,” were hoaxes, but honest experimenters brought about considerable improvement throughout the South. This achievement, however, was an exception to the general crude system of agriculture.

It has been the fashion to blame Negro slavery for the employment of slovenly methods. Unfortunately for this accusation, southern and northern agriculture were both wasteful. Rather these methods were an additional factor which made slavery possible. The Negro had little industrial training. His capacities as a worker and his traits of character were set by tropical Africa. Existence there was primitive. There was no compulsion to develop elaborate handicrafts or a complicated agriculture. The influence of the Negro’s milieu extended even further. Since the climate of equatorial Africa was enervating, the inhabitants of that region inevitably became careless, lazy, and improvident. But the European who settles in the same region eventually exhibits the traits of the native. The tropics have no respect for persons. The profitable transfer of the African Negro to American slavery involved a training in more complicated industrial practices and the insistence upon traits of behavior which were incomprehensible in the African jungle. Only the abundance of cheap land in America and the crude routine methods used in agriculture made possible the utilization of the involuntary labor of this unskilled mass.

In the production of the southern staples there was not only the competition between the new and older centers of production, but throughout the entire South a competition between different units of production—the farm and the plantation. The farmer carried on small-scale operations and a more generally rounded agriculture. He raised the southern staples for market and articles for his own use and consumption. As owner of the farm he and his family might be the only laborers upon it, or he might hire help or buy a few slaves to work with him in the fields. On the other hand, as Professor Phillips states,

A plantation was a unit in agricultural industry in which the laboring force was of considerable size, the work was divided among groups of laborers who worked in routine under supervision, and the primary purpose was in each case the production of a special staple commodity for sale. The laborers were generally in a status of bondage.

A welter of conditions determined the victory of one type of production over another. On the frontier and on the exhausted lands of the Atlantic South the farm type predominated. In the ever changing area between these
two extremes the nature of the staple, the fertility of the soil, the existence of means of transportation, or the time of settlement were the determining factors.

Of the important southern staples sugar and rice lent themselves inevitably to the plantation system. The vital factor in the production of sugar was the sugar mill, for the amount of crop which could be harvested depended upon the rapidity with which the cane could be ground and crystallized before the frosts set in. In view of the existing lack of communications every planter had to have his own sugar mill. To depend upon a neighbor's was folly, for every one was working his own plant to capacity during the harvest season, and no one would run other people's crops through at the expense of his own. The sugar mills, moreover, became increasingly expensive. Steam engines were introduced to furnish power, and the pans for boiling and evaporating were improved. Plantations under the circumstances tended to enlarge. The bumper crop of 1853 was produced on 1,407 estates. Only 103 of these produced fewer than one hundred hogsheads each. The average plantation in the fifties turned out some three hundred hogsheads and had almost one hundred slaves.

The rice coast of the Carolinas and Georgia also had a plantation economy. Here small-scale operations were hampered because the owner had to turn over the conduct of operations to overseers while he fled to higher ground to avoid the summer malarias. If an overseer must be employed, his expense would be less if he managed a large plantation. A rice plantation required various specialized occupations, coopers to make the barrels, millers of the “Rice Machine and Mill,” boatmen, bird minders to scare the rice birds from the crop, as well as the common laborers. A large labor force was necessary, therefore, for the most efficient unit of production. Probably no plantation could be successful unless it had an hundred acres planted in rice, and this acreage, on the computation of one hand to every five acres, involved a slave force of at least twenty field hands. Most of the plantations were much larger. That of William Aiken, one-time governor of South Carolina, had fifteen hundred acres which could be flooded. Two-thirds of these were planted with rice; the remainder with corn, oats, and sweet potatoes. The threshing machine by which the kernels were separated from the stalks was steam-driven, but the mill which pounded off the hulls was driven by the tide. The labor force was composed of 700 slaves. About 1850 the crops brought $25,000 in the open market and the expenses amounted to $10,000.

The organization of cotton production was not inevitably committed to the plantation régime. A single farmer with a few laborers could follow the routine with approximately as much profit per person. Indeed at first the hope was entertained that cotton would tend "to fill the country with an
independent industrious yeomanry.” A widespread realization of this anticipation never came, for the plantation became increasingly dominant even in the production of this staple. The reasons for its victory varied in part with localities. In the rich bottom lands of the Mississippi the cotton fields were flat and near together, and a large labor force could be used there with advantage. The construction and maintenance of levees was a capitalistic operation. As a result, in some Mississippi and Louisiana counties the slaveholdings ranged from thirty to fifty slaves and the number of non-slaveholders was unimportant. On the prairie lands of Alabama a similar condition prevailed. In the Piedmont region of Georgia and North Carolina the smaller unit had advantages. The soil was less fertile and the topography was uneven. New fields, therefore, continually had to be cleared, and this operation was better carried on by the independent farmer than by slave labor; the fields also were scattered and the movement of a gang from one to another wasted precious time. But even in these regions the plantation emerged. In 1800 in Oglethorpe County, in the uplands of Georgia, the whites outnumbered the slaves two to one; there were eight non-slaveholding families to five families owning slaves; and the average holding was five slaves each. By 1860 the Negroes outnumbered the whites; the number of non-slaveholders had decreased more rapidly than that of the slaveholders; and the average holding was slightly over twelve slaves. Many farmers still remained, but the plantation had become dominant.

The tendency toward the plantation system was due to several factors. The larger unit had some advantages in the purchase of goods for plantation consumption and in the sale of its products. But this was a minor superiority. In general, the cotton growers who made money sought to enlarge the scale of their operations. The net returns from the labor of ten slaves would be doubled by the labor of twenty slaves. The social prestige of owning many Negroes was an additional stimulus. So the farmer who made money invested it in more slaves and in additional land. Then when the first flower of prosperity in a new region had wilted away the small farmer discovered that his diminished profits were not enough for livelihood, and he could restore his land only by improvements or by fallowing. The owner of many slaves, however, could still secure an adequate return through his larger operations and could afford to rest some of his fields and introduce better methods of culture. So the little fellow sold out to his wealthy neighbor and pushed westward to new lands in the South, or crossed over into the northern states, or else sank lower in the scale of southern agriculture. The earlier hope of an independent yeomanry had been partially frustrated. Nevertheless even in 1850 the cotton crop was produced on estates which were manned on an average by a slave force of six farm hands, and the larger units
did not rival the plantations of the rice and sugar régimes. It was not profitable in cotton to have more than sixty slaves under one overseer. The large cotton growers who exceeded this number did so through the ownership of several plantations, often scattered, each of which was an integral producing unit.

The Responsibilities of the Slaveholder

The employment of slave labor in the South created problems of labor organization more numerous and more complicated than did the employment of free labor in the North. With some exceptions the employer in the North was free of obligation to his workers after they had left his factory and after they had received their wages. Today the American employer, if he is extremely progressive, may interest himself in the health, pleasure, and the education of his workers, but these forays in voluntary social service do not create a tithe of the responsibility which the ante-bellum southern planter could not escape. For his labor force was with him every hour of the day and every day of the year. He had to concern himself not with the comparatively simple questions of hours of work and of wages but with such diverse and complicated matters as food and diet, sanitation and health, living quarters and clothing, religion and education. The multiplicity of these details was oppressive. Northerners and foreigners were impressed by the interruptions which they occasioned. In a much-quoted passage Olmsted, the northern reporter, described his visit to a Virginian estate: "During three hours, or more, in which I was in company with the proprietor, I do not think there were ten consecutive minutes uninterrupted by some of the slaves requiring his personal direction or assistance. He was even obliged, three times, to leave the dinner table." It was a not uncommon observation that the slaves seemed much happier than their masters.

An avenue of escape lay in the employment of an overseer, and that functionary indeed became inevitable if an individual owned several plantations. The overseer might be a former planter fallen upon hard times, a younger son who desired to get a start, a foreigner seeking employment, but generally he was a member of the southern yeomanry. When one reads over the duties required of him, his occupation inspires sympathy. He had to supervise the work, maintain the property of his employer, get labor out of the Negroes, write frequent reports and compile inventories, and he was not expected to leave the plantation, night or day, without his employer's consent. Very few overseers managed to satisfy the owners. As a class they were regarded as dishonest, careless, and incompetent. The papers teemed with advertisements, written with plaintive emphasis, for good overseers, and salaries for satisfactory ones were comparatively high. Most plantation
owners, however, learned to their own satisfaction the truth of the southern axiom, “The footsteps of the master fertilize the soil.”

The treatment of the slaves was well summarized by the instruction which a South Carolinian wrote for his overseer in 1856: “The proprietor, in the first place, wishes the overseer most distinctly to understand that his first object is to be, under all circumstances, the care and well-being of the negroes.” This was but one of many texts on the same theme. Even if the owner could be regarded as a machine, devoid of all human feelings whatsoever, business considerations dictated a policy of kindness and consideration. For the slave was a valuable piece of property. Through the national era the tendency of slave prices was generally upward. The prices of unskilled, able-bodied field hands rose unevenly after 1795, when they were from $300 and $400 in the upper and lower South respectively, to $800 and $1,000 in the speculative period after the War of 1812. Then came a brief reaction, until the early thirties when prices skyrocketed to $1,100 or $1,300. They declined again in the severe and prolonged depression following the panic of 1837. After 1845 came fifteen years of general prosperity, and slave prices shot upward until in 1860 prices reached an unheard-of level between $1,800 and $2,000. Such prices were declared to be “incredible,” and some explained the phenomenon on the ground of a temporary dementia. The reason for these increases was the discrepancy between supply and demand. The number of Negroes was comparatively inelastic, since they could not be produced automatically like commodities. Foreign importations were cut off by the closing of the slave trade with Africa through a national law in 1808 and a later enactment making the slave trade piracy. There was always some smuggling of African Negroes into the United States, but it was inconsiderable and did not affect the situation. The increase of the slave population, therefore, depended upon the birth rate among the native Negroes.¹ There is no evidence that slave owners ever attempted to breed slaves commercially, and the control of the rate of procreation was fantastic in any case.

Gradually the economic development of the Border states, Maryland and Virginia and, to a less extent, Kentucky and Missouri, produced there a slave population larger than could be profitably utilized. An internal slave trade between these districts and the rice, cotton, and sugar regions then grew up. It was distasteful to the slave owners in the Border states, but economic necessity triumphed over personal choice. Some firms dealt in slaves as a business. Their purchasing agents journeyed through the country with an eye open for likely Negroes between ten and thirty years of age and bought from individuals or at auctions. The Negroes were then assembled at some depot

¹ Increase in the slave population of the United States in round numbers (South in the Building of the Nation, Vol. V, p. 111): 1776, 300,000; 1790, 750,000; 1800, 1,062,000; 1810, 1,380,000; 1820, 1,777,000; 1830, 2,328,000; 1840, 2,873,000; 1850, 3,638,000; 1860, 4,444,000.
and dispatched to a slave market in the lower South. Many slaves made the
journey by boat along the coast, others went overland at the rate of twenty-
five miles a day, the men walking and the women and children riding in
wagons. The trade met with social disfavor, and those who participated in it
were the object of popular contempt. Its extent is difficult to determine. After
1815 the coastal trade annually carried south five thousand Negroes. Perhaps
half of these were accompanying their masters, to a new plantation; the
rest went south for sale. This internal slave trade, however, was not sufficient
to supply the demand for slaves.

In view, then, of the price paid for him, the slave was a valuable piece of
property. The owner could afford to take no chances with the welfare of
such a heavy investment; he must be kept producing to the limit of his ca-
pacity. Food was not various, but it was abundant. For each field hand the
ration was a good peck of corn meal a week and three to five pounds of ba-
con and pork. In winter sweet potatoes might be issued in place of the meal,
and fresh meat was occasionally substituted for the salted pork. Some owners
allowed their slaves to have a small garden patch of their own, but the tem-
ptation to add to its products through stealing from the master’s supply some-
what curtailed this general privilege. Clothing was issued on an adequate
scale. In the fall the men received a pair of woolen pants, a woolen jacket,
and two cotton shirts; in the spring two pairs of cotton pants and again two
cotton shirts. The women received woolen and cotton cloth which they were
to make up into dresses. Children’s allowances were proportioned to this
scheme. A frantic effort was made to keep the Negroes’ quarters clean. The
houses were to be frequently inspected and once or twice a year subjected to
a thorough overhauling and whitewashing. The Negroes themselves were
subjected to a requirement of rigorous cleanliness. “Every negro habitually
uncleanly in person must be washed and scrubbed by order of the overseer—
the driver and two other Negroes officiating.” These were health precau-
tions. No master could afford to lose the time of his slaves through sickness
or their future productivity through death. Planters had been ruined by dis-
eases which swept away their capital in slaves just as surely as flood or fire
could destroy the capital invested in a factory. In no single phase of health
was greater care taken than in the regulations drawn up for women who
were pregnant or who had just borne children. Their work, their diet, their
rest periods, the length of confinement, even the suckling of their young,
was governed with an accuracy so scientific as to be depressing.

Owners and overseers were also confronted with the more usual task of
the employer—the management and direction of workers at their labor.
Either the task or the hour system was used. The cultivation of rice was
the chief illustration of the task régime, for the rice fields could be divided
into areas suitable for individual cultivation. The unit for a field hand was an acre—laid out in a rectangular figure 300 feet long and 150 feet broad. This was subdivided into small portions known as compasses, 150 feet long and 5 feet wide. The task acre might be assigned to a single field hand or to fractional hands, such as two half-hand youths. The day's tasks in this area were proportioned to their difficulty. A day's work might be plowing the whole area with two oxen, or breaking ten compasses with the hoe, or sowing from three to four half-acres, or reaping three-quarters of an acre with a sickle. The other duties of the rice plantation were likewise on a task basis. This system had advantages, since supervision was relieved of pushing the hands and was concerned with the manner in which the work was done. If a Negro got his task done early the extra leisure was his.

As on the northern farms, most of the work on the southern plantations was done on the hour system, for the task system was not applied extensively to tobacco, cotton, or sugar. The length of the working day was that of all agricultural laborers, free or unfree, northern or southern. It began with good daylight and lasted until sunset with an intermission at noon, whose length depended upon the heat of the season. Within this time limit work was proportioned to strength and ability. The huskier hands formed the plow gang, and their day was a bit shorter; those physically less vigorous were in the hoe gangs. The intensity of the labor never seems to have been excessive except perhaps in the harvest season for cotton, when every one, white and black, young and old, turned to and picked in the fields to prevent the loss of the crop, and in the grinding season on the sugar plantations. But these were spurts when no one spared himself, and they were not of long duration.

Slave labor was generally given unwillingly. The northern abolitionists, therefore, easily assumed that it was obtained only under the terror of the whip: Simon Legrees strode through the fields curling the lash over the bending backs of the Negro slaves. Punishment of this sort was rarely used as a stimulus to exertion. A whipping was a disciplinary measure for an offense not actually connected with work, such as running away or stealing property. To entice labor from their slaves the masters followed a different policy. Some elaborated a system of small money bonuses and of extra privileges for willing workers. On the plantations of Joseph and Jefferson Davis in Mississippi the slaves were encouraged in every way to earn money for themselves. And then it must be recalled that master and slave had to live together in some form of community life. Under this compulsion it was as difficult for a slave owner as for a college dean to remain permanently severe. If tasks were too hard, it was more pleasant to reduce them than to insist on their performance. If work was slovenly done, it was less bothersome to ignore it than
to correct it with painful detail. Northern and foreign observers, if not imbued with a priori opinions about slaves, were impressed with the air of easy-going patience which hung about most southern plantations. Basil Hall wrote of Carolina that, in contrast with the North, "all mankind appeared comparatively idle." Finally, the money value of the individual slave affected the conditions with which the master surrounded his work, just as it had those surrounding his larger life. The slave was not coolly and deliberately worked to death; he was preserved at considerable cost. When the planters had disagreeable or dangerous work to do they employed other laborers. In the sugar district there was widespread employment of Irish laborers for ditching the fields and felling the trees or clearing the land. It was a form of labor too severe for the Negro. Traveling by steamboat on the Alabama, Olmsted noted, when cotton bales were shot down into a vessel's hold from a high bluff, that a Negro stood at the head of the chute and an Irishman at the foot. The captain dispelled the mystery of this division of labor with the following explanation: "The niggers are worth too much to be risked here; if the Paddies are knocked overboard, or get their backs broke, nobody loses anything."

**The Cost of the Slave System**

Very few contemporaries of the slave system had an exact notion of its general economic profitableness as compared with other systems of labor. Surface calculations apparently gave a decisive affirmative answer to the question of its value. On the one hand stood the annual cost of maintaining the producing slaves. According to circumstances and the scale of operations, this varied from fifteen to forty dollars. Probably twenty dollars was a fair average. On the other side stood the value of the annual production per slave. If the former were subtracted from the latter, you had your profit. On a Georgia plantation from 1830 to 1847 the net proceeds, for instance, varied from $137 to $41, and averaged for the eighteen years $83. This surplus apparently gives a wide margin of profit.

Modern accounting, however, would elaborate an impressive series of liens upon it. There was the original cost of the slave to be considered. If the master bought him at the beginning of his productive period, say at twenty-one years of age, the purchase price represented a capital investment which had to be written off year by year during the slave's period of productivity in order that he might be replaced without additional expense when he died or was too old to work. On this amortization there would naturally be an interest charge. If the planter raised his own slaves, there was still this capital charge to be met. There were the years of infancy when no return was secured, and of adolescence when the return was small; there was the loss of
time by the mother during pregnancy and confinement; there were the charges for supplies and materials at birth; and then allowance had to be made for the fact that the slave might die before he reached the years of manhood. Once the slave was working, the actual maintenance charges for food, clothing, and medicine were not the only ones. There was the possibility that disease might carry off the worker before his period of productivity ended at fifty or sixty years of age, or that he might become a fugitive; and there was the certainty that he would lose days through illness or accident. Theoretically the planter ought to have carried insurance against such accidents, just as he should have carried insurance for the old age of his slaves, a period when they produced little or nothing and yet still had to be fed, clothed, and housed. Under the impact of these charges the obvious gains from slave labor might well melt away.

There is little evidence that southern slave owners had any exact notion of the financial charges they were actually carrying. They purchased their slaves on some such rule of thumb as $100 for every cent that cotton would bring a pound, or they simply determined their action by an approximate calculation. They escaped consequences of their action through the speculative character of southern agriculture. Prices on slaves and on staples fluctuated in an unforeseen fashion and created unexpected surpluses and deficits. Only the most efficient plantations, enjoying the benefits of the most fertile lands, made money year in and year out.

To appraise southern Negro slavery justly, however, the emphasis should be placed upon its effects upon the whole of southern life rather than upon the fortunes of the individual slave owner. In the first place it prevented the accumulation of savings and of funds for investment in the new enterprises of the nineteenth century. In part this was due to a large, gentlemanly manner of life which despised economy and admired expenditures. But the greater reason was the amount of money tied up in the labor force. Instead of the payment of wages at frequent intervals, the purchase of the slave required at the beginning a large financial outlay, and this fixation of capital increased as time went on, for every planter desired to enlarge his slave force. This capital investment in labor was unfortunate for the planter as an employer. When cotton, sugar, or rice prices fell, he was gripped in a vise. Unlike the northern employer, he could not curtail operation through the discharge of his help. The only means of discharge would be the sale of his slaves, and this would be a forced sale at prices depressed through the general prostration of agriculture. Nor could he afford to let his slaves remain idle. A prolonged vacation from work would relax discipline and undermine health. And all the time the fixed charges of food, clothing, shelter, and other items were mounting. The planter was, therefore, driven to continue produc-
tion, and continued production was the precise means which would prevent a recovery from lowered prices for agricultural products.

Since so much capital was tied up in the labor force it was not available for other forms of investment. In many ways the South had advantages for the development of manufacturing, and a number of small mills and factories had been established in the late eighteenth and early nineteenth century. Yet in 1860 the South was manufacturing almost none of its cotton: "It is because all spare cash is sunk here in purchasing negroes." That the South had the greatest difficulty in accumulating capital was demonstrated in other directions. The North supplied the capital for the internal trade in the South and for the shipping which carried the cotton to England and to the northern states. The construction of railroads in the South could not be financed through the contributions of private investors; it had to be undertaken through city and state aid. This failure to accumulate capital for investment in the new productive processes of the industrial revolution and in the new methods of transportation put the South behind the North in economic development. While admitting the situation, many Southerners and many later observers naturally questioned whether that northern development, overwhelming as it was in quantitative terms, produced a society which was qualitatively as desirable as that created by the southern agricultural régime.

The existence of Negro slavery was a barrier to the creation of a superior labor system. Originally devised to make good the lack of workers, it eventually operated to prevent the settlement in the South of white, free laborers, who, in spite of the southern belief that cotton culture could be made profitable only under Negro slavery, could have produced that staple more advantageously. Throughout the forty years before 1860 a generally rising tide of immigrants poured into the country. Of this number the South received only a very small proportion. In 1860 only 13.4 per cent of the total foreign-born of the country were in the slaveholding states, and in the lower South, with the exception of Louisiana, the foreign-born constituted less than 5 per cent of the population. It would be a mistake, however, to assume that slavery was the only factor in explaining this difference in immigrant distribution. Since there was little direct transoceanic trade between European ports of embarkation and southern ports—New Orleans was an exception—immigrants, who were commodities handled in the course of European-American trade, were not put down in large numbers in southern regions. The immigrant, moreover, has generally sought in this country a climate similar to that in his country of origin and crops which he has been accustomed to raise. Both these attractive causes existed in the North rather than in the South. Finally, the foreign-born element in the South declined after the Civil
War, which abolished slavery. This last consideration indicates that the white immigrant was repelled less by slavery, an institution, than by the Negro, a social factor. Both were, however, features of southern economy and cannot, in the case of immigration, be disentangled. That repugnance for the "peculiar institution" of the South was a deterrent factor can be traced in numerous guides written to advise the immigrant. The anti-slavery movement in England and in Germany after 1840 was a further cause in prejudicing the emigrant from these countries against settlement in the southern states. So the black belts of the South grew blacker. It became more difficult to substitute free white for servile black labor.

Among the whites themselves Negro slavery created a disinclination for hard physical labor. The actual slave owner was busy enough, for his obligations were heavy. But a disproportionate number of men and women in the upper classes lived a life of genteel labor or leisure rather than of strenuous activity. Other classes in the white community, less happily situated than the planter, made it a boast and a mark of distinction that they did not "work like a nigger."

The Southern Yeoman and the Poor White

Attacks upon the South made the mistake of painting this region according to a single formula: slave labor added to the plantation system equaled southern economic life. Such an equation was false. It did not apply to large geographical sections and population groups in the southern states. There was free labor as well as slavery. In 1860 the white population of the fifteen slave states was 8,000,000; the Negro population was some 4,000,000. Of the white families, only a quarter owned slaves and many of this limited group owned only one or two. Most Southerners, then, were in the small slaveholding or non-slaveholding classes. They deserve our attention.

Although deductions must naturally be made for such whites as were artisans, traders, and professional men, the great majority of this other South were farmers of one sort or another. They fall into two great classifications. At the lower extreme were the "poor white trash." This class was characterized by a variety of appellations—"piney woods" people, "hill billies," "sandhillers," "clay eaters"—some of which refer to their habits, others to their locale. The most significant areas in which the poor whites were concentrated were, first of all, the great pine-barren belt of Georgia which runs diagonally across the state from northeast to southwest between the Georgia uplands and the coastal plains. In Mississippi there was a distinct pine-barren district extending north and south through the state east of the Pearl River. Other poor whites were scattered about the pine woods and sand hills which are spotty topographical features of South Carolina, Alabama, and Florida.
These areas did not have the rich soils which plantation staples sought nor had improved transportation connected them with distant markets. The poor whites obtained their food from a scraggily patch of potatoes and corn, and in greater abundance from fishing and hunting. “Wild hogs, deer, wild turkeys, squirrels, raccoons, opossums—these and many more are at [the] very doors [of the poor whites]; and they have only to pick up ‘Old Silver Heels,’ walk a few miles out into the forest, and return home laden with enough meat to last them a week.” Their homes were equally primitive. “A few rickety chairs, a long bench, a dirty bed or two, a spinning wheel,” “a skillet, an oven, a frying pan” were the contents of their rude log cabins. Lazy, shiftless, ignorant, they were despised by the planter and the farmer and even looked down upon by the Negro. In the light of modern research, their vices were due as much to the ravages of the hookworm disease as to defects of character. Dirt eating, clay eating, rosin eating were simply symptoms of the advanced stages of this debilitating ailment.

But the author of *Social Relations in Our Southern States* wrote in 1860: “The Poor Whites of the South constitute a separate class to themselves: the Southern yeomen are as distinct from them as the Southern Gentleman is from the Cotton Snob.” Whether he owned few slaves or none at all, the southern yeoman followed a more varied agriculture which made his farm more self-sufficing than the plantation and involved less exchange of staples for bought commodities. He worked in the fields, even with his slaves if he had them; and the latter were on more friendly terms with him than they would be with an overseer or a large owner. His dwelling was neither the dirty cabin of the poor white nor the veranda-enshaded mansion of the planter. It was a comfortable but rudely constructed log or frame house; for the slaves there were no elaborate “quarters,” only a simple cabin.

Though farm and plantation were everywhere intermingled, some areas had a heavier concentration of one form or the other. In South Carolina and Georgia farms were concentrated along the eastern edge of the uplands, in Mississippi in the eastern part of the state. But the greater number were in the Border states and in the rounded salient thrust southward from the Border states along the mountain ranges of the Appalachians. In this region there were, to be sure, areas of large slaveholdings. In Missouri plantations, cultivated to hemp and worked by slave labor, were staked out on the rich bottom lands of the state. In Kentucky most of the 225,000 slaves were concentrated about Lexington, where hemp growing and livestock raising took advantage of limestone soils, or along the Cumberland River, where there were cotton and tobacco plantations. In Tennessee the plantations were confined to the central area or the Mississippi valley. Elsewhere in the Border states slaveholdings were small. A similar condition prevailed
in the western portion of Virginia and the Carolinas. Since this whole region had a climate unsuited to southern staples, its white farmers grew cereals and raised livestock. Their economic differentiation from the rest of the South had interesting political results during the Civil War, for in this area Missouri and Kentucky remained loyal to the Union, West Virginia split away from the Old Dominion, and in eastern Tennessee and western North Carolina opposition to secession and the Confederacy was widespread. A third southern area in which the farmer predominated was the old plantation district of colonial times, the Chesapeake Bay Region of Maryland and Virginia. Here by 1860 the number of slaves was diminishing, the number of free blacks was increasing, and the farm was supplanting the plantation. Such an extraordinary development can be explained only by the transformation which the agricultural conquest of the West had compelled in the United States.

**The Agricultural Revolution**

It is a truism that America is the extension of Europe. The colonizers and the later immigrants departed from its shores; the civilization of the New World derived from Europe, and refreshed itself at that original spring; and the great transforming agencies of the nineteenth century in the United States—the industrial and the agricultural revolutions—migrated from England to this country. Both revolutions were products of the eighteenth century, and behind both lay the spirit of an age which witnessed the breakdown of traditional beliefs before the onslaught of rationalism, the development of pure science, and the excitement of a scientific curiosity which sought to experiment, to classify, and to understand.

The revolution in agricultural knowledge was the work of a series of gifted amateurs. The first of these was Jethro Tull. He published in 1733 a remarkable classic, *The Horse Hoing Husbandry*, in which he advocated the sowing of seeds, not broadcast, but in drills and emphasized the importance of the cultivation of the fields while the crop was growing. Charles, second Viscount Townshend, at the same time was experimenting with rotations, including the artificial grasses and turnips, to restore the fertility of his soil and to produce abundant food for a greater number of livestock, whose manure could be returned to the fields. Later Robert Bakewell, though he had little more scientific knowledge about breeding than his predecessors, for like them he bred like-to-like and best-to-best, was quick to realize the new qualities desired in livestock—meat rather than draught power, for instance—used inbreeding somewhat more audaciously to stabilize desired traits, and, perhaps most important of all, fed his animals generously. Finally at the end of the eighteenth century the new knowledge and the new
methods of agriculture were disseminated by able popularizers, of whom Arthur Young was deservedly the most famous, and put into practice by farmers possessing intelligence and capital.

Then in the nineteenth century scientific knowledge began the more accurate explanation of existing empirical methods and initiated the adoption of novel practices. The development of chemistry was primarily responsible for the change, and its pioneers all made contributions. Progress was so rapid that by 1840 the German investigator Justus von Liebig was able to issue in German and English his Organic Chemistry in its Relations to Agriculture and Physiology, the basis even today of scientific agriculture. Through analysis Liebig had become convinced of the importance of the elements nitrogen, phosphorus, and potassium to plant life and insisted upon their restoration to the soil in amounts proportioned to their presence in the plant's ash. Although his fundamental contributions were sound, he went astray with the belief that sufficient nitrogen was replaced by precipitation from the atmosphere and that ash analysis was the proper determinant for fertilizer application. Later investigators corrected or amplified these theories. J. B. J. D. Boussingault demonstrated the value of additional applications of nitrogen and showed that legumes, in a fashion then unexplained, fixed nitrogen from the air. In England J. B. Lawes and J. H. Gilbert, the latter a pupil of Liebig, began at the laboratories and farm of Rothamstead the half century of experiments that were to fashion modern scientific agriculture. They soon reinforced Boussingault's emphasis upon nitrates and proved that some plants could use profitably greater amounts of minerals than Liebig had recommended. Thus the first steps toward soil analysis and the more scientific preparation and use of fertilizers had been taken.

The features of the agricultural revolution were adopted slowly in America. One explanation of this tardiness was the conservatism of human nature, which is skeptical of the advantages of change and resists uncomfortable adaptation to new circumstances. A second explanation was peculiarly American. With an abundance of fertile land at low prices, "it was," in Jefferson's words, "cheaper to clear a new acre than to manure an old one." A third was the highly tentative character of agricultural knowledge itself. An American in 1860 could say with truth,

Every question of the science and practice of Agriculture, such as plowing, draining, drilling, quantity of seed per acre, time of harvesting, cutting hay, feeding, manuring, and so on through every labor of the farm to sowing the seed again, is in doubt and uncertainty, and on almost any of these various questions two parties could be arrayed nearly equal in numbers.
But if agriculture were to survive in the eastern states it would have to
find in new practices an escape from the invincible competition of the West.
The handicaps of the East were discouraging. For one reason or another, its
soil endowment was inferior to that of the western areas, where the new
kingdoms of wheat, corn, livestock, and cotton were being established. In
New England the soil was difficult to cultivate, and although it held its fer-
tility after years of tillage, its natural richness did not equal that of the west-
tern prairies. In the South the surface fertility of the soil had been exhausted
by cotton and tobacco crops, and the soil itself, lighter than in the northern
states, had been a fearful victim of erosion.

The exhausted soil was not the only factor which tried the eastern farm-
ing sections. The loss of man power through westward migration was a
prodigious drain. Its extent can only be surmised. But in 1850 there were
approximately 1,500,000 natives of New England in New York and the
north-central states; over 500,000 Virginians and Marylanders were living
outside the boundaries of those states; and from New York and Pennsyl-
vania over 1,300,000 citizens had migrated elsewhere. In the case of slaves,
as a Virginian pointed out, the purchase price, their capitalized value, was
returned to the state from which they were sold. But this was not the case of
the emigrant white; his future contributions were lost to the state forever,
and the latter received no reimbursement for unproductive years of child-
hood and adolescence spent within it. Furthermore many of the immigrants
carried with them funds and movable property. In case the farms which they
left went out of cultivation entirely, there was a loss of a part of the original
investment for clearing and improving them. If they were sold in the open
market, their price was lowered through competition with other abandoned
areas. The advertisements of land for sale ran into hundreds of thousands
of acres, and some of it found no purchasers at any price. All in all, the tem-
porary loss to certain areas in the East through westward migration is in-
calculable.

The advent of the industrial revolution must be anticipated to appreciate
the other dangers besetting agriculture in the older regions of the country.
The competition of the new methods of manufacture, introduced by the
revolution, broke down the old circle of self-sufficiency and destroyed the
domestic manufacture of clothing, utensils, and furniture. Many families had
eked out a livelihood through combining farming activities with household
production. Now this possibility was lost. Moreover, once these by-industries
were gone, the movement from the farm to the factory began. Agriculture
had to adjust itself to a migration to the cities, which the concentration of
factories at advantageous locations created or enlarged. This raised ques-
tions of farm labor, but, even more vital, of the social esteem in which farming was held. Farmers complained: "Thousands of young men do annually forsake the plough, and the honest profession of their fathers, if not to win the fair, at least from an opinion, too often confirmed by mistaken parents, that agriculture is not the road to wealth, to honor, nor to happiness. . . . Every farmer's son and daughter are in pursuit of some genteel mode of living." This urban drift was as important as that toward the West, but it has been less remarked.

The changing conditions in the East scattered the seeds of regeneration as well as of decay. The industrial revolution might bleed the countryside white of population, but through its urban communities it built a broadening and insistent market at the very threshold of the depleted agricultural regions of the East. In many respects the western agricultural empire could supply the new consuming area, but some products were too bulky to pay for a long freight journey and others were perishable and needed immediate delivery. To seize these advantages the older agricultural regions creaked slowly and clumsily through a twofold adjustment. On the one hand, the technique of farming the staples was sufficiently improved to restore and maintain the fertility of the soil and to enable these regions partially to compete with the fertile lands of the West. On the other hand, there was a shift to crops and other aspects of agriculture more suited to the economic situation of the eastern agricultural areas. Here the indifference to innovations and improvements gradually diminished. Here the agricultural revolution began to bite home.

At the beginning no institutions existed in the United States for diffusing a knowledge of the new methods of European agriculture or for conducting research and experimentation of their own. So until the Civil War the improvement of American agriculture was largely the work of inspired individuals, usually those who had inherited wealth or acquired a competence from other occupations than agriculture or who, while in the midst of their agriculture innovations, still drew a steady income from some other pursuit. There was no absence of recruits for this adventure. Most Americans had at one time or another come into contact with farm life and if they had the means they craved a return to the delights of agriculture. Nor was the arrangement a barren one. After all, only those with financial resources could afford to gamble on the new knowledge as it came across the Atlantic, import improved livestock, and follow their own bent or intuition to new discoveries. For this type George Washington set the illustrious pattern. He made with his own hand a careful analysis of such English books as Tull's The Horse Hoing Husbandry, corresponded with progressive agriculturists abroad, including Arthur Young, with an almost pathetic humil-
ity, experimented with manure, soil amendment, and rotation, tried to breed up his domestic animals, and fought erosion as an enemy. Later men, likewise proud to bear the title "agriculturist," did even more. Some created an agricultural press more reliable than the granny's lore of the almanac and more regular than the occasional articles in country newspapers. Between 1819 and 1860 approximately 250 agricultural magazines were started; most died, but at least one survived to attain a circulation of 100,000 in 1864. Nor could the metropolitan press ignore the subject. Both the New York Times and the New York Tribune had agricultural departments, and the weekly edition of the latter carried the zeal of Greeley and the information of Solon Robinson, one of the great agricultural writers of the era, into thousands of homesteads. Others turned their farms into training schools or demonstration projects for the neighborhood.

These agricultural leaders soon formed societies whose rosters in the eighteenth century read like a list of the signers of the Declaration of Independence or the Constitution. The lead was significantly taken by the eastern states. In 1785 the Philadelphia Society for Promoting Agriculture and the South Carolina Agricultural Society were formed. The example was followed in cities, towns, and states as far north as Maine. The membership of such organizations was catholic, for doctors, lawyers, ministers, statesmen, politicians, and businessmen were all admitted on the ground that, as the Philadelphia Society announced, "The interests of Commerce, Arts, and Manufacturers, form with Agriculture, an indissoluble union." Practical farmers justly asserted that these societies tended to reflect the "literary" or "philosophical" interests of the "farmers" who composed them, and that too much time was devoted to papers celebrating, with a wealth of classical allusion, the worth of farming as an ennobling occupation. But Elkanah Watson, one-time merchant and speculator, later a large landowner near Pittsfield, Massachusetts, was the originator of a more democratic and effective organization. At his suggestion, a few neighbors, following a practice which had grown up in England and France, held in 1810 an agricultural fair on the village green and exhibited their improved livestock. So successful was this innovation that the Berkshire Agricultural Society was established to perpetuate the custom. The idea now enlarged in Watson's mind. He would establish elsewhere similar county organizations of practical farmers to hold county fairs. These annual celebrations were to be social in character, with church services of "animated pastoral prayers and appropriate odes," parades in which officers and members marched, and an agricultural ball in the evening; but the main purpose was the award of premiums for the best exhibits. The movement for a time met with great success, declined for fifteen years after 1825, and then revived, particularly in the western areas of the United
States. A list of "boards and societies" in 1858 enumerated over nine hundred organizations in the country.

These societies became the chief organized agencies for agricultural improvement in the nation. Their fairs varied the dull routine of rural life and, more important, the exhibition of livestock and the demonstrations of farm machinery and implements exerted a tangible educational influence. But these societies were more than fairs; they operated throughout the year. Some possessed experimental farms, others imported improved cattle and tested agricultural machinery, and nearly all had meetings, sometimes as often as once a month, which discussed agricultural problems and listened to papers. These proceedings were published in the local press or, if the society was affluent, in separate volumes, many of which remain a valuable source of agricultural knowledge of the day. Little by little they took on a public character. The state gave them financial assistance for premiums or other projects and occasionally coalesced representatives of the different county associations into a state board of agriculture. The national government was slow in giving financial aid, but in 1839 it appropriated $1,000 to be spent under the direction of the Patent Office for the benefit of agriculture. From year to year the sums were increased, and in 1862 agriculture became a distinct government department.

Agitators for increased governmental assistance always placed in the forefront of their objectives the creation of an institution for teaching and promoting the industrial or agricultural arts. A start had been made early in the century as some college professors of natural history gave incidental attention to its bearing upon agriculture, and in the lower schools the interest in vocational studies aroused in this country by pedagogical experiments in Europe, particularly in Switzerland, often stimulated a very considerable instruction in practical agriculture. But by the Civil War there were few institutions that had the means or the men for agricultural research and instruction in scientific agriculture. Michigan had just established the first state-supported agricultural college, the Michigan Agricultural College. It had an experimental farm and offered a "wide range of instruction in English Literature, in Mathematics, and in Natural Science. Special attention will be given to the Theory and Practice of Agriculture in all its departments and minutiae." In Pennsylvania Evan Pugh, who had studied in Germany and at Rothamstead and demonstrated his abilities as a research man in agriculture, was heroically trying, as president, to get the Agricultural College of Pennsylvania under way. Meanwhile Yale had secured a headstart and preëminence. In the forties she had established a School of Applied Chemistry in the Department of Philosophy and the Arts. J. P. Norton, who had studied in the laboratory of the Agricultural Chemical Association in
Edinburgh, was its first professor of agricultural chemistry. His book, *Elements of Scientific Agriculture* (1850), although only a text, was the most important American volume in its field since the *Essays* of Jared Eliot. In the fifties S. W. Johnson, who had studied under Norton and under Liebig at Munich, secured an appointment to the school, became chemist for the Connecticut State Agricultural Society, and began a scientific analysis of fertilizers. He was to become the most influential agricultural scholar in his generation. Both Norton and Johnson came from American farms; both epitomized the transit of agricultural knowledge across the Atlantic.

**Improvements in Livestock**

It was a common observation in England that the improvements in livestock inspired a quicker imitation than those in tillage or cultivation. A Bakewell sheep was obviously so superior to the common animal that seeing was believing. The same generalization was true in this country, for improved livestock were introduced with comparative rapidity. In the large, the history of this movement again demonstrated the dependence of American changes upon European innovations, for Americans identified improvement with importations of better animals from abroad. Undoubtedly these foreign superiorities were often more advertised than real, and other factors, like generous feeding, were more responsible than uninformed inbreeding practices for their excellence. Still importations were an historic method of betterment. The English cattle which Americans now brought in were the descendants of Dutch and Flemish cattle once imported to Great Britain.

Only in the case of hogs were importations of better breeds comparatively unimportant. This was not because the American breeds were an excellent base for experimentation, but because the rapid maturity and large litters of the animal made improvement easy. So, although boars of various breeds were imported from Europe and Asia, the native stock generally furnished the sows. Of the European breeds the Berkshire had the greatest vogue, but breeds produced in this country were equally favored, and the Poland China came to occupy a position equivalent to that of the Shorthorn among cattle. Perhaps as important as the new blood was the care given to hogs. Except in the frontier regions, they were no longer turned out to be companions of the forest animals. They were often sheltered, curbed in pens for the whole or part of their lives, and fed more generously with corn. The typical American hog under these benign circumstances became a small-boned animal, his body a barrel of fat set solidly upon four short legs, his head and ears small, his tail short. The change, however, was not solely esthetic. His sides and quarters were loaded with pork fat.

American native cattle, a mixture of everything and "not very celebrated
for anything,” were “small, short-bodied, thin and coarse-haired, steep rumped, slab sided, having little aptitude to fatten, or to lay the fat on the right place.” Importation of English breeds, not exactly identified, began immediately after the Revolution. Their effect was negligible. After the second war with Great Britain, American fanciers imported the Shorthorn. They were not primarily dairy animals: instead their rapid maturity, their great weight, and their beautifully marbled flesh made them prime beef cattle. These attractive characteristics suited them for the trans-Appalachian area where the rich pastures in the Ohio and upper Mississippi valley met their feeding requirements. Animals were imported directly into Kentucky or sold westward from eastern herds into that state and Ohio. Finally in 1834, a group of individuals formed the Ohio Society for Importing English Cattle. Funds were raised through the sale of shares of stock at $100 a share, a cattle dealer, was sent abroad to obtain the finest Shorthorns irrespective of price, and nineteen animals were brought back. These were kept with later importations until 1836, when a sale dispersed the improved cattle through the Middle West and immediately realized a dividend for the subscribers. The importation of Shorthorn cattle was the outstanding importation of cattle before the Civil War.

Improved hogs and beef cattle, although of local importance in the eastern states, were no salvation for eastern agriculture. They did not eliminate western competition; rather they strengthened it, for the abundance of fertile land in the West was no reason why that region should prefer inferior animals as it did inferior methods of tillage. Other branches of animal husbandry did give the East a temporary and in some cases brilliant relief. One was sheep raising. The history of this occupation is exceedingly complicated, for it is closely connected with changes in market demand, either in wool manufacturing or in mutton consumption. These two uses are further complicated with advances in machine technique, tariff duties on raw wool and woolen fabrics, and shifts in dietetic tastes and clothing fashions.

Before any profitable reason for improving the American breed of “natives” existed, however, amateurs and wealthy farmers had begun the importation of the Spanish merino, a sheep with a very fine and soft wool. These sheep were so much prized that Spain had placed an embargo on their export, and breeders in England, Germany, and France had gone to considerable expense and danger to obtain animals for their herds. In 1802 there were two very important shipments of merinos to the United States. Robert R. Livingston, an American diplomat and a landed grandee of New York, sent to his large estates two pair of merinos selected from the French flocks; and Colonel David Humphreys, returning from his position as minister to Spain, was graciously allowed to evade the embargo and bring directly to
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America a flock of merinos to form the nucleus of the herds on his large estate in Connecticut. Here the matter bade fair to stop.

But in 1808 the wool manufacturing of the country entered upon seven years of hothouse stimulation, during which international confusions of one sort or another practically cut off the importation of English woolens and made woolen manufacture in this country profitable. The demand for fine wool far exceeded the supply, and prices for pure merino wool ran up to the dizzy sum of two dollars a pound. A merino mania swept over the country. Every one wished to own such valuable animals. Livingston sold purebred ewes at $1,000, and Humphreys sold two rams and two ewes for $1,500 apiece. Meanwhile, in Spain, as a result of the Peninsular War, the embargo on exports had been raised, and owners of merinos were eager to convert their flocks into cash before they were slaughtered or dispersed. With that providential coincidence which seemed to have placed sheep fanciers in Peninsular diplomatic posts, William Jarvis of Vermont was consul at Lisbon. At once he undertook shipments which were the first in a positive migration. Within sixteen months more than 19,000 merinos were sent to the United States. Although these extensive importations brought a reduction in the price of individual animals, the high price of wool still made sheep growing very profitable, and the common farmer, responding to the speculative excitement, purchased representatives for his herds. In many places along the Atlantic coast sheep raising became a major enterprise. Then came the inevitable deflation. After the war the competition of European woolens depressed wool prices and blighted the royal anticipations of the American speculators. Expensive animals were worth but a part of the former value. Disappointed farmers either sold their merino flocks to the butcher or neglected them.

In the eighteen-thirties the wool industry enjoyed a brief second blooming. The number of sheep increased 60 per cent during the decade. Also the quality was improved. Renewed concentration was placed upon the American merino. Native breeders, particularly those in Vermont, had developed a merino with fleece still fine but slightly heavier and with a longer staple. These became world-famous. As these facts suggest, the East still retained the major share of the industry. New York’s herds were in the western and central portions of the state—a broad zone paralleling the Erie Canal. Pennsylvania’s holdings were more scattered. In New England a definite sheep district had grown up in the Berkshire Hills and in Vermont. This state was unique in the country. In the five years after 1832 its sheep increased over a million in number; it had more sheep per acre than any state in the Union; it was the home of the greatest breeders; and sheep there were a major industry. But the whole East was so touched by this episodic prosperity that
an editor even foresaw the time when the wool of the North would rival King Cotton as a staple.

As it turned out, this was but the fancy of the moment. Between 1840 and 1860 sheep husbandry, quantitatively considered, remained at a standstill in the nation. But there were shattering displacements within its boundaries. The industry rushed westward. Ohio snatched the golden fleece from New York. The simple explanation for this dramatic overturn was the comparative cheapness of raising sheep in the West. The land in the East was a considerable expense—sheepwalks in Vermont were valued at thirty dollars an acre—but that in the West was cheap or might be grazed over for nothing. In the East there was the necessity of sheltering and feeding the sheep during the winter months; this was unnecessary in the western regions. The reason that western competition had not been damaging previously can be discovered in one word—transportation. Not until after 1840 when the Erie Canal and the cross-state canals in the Middle West had been opened, was it possible to transport wool profitably in great quantities from the West. So once again the East faced adjustment. While some of the more famous Vermont breeders continued to produce selected stock for western purchasers, most eastern sheepowners discarded the merino for the long-wool mutton types. Their coarser and longer fleece could be used in textile manufacturing, and their carcasses supplied the growing demand for mutton. Although importations of Southdowns and of improved Leicesters furnished a start for the new specialization, the extensive sheep industry of the East was not restored.

Observers in the Berkshires and central New York pointed out that the sheep craze had interrupted the development in dairying already taking place in these regions. After 1840 cold mathematical calculation sent the farmer back to this occupation. It was said that the annual return at prices current in 1850 from eight sheep, which consumed the same amount of feed as a cow, was about fourteen dollars; but the receipts from the cow ranged from thirty to sixty dollars. There were other advantages in dairying. Hogs were raised to hog down the food neglected by the cattle and to consume the waste milk; the prices of butter and cheese did not fluctuate as widely as those of wool and a new market for these products was opened in the export trade; the labor of the whole family could be utilized in dairying and not in sheep growing. Finally, the dairy business enabled the eastern farmer to compete with the western prairies. The fresh milk sold in the eastern urban centers had to be produced near at hand before the days of refrigeration; the manufacture of butter and cheese required care, skill, and labor—pains which the western farmer did not find it necessary to take. With the decline of sheep raising, therefore, dairying came in with a rush.
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At first the dairying area was confined to the western counties of Connecticut and Massachusetts, to the districts along the lower Hudson, particularly Orange and Dutchess counties, and to the region about Philadelphia. By 1860 it had spread into Vermont, which was the first New England dairying state; it had supplanted the declining wheat yields of the Mohawk valley and invaded the Genesee country, creating in central New York a dairying rival to Orange County; it had moved westward to the Western Reserve of Ohio, where the production of cereals had never been as promising as the opportunities for grazing; and it had enlarged its area in Pennsylvania. In spite of the growing production of Ohio, the industry remained predominantly an eastern one. In 1860 New York State alone produced nearly half the cheese made in the country and nearly a quarter of the butter. Her supremacy was not only quantitative but qualitative. “Orange County” butter, although by no means confined in its manufacture to that district, was a standard, and was purchased by the United States Navy because it best withstood the heat of the tropics. Its superiority seems to have been due to the carefulness and the exactness in its preparation.

The spread of dairying in the East worked a revolution in the treatment and breeding of milch cows. These animals were no longer left to shift in the open through the winter, but were better housed and fed. The improvement in milk breeds was effected through specialization. Cattle no longer were bred at the same time for beef and milk. After 1840 they were selected for their dairy qualities. Native animals who were good milkers were retained in the herds; the others were culled out and sold. There were scattered importations of Jerseys, Guernseys, and Ayrshires. The average yield of milk per cow was increased. According to statistics compiled by the Massachusetts Society for Promoting Agriculture, between 70 and 100 pounds of butter was a fair annual return from a cow in 1800; by 1840 the amount had increased to 166 pounds. The evolution of the cow into a milk machine had begun.

Scientific Tillage

No comparable achievement attended the introduction or breeding of plants. The first duty was pursued, to be sure, with organized zeal. Naval and consular officials, at the direction of the government, sent back seeds and plants from abroad, travelers with agricultural interests returned laden with vegetable booty, and the Patent Office distributed seeds of novelties to American farmers and grew tea plants and pomegranate cuttings in its “propagating houses” in Washington. Perhaps the most important immigrant arrived in 1819 without official fanfare: Mediterranean wheat, a semi-hard red winter wheat, whose greater hardiness and early maturity enabled
it to challenge the attacks of rust and Hessian fly. But the period as a whole lay between the great importations of colonial times and the more systematic introductions of a later date. Nor did ordinary farmers and their leaders possess a knowledge of the techniques required for plant breeding. They could do no more than select from the accidental mutants and hybrids in their fields the seeds of specimens that seemed unusually productive and otherwise desirable. Although this method was not scientific, it gave new varieties of wheat, corn, and cotton.

Farmers with a bent for improvement were more concerned with the question of rotations and fertilizers. The agricultural revolution in England had early emphasized these matters and they directly benefited the exhausted soils of the East. Rotations interrupted the life cycles of weeds and parasites associated with certain crops. Rotation crops furnished foodstuffs for the livestock, whose heavier concentration on the farm provided a greater quantity of animal manure; turned under, they served as a green manure, and the legumes added nitrogen to the soil. Americans worked out rotations for their own conditions. Although often advised to follow the British pattern, they discarded the turnip. In our northern zones this root would not winter in the ground, and it required a great deal of labor. Indian corn served just as well, for its cultivation killed the weeds and demanded less labor; its leaves and ears furnished fodder. Increased attention was given to artificial grasses, for in the eastern states the native grasses, generally speaking, were unsuitable for livestock. Natural meadows were occasionally reseeded; the grass sequence in rotations was prolonged, and the uplands were sown with the European grasses introduced in the colonial era. Thus eastern farms grew hay for the market of eastern cities and forage for their greater herds and flocks. In 1860 New England and the Middle Atlantic states produced 76 per cent of the hay in the United States.

Clearly the questions of fertilizers and rotations were interlocked. But it took years of experimentation and research to determine what crops and what soils required what fertilizers and in what amounts. The old distaste for animal manure passed away. Reformers from Maine to Georgia emphasized its importance and popular opinion approved the saying, “The size of the manure pile is the measure of success in agriculture.” But the management of livestock so as to produce the greatest offal, the protection of manure from leaching in the rain, and the time and manner of its application were matters of excited debate. Others directed their attention to the mineral manures, gypsum and marl. The former added calcium and sulphur directly to the soil, and by stimulating the growth of legumes it returned nitrogen to the fields. Early in the nineteenth century a rage for “gypsum
and clover” swept the East; it yielded results—on the right soils. Marl, usually rich in potassium and phosphates, sweetened an acid soil or prepared it for animal manures. A scientific appraisal of its value waited upon the work of Edmund Ruffin of Virginia, whose book *Essay on Calcareous Manures* (1832) was declared at the end of the nineteenth century to be the “most thorough piece of work on a special agricultural subject ever published in the English language.” In lower Virginia, where this fertilizer was used, the worn-out soils spat forward under its application and the whole of agriculture was revived. Then in the forties Americans learned the miraculous value of guano, the dried droppings of birds on the islands off the coast of Peru. One writer in 1844 declared, “In effect, this article *Guano*, will transfer the Western lands to the Atlantic.” Finally in the next decade a New Jersey agriculturist, J. J. Mapes, patented a nitrogenized superphosphate, the first complete artificial fertilizer in the United States.

These innovations not only aided general farming but assisted specialized agricultural production where favored districts facilitated such development. The urban markets made possible intensive agriculture in truck farming. Near the large cities, Baltimore, Washington, Philadelphia, New York, Boston, the land rose in value, and it was ditched, drained, and highly fertilized. Often immigrants trained in market gardening abroad leased and finally purchased the land. These same markets made possible a better fruit culture. Previously apples and peaches had been prized preeminently for their beverage possibilities, but overproduction and a temperance movement had destroyed the value of this market. Orchards were neglected and the fruit fed to animals. After 1840, however, the city markets called for fresh fruit, and comparatively rapid transit carried the product toward the demand. New York State developed apple orchards, New Jersey and Delaware and Maryland grew peaches, and in the Ohio and Missouri valleys there was the beginning of grape cultivation.

With the increased rotation of crops and the use of fertilizers went a change in the methods of cultivation. In the South the great problem was that of erosion. Deeper plowing, advocated as a means of lessening this evil, gave plant roots greater freedom for growth and produced a layer of earth which absorbed the rains and prevented gullying. On the hills the old method of plowing up and down and thus constructing perfect channels for erosion was succeeded by the practice of horizontal plowing. Everywhere in the East the old methods of broadcasting seed gave way to the drill, and the cultivation of the fields grew more frequent. The larger expenditure of labor which these betterments entailed necessitated the improvement of agricultural machinery.
Agricultural Machinery

America's most original contribution to the agricultural revolution was the invention of agricultural machinery. It would be pleasing to presume that this preëminence was due to the superior inventive capacity of the American mind, but, as a matter of fact, it sprang from the necessity of American agriculture. It is a mere reiteration to say that the westward migration and the urban drift made agricultural labor scarce and raised the general level of wages. Throughout the early period of the nineteenth century this condition persisted. In Massachusetts, for instance, farm wages nearly doubled in the forty years between 1790 and 1830. At the same time the price of agricultural products was falling. The employer simply had to secure an increased production per laborer if he was to remain in competition. The same situation existed elsewhere in the East and was one of the factors which stimulated the adoption of agricultural machinery in the East earlier than in the West. But after 1840 the adoption of machinery became almost nation-wide.

The variety of appliances which were invented or improved—hay tedders, mowing machines, hayrakes, cultivators, drills—is a challenge to description, but the more fundamental improvements were made in the plowing and the reaping processes. The plow, in spite of its comparatively simple appearance, is the result of many inventions and a rather complicated evolution. The colonial plow was a clumsy instrument. It required several horses or oxen to pull it, and two or three men to guide it and keep it in the ground, and it turned up an edged rather than a flattened furrow. Each plow was unique, for the local blacksmith, using his own designs, made it of wood with perhaps the wearing edges clumsily protected by iron strips. The first improvements in this imperfect tool were made by theorists. Thomas Jefferson, speculating on the proper lines for the moldboard, worked out mathematical formulae which, with little revision, have stood the test of experience. With less effort the furrow slice was now evenly cut, gradually raised, and turned over, flattened, and broken. The friction was so reduced that the team was halved and one man was able to do the plowing.

These theoretical contributions, important as they were, would have failed unless embodied in an instrument more carefully and more permanently constructed than the old plow. Although at the close of the eighteenth century a patent for a cast-iron plow had been granted, its disadvantages hampered its introduction. Cast iron was easily broken, and the cutting parts were dulled. Jethro Wood, a New York Quaker, in 1819 overcame these initial difficulties. The share, the moldboard, and the landside were all separately cast and then fastened together into the whole instrument. If any piece
needed to be replaced, an interchangeable part could be inserted by the farmer without calling in the aid of a skilled plowwright. The moldboard of the Wood plow utilized in part the Jeffersonian formulae. Technical difficulties seemed more easily overcome than human inertia, for farmers claimed that the cast-iron plow poisoned the soil and grew crops of weeds. By 1830, however, rural suspicion had collapsed.

When settlement spread to the prairies, the cast-iron plow was unable to break their heavy soils. The moldboard scoured poorly, and the plow plunged about in the turf. An Illinois smith, John Deere, then built a very light plow of high-grade rolled steel which cleaned beautifully. The widespread use of this improved machine was for a time retarded by the difficulty of securing metals, but by 1847, when he began the manufacture at Moline, American steel of the desired quality was available. As this personal development suggests, plow making had been placed on a factory basis. As early as 1830 two factories in Pittsburgh were manufacturing 34,000 plows a year, and by 1858 John Deere's annual output at Moline was 13,000. Cheaply turned out by large-scale production, designed expertly, constructed of proper materials, and equipped with interchangeable parts, the American plows became the standard of the world. They were exported to Europe, and at the great London Exhibition of 1851 they won the commendation of the judges for their "extraordinary cheapness and lightness of draught."

The improvements in this fundamental instrument were, however, less startling than those which revolutionized the cutting of grain. In spite of the invention of the cradle, harvesting was still slow work, and grain growing on a large scale was severely hampered. But the difficulties of a mechanical reaper were bafflingly numerous. It had to run over uneven ground, cut the stalks and deliver them in some ordered arrangement so they could be easily gathered and bound, and somehow furnish the power for such operations. The natural source of power was the rotation of the wheels of the reaper over the field, but how draft animals were to pull any such contrivance through standing grain without trampling it down was so perplexing that the early experimenters put the animals behind their inventions and pushed them over the fields. Eventually, however, the idea of having the horses put to one side of the cutting edge was adopted. After heartbreaking trials with various devices a cutting edge consisting of a knife moving back and forth on stationary fingers, which gathered up the grain in tufts, had been invented. Other features were a divider, which separated the grain to be cut from that left standing, and a reel, a sort of windmill effect, which in its revolutions pushed the grain against the reciprocating knife, and then laid the stalks evenly upon the grain platform behind the cutting edge. All of these arrangements, with the exception of the divider, had been devised by
various inventors, and were combined in 1822 by an English school
teacher—Henry Ogle—into a single machine.

What relation these earlier English experiments and the early American
experiments had with the two American creators of the reaper is a matter
of conjecture. At least the thing was in the air. The struggle between the
two American inventors, Obed Hussey and Cyrus Hall McCormick, is one
of the vivid tales of American invention. Hussey, a Nantucket sailor, dreamy
and rather impractical, patented his machine in 1833. McCormick, a farmer
mechanic from the western valley of Virginia, was a hard-headed inventor
and businessman. His first patent was secured in 1834, but three years earlier
his first reaper had cut a very small stand of grain. The great superiority of
these solely American reapers over their predecessors was in the cutting edge.
The projecting fingers were grooved, and the reciprocating knife was jagged
with teeth which worked in and out of these grooves. The grain brought
back by the reel was thus clipped or sawed most effectively. The angle of
the teeth and the shape of the groove were the subject of experimentation
over a period of years, so that finally the grain never clogged in the apparatus
and the reaper could mow without racing the horses. In the course of these
improvements the machines of McCormick and Hussey began to resemble
one another. The actual contribution of each inventor thus became a matter
of controversy which dragged through lawsuit after lawsuit.

In spite of their early invention, the difficulties of manufacturing reapers
and securing their adoption prevented their widespread usefulness. It was
not until the decade of the fifties that they spread rapidly to the grain-grow-
ing western prairies for which they were particularly suited. With the plow
the American reaper made the journey to the London Exhibition of 1851,
where it eventually won the approbation of the London Times, at first
merely amused by its curious appearance. But its greatest triumph was at
the Paris Exhibition of 1855, where it was entered in a contest with English
and Algerian reapers. The Algerian reaped nearly an acre of oats in seventy-
one minutes, the English in seventy-six, and the American in twenty-two.
Whosoever may have been the inventive genius which created this Ameri-
can product, McCormick rather than Hussey reaped the material rewards.
He was the better businessman. In 1848 he moved his factory to Chicago
to be at the door of the rising wheat empire of the West; he was constantly
on the alert for improvements; and in his competition with others he em-
ployed an efficient ruthlessness. His advice to one of his lieutenants in a law
suit in Maryland was, “Meet Hussey in Maryland and put him down.” By
the middle of the fifties he was producing fifteen hundred reapers a year,
and he had accumulated a fortune which was large for the era in which he
lived.
SLAVERY: THE AGRICULTURAL REVOLUTION

The quickening and liberating effects of agricultural machinery deserve to be compared with those deriving from the inventions of the industrial revolution. The horse hayrake, often driven by a boy, performed the work of seven men with hand rakes; the mowing machine did as much as a crew of ten men equipped with the old scythes; the reaper required for cutting and binding fifteen acres a crew of only nine men compared to a gang of fourteen using cradles for the same task; the corn cultivator made it possible for a man to cover three acres for one with the old plow; Pitt's mechanical thresher—American improvements grafted upon Scottish inventions—"which literally devoured the sheaves of wheat," could thresh over twelve times as much in an hour as six men equipped with the old hand flails. Such a saving of labor and such a speeding of processes had a profound effect upon American agriculture. The adjustment to increased wages and an uncertain labor force was made possible. Machinery lightened the burden of agricultural existence. But on the other hand it did not necessarily accomplish a thing toward remedying the wasteful and extravagant methods of American agriculture. In some instances it increased their profitableness and extended their dominion, for it was possible with the improved machinery for a man now to farm extensively thirty, forty, or sixty acres rather than ten or fifteen. In this case, as in others, the effects of machinery are not wholly admirable. They challenge a discriminating appraisal.
CHAPTER VI

The Decline of Foreign Commerce

The Problem of Foreign Commerce

The greatest disadvantage of American independence was the effect of that status upon the foreign commerce of the new Republic. For though in after years the loss of the British colonies by Revolution was often used to discredit mercantilist philosophy and practice, nations for the moment drew no such lesson from experience. Instead Great Britain, France, and Spain, the three who dominated the Atlantic Basin, continued for themselves and their colonies the old colonial system. Bent on national wealth, power, and self-sufficiency, they imposed prohibitions and preferences on imports, stimulated exports, and excluded the merchant marines of rivals from all trades except those so direct as to compel a grudging exchange of reciprocal favors. Each power acted independently through its own orders, decrees, or statutes unless a commercial treaty, oftentimes dictated by the victor, introduced an element of bilateral agreement. For trade, the result was rigidity, exclusion, monopoly and, whether in peace or war, continuous conflict. For no nation was powerful enough to unify the international order by force or example. Into this anarchy the United States now stepped—alone.

For the United States the commercial policy of France had significance, though perhaps less than in the colonial era, for the latter was a great naval power and still possessed an island empire in the Caribbean. Of more importance was Spain. Likewise a great naval power, her empire, whose trade she attempted to monopolize, extended from Cape Horn to the Mississippi, arched through Florida, and embraced Cuba, Puerto Rico, and a portion of San Domingo. But for the new Republic the chief concern was the commercial policy which Great Britain adopted for herself and for her colonies. With the latter, particularly in the West Indies, the United States had once played a reciprocal rôle, so vital to both that its destruction seemed incredible and disastrous. With Great Britain itself trade relations had been building over a century and a half. Such an edifice could not be shattered in a twinkling. English goods, hardware and woolens for example, were necessarily im-
ported because no country could make them as well or as cheaply; English merchants were patronized by American purchasers because the latter could secure only in England the long credits which were essential in carrying on commerce in a new country; finally the ties of culture and habit were not easily broken. Like the American Indian, wedded to his English blankets, the American consumer depended upon English products. All in all, in 1790 nearly two-thirds of our foreign commerce was with regions under the British flag; in 1860 the proportion was still 54 per cent.

In Great Britain there were two opinions as to the policy to be followed in dealing with her former colonies. One was expressed by William Pitt, a convert to the liberalism of Adam Smith. Early in 1783 he introduced into Parliament a series of trade bills which would have established commerce between the United States and Great Britain and her colonies on a basis of commercial generosity. The opposition to such measures was aroused and marshaled by Lord Sheffield, whose Observations on the Commerce of the United States, published in 1783, was a severe arraignment of commercial liberality on the ground of its needlessness. The Sheffield party mustered so much strength that Pitt’s bills were abandoned. Although the policy of liberalism failed, some arrangement had to be made for the new situation following the Revolution. To the exasperation of the United States, Great Britain saw no reason to settle that relationship by a commercial treaty; very much as if she were still the mother country she regulated it by acts of Parliament and Orders-in-Council. Of course the United States was likewise entitled to pass regulatory legislation, but the disordered condition of the government of the Confederation and the indispensability to America of English commerce were relied upon to prevent retaliation from this side of the Atlantic.

When commodities were in question, British regulations or statutes at the outset granted certain favors in the British market to American exports. Most manufactured articles and certain semi-manufactured ones, of which pig and bar iron and naval stores and timbers were the most important, were admitted on the payment of the duties born by similar goods imported from the British colonies in North America. All lumber and such tobacco as was destined for reëxport were admitted free. These concessions were dictated not by a love of America but by the self-interest of certain British economic groups, notably the shipbuilders and the tobacco merchants. On the other hand, grain products, an inevitable article of export from an agricultural nation, confronted after the seventies a series of Corn Laws, which for practically seventy years attempted to preserve the British market for her own wheat growers by the imposition of heavy customs duties. For her colonies Great Britain did not pursue a uniform policy. In the Maritime Provinces, she prohibited, with certain emergency exceptions, all importations from
the United States. To the British West Indies, a more critical area for American commerce, she permitted in the eighties the United States to export lumber of all kinds, live provisions, rice, naval stores and tobacco, but prohibited shipments of salted meats, dried fish, and dairy products. In brief, Great Britain determined to replace the United States by Canada as a provision colony for these islands.

As for the American merchant marine, the achievement of political independence placed it at once outside the pale of the Navigation Acts which had formerly sheltered it. Since these measures had authorized similar arrangements with Europe, it was inevitable that Great Britain should open to the United States the direct trade between the two nations. She even went farther, levying at London, if not elsewhere, no higher port charges upon American than upon English vessels, and exempting everywhere the cargoes brought in American vessels from the higher “alien” duties customarily imposed upon commodities imported in foreign owned ships. Nonetheless, American vessels could bring to Great Britain only products grown or produced in the United States or customarily shipped from it.

From other trades within the empire the United States was excluded. Particularly injurious was the exclusion of its vessels from the British colonies in the western hemisphere, British North America and the West Indies. Important in their own right, these colonies, especially the West Indies, had been woven into triangular and other indirect trades which had enabled shippers and merchants to make several profits in the course of a prolonged voyage. Great Britain now contended that the carrying trades between the United States and these British colonies were to be taken over by the merchant marine of Canada or the West Indies or of Great Britain. Since the first two existed only in anticipation, the shipping of Great Britain was for the moment relied upon to fill the gap left by the proscription of the United States. Whatever hardship this decision inflicted upon the colonies and the United States, the British shippers were happy in their position. By incorporating the West Indies as one stop in a series of indirect voyages, they kept their vessels full and turned over their freights several times in the course of a voyage and thus were enabled to compete more successfully with the American vessels in the direct trade between Great Britain and the United States.

Unfortunately, the description of these prohibitions and discriminations creates the impression that Great Britain was an ogre seeking with bitter malignity to destroy the Sir Galahad of American commerce. But it must be remembered that other European nations did not break down their exclusive commercial systems for the benefit of the United States; even France, our ally in the Revolution, limited the commercial freedom she granted us.
THE DECLINE OF FOREIGN COMMERCE

British policy cannot be judged on the basis of right or morality. When it ceased to be expedient, she abandoned it for a different course of action. For after the eighteen-twenties this policy was progressively modified. In the meantime the United States avoided the full impact of its disadvantages through good luck, the aggressive utilization of such considerable benefits as freedom from the English system conferred, and the formulation of an effective counterpolicy of its own.

THE BLESSINGS OF WAR

Of all the strokes of good fortune, the outbreak in 1792 of a world war, lasting almost unbroken for twenty-two years, was the most considerable. For this struggle with its overriding necessities soon breached mercantilist restrictions everywhere and elevated the exceptions and evasions, which, for instance, the United States was exploiting in the West Indies in the decade after 1783, into a system. Not even the perspicacious author of the Observations on the Commerce of the United States could have foreseen the events which were so soon to upset his reasoning and recommendations. The opposing poles of this world war were France and Great Britain, for the latter entered the conflict in 1793. The military and naval situation soon became fundamentally simple. The British navy controlled the seas and exercised such restraint upon the commerce of her enemies and of neutrals as she thought would lead to ultimate victory. The Battle of Trafalgar (1805) put a definite seal of success upon this naval predominance. Meanwhile Napoleon’s armies and military genius had won on land a supremacy as unrivaled as that of England on the sea. Neither antagonist seemed able to wreck the other. At the close of 1806, however, Napoleon, master of the Continent, attempted to dislocate England’s economic organization by his Continental System. Briefly, it attempted to deprive her industry of markets by closing to English products such countries of the Continent as he possessed or controlled. Markets lost, British factories would shut down, unemployment would increase, the inflow of gold into Great Britain from foreign nations to pay for their purchases from her would diminish, and this economic upheaval would bring England to terms. To enforce this scheme the French emperor issued a flood of Decrees, and to combat it the English poured forth a stream of Orders-in-Council. These various pronouncements bore with such extreme hardship on merchants and shipowners of the United States that the government of this country had to protest their execution and then enforce its threats with tangible measures. Short of war, the only alternative was economic pressure, or so it seemed to Thomas Jefferson, and in December of 1807 Congress passed an embargo act designed to drive the European nations into submission by closing our trade to them. No vessels were to
leave any American port for any foreign port whatsoever. With variations of emphasis and with interruptions this policy lasted until its only feasible alternative, war, was declared against Great Britain in 1812. The years 1814-15, crammed with peace treaties, put an end to this chaotic period.

The effects of this period upon American commerce were profound. The French merchant marine was swept from the seas; the fleet of Spain, an ally of her northern neighbor, went into retirement; and the effectiveness of the British merchant marine was hampered by French privateers and the occasional sorties of French naval vessels. The United States was the great neutral, and, taking refuge in such statements of international law as gave the greatest play for neutrality, the American shipowner, merchant, exporter, and importer embarked upon a career of prosperity. The services of a neutral flag were so valuable that, for the moment, European nations and their colonies abrogated exclusive trade laws and navigation acts and threw the closed trades open to the Americans. Great Britain’s shipping interest in alarm secured the revival of a so-called rule of international law, the Rule of the War of 1756, which declared that trades closed in time of peace could not be reopened in war. This prohibition Americans evaded by carrying the goods to the United States and then reshipping them, consecrated by this process with neutrality. Such legal quibbling was extremely profitable. Between 1795 and 1807 this country exported annually to the French West Indies, for instance, products, mainly European, varying in value from $2,776,000 to $7,148,000; and of the imports from the French West Indies, which showed similar high figures—$2,022,000 to $15,751,000—the majority were re-shipped to Europe. The same story could be told of the Spanish West Indies and the other American colonies of Spain, and of the trade between the Orient and European nations.

The same pressure of circumstances broke the dikes of the British system. The employment of British shipping in the waters of the Far East and of Europe made the situation of the British colonies in the West Indies desperate. Proclamations of their governors invited the import “of flour, bread, wheat, rice, or grain of any sort, staves, headings, shingles, or lumber of any sort, horses, horned cattle or livestock of any kind” from the United States or elsewhere in vessels of the United States, and other articles whose importation had been previously forbidden were admitted. Within a year the number of American vessels employed in the trade with the British West Indies increased thirteenfold; the exports to the islands increased four times and imports nearly three times between 1795 and 1807. The British shipowners, genuinely frightened, had convinced their government even before the American embargo of 1807 to take measures designed to prevent the return of American commerce to these old and familiar seaways.
THE DECLINE OF FOREIGN COMMERCE

Even in the direct trade between the United States and Great Britain wars conferred advantages upon the former. Although no Navigation Acts were repealed, the British Corn Laws spasmodically ceased to operate. Bad harvests in Great Britain or interruptions to foreign supplies so raised the price of grain—between 1809 and 1813 it cost over 100 shillings a quarter (eight bushels)—that importations were profitable in spite of the high tariffs. Indeed from time to time Parliament encouraged importations by bounties. In spite of violent fluctuations in shipments, the United States supplied Great Britain between 1800 and 1813 with 1,170,000 quarters of wheat, somewhat over one-sixth of her total wheat imports. No wonder American farmers regarded Napoleon as a savior and disliked the prospects of European peace. Rather they prayed that “France and England get at Loggerheads,” for then “the chance would be good.”

Nothing illustrates better the dependence of Great Britain and her colonies upon the United States than the experiences of both nations in the period 1807 to 1814, when trade was ostensibly curtailed by legislation and then by war. Although these restrictions severely limited American commerce, the export of necessary articles continued. Grain was shipped to England in spite of embargoes and non-intercourse acts. One common means of evasion was to dispatch it to a port of the Spanish Peninsula but land it in Great Britain, perhaps after the registry of the vessel had been changed. Cotton was shipped from Charleston directly to Great Britain by those “who had no character to lose,” and the more discreet and honorable sent it southward to Amelia Island, just across the border in Spanish Florida, where it was transshipped to English vessels or American vessels under foreign registries. When economic restrictions gave way to the War of 1812, this commerce kept up with the connivance of the British authorities. The British troops in Spain and in Canada were supplied with American provisions, the British fleets off the American coast were provisioned from the shore, the British West Indies imported the commodities necessary for their existence, and even Liverpool received diminished shipments of American cotton. Although the Treaty of Ghent and the Congress of Vienna formally concluded this novel period in 1814–15, the position of American commerce was far different at its close than thirty years earlier. Furthermore the war period, as we shall see, by clearing the way for independence in Latin America added new trades to those the United States had already developed, and stimulated American commercial policy to new vigor.

NEW TRADES

The exclusion of America from the British commercial system after the Revolution was also an escape. Trades previously closed were now open to
us, and these new opportunities American shippers cultivated with energy and audacity. We carried our products straight to Europe rather than shipping them through the “metropolis,” and we returned with European cargoes without following that detour. On the Atlantic littoral a direct trade of importance with France and the Netherlands sprang up; and to the Baltic and the Mediterranean American ships carried the new flag. To the latter area colonial trade of a sort had been permitted, but now all restrictions were removed. France and Spain on the Mediterranean, as they were characterized by the navigation reports, and the small states of Italy, Trieste, and the Adriatic learned to know the character of American seamen and cargoes; and soon in the eastern reaches of the Mediterranean, at the ports of Egypt and the Levant, the same lesson had to be mastered. Trade to the Baltic, the other famous commercial area of the Middle Ages, involved the Scandinavian countries, the great ports of Hamburg and Bremen, still the “Hansa Towns,” the heirs of the Hanseatic League, and Russia.

Nearer home, indeed from America’s doorstep, the Spanish Empire stretched southward with certain Caribbean islands and Brazil, a Portuguese possession, the only exceptions to its suzerainty. To these vast, rich areas Spain theoretically applied the policy of excluding the products and vessels of foreign nations. In 1797, since the European conflict had destroyed her commerce with them, these restrictions were lifted; evasions had always been frequent. American privateers operating from Latin American bases and American whaling vessels putting into port for repair or provisions had already blazed the way for the American trader. A Philadelphia vessel in 1798 began American commerce to the region of “Rio de la Plata,” the great estuary between Argentina and Uruguay; somewhat later American ships were officially noticed in Venezuela, and after 1808 they were legal visitors to Brazil, whose commerce had been opened to all nations by the emperor of Portugal, a refugee there from Napoleon. At the same time, in the wake of the whalers, Americans rounded Cape Horn and traded with the ports of the Pacific coast. Our commercial success, however, was greatest in Cuba, Puerto Rico and the present Colombia and Venezuela.

Though ostensibly the Spanish monopoly was reimposed after the Napoleonic period, the struggle of the Spanish colonies for independence soon led to its abrogation. Both those loyal to the motherland and the revolutionaries threw open the ports in their control in order to secure supplies. Eventually the United States, enthusiastic at this multiplication of republics, recognized their independence and promulgated the Monroe Doctrine, gestures of friendship and protection accompanied by a healthy interest in the trade of these new nations. Consular agents at once were dispatched, and the negotiation of commercial treaties undertaken. In the first of these treaties, con-
cluded in 1824 between the United States and Great Colombia, a clause provided that the concessions granted to the most favored nation would "immediately become common to the other parties." This principle the United States insisted upon incorporating in other and later treaties with South American countries, partly because these republics, moved by their community of race and history, desired to give each other trading preferences and partly to undo the commercial favors which many of them had already accorded the British. For the great competitor of the United States in this trade area was indeed Great Britain, whose historic interest in the trade of the Spanish colonies had been heightened by the rapid expansion there of British commerce during the Napoleonic period. Although the Monroe Doctrine was a diplomatic reversal for Great Britain, she showed greater ability in obtaining commercial treaties, and exported to South America in 1825 products nearly three times as valuable as those of the United States.

Nowhere were the advantages of withdrawal from the British colonial system greater than in the case of the "East India" trade. From the commerce of this immense region stretching from the eastern coast of Africa to China, including the innumerable islands, the American colonies had been excluded. The East India Company, the instrument of British imperialism in the Orient, had a monopoly of this domain. But the Revolution was hardly over before the Americans began to invade it. The Empress of China, sailing from New York but supplied in part with capital from Philadelphia, arrived at Canton in 1784, the Grand Turk from Salem unloaded a cargo from Mauritius in 1786, and the first American vessel to reach a port in India was the Chesapeake of Baltimore, sometime between 1786 and 1789. These facts were significant, not only because they forecast the American ports which were to be concerned in the trade but also because they exhibit the haste with which these new routes were followed.

As a newcomer to the Oriental trade the United States confronted the colonial systems of European nations. But, influenced by some sea change, these were more mellow and generous than in the Caribbean. The French government in 1784, opening its ports on the Indian Ocean, gave us access to its important islands and to the few stations still retained on the Indian peninsula. The Dutch treated us no worse than they did any European nation. Spain manifested no objection to American commerce with her colonies, and in British India, by a commercial treaty in 1784, the Americans enjoyed preferences in import and export duties and other privileges accorded to no other nation except Great Britain. Years later a British statesman ascribed the earlier liberality of policy in this area to "possessions of such vast extent, such a dense population, such abundant resources, such facilities for active commerce, and such means of circulating and promoting wealth." In short
restriction was impractical. To such parts of Asia and Africa on the Indian Ocean as were left untouched by the preemption claims of European nations the American trade in the early nineteenth century surpassed that of all European nations combined.

In China the Americans confronted a Chinese rather than a European commercial system. That empire, cherishing quite justly an indifference and hostility to foreign commerce, confined its operations to Canton and regulated its details with minute carefulness. The Americans, like other foreigners, were subjected to this regimen. Their vessels were entered and cleared in the same fashion, theoretically they were taxed with the same heavy taxes, and American supercargoes and merchants were compelled to deal with the dozen or so hong merchants to whom the government had given the conduct of the trade with occidental outsiders. This situation tended to identify American policy at Canton with that of the European merchants. On the other hand, these merchants, particularly the British who alone surpassed us, were commercial rivals. American policy accordingly vacillated. It sought Chinese good will as a makeweight against British preponderance, but it sympathized with the desire to break down Chinese exclusion. Consequently, when the Opium War, fought by Great Britain against China, resulted in the Nanking Treaty of 1842, opening four additional ports, establishing a uniform customs tariff at lower levels, and abolishing the hong monopoly, Americans were relieved when the Chinese insisted that these favors be extended to the traders of other nations. Indeed, some seventy years later this most-favored-nation treatment was definitely transformed by the Americans into their own policy of the open door.

The East Indian trade, nevertheless, aroused some misgivings. Since this country had few goods desired by Oriental consumers, specie had to be exported to pay for the imports of nankeens, silks, chinaware, and teas. Such fears were not entirely mercantilistic, for specie was collected with difficulty in the United States. But the Canton market was eager for furs with which to line the heavy garments worn by the Chinese aristocrats. Suddenly at the close of the eighteenth century new and accessible resources of fur-bearing animals were discovered. One area was the Pacific Northwest. In 1788 Captain Gray, dispatched by Boston merchants in the *Columbia*, reached that dangerous coast and started a trade which was to create the Boston "Norwestman" and convince the Indians of that region that Boston and the United States were synonymous. Meanwhile another Boston vessel had discovered that sealskins, obtained at the Falklands or other islands of the southern hemisphere, could be sold in China. Such furs were less valuable than the glossy black skins of the sea otter of the Northwest, but they were easily collected by white crews who landed on these deserted shoes and clubbed
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thousands of the awkward creatures to death. Running westward with furs, these vessels would complete their cargoes at the Hawaiian or Fiji islands with sandalwood, used alike for incense and furniture, and with food delicacies, such as the béche-de-mer, a sea slug esteemed by Chinese epicures.

By sailing east other commodities for exchange at Canton could be secured. An American vessel, taking on board at some Atlantic port a mixed cargo of foodstuffs from South America and the West Indies and reexports from the Orient, would depart for the islands off the African coast and for the Mediterranean, there to pick up specie for the Chinese trade or to exchange its cargo at Gibraltar or in the Levant for the opium of Turkey. Then it might sail, with stop-overs for trade at the Cape of Good Hope, Mauritius, Calcutta, and Bombay, to Canton to exchange the accumulated cargo for silks and teas. Or the vessel might proceed from the United States to England and to the despair of the British shipper take on British cottons which were sold in Canton at cut prices. By 1830, however, most of these trades were worked out. The seals had been butchered, the Northwest fur trade was dead, the Hawaiians had cut down all their sandalwood trees, and the opium trade had begun to decline. American manufacturing development had, however, provided in its cheap cotton goods a substitute acceptable alike to the American shipper and the Chinese consumer.

AMERICAN POLICY

The easy remedy for restriction was retaliation. Some of the states, therefore, resorted in the Confederation period to varied forms of this device, but their disjointed efforts were as ineffective as Lord Sheffield and others of like mind had anticipated. With the adoption of the Federal Constitution the national government secured the power to regulate foreign commerce and a common policy was henceforth possible. Nevertheless, the new nation was unwilling to adopt stringent measures. After all, one cornerstone of American revolt against Great Britain had been the latter’s restrictions upon colonial commerce; neither logic nor experience justified the founding fathers in erecting a mercantilist system of their own. Nor was that their intention. As Jefferson phrased it, "Were the ocean, which is the common property of all, open to the industry of all, so that every person and vessel should be free to take employment wherever it could be found, the United States would certainly not set the example of appropriating to themselves exclusively any portion of the common stock of the occupation." Supplementing such liberal abstractions, especially in the minds of merchants, was the realization that in the competitive game of restrictions, the United States was at a disadvantage. It had no colonies, its money was pitifully weak, its economy was undeveloped, the trade of others was more critical for us than ours was important
for them. Even Jefferson realized, however, that some redress was essential lest the United States "be disarmed of its defence, its productions . . . at the mercy of the nation which has possessed itself exclusively of the means of carrying them, and its politics . . . influenced by those who command its commerce."

American navigation policy was, therefore, primarily defensive. In 1789 a series of enactments restricted registry under the American flag to American-built vessels; gave cargoes imported in American ships a reduction of 10 per cent from the regular duties; levied a tonnage duty of fifty cents per ton upon all foreign-built and owned vessels entering our ports, thirty cents per ton upon American-built, foreign-owned vessels, and only six cents per ton upon vessels owned in the United States; granted such reductions in the duties on tea and East Indian goods if imported in American holds that their carriage became an American monopoly; and virtually excluded foreign vessels from the coasting trade. Any appraisal of the effectiveness of such measures was made impossible by the outbreak of the Napoleonic wars and the ensuing stimulus to the American merchant marine. At least the failure of Jefferson's policy of peaceful coercion in 1807 and after was evidence that nations as powerful as England and France could not be brought to heel by American maritime restrictions.

With peace the United States embarked upon a more affirmative navigation policy. In a mood of self-confidence, Congress and the country determined to develop the national economy by tariffs, a central bank, and aid to internal improvements. No logical reason existed for exempting the shipping interest from this general program. Furthermore, in view of the new strength of the nation, measures in behalf of the merchant marine were more likely to be effective than in 1789. So with one hand American legislation proffered the olive branch; an act of 1815 authorized the President to repeal all discriminations—both tonnage and customs against foreign ships "bringing the produce or manufactures of the nation to which such foreign ships or vessels may belong" whenever he was satisfied that the discriminations enforced by that foreign nation against the United States had been withdrawn. Within four months a treaty to this effect had been made with Great Britain.

The British treaty and others which followed clearly dealt with only a limited trade. They did not free from discrimination the carrying business when vessels of one nation were loaded with the products of another nor open trades between the United States and the colonies of European nations. To deal with these matters, the United States carried a sword. A series of Navigation Acts explicitly closed the coasting trade to foreigners, levied burdensome tonnage duties on foreign ships arriving from ports closed to
the Americans or prohibited any entry whatever, and attempted by heavy bonds to forestall the departure from American harbors of foreign vessels to ports closed to American craft. Finally in 1826 Congress, by a measure based upon the principle of 1815, authorized the President to suspend discriminations upon vessels entering our ports with commodities from any foreign country provided similar concessions were made by other nations. Two years later, after difficult negotiations, a commercial treaty with Great Britain fulfilled in large measure the liberality of these legislative intentions. British ships and cargoes from her colonies could enter American ports without paying discriminatory duties; on the same terms free ports in the British colonies were opened to American vessels and most American products, and American vessels could carry thence colonial products to any destination outside the British empire. By this treaty the tariff preferences in the colonies on goods coming from Britain or parts of her empire was left intact. Still America's struggle for a freed navigation was largely successful. As we shall see, it was due only in part to the policy here set down.

Clearly the narrative so far demonstrates that tariff duties on commodities were auxiliaries in the battles over navigation policy; it does not reveal that their evolution parallels in a curious way that of the Navigation Acts. Thus the Congressional session of 1789 saw the passage of the first national tariff act, to raise revenue and to protect American industry. Since the range of the duties for the latter purpose was low, the achievement fell short of its intentions. It made little difference. The Napoleonic wars soon introduced a measure of actual protection which no legislator would have dared propose or vote for. Then between 1815 and 1833—in the latter year a measure effected a progressive reduction of duties—the protective system secured its greatest popular support and most extreme legislative embodiment. The harsh experience when America was cut off from European production during the war years gave a new cogency to the argument for self-sufficiency; a dreaded flood of cheap imports sharpened the genuine and verbal alarm of American manufacturers; and a collapse of agricultural prices convinced American farmers that they must consent to a tariff in order to develop a home market as substitute for those lost with peace, first in Europe and later in South America. Higher duties in fact have been a common American response to depression and anxiety. The decade of the twenties was such a period. Although the reduction planned by the act of 1833 was temporarily reversed by a measure in 1842, four years later the Walker Tariff Act, christened for the Secretary of the Treasury, a professed disciple of free trade, introduced eleven years of moderate protection. The tariff of 1857 extended this period until the eve of the Civil War.

The purposes voiced in measure, debate, and argument were not always
the cool calculations of economic loss or gain. Of one tariff, passed in the ultra-protective era, a Virginian representative said quite justly: "The bill referred to manufactures of no sort or kind, except the manufacture of a President of the United States." Nearly every enactment marred the purity of theoretical design as it compromised the interests of cotton growers or importers, both hostile to protection, with those of assorted industrialists. Nevertheless, beneath these specific and sometimes superficial stresses, tariff legislation served continuing purposes. It was a source of revenue. Indeed, over the long span from 1789 to 1860 imports furnished the largest share of the government receipts, with the single exception of 1836 when returns from land sales exceeded them. It was a means of protection to industry, though most students of the question admit that the phenomenal growth of American manufacturing in those years was in larger measure due to other causes. Still, from time to time, for some goods the solicitude of tariff makers stimulated production.

The prolonged arguments over the tariff question revealed that contemporaries also appreciated the tariff duties as a means of directing the channels of trade. For various reasons the United States was unable to use them in any precise fashion. A new country dependent upon imports could not afford seriously to hamper their inflow by high duties; extensive exports, some asserted, depended in turn upon ample imports to pay for them. Furthermore at the insistence of Hamilton, the intellectual architect of the program, the United States adopted the policy of a fixed tariff, identical for the goods from all countries. So for bargaining and promotional purposes the United States had at hand only a blunt instrument. In the twenties it was possible by reducing duties on specific articles, wines and silks, to give favors to France from which such imports predominantly came, or by raising duties on rum and molasses punish Great Britain in a crude way for the exclusion of American commodities and vessels from her West Indies. In a sense, the whole protective movement of that decade was in part a response to European markets closed to our flour and grain, and the reduced protection of a later era was justified by the argument that Great Britain admitted our cotton without duties and it was folly for us to increase by tariff walls the cost of the imports for which it was exchanged. Still later, in 1854, special circumstances occasioned a reciprocity treaty with Canada. This new departure will be described in another chapter.

An International Order

With the perversity with which events often irk the historian, Great Britain responded to the adjustments after the Napoleonic Wars and to the deep
distress of that period in a different fashion than the United States. In the twenties her ministries, prodded by the merchants, undertook a thorough overhauling of the colonial system. They repealed stipulations, over a century old, compelling the shipment of certain commodities, "enumerated" commodities, from the colonies to the homeland and returning to the colonies, through Great Britain, products produced in Europe and elsewhere. The alien duties levied upon cargoes in foreign flagships, prohibitions and prohibitory duties, and the closing of certain trades to foreign vessels, as the brush with the United States demonstrated, went by the boards. In their place was put a two-way preferential system—tariff preferences in the colonies of the western hemisphere for British exports, mostly manufactured, and in Great Britain for colonial goods, mostly raw materials. Even the Corn Laws which had treated all off-islanders impartially were given a preferential slant. Certain trade routes, notably between ports within the empire, were still an imperial monopoly.

The forties shattered this substitute system, the fifties swept away the stray pieces. Great Britain hurried to free trade. Merchants, desiring to stimulate exports, manufacturers seeking lower costs on raw materials, the masses won by the cry of "cheap bread," civil servants disdaining the irrational complexities of the old statutes, idealists identifying freedom of trade with a logical economic order and international peace—all formed a highly effective phalanx in favor of the new order. Rarely have pressure groups been better organized, better informed, and better led. Timely events, like the Irish potato famines of the mid-forties, aided their cause. Parliament repealed the Corn Laws, swept away the system of imperial preference, fell belatedly upon the Navigation Acts, the first of which dated from the fourteenth century, and threw open all trades, even the coasting one, to foreign vessels. On article after article duties were swept away. Finally in the Cobden treaty of 1860, France and Great Britain agreed upon the reduction and removal of duties on the trade between the two countries and engaged "to confer on the other any favour, privilege, or reduction in the tariff of duties of importation on the articles mentioned in the present treaty which the said power may concede to any third power." In short, tariff reductions were to be generalized for all nations. The free trade movement was international, as the contemporary development in the United States had helped to demonstrate. In essence, its success turned foreign commerce over to private direction.

Significant enough by itself, the context heightened the achievement. For by mid-century an international economic order different from that of thirty years earlier prevailed. Great Britain, the citadel of free trade, was its manager. She was the world's greatest manufacturer, greatest trader, great-
est foreign investor and banker. She had the largest navy and the largest merchant marine. For this international order, she set the pattern of the gold standard, private enterprise, international peace, and material calculation.

American Imports and Exports

As far as the commercial policies of the United States and other nations permitted, the foundations of international trade were the economic specializations of geographical areas brought about through differences in climate, resources, and stages of economic development. The foreign trade of the United States, therefore, was an equation whose two variables represented the economic development of this country and the economic development of those with whom it had commercial intercourse. The imports into the United States for domestic consumption reflected the requirements of the United States for necessities and luxuries; the domestic commodities which it exported were those which it could produce profitably in competition with other nations, and which the consumers of other nations in turn required to meet their tastes and their needs.

Judged by monetary values, the foreign trade of the United States increased enormously in the decades between 1790 and 1860, from a total of $43,205,000 to one of $687,192,000. At least two reservations to these and other figures must be noted. The entries for the earlier years are far from accurate and none, then or later, took account of the changes in the value of the dollar. These were marked, for instance, in the inflationary fifties. With somewhat greater precision, the figures demonstrate that over the period the value of imports usually exceeded that of exports; indeed in only fourteen of the seventy years was this custom broken. This "unfavorable balance of trade," to use the mercantilist vernacular, had to be redressed by other items, for over the long run the foreign currencies, mostly sterling, with which we financed our imports had to be secured through the shipment of goods, the export of specie, foreign investments in the United States or payments from foreigners for services performed by us. In the decades in question, the shipment of specie was of considerable importance only in the fifties after the California gold discoveries. Throughout, the money earned by our merchant marine was the chief factor in maintaining our passive balance of merchandise trade.

In determining the constituents of the foreign commerce of the United States, the nation's preoccupation with agriculture, and to a less extent with other extractive industries, was decisive. We imported manufactures. As late as 1855-59 manufactures ready for consumption were 47.4 per cent of our imports; semi-manufactures added an additional 12.3. But these embracing and dull categories describe little. Judged by monetary value, textiles, cot-
tons, woolens, silks, and linens were the chief imports. An enumeration of
these fabrics calls to mind the industrial revolution and suggests that the
greatest source of these importations was Great Britain, the nation first af-
fected by that remarkable transformation and the one which before 1860 had
carried it farthest. The cotton factories of Lancashire provided an over-
whelming proportion of the cotton goods shipped to America; the mechan-
ized linen industry of Great Britain had substituted its output for the old
handmade linens, many of which had come from Germany; but Great
Britain’s supremacy as an exporter of woolens, although still apparent, had
been somewhat diminished by France. The latter country was the chief pro-
ducer of silk goods for the American market.

The leadership of England was even more apparent in a second category
of imports, iron and steel products. This is a disordered conglomeration of
many items, by themselves unimportant but collectively large. Hoop and
sheet iron, nails and anvils, anchors and cables, mill saws and tailors’ irons,
bonnet wire and sickles jostle one another without significant appeal except
for the specialist. In this classification, however, the outstanding importa-
tions were cutlery and rolled bar iron. The merits of Sheffield cutlery and
Birmingham iron goods were a tradition among American consumers, and
the cheapness of rolled bar iron, manufactured by new technical methods in
Great Britain, could not be duplicated in Europe or in this country. A third
important category of manufactured products imported by the United States
was china and earthenware. Here also England led, for the industrial revo-
lution had transformed her pottery industry from a difficult and tedious
handicraft to a large-scale, specialized, capitalist industry. All in all, the in-
umerable importations from other European countries cannot conceal the
close dependence of the United States upon Great Britain for manufactured
articles.

This relative simplicity of foreign commerce became more complicated
when imports of foodstuffs are considered, for these had to be assembled not
from the industrialized edge of western Europe but from the four quarters
of the globe and across the seven seas. Europe, indeed, furnished a part of
these importations in the wines and liquors which a country, relatively un-
touched by the temperance movement and state prohibition until the fifties,
consumed in quantities. But southern Europe and the islands off Africa
were the chief purveyors. On the other hand, from the tropics or subtropics
came those delicacies which the expanding commerce of the eighteenth cen-
tury had made necessities for the western world. In the Mediterranean area
currants came from Greece and the Adriatic, raisins from Spain, nuts from
Sicily, and figs from Smyrna. From the Far East, with the addition of re-
exportations from Holland, were derived the spices whose monopoly control
had once built the commercial empires of Venice, Portugal, and Holland. All these were but trivial items in comparison with the great staple, tea. Annually tons of this Chinese product were put down in this country. It came in all varieties, but there was a constant shift from the cheaper brands of black tea, at first more acceptable to the American taste and pocketbook, to the more expensive, delicate green teas, the evidence alike of an educated palate and increasing wealth.

With the twenties, however, the vogue of tea was eclipsed by the popularity of coffee. American imports were literally collected around the world. Arabia and the Dutch and British East Indies furnished the finer varieties, but the Caribbean area and Brazil really supplied the American market. The trade with Brazil was phenomenal. At the beginning of the nineteenth century it did not exist; by 1860 the importations hovered around 200,000,000 pounds. "Rio" coffee, whose somewhat cruder flavor appealed to the frontier nation—its greatest consumption was in the trans-Appalachian region—became the chief non-intoxicating American drink. The New World, too, supplied other tropical beverages and foodstuffs. Haiti, Brazil, and Central America were the chief sources of cocoa. Sugar and molasses, sometimes imported from the Far East, came predominantly from Brazil and the Caribbean. The spectacular imports from Puerto Rico and Cuba suggested that these islands were already swinging into the sphere of American concern.

With the exception of cotton, the export trade of the United States in the first sixty years of the Republic's life was a continuation of colonial commerce. For, according to the Commercial and Navigation Reports, exports still fell primarily into three classification, "Products of the Sea," "Products of the Forest," and "Products of Agriculture." The fourth category, "Manufactures," consisted of numerous small items, soap, furniture, lead, snuff, nails—articles which even in the colonies had formed a part of our huckstering commerce. But by 1860 America was to demonstrate that some of her manufactured products could meet the competition of the world. Of most significance was the appearance of cotton cloths in the ranks of domestic exports. Sent to the less developed regions of the world, the value of shipments had increased from $1,318,183 in 1830 to $10,934,796 in 1860, yet even the latter figure was not as great as the value of cotton goods imported into the United States from Great Britain. No American industry concentrated on the foreign trade as did the ironworks of Birmingham or the cotton factories of Lancashire, and no American industry was consequently dependent upon this branch of commerce.

Though the "products of the sea" had been a mainstay of colonial commerce, they had a relative unimportance in the Republic. Though New England ingenuity might invent new methods of catching mackerel and cod
and create a fresh-fish industry, foreign markets stagnated or declined. For a few decades the whaling industry, based upon New Bedford as its chief port, sent oil for the lamps of Europe, the Caribbean, and the heathen Chinee. Then the discovery of petroleum in 1859 harpooned this maritime calling at last. As for lumber products, the West Indies and the Mediterranean still needed American specialties and the naval stores of tar, pitch, and turpentine had a steady European market.

Over the exports of some agricultural staples, the same decorous and familiar air, a hangover from the colonial age, persisted. In others a remarkable expansion took place. Pork, bacon, hams, and lard, once fit only for the colonial markets in the Caribbean, now more skillfully and carefully packed or cured, began their invasion of the United Kingdom and even the kitchens of western Europe. As for flour and wheat, between 1821 and 1860 the quantitative exports of the former multiplied three and of the latter thirty times. These two cereal trades were hardly interchangeable. Flour was shipped to the American tropics—in 1860 Brazil was the largest customer—and to the British North American colonies. The wheat trade, developing more slowly, did not run southward, but north to Canada and east to the United Kingdom. In 1860 the latter took 1,934,206 bushels of wheat; in 1845, before the repeal of the Corn Laws, only 2,010. After Brazil and British North America, Britain was the largest customer for American flour; in 1845 Cuba, Haiti, Venezuela and the British West Indies had also surpassed her.

But all paled before cotton. People had once refused to believe that the United States could become the international producer of this staple. Before 1780 British spinners had imported their cotton from the Levant, and after that date they found more important sources of supply in the West Indies and Brazil. The first shipments from the United States, arriving in 1784, were seized by the British customs officials on the ground that the product could not possibly have come from this country and hence violated the navigation arrangements between the two countries. Eleven years later, at the very moment of the invention of the cotton gin, John Jay, American negotiator of a commercial treaty with Great Britain, was willing to promise that the United States would not export any cotton to England in American vessels under the impression that that product was almost all of West Indian growth. In fact, it was not until 1802 that the exports of American cotton to Great Britain exceeded those thither from the West Indies. But from that moment the supremacy of the United States was unquestioned. Rivals such as Egypt or the West Indies might appear dimly on the horizon, and the English cotton manufacturers might grow gray with apprehension at the thought of a cotton famine brought about by a dependence upon a single source of supply, but the comparative advantages of cheap western lands and
the increasing effectiveness of American Negro slave labor could not be equaled anywhere else.

For the cotton trade, the year 1860, occurring as it does just before the Civil War, affords an admirable point of summary. The cotton industry of European nations was dependent upon American production. Russia, Germany, Austria, Holland, and Belgium all obtained their supplies from the United States. The largest single Continental consumer, France, imported from us nearly all the 240,000,000 pounds spun and woven by the cotton industry of her northern provinces. But Great Britain was the magnet which drew all cotton to her. Her annual demand, approximately 1,000,000,000 pounds, was three times that of the cotton textile industry in the United States. England’s cotton industry, concentrated in Lancashire and spilling over a bit into neighboring shires, had over 440,000 workers dependent upon its prosperity. Liverpool, the economic capital of this district, was the greatest cotton port and market in the world. And three-quarters of England’s cotton imports, the prop of this structure, came from the United States. Finally, if cotton and other southern staples were added together the South was found to contribute two-thirds of the exports of the United States. The southern producer of cotton was absolutely dependent upon his foreign market. In the period 1856–60 nearly four-fifths of the crop was exported.

As this recital suggests, western Europe and the United States exerted a reciprocal attraction upon the trade of each other. As late as 1860, 72 per cent of our exports went thither and 61 per cent of our imports were drawn from that source. The North Atlantic routes became the chief ocean highway of the world. The tendency was furthered by the increasing concentration of foreign trade at a few ports within the United States. Whereas in 1790 overseas commerce touched every harbor from Portland, Maine, to Savannah, Georgia, and the exports from the chief commercial states exhibited an astonishing equality, by 1860 smaller ports, like those in New England, had to submit to a regional hegemony and a single leader. And among the great rivals, Baltimore, Philadelphia, Boston, New Orleans, and New York, the last had emerged essentially without a peer. This outcome had many explanations: the superiority of a natural harbor, the development of a coastwise traffic to distribute and assemble goods, banking facilities to extend credit and auction sales to give buyers flattering prices, and the enlargement of the hinterland by canals, for example the Erie, and by railroads. Still the achievement of New York was such that many like the author of Moby Dick were perplexed by “your insular city of the Manhatoes, belted around by wharves as Indian isles by coral reefs—commerce surrounds it with her surf. . . . Tell me does the magnetic virtue of the needles of the compasses of all ships attract them hither?”
THE DECLINE OF FOREIGN COMMERCE

THE POUND STERLING IN AMERICA

In a crude manner of speaking, Great Britain financed in dual fashion the foreign commerce of the United States. Although during the Revolution and for years thereafter investments in this country by foreigners, in so far as they represented the purchase of securities of the central government, were made chiefly by buyers in France and in Holland, Great Britain took the leadership in American loans by the twenties and early thirties. As we shall show in more detail later, American states then lavishly issued bonds to obtain the funds to finance banking, canal and railroad enterprises. The larger portion of these issues were marketed overseas. The panic of 1837 and the subsequent scaling down or the repudiation of these debts led, for the moment, to a natural revulsion abroad against further lending to America. In the fifties, a more prosperous and sunnier decade, the process was renewed. As for totals of foreign investments, estimates place them at $200,000,000 in 1837 and twice that in 1860. This inflow of funds, more extensive than the counter current of interest on them, joined with the payments of foreigners for the services of the American merchant marine in the fifteen years before 1837 and the ten years before the Civil War to facilitate the excess of merchandise imports previously remarked.

Of more immediate importance were the short-time credits which British merchant firms and banks made available for American commerce. This had been a colonial practice. Such credits on the eve of the Revolution were estimated at $28,000,000. By 1836 they had risen to $85,000,000 and by 1857 to $155,000,000. These were peak years. In times of depression the figures were much smaller. Whatever their total, such loans financed not only the direct trade between the United States and Great Britain but also those between the United States and Europe, South America and the Far East. The sterling bill was an international currency.

This English credit financed the American import trade. For forty years or so after the Revolution the American merchant continued the colonial practice of importing from abroad and selling to jobbers; these jobbers resold to retail country storekeepers. Since the customary period of settlement by the last was once a year, from harvest to harvest, and sometimes less frequently, the American importer perforce conformed to the same arrangements. Consequently, English export houses consigned their goods to the American correspondents on credits which occasionally ran for fifteen months. The latter discharged their indebtedness by the shipment of goods or by bills of exchange drawn on shipments to other firms in England or in Europe.

Between 1825 and 1830 these arrangements were enlarged and extended.
A "credit bridge" of impressive proportions was built between the United States and Great Britain. By now American importers had such a reputation for business integrity and importance that they sent their representatives abroad to purchase supplies and opened with English banking houses accounts upon which they could draw. These houses, about eight in number, located in Liverpool and London, combined the functions of commission merchants and bankers. The two largest houses concerned with the American trade were Baring Brothers and Brown and Brown. Upon these houses the American importer drew bills of exchange for their purchases. In turn these bills were discharged by cargoes of cotton and other goods sent from the United States, by some export of specie, and by the freight money paid by foreigners to the owners of American vessels. In other words, British, rather than American, capital supported the structure of American foreign trade.

The credit system was equally important in the American export trade. The American commodities destined for foreign markets—rice, tobacco, flour, and cotton—passed through an extended series of middlemen before they reached their destination. Take cotton as a case in point. The most important figure among the middlemen who handled it was the factor, usually resident at some southern port or some interior point where cotton was collected. For a commission he sold the cotton of his client. Since the planter, moreover, had most of his capital tied up in land and slaves, the factor stepped in to provide the funds for planting the crop and continuing its cultivation. This loan might be advanced in cash, but more often it was in the form of supplies purchased by the factor for the plantation and forwarded to that destination. On these advances the factor charged interest. When the crop was made, the planter had to turn it over to the factor to whom he was in debt. In turn the factor generally sold the cotton to other factors resident in the South but representing northern houses or to agents sent South by these houses. The seller received his payment in a bill of exchange upon a northern house which he could discount at the bank. The northern house, a commission firm, had undertaken its southern purchase, if foreign trade were involved, for the account of a British commission house at Liverpool, and the former drew upon the latter by a similar bill of exchange. The Liverpool house employed a broker on commission to sell its product to representatives of the Lancashire manufacturers and drew upon him for credit. The broker in turn might provide the credit or might secure it from an English bank, usually one of the eight Anglo-American houses. In any case, the chain of credit had ended in Great Britain. It was obvious, incidentally, that these marketing arrangements influenced cotton cultivation as much as soil and weather.
THE DECLINE OF FOREIGN COMMERCE

THE AMERICAN MERCHANT MARINE

Throughout the first part of the nineteenth century our merchant marine was a runner-up to that of Great Britain, the mistress of the seas. Or if international comparisons are disregarded, domestic figures for the period demonstrate the dominant position of the American merchant marine in American foreign commerce. In the first decade of the nineteenth century, when most European navies were driven from the sea by the Napoleonic conflict, the proportion of our foreign commerce, judged by the value of cargoes, carried in American vessels practically never fell below 85 per cent; to show that this was no accident the decade of the twenties maintained an average of 90 per cent; a gradual decline then set in, but even in 1850 approximately 72 per cent of our trade was still carried by American vessels. An army of explanations has been mobilized to account for this prosperity of the American merchant marine. Many have advanced the discriminatory character of American policy. But they forget that the purpose of this legislation was not to create advantages for the American merchant marine but to secure an equality of competition between nations. Unfortunately, moreover, the periods of greatest American discrimination do not synchronize exactly with the periods of greatest prosperity for the merchant marine. The superior place held by the American marine is better explained by the economic advantages which it enjoyed; and the wisdom of American navigation policy in this period lay in its effort to give these advantages full play.

As late as the fifties the wooden sailing ship, though threatened by the steam-driven iron vessel, still ruled the seas. Such carriers American yards, until the end of that decade, could build more cheaply than their rivals. One source of advantage was a timber supply. In spite of colonial encroachment this was still abundant at the beginning of the nineteenth century, and, although shipbuilders had to search farther afield, unexhausted fifty years later. The supplies of white oak, originally growing close to the ocean from Maine southward, were by 1850 furnished from the great oak forest growing on the peninsulas of Delaware, Maryland, and Virginia. Here were magnificent trees, grown in moist land and toughened by the ocean winds, which could produce timbers seventy feet long and two and one-half feet square. Farther to the south the shipbuilders found the long-leaf pine, variously known as “southern pine” or “yellow pine,” which grew in a belt one hundred miles wide along the coast, and whose heavy, coarse, resinous wood gripped iron like a vise and furnished admirable boards for the outer shell and inner casing of wooden vessels. Then finally came the white pine. Even in colonial times the search for big, one-piece timbers had involved a shift in lumbering from New Hampshire to Maine, and in the nineteenth century
the Atlantic shipbuilders were compelled to ransack the Middle West for pieces or to build composite masts of several smaller pieces hooped together with iron.

The South, in spite of its admirable timber resources, exhibited again its absorption in agricultural staples and was compelled to see its timbers freighted northward to the centers of this maritime industry. Maryland and Pennsylvania had their innovating ships’ architects, and won a reputation for vessels of a high finish. But as the years went by, shipbuilding tended to concentrate at New York, Boston, and along the Maine coast. The first two centers had the big yards which could afford to organize their labor forces into specialized groups and buy machinery for working and handling the wooden pieces. In 1855 New York had thirty-one shipbuilding establishments; one of its firms, that of W. H. Webb, was probably the most prolific builder in the country; the city specialized in turning out large ships—clippers and packets. By this time the once important yards, scattered along the rivers, salt-water streams, and shelving shores of southern New England, were in eclipse. But Boston’s big enterprises mirrored those of New York City and the skill of her designers and builders of clippers recognized no superior.

Meanwhile Maine became the builder par excellence of general cargo, deep-sea ships. She built few packets or clippers. Her supplies of timber were ample and easily conveyed to the seaboard by a magnificent river system, her coast furnished countless harbors, and no attractive alternative like manufacturing ever weaned her from the sea. By 1850 towns from Machias to Kittery were engaged in building vessels, and a whole seaboard population was dependent upon the various crafts of the sea—ship carpenters, sailmakers, calkers, riggers, ropemakers, shipsmiths. Her trained labor supply gave her an added advantage. Of all the Maine centers Bath became the largest shipbuilding town in the Union, and her shipbuilders, the Houghtons, the Pattens, and the Sewalls, not only were pioneers in the development of new types but carried their craftsmanship to its highest development. New York might be the greatest port in the country, but the ships which lined her wharfs were not always built there. Of the one hundred vessels registered there in 1850, three-quarters were built in New England, and of this large fraction Maine provided somewhat over one-half.

Another factor in American superiority was the energy, daring, and creativeness of her ship designers. Necessity compelled the Americans to depart from precedents. During the Napoleonic Wars a premium was placed upon speed as one means of escape from privateers and war vessels, and American design was undoubtedly influenced by these considerations. Smugglers and slavers, as well as privateers, brought into being the "Baltimore clipper," not a
ship, for she was brig- or schooner-rigged, but with a better modeled and faster hull than her predecessors. After 1815 American designers were presented with a further opportunity when American shipping firms conceived the idea that the amount of traffic across the North Atlantic was large enough to support a line of vessels sailing at regular intervals. In this faith a group of promoters established in 1818 the Black Ball line, a "packet line" with monthly sailings from New York to Liverpool. It was followed by a host of competitive imitators, picturesquely named, which ran not only from New York but from other Atlantic ports and to other European destinations. The pressure of competition stimulated the continual improvement of packet ships. The first vessels of the Black Ball line were from four hundred to five hundred tons burden, and as such they represented the maximum size which builders in the previous era had commonly accepted as safe; driven across the Atlantic, in the first nine years of their existence they averaged passages eastward of twenty-three days and westward of forty. The size and speed of these vessels gradually increased until in 1845 they began regularly to exceed a thousand tons and make faster records. The acme of their development was undoubtedly the Dreadnought, a clipper ship. Built by a famous firm of Newburyport in 1853 and commanded by a noted captain, she made unique records across the Atlantic in spite of her fourteen hundred tons. Her shortest run to England from New York was thirteen days, eleven hours; her quickest to Sandy Hook was nineteen. To these packet vessels the English were compelled to surrender the sailing supremacy of the North Atlantic.

The origin of the clipper was diverse. But the first large vessel which brought its distinctive features together in unmistakable fashion—three masts, square-rigged, a long hull tapering from a bow no longer rounded but concave to a finely modeled stern, a narrow beam farther aft than in previous models—was the Rainbow, designed by a ship draughtsman, John W. Griffiths, in 1845. This creation came just before the appearance of the trades which could utilize these rapid vessels—the gold rush, first to California and then to Australia, and the Oriental tea trade, which carried these vessels around the world. The master artist of the clipper ship was Donald McKay, Nova Scotia born, New York and Newburyport trained; his greatest vessels were launched from yards in East Boston. And they bore names which expressed at once a builder’s pride and a sailor’s confidence—Flying Cloud, Sovereign of the Seas, Great Republic, Lightning. These vessels made sailing records on the race courses of the world, and one of them, the Lightning, in her first voyage across the Atlantic logged in a day 436 miles, the greatest day’s run ever made by a sailing vessel.

The speed and fascinating beauty of the clipper ship and the more solid performance of the regular packet must not obscure the fact that the burden
of American tonnage was transported in smaller and less graceful conveyances. The bulk of the business was heavy freighting to Europe and to South America. For the cotton trade the American designer developed special types with a bluff bow, high deck houses at bow and stern, and a deep hold rounding out under water like a "kettledrum." These lines were modified for general freighting, but the vessels were still full-bowed and broad-beamed. It was the humble freight vessel which furnished the backbone of the merchant marine.

But to build vessels cheaply and expertly was not enough to create a merchant marine; they had to be owned and run by those worthy of their mettle. It is difficult to generalize about the ownership of vessels, for so many methods were demonstrated in practice. Vessels were often owned in shares which represented a fractional part of the value, sometimes as small as one sixty-fourth; many shipbuilders built for themselves, as the phrase went, and controlled the operation of their own vessels; captains might purchase vessels and conduct an individual business; but probably the dominant method of ownership down to 1815 was the persistence of the colonial type, the merchant-shipowner who owned vessels, who assembled the outgoing cargo in his own store and sold by auction or some other way to retailers the product which his supercargoes or captains had picked up around the world. These merchant-princes were the wealthy men of the early Republic as they had been of the colonial era. "King Derby" of Salem was but one of the many millionaires created by the commerce of that port. John Jacob Astor was not only a fur trader and real-estate owner, he engaged also in foreign trade. Stephen Girard of Philadelphia, an immigrant from France, pursued his trade in every port of the world and left on his death in 1831 a fortune of $7,000,000, one of the first in the country to be devoted to private philanthropies.

But the growing regularity and volume of commerce gradually made this union of functions unnecessary, and the public carrier, operating either on a regular schedule like the packet ship or secured by a charter like the freight sailing vessel, began to carry the bulk of the commerce. The latter practice began as early as 1800. Even Stephen Girard, who owned a fleet of six vessels, carried on the bulk of his operations in chartered holds. If a date must be chosen, 1815 marks the emergence of the public carrier, although in certain trades like those to the Orient, the Mediterranean, and South America, the traditional merchant-shipowner hung on until the Civil War. But before his disappearance he had done much to create the glory of the American merchant marine. Compelled by circumstances, he explored new routes, developed new trades, and took great chances. This untiring daring was one reason for American superiority.
In the men who ran the vessels Americans had another advantage. Perhaps until 1820 Americans, bred to the sea, continued to form a majority of the crews, and the first foreigners who were supplied to replace them, British and Scandinavians, were all good sailors. But the packet boats and clippers were run by nondescript crews who were "learned the ropes" with a brutal discipline. The officers always remained an able lot. The sea held out in early America the prestige of social position and the hope of gain and promotion. An American boy, shipping for a voyage or two before the mast, was soon started upward through the ranks of petty officers to a captaincy, and the rewards of that position were great. Shipowners paid officers good salaries and stimulated zeal and carefulness by setting aside ship space in which they could adventure a small cargo. On the packet vessels through various sources of income the captains often made the large salary of $5,000 a year. Under these various temptations, a sea calling appealed to able Americans of the better sort. These officers drove both ship and crew. Day and night sails were carried in high winds that caused other vessels to furl canvas; ropes were padlocked to keep crews from letting the sails go in a gale which seemed to them dangerous; American clippers left port when others were delaying for favorable weather. And the captains ran their vessels with smaller crews than their rivals. Under these advantages, the American ships secured the best rates and the quickest cargoes.

The superiority of the United States in the days of wood and of sail was, however, menaced by technical inventions in which Great Britain and not the United States took the lead. Although an American, Robert Fulton, perfected the steamboat, the utilization of the new motive power on the high seas was Great Britain's achievement. In 1838 Philip Hone, a New Yorker, although he had previously doubted if a steam vessel "overburthened with the weight of machinery, with a burning volcano in her bowels" could "ride on the crested billows and sink again into their dark, deep caverns," chronicled in his diary the arrival on the same day of two British steamboats. One of them was the famous Great Western, registered 1,340 tons. The paddle wheels which such vessels employed for propulsion were not well suited for ocean navigation. In 1845 there arrived in New York harbor another British vessel, the Great Britain, an iron steamer "propelled," in Hone's words, "by the Archimedean screw instead of paddles." Five years later a British shipowner started a regular line of iron vessels, screw-propelled, between Great Britain and Philadelphia. These new vessels not only utilized a superior means of propulsion but also substituted iron for wood. This was a great advantage. Vessels with larger carrying capacity could be constructed of the new material; the hold possessed a greater rigidity and could be modeled in finer lines; the whole ship was drier, safer, and faster. In 1854 Lloyd's Regis-
ter Association, the great insurance concern, only reflected the situation when it charged a higher rate upon American wooden vessels than upon British iron ships. To pay the higher premium the wooden vessels had to charge higher freights.

Great Britain had aided the extension of her steam marine to the Mediterranean, Indian Ocean, and South America by contracting to pay to favored lines an annual subsidy for the carriage of the mails. In 1840, probably to challenge the American sailing packets, it inaugurated a similar policy for the Cunard Line to Halifax, Boston, and later New York. Perhaps by copying a policy it can be checkmated. At any rate, the American Congress in the late forties inaugurated a subsidy program and in the fifties aided in a generous fashion the Collins line from New York to Liverpool. The competing Cunarders won higher subsidies from Britain; accident and extravagance overwhelmed its American rival; and governmental dissatisfaction led to the cancellation of subsidies in 1858. The heart of the matter was, however, the greater cost of the American vessels. By the end of the fifties American advantages in building wooden vessels were no longer decisive. The British iron industry, much more advanced than ours, could turn out plates for hulls at lower prices, and, joined with British engineering, manufacture engines more cheaply. British yards with skilled workers in abundance manipulated these new materials more advantageously than did we. These newcomers took over the passenger and immigrant trades of the North Atlantic; sailing vessels glutted the California trade; and the Civil War interrupted the cotton trade and led American owners to transfer their vessels in one way or another to foreign flags. Together these factors accounted for the declining rôle of American vessels in American foreign trade. In 1855–59 they carried 74 per cent of the value of the goods imported and exported from this country; in 1866 the figure was 32.2.
CHAPTER VII

The Rise of Domestic Commerce

The glamorous history of the American sailing marine has obscured the fact that before the Civil War the foreign commerce of the United States, viewed in the light of national growth, was declining. The beauty of the clipper ship and the perfection of the ocean steamer must not divert attention from the more substantial achievement of the period: the improvement of transportation within the nation and the development of internal commerce. These changes were indeed not only fundamental to the growth and unity of the United States as a governmental entity, but essential to the attainment of a complex well-being. At the end of the eighteenth century it was conceivable that the United States might in the immediate future be divided into two contrasting areas. Located along the Atlantic seaboard would be a highly developed economic organization, enriched by the exchanges which its cities and their immediate neighborhoods were able to effect through commerce along the coast and with foreign countries. In the regions denied access to this water-borne commerce there would be no possibility of moving bulky products to market or of organizing a regional specialization of agriculture and industry. Instead an extensive self-sufficing frontier, with a certain crude form of comfort, would come into existence. To shatter that simple arrangement a revolution in the means of transportation had to be effected. For a new nation the task was so immense that thinkers and doers alike summoned governments to undertake or aid it. With the possible exception of banking, this area in the first half of the nineteenth century was thus the one par excellence of public enterprise.

The resulting achievements, accomplished by a blend of public and private enterprise, did indeed constitute a transportation revolution. In 1790 coast and river and highway constituted the nation’s transportation network. Twenty years later the steamboat promised to heighten the usefulness of water transportation and the turnpike movement had failed to accomplish a permanent improvement in American highways. The farsighted, therefore, were already advocating canals to supplement and connect natural water
ways, and in 1825 the successful completion of the Erie Canal, sanctifying this vision with business success, inaugurated the canal era in American history. Within five years the railroad was a demonstrated success in Great Britain and American promoters, fired often with public spirit, were attempting its domestication this side of the Atlantic. By 1840 if not before, their hopeful words were incarnate in successful enterprises from South Carolina to Massachusetts. The railroad age was under way. Clearly these changes, however quick their pace, were far from universal. Though canals and railroads superseded the through highway, roads remained as supplements and feeders. While railroads broached the hinterlands for Atlantic ports, boss and laborer were shaping the prisms and building the locks of Middle Western canals. As late as 1852 the commerce on American coasts, rivers, and lakes, measured both by tonnage and value, was roughly a third greater than that carried by canal and railroad.

**Natural Waterways**

Since continuity was thus as important as change, the nation’s splendid natural endowment for waterway commerce was a permanent blessing. In the East the Atlantic was the main highway; its extensive sounds and bays gave, with few interruptions, a sheltered navigation. To the Atlantic the river systems were accessory. In New England these did not promise much for the fall line was too near the coast, but in the middle states the Hudson was navigable for one hundred and fifty miles and on the Delaware sloops could sail as far as Trenton, seventy-five miles inland. In the Old South the fall line retreats from the coast and a series of magnificent rivers lead inland from the sea. The Potomac, the Rappahannock, the James, and the Savannah were the most important. All these streams were navigable in varying degrees. Rapids and shoals which were a barrier for sailing vessels might be run by rafts, and the spring floods were apt to repeal all limitations on navigation.

Striking as the advantages of these eastern rivers were, nature did things on a larger scale in the trans-Appalachian region. In the North were those inland seas, the Great Lakes; and in the South navigable rivers, of which the Mobile was the most important, ran down to the Gulf. Finally, this West possessed one of the great river systems of the world, the Mississippi. The stream itself could be sailed by vessels from New Orleans to the “head of navigation,” the Falls of St. Anthony, 2,161 miles away; reaching out east and west were its two great subsidiary systems, anywhere else important in their own right, the Ohio and the Missouri. Although the former was interrupted by rapids at Louisville, large vessels could go as far as Pittsburgh when the water was right; and the Missouri, in spite of its rapid current and
shallow flow, could carry vessels of light draught twenty-five hundred miles from its mouth.

The eastern waterways were, of course, the first to develop a commerce. From the Merrimac to the Potomac, flatboats, barges, and rafts worked downstream with their burden of lumber and country produce; and in the South "cotton boxes," flatboats with high sides to protect their fleecy cargo, carried the staple to the southern shipping ports. Luckily, the commodities brought back—West Indian goods, like sugar and molasses, and manufactures—were valuable in proportion to their bulk, for the voyage against the current was arduous, expensive, and even on favored avenues, like that of the Hudson where sloop navigation was possible, of uncertain duration. Such costs and delays slowed the whole pulse of business.

The steamboat was the emancipator. On August 9, 1807, the Clermont left her dock at New York City, paused in the stream while her paddle wheels were adjusted, and then steamed slowly northward up the Hudson. Arriving the next day at Albany, she had covered the one hundred and fifty miles in somewhat over thirty hours, a rate of speed not quite twice that achieved by some of our contemporary women swimmers on the same course downstream. Nevertheless the Clermont inaugurated a revolution in transportation. It was not one of invention. Foreigners had earlier devised steamboats and both the boiler and the engine of the Clermont, built by Watt and Boulton, were imported from England. From time to time Americans had also placed on eastern rivers boats moved by steam power in one way or another. But Fulton, the designer of the Clermont, had the advantage of association with Robert R. Livingston, a New York landed grandee, politician, and steamboat experimenter who had secured a monopoly from the New York legislature granting him the exclusive right to navigate its waters with steam vessels, provided a vessel of certain weight and speed was operated successfully within a certain time. Thus the Clermont assured to Fulton and Livingston a twenty-year monopoly of the waters of New York State and the Hudson placed the steamboat upon a route which had commercial advantages. From Fulton's first trip on, the steamboat had a continuous history.

Its wide employment really began in the fifteen years following 1815. For one thing the monopoly of Fulton and Livingston, although not usually oppressive, was successfully challenged by rival promoters and apostles of equalitarianism. Eventually, in 1824, the Supreme Court of the United States discovered in the case of Gibbons v. Ogden that the grant was an unconstitutional invasion of the right of the Federal government to regulate interstate commerce. For another thing, between 1815 and 1830 a definitive trend had been given to the power mechanism and shape of the eastern river steamboat. The engine, which could burn coal, had the low-pressure boilers
and large cylinder of the Watt-Boulton prototype; a walking beam transmitted the motion to the large paddle wheels concealed in decorated houses; the hull was shallow and long with a main deck broadened by guards to the outer edge of the paddle wheels; and a layered structure of decks built up an ever higher wooden superstructure. The whole ship was strengthened by two trusses, hog-frames running its length, and was held together by ingenious arrangements of struts and ties. Robert L. Stevens, New Jerseyite and son of a distinguished inventor, introduced many of these innovations.

Until the railroad came, heroic efforts pushed small river steamers—Charles Dickens described one in 1842 as "a warm sandwich, about three feet thick"—into the upper shallows of the eastern rivers. Actually their main employment was on the lower reaches, or as water links in a communication system, like that between New York and Philadelphia, or on such splendid arteries as the Potomac and the Hudson. In the East, the latter was without a peer. A cavalcade of vessels connected the lower ports with New York City or ran the through route to Albany. Competition and consolidation unrolled a business drama in which Commodore Vanderbilt and Daniel Drew, to mention no other titans, secured fortunes and a schooling which they later applied to railroads. In the year ending July, 1851, the Hudson River Boats carried 995,000 passengers. Here, as elsewhere, steamboats by their regularity and convenience took over the passenger trade from stagecoach and sailing vessel. They also carried high class freight. As the power source for a tow the steamboat likewise contributed to the carriage of bulk cargoes. After the opening of the Champlain and Erie Canals, huge areas of barges, four or five abreast and half a mile long, were pulled by some decrepit and antiquated steamer so slowly that the movement was scarcely perceptible. Still, the rates as well as the speed were low; on the Hudson the former fell to .7 of a cent per ton per mile.

Soon the steamboat ventured out from its Hudson River nursery to the adjacent waters of New York Bay and Long Island Sound. By the thirties a series of lines connected the metropolis with New Jersey and the ports of southern New England. On the other side of Cape Cod, Boston had regular service with the ports of Maine; on the Delaware steamboats fanned out from Philadelphia; and Baltimore and Norfolk were connected by a line running the length of Chesapeake Bay. But the conquest of the longer routes came more slowly—in the late forties and fifties. Of course, New York was the leader; after 1846 she had regular connections with Charleston and after 1849 with New Orleans. Though such voyages, like those across the Gulf of Maine from Boston, were subject to the same dangers as ocean navigation, the vessels that traversed them were more like river boats than trans-Atlantic
liners. Whatever the fitness of their design, coastal steamers, operated in lines and on regular routes, began to alter the patterns of coasting commerce. Before the steamer’s arrival the chief ports of the Atlantic littoral had developed elaborate networks of sailing packets or regular traders, oftentimes with regularly scheduled sailings, between themselves and with the minor ports whose commerce they naturally wished to appropriate and enjoy. Both types carried passengers; the whole bewildering variety of finer freights—grocers’ goods, textiles, iron ware, local products; and bulk commodities, if necessary to fill out the hold. On the whole, however, tramp sailors or vessels on charter picked up the last sort of cargo. When steamers invaded the coastal traffic, they at once appropriated the sailing packet business between the larger ports. The bulk of the coastwise traffic, however, continued to move under sail. There were a multitude of ports untouched by steamer lines but still with business enough to keep a packet or regular trader busy. Nor did all the trades of the coast require despatch of carriage or promptness in delivery. Bulk cargoes primarily sought low costs of transportation. These sail offered since American yards turned out vessels cheap to build and operate. For the coasting trade with its shallow harbors and rivers and with its landlocked bays and sounds, the schooner increasingly proved the fittest carrier. This vessel drew little water, and its fore-and-aft rig was more quickly shifted than that of a square-rigger, and two and three masts kept the sails so small they could be handled by a small crew. By 1860 the schooner was the coaster par excellence.

Some of the commodity trades originated in the South. That region sent northward the rice of the Carolinas, sugar and molasses from Louisiana, timber from Mobile, naval stores and tobacco from many ports, and from New Orleans the grain and flour of the Northwest. But the mainstay was cotton. More cotton was received by 1850 in New York than in any other port in the country except Mobile and New Orleans. Providence, Philadelphia, and Boston also received extensive shipments. From the Potomac, Chesapeake, and Delaware vessels carried corn, wheat, and flour to northern and southern markets. But as time went on coal dominated the commerce of this middle region. Shipments depended upon the location of supplies, the adaptation of stoves and boilers to the use of anthracite, and the construction of internal improvements to bring coal from the interior to the seaports. The bituminous coal deposits of this country had been tapped in the eighteenth century; the popularization of anthracite occurred between 1815 and 1830. As canals were opened into the coal regions of Pennsylvania and Maryland, a flood of coal descended the Lehigh, the Susquehanna, the Schuylkill, and the Potomac to Baltimore and Philadelphia. This coal was shipped coastwise to New
York, in spite of the canals built to carry it by inland routes, and to New England in sailing vessels which had brought northern products to Philadelphia or Baltimore. In 1822 the tidewater shipment of anthracite from Philadelphia totaled 200 tons; in 1850 it had increased to 1,075,000 tons. In exchange the extreme northeast could furnish lumber, ice, and stone when bulk products were in question.

Unhappily, the amount of this commerce along the Gulf of Mexico and the Atlantic was as unmeasured in the days of the Republic as in the colonial era. That by 1850–60 it was the largest single item in America’s domestic trade seems, nonetheless, a defensible surmise.

As soon as settlement crossed the mountains and drove a wedge of communities and farms across Tennessee and Kentucky, the pioneers relied upon the western waters, the Tennessee, Cumberland, Ohio, and Mississippi, as avenues for taking their products to market. Whatever the intentions of the nation which controlled the mouth of the Mississippi, these western Americans insisted upon the free navigation of that river and upon a right of deposit at New Orleans where the goods could be transferred to ocean vessels. To carry their goods thither, they built strange, frontier merchant marines. To a later day the distinctions between various craft seem obscure, and undoubtedly the classifications were blurred, since so many builders were amateurs and the needs were so various. Flatboats, roughly shaped vessels, sometimes partly roofed over to make an ark, differed from “Kentucky” or “Ohio flats,” massive vessels covered throughout and roomy enough to carry a cargo of two to four hundred barrels or to transport settlers down river; barges, large vessels with masts, disputed the aristocracy of the river with keel boats, lighter, more graceful vessels carrying between fifteen and thirty tons, which had a keel for better balance and strength and a runway along each side upon which the crew walked when poling the ship upstream. Most of the vessels cost little to build. A farmer could construct a flatboat for his own produce, and a group of farmers might build a larger vessel.

These craft were laden with western produce and sent with the current southward. At New Orleans after the cargo was unshipped the vessels were sold for lumber. The crews then took passage for some eastern port or else returned home across country on foot. Upstream traffic was negligible, for few products could stand the expense of shipment. It cost one hundred and twenty dollars to get a ton of goods from New Orleans to St. Louis. But keel boats did make it. Manned with a crew of about thirty men, they fought their way upstream by towline, oar, or pole. Although a daily advance of ten miles by such exhausting methods was a fair average, packet lines of barges and keel boats were established on the Ohio and between Ohio River
ports and New Orleans. There the rising receipts from the old Northwest revealed a substantial growth in trade. In 1798 such goods were valued at $975,000; by 1816 the total had increased to something over $8,000,000. This traffic was carried southward by nearly six hundred barges, twice as many flatboats, and six steamers.

For in the meantime this last method of navigation had become domesticated on the western waters. In 1809 Nicholas J. Roosevelt of New York, who was associated with Fulton and Livingston in perfecting the steamboat, made a preliminary survey of the Ohio and Mississippi from Pittsburgh to New Orleans; and in 1811 he launched the New Orleans at Pittsburgh. She had a carrying capacity of one hundred tons and had cost about $38,000. In November when the river was high enough, she steamed away for New Orleans, and early the following year she reached her destination. The eastern investors were gratified and looked forward to easy profits, since they had secured a monopoly grant from the Territory of Orleans, later Louisiana. In the following year the New Orleans entered the service between Natchez and New Orleans and earned $20,000 on her investment. The monopolists forthwith put additional boats on the Mississippi and Ohio and enterprising rivals, among whom was H. M. Shreve, later one of the most famous of river captains, decided to take their chances in this adventurous business. By 1815 steamboats had demonstrated their ability to sail from New Orleans to Louisville, Pittsburgh, and beyond; two years later the Fulton-Livingston monopoly collapsed largely because of the impossibility of enforcing it; and by 1818 a burst of boat building encouraged by the huge profits got under way. In 1821 the tonnage of steamboats arriving at New Orleans for the first time exceeded that of flatboats, barges, and other primitive vessels. In the West as in the East the steamboat left the experimental stage in its development.

There were many similarities between river vessels on eastern and western waters and between the conditions which shaped them. Since both traveled shallow waters, the hull was comparatively flat-bottomed with a deck only a little above the water line; it was long, to provide a sufficient bearing on the water surface without increasing too greatly its resistance; side paddle wheels, which aided maneuvering, propelled both. There were also differences. Since the western partner had to make landings along the shore, the bow was built into a square-towed platform over the sharp prow concealed beneath it. With its shallow hull, the engines and the boat's quarters could not be in the hold but were piled skyward. Well forward on the first deck the engines and horizontal boilers were placed with the doors of the latter opening toward the bow to get the full effect of the draft. These engines were not the large, low-powered, finely finished ones of the eastern steamer. They were
the American type of high-pressure engine, light, compact, noisy, inexpensive, and capable of delivering the surge of power required to buck a strong current or crawl over a sandbar. They were connected directly to the crankshaft of the paddle wheels rather than through a walking beam. Aft of this machinery was the second-class cabin, where the deck passengers traveled. The "scene of filth and wretchedness that baffles all description" presented by these quarters was forgotten on the upper deck, where the first-class cabin passengers had an airy and gorgeously decorated great cabin and luxurious staterooms. The whole was topped with the hurricane deck over thirty feet above water on which was the pilot house and over which towered the two tall smokestacks.

The navigation of these inland waters was dangerous. One hazard was the vessel itself. The high-pressure engine had alarming potentialities for explosion, especially when their captains used steam "of a most dangerously great elasticity" on maiden voyages and in races with other boats. Explosions of boilers, often followed by the burning of the vessel, were only one source of danger. Shoals and bars were numerous and they shifted overnight; snags, "sawyers," and "planters"—water-logged timbers below the surface of the river or whole trees anchored in the silt by their branches but with the trunk swinging free—would rip open the delicate hulls of the vessels. A calculation placed the number of vessels lost by 1850 at 1,070, whose aggregate cost was over $7,100,000. The number of casualties was 2,269 killed and 1,881 wounded. No wonder that Philip Hone reflected: "Steam, this powerful agent . . . has become a substitute for war in the philosophical plan of keeping down the superabundance of the human race, and thinning off the excessive population of which political economists have from time to time expressed so much dread." Calhoun was too sanguine when he asserted that the average life of a steamboat was nine years; four or five years would have been a more accurate estimate.

In spite of their fragileness, in spite of the fact that navigation except on the Mississippi south from Cairo had for all except small boats a seasonal character—spring and fall were the most favorable times—the steamboats went ahead to secure the traffics of the western waters. They increased greatly in effectiveness and capacity. Some of the boats in the twenties could carry about 200 tons on eight feet of water; by 1860 some were carrying 1,200. In speed they advanced. Whereas in 1815 it had taken twenty-five days for the voyage from New Orleans to Louisville, the pre-bellum record, made in 1853, was four days, nine hours, and thirty minutes. These record breakers traveled day and night and averaged nearly fourteen miles an hour. More customary were trips of four and a half to six days. While speed increased, fares came down. At first this new method of locomotion was expensive—
the cabin fare from New Orleans to Louisville ranged in the early years from $100 to $125. But competition reduced this figure and it became possible to take the journey by mid-century for from $12 to $25. Deck fares fell from $8 and $10 to $3. Freight rates fluctuated wildly depending upon the season, the scarcity of cargo, and the number of competing vessels. In the forties De Bow, making out a case for river transportation probably underestimated the averages when he stated that they were between one-half cent and one and one-half cents per ton per mile. Compared to the rates on wagon routes, these were astoundingly low. The extent of the western fleets can be grasped only in figures. In 1811 the first steamboat was launched upon the Ohio; in 1860 there were 735 steamboats in service on the western rivers. A decade earlier they had nearly everywhere definitely surpassed the flatboats as carriers.

Thee navies built a cavalcade of ports. Pittsburgh, Cincinnati, Louisville, and St. Louis had an export and import trade and steamship arrivals and departures which would have done credit to any Atlantic emporium. New Orleans, at the “mouth” of the river ninety-eight miles from its real union with the Gulf, was classed with London, Liverpool, and New York as one of the great commercial cities of the world. Sooner or later most of the traffic of the Mississippi system came to rest where her broad wharfs jutted into the stream. She was the destination of two sorts of western produce. Since the Ohio River was before 1820 the chief wedge of settlement driven into the trans-Appalachian wilderness, it is not surprising that in 1816, fully 80 per cent of the products arriving at New Orleans came from the Ohio valley or from the Mississippi north of the Ohio. The roll call of commodities reflects the pioneer economic organization of the West: flour, beef, bacon and hams, corn, lard, oats, pork, peltries, whisky, apples, and potatoes. Southern products were tobacco and cotton. The value of these shipments classified under forty items was $8,042,540. In 1852 the variety of the commodities was more extensive, the classification more exact, and the amount greatly enlarged. The value of shipments in 1852 reached the total of $108,051,708. Even more significant than these absolute figures was the relative proportion occupied by their various constituents. In 1852 the value of cotton passed that of all other products combined; by that date sugar and molasses, items which were purely southern in origin, occupied a position higher even than tobacco. Meanwhile the receipts of flour and wheat and other western products remained practically stationary in value. New Orleans was becoming a southern port.

The reasons for this astonishing reversal were in part the course of settlement, which had poured into the southern West and had carried the cotton kingdom from the shores of the Atlantic to those of the Gulf of Mexico. They
were in larger part the result of the construction of lines of communication between the Atlantic Northeast and the Middle West. In spite of the steamboat, upstream traffic from New Orleans never assumed the impressive proportions of that downstream. Coffee and sugar and molasses, with the occasional addition of some bulky machinery, were the chief long-distance shipments. The Northwest was supplied with cloths and fine manufactures from the Atlantic seaboard by way of the inland lines of communication. New Orleans was an export rather than an import city.

In the commerce of these natural waterways, the government played a minor rôle. Within the sphere where it acted, some measures were promotional. Government agencies surveyed rivers and coasts, built lighthouses and marked channels. Congressional legislation gave in 1817 a definite monopoly of the coasting trade to American vessels. In the twenties Congress enacted the first rivers and harbors bill and from then until the Civil War, with considerable interruptions, federal money improved harbors, contributed to the construction of an essential canal around the falls of the Ohio, financed Captain Shreve and his snag boat to remove these dangerous obstructions, and undertook some dredging and building of wing dams on the western waters. The regulatory activities of the Federal government sought to ensure safety for steamboat travelers. Instructed by explosions, burnings, and sinkings, Congress in 1838 provided for the inspection of boats and machinery and laid down specifications for life saving and fire fighting equipment. The act was rudimentary. Effectively tightened in 1852, it provided in addition for examining and licensing pilots and engineers.

**The Turnpike Era**

Magnificent as was the national endowment of natural waterways, it is hardly querulous to point out their obvious defects. The Great Lakes were not all interconnected by navigable passages and a mountain barrier separated the Mississippi basin from the Atlantic seaboard. Nor did navigable streams penetrate to every portion of the country. Even in colonial days a supplementary system of roads had, therefore, been constructed to connect the settlements with water routes or with each other. In the eastern portion of the country these highways radiated from the commercial cities—Boston, Providence, New York, Philadelphia, Baltimore. Farther inland the roads ran down from the interior to some water’s edge. The system, if one could lose one’s sense of humor sufficiently to call it such, was wretchedly inadequate.

The planning, construction, and care of roads was generally left to the local authorities, who were not particularly interested in the development of through routes. The prevailing ignorance of the principles of road engineer-
ing and the lack of capital were additional hampers upon improvement. In its elemental form a road consisted of a cleared path through the trees and nothing else. If further refinement was demanded, the road was crowned high with dirt and edged by a gutter. Over such roads the transportation of passengers was alone profitable. Freight commerce was confined either to short distances or to products such as whisky and peltries, whose value was high in proportion to their bulk. A wagon load of goods could be sent overland at the time of the War of 1812 from Augusta, Maine, to Savannah, Georgia, but the journey required 115 days and the freight charges on the load were $1,000.

Many states saw in the private turnpike corporation, a device which the British had used to improve their highways, a means of overcoming the handicaps which lay heavy upon American land transportation. In 1792 Pennsylvania chartered the Lancaster Turnpike, the first important enterprise of this sort in the country. This company raised the funds for the improved highway through the sale of its stock to investors; secured a right of way through the exercise of eminent domain, a privilege granted by the state; built at the cost of $463,000 a road surfaced with crushed small stone; and sought to recoup its expenditures and make a profit through tolls charged at gates seven miles apart. The business methods of this earliest turnpike, like that of its numerous imitators, aroused popular hostility. Road-making had previously been a governmental function; now it was surrendered to private individuals with the right to invade private property and charge tolls. The financial experience of the Lancaster Turnpike also foreshadowed that of turnpikes in general. The cost of construction far exceeded the original estimate; additional levies had to be made upon the stockholders; in 1807 the management reported that the stock was at last at par but that it had never earned more than 2 per cent profit upon its investment.

A rage for the construction of improved roads, however, swept the country. In 1807, when Gallatin, Secretary of the Treasury, made his famous report on roads and canals, he described the sixty-seven companies in New York which had already constructed nine hundred miles of improved roads; the progress of New England, particularly Massachusetts, where excellent thoroughfares radiated from Boston to Newburyport, Providence, and other places; and the extensive projects in Pennsylvania and Maryland for tapping the commerce of the western regions. He was writing, as it turned out, at the beginning of the first turnpike era. For in the eastern states the golden age of the turnpike, in terms of usefulness rather than in number of charters, was from 1810 to 1830. Then other means of transportation—canal, railroad, and public highway—superseded it. The constant movement of population into new areas, however, and the discovery of new varieties of road surfacing
explained the appearance of a later turnpike era in western states and the
rebirth of the craze in the older regions. The plank road, for instance, made
of woods as varied in staying power as hemlock and white oak, had an im-
mense vogue in the late forties and early fifties. Though this innovation was
not the whole explanation, states as diverse as New Jersey and Ohio reached
the peak of turnpike incorporation in that period.

In the matter of turnpikes and public roads the individual states tended
to follow a policy as exclusive and as belligerent as modern nationalism. Each
state fought for its economic interests or those of its metropolis, be it Port-
land, Maine, or Baltimore, Maryland. Such competition spurred enterprise;
it did not necessarily build a national system. Those with wider horizons
had often advocated that the Federal government undertake to provide
essential internal improvements, including highways. Such vision collided
with constitutional difficulties. Though the resultant arguments as to
whether the national government had the power to survey, build, operate,
and repair roads are of interest chiefly to legal antiquarians, it must be ad-
mitted that they seriously curtailed government assistance. But before the
question of constitutionality was temporarily decided the Cumberland Road
had been constructed. When Ohio was admitted to the Union a percentage
of the money obtained from the sales of her public land was set aside for
road building, and in 1802 it was decided to devote a part of this fund to the
construction of a roadway connecting Ohio with the Atlantic. The logical
route geographically was from the Ohio River to some river flowing into
Chesapeake Bay, for here the distance across the Appalachians to salt water
was the shortest. Finally in 1811 local jealousies were appeased and the road
was laid out to extend from Cumberland on the Potomac through the lower
western corner of Pennsylvania to Wheeling on the Ohio. The statute pre-
scribed the width of the roadway, the shape of the roadbed, and the surfac-
ing of stone. In the same year the first contracts were let for its construction
and in 1818 it was opened for traffic to its western terminal. The cost of con-
struction, $13,000 a mile, had brought a stone-surfaced road with substantial
bridges, but so great was the traffic that the road wore out rapidly. Con-
gress, while debating the delicate question as to whether it was entitled to
repair its own creation, voted its extension westward through the state capi-
tals of Ohio, Indiana, and Illinois, and some selected a final terminal at
St. Louis. This projected National Road, however, was never completed.
Meanwhile the finished eastern portion benefited among eastern cities Phil-
adelphia and Baltimore, which early made connections with it, rather
than New York which found access difficult.

No matter how they had been sponsored or financed, improved roads de-
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veloped an immense wagon traffic. Private carriages or stagecoaches might attain greater luxury or speed, but the Conestoga wagon, dragged by six horses, was the mainstay of the highway. Freighting companies were chartered which owned several wagons, employed numerous drivers, and operated on a regular schedule. An observer estimated that 12,000 wagons arrived in 1817 at Pittsburgh from Baltimore and Philadelphia. And Wheeling rivaled Pittsburgh just as Baltimore rivaled Philadelphia. An interesting feature of this traffic was its concatenation with the traffic down the Ohio and the Mississippi. Owners of flats, who had sold cargo and boat alike at New Orleans, took ship northward for an Atlantic port and invested their money in fine goods which were taken overland by wagon and then sold along the western rivers. Thus a curious triangular trade developed, whose angles coincided with the West, New Orleans, and some eastern city, rather than as formerly with Newport, the African coast, and the West Indies.

Improved roads had lowered rates. Though it is difficult to reduce them to averages, passenger fares in the twenties were approximately five cents a mile. As for the more important freight business, the competition of the eastern cities had forced down charges on a hundredweight of goods from Pittsburgh to Philadelphia from $9.50 in 1817 to $6.50 in the following year. But these unusual rates were still prohibitive. To move a barrel of flour from Pittsburgh to Philadelphia cost $13.00. Off the main roads it probably cost, according to McMaster's careful estimate, "ten dollars per ton per hundred miles." Very few bulky articles could stand such freight charges. Although manufactured articles might pay for their transportation, agricultural ones like wheat and flour could not be gainfully carried more than one hundred and fifty miles. A ton of goods could be moved across the Atlantic almost as cheaply as from Philadelphia to Lancaster.

THE EASTERN CANALS

If roads were not the answer to the eagerness of Atlantic coastal cities for a hinterland of their own and an effective connection with the trade of the Golden West, canals promised salvation. Calculations proved that in a day's time four horses could draw a wagonload of goods, weighing a ton, twelve miles over an ordinary road; in the same time over a turnpike they could pull one and one-half tons a distance of eighteen miles; on a canal they could pull one hundred tons a distance of twenty-four miles. With such savings in horsepower, wages, and time, bulky products could be profitably taken to market. The value of such paper calculations had been proved in Europe by the end of the eighteenth century, and foresighted Americans had devised elaborate schemes for the construction of canals in this country. But the in-
tresult of wars, the tardiness of settlement, and the lack of funds had
prevented the fulfillment of these elaborate dreams. Only here and there had
a few short canals been constructed.

The canal era really began with the construction of the Erie Canal. The
idea of water routes between the upper Hudson and Lake Ontario or Lake
Erie and between the Hudson and Lake Champlain was conceived in the
eighteenth century. It is not surprising, for nature itself was an ally of
such designs. At a point where the Hudson River is still navigable its valley
abuts roughly at a right angle upon the valley of the Mohawk; almost im-
perceptibly the Mohawk connects with the Finger Lake region of central
New York, from which rivers, the Oswego and the Genesee, run north-
ward into Lake Ontario. In no spot was the route more than six hundred
feet above sea level. The whole depression formed the greatest break in the
Appalachian barrier between the St. Lawrence and Georgia. Moreover,
northward from Albany one could journey up the Hudson and then, by
a series of portages between rivers, reach Lake Champlain. In the seven-
teen-nineties New York State chartered two private companies to develop these
routes. They had failed. But with every year the compulsion to over-
come this failure grew stronger. New York City stood isolated at the
mouth of the Hudson. The trade of the Middle West flowed southward to
New Orleans when it did not move eastward over the Cumberland Road to
Philadelphia and Baltimore, New York's deadly rivals. Even within New
York State the southern counties looked toward the same markets and Lake
Ontario and Lake Champlain traded with Montreal. The explanation for
these preferences was the high freight rates to New York City. It cost $100
to ship a ton of goods thither overland from Buffalo.

The identity of the man who "built" the Erie Canal to redirect these chan-
nels of commerce has been a battleground for partisans, but in the perspective
of one hundred years there is little difficulty in selecting De Witt Clinton,
mayor of New York City, governor of the state, and canal commissioner.
Clinton had the wit to realize that European experience had demonstrated
the futility of improving a river if the stream was not large enough for in-
dependent navigation. Currents were variable, the depth available for vessels
depended upon the season, and the towpath was either too high above the
river or submerged beneath it according to the heaviness of the rainfall and
the flooding of the stream. Better by far to construct a canal parallel to such
a river and use its waters to keep the level set in the canal itself. In the sec-
ond place, a private corporation had proved inadequate for the task since its
funds had been insufficient and its affairs badly mismanaged. If the work
was to be undertaken it would have to be at the expense of the state, aided if
possible by the Federal government.
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After disheartening vacillations, caused in large part by local jealousies, the state in 1816 and 1817 passed the necessary legislation. The financial expedients were complicated and burdensome, for a state with a population of less than a million and a half undertook the construction of two canals—the Lake Champlain Canal was constructed simultaneously with the Erie—whose combined cost was estimated at $7,000,000. To meet these expenses the credit of the state could be used for borrowing purposes, and to meet the interest and principal of this indebtedness a canal fund was created. Into this reservoir various trickles of revenue were diverted—money obtained from the land donated to aid the canal, of which a gift from the Holland Land Company was the largest, taxes levied on the manufacture of salt, taxes laid on all persons who traveled stated distances on the Hudson River steamboats, proceeds from certain lotteries, taxes on sales at auctions, appropriations from the state, and finally all tolls collected when the canals were built.

Then came the physical task of constructing the canal. Western New York was a wilderness, and the central region was one of unhealthy marshes. The pioneers at Panama in a new engineering era confronted no greater difficulties. In the absence of sanitary precautions and modern medical knowledge, agues, bilious fever, and typhus attacked the workers and occasionally halted the work. The primeval forest had to be hewed down and the roots grubbed out. The digging, furthermore, had to be done without the aid of modern excavating machinery and without the supervision of trained engineers. Such were not to be had in America. After the failure to secure an English engineer, two of the three great sections were entrusted to James Geddes and Benjamin Wright, both of whom were lawyers who had practiced surveying on the side. They developed their engineering talents as the work progressed. In fact the canal was a school of engineering. One of the subordinate engineers, Canvass White, started as a surveyor, then went to England, where he tramped two thousand miles of towpath observing every feature of canal construction, and returned in time to aid the building of locks and works with his diagrams and to discover with the help of others a waterproof cement equal to the best of Europe.

On July 4, 1817, the first spadeful of earth was turned. In 1825 this "Hellespont of the West" was completed and elaborate state and civic celebrations marked the triumph. Somehow they fell short of the achievement. For the total length of the canal from the harbors which were built at Buffalo to the basins at Albany was 363 miles; its greatest height above sea level was 566 feet, and the total lockage made necessary by ascents and descents to conform with the topography was just a little less than 700 feet. The canal itself was nothing but a big ditch; its prism was forty feet wide at the top, twenty-eight feet wide at the bottom, and four feet deep. As an engineering feat the
canal was unexampled in America. Although the gates were of wood, the locks were built of stone and on the average could be passed in the short time of four minutes; its aqueducts, fills, and mechanisms impressed even European visitors. Furthermore the canal was built well within the time limit estimated by De Witt Clinton; the cost, together with the Champlain, was $10,200,000; and is construction had been attended by a happy absence of wastefulness, extravagance, and corruption. A contemporary narrator was justified in his superlatives: "They have built the longest canal in the world in the least time, with the least experience, for the least money, and to the greatest public benefit."

The effects of the Erie Canal upon the development and history of the United States ramify almost into infinity. Perhaps it is best to begin with a statement of traffic and the money returns in sheer dollars and cents. In the first year, in which it was operated for only part of the season, 13,110 boats and rafts passed through the canal and the tolls collected were equal to one-seventh of the original cost. This was impressive. Yet twenty-five years later the tonnage carried on the Erie was 1,635,089; the tolls collected in that year were $2,933,125.93. The cost of original construction had been met several times over. New York was dizzied by the prospect of financial success even in 1825 and proceeded to authorize the construction of a number of canals as feeder s to the Erie—a state-wide system—and later began the enlargement of the Erie itself. But more important was the result of this record upon the seaboard rivals of New York. Though they could hardly hope to rival her in reaching the Great Lakes, they had compensations. In 1825 the Great Lakes region was comparatively undeveloped; the Ohio valley was the real heart of the West. Both Pennsylvania and Virginia thrust the bulk of their territory to the very banks of the Ohio, and Maryland, although cut off from that river by the others, possessed a part claim to one of the inevitable routes of approach, the Potomac. Finally, the commercial cities of Philadelphia, Baltimore, and Richmond were nearer Ohio than was the metropolis of the Hudson.

Of all these competitors undoubtedly Philadelphia was made the most unhappy by the Erie Canal, for the barrier of the Appalachians and the absence of rivers running east and west seemed to veto the construction of any effective rival. Something, nevertheless, had to be done. As a result of the organized activity of the merchants, bankers, and publicity experts of Philadelphia, the state legislature in 1826 passed a measure for a canal between Philadelphia and Pittsburgh. As the work progressed modifications of the original scheme were introduced which created the most remarkable transportation system in the United States and one of the most remarkable in the world.

1 By 1882, when tolls were abolished, the Erie had collected $120,692,400.75.
From Philadelphia a railroad traversed the eighty-one miles to Columbia on the Susquehanna. From Columbia a canal ascended the Susquehanna and then traveled westward along the Juniata to Hollidaysburg, where the Allegheny ridge 2,291 feet high had to be surmounted. The device chosen was the Allegheny Portage Railroad, which mounted each side of the ridge with five inclined planes interspersed with level stretches. Stationary engines pulled the vehicles up the inclines; horses pulled them on the level tracks. In this fashion cars or cradles with canal boats were raised from the Juniata and finally let down on the other side into the Conemaugh at Johnstown, whence a canal continued along the routes of various rivers to Pittsburgh. The work proceeded rapidly under the direction of engineers trained on the Erie Canal, and in 1834 it was opened for use.

Although the route was shorter than the Erie Canal, transportation over it was more difficult and more expensive. It had 174 locks against the 88 on the Erie, the expense of its three transshipments was equivalent to that of 50 miles by canal, and all transportation companies had to own both canal boats and cars and maintain several sets of depots and agents. The route carried nearly every European visitor to the United States, but its record as a freight carrier was much less impressive. The total through freight, for instance, weighed at Hollidaysburg in 1844 was only one-fifth that carried in the same year by the Erie.

The Virginia and the Maryland routes are indissolubly connected with the name of George Washington. Owning western lands which he desired to increase in value and realizing the political importance of some tie binding together a country severed by the Appalachian ranges, he investigated various routes and wrote to the governor of Virginia in 1787, "It has long been my decided opinion, that the shortest, easiest, and least expensive communication with the invaluable and extensive country back of us would be by one of the rivers of this State, which have their sources in the Appalachian mountains." To prove the practical nature of his convictions, Washington became the president of the first companies chartered to improve these means of communication. The final value of his foresight was demonstrated when for over seventy years Maryland and Virginia worked together or separately to utilize the rivers—the James and the Potomac—which Washington had thus designated.

The James River project was entirely a Virginia enterprise. After years of futile attempts to improve the navigation of this stream above Richmond, Virginians became impatient to have some connection with the western states. Virginia "has been living on Glory!—her past Glory—breakfasting, dining, and supping on it," while others grasped the prize. Finally, in 1832, the James River and Kanawha Company was chartered. Three years later
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this corporation decided to parallel the James with a canal, build a railroad from the terminus over the mountains to the Kanawha, and to improve that river to the Ohio. To supplement the subscriptions of private investors the state and the city of Richmond made contributions to the enterprise. Then began the customary tale of endeavor and disappointment. The James River Canal aroused sectional and political jealousies. There was a quarrel between the adherents of the railroads and of the canal project. As usual, the expenses of construction were far above the estimates, and money had to be borrowed at high rates of interest. By 1851 the canal had been pushed some fifty miles beyond Lynchburg. Meanwhile some poor improvements in the Kanawha River were constructed. Although the rail connection between the two was never achieved, the Kanawha turnpike running northwestward to that river from a branch of the James served for a small traffic.

A canal along the Potomac route involved a tangle of jealousies. The states immediately concerned were Virginia and Maryland, but the most favorable routes to the Ohio after leaving Cumberland went northwest through Pennsylvania. The number of towns and cities aspirant to commercial greatness further complicated the situation. Baltimore, Washington, Georgetown, and Alexandria were all closely involved. To make matters worse, there was a bitter controversy about the methods of communication—canal or railway. Even the splendid Potomac route was barred by the ridge of the Alleghenies, whose passes were all over two thousand feet above sea level. Utilization of the route illustrated in a precise fashion all the phases of transportation development. The first design was the Patowmack Company, chartered by Maryland and Virginia, aided by subscriptions from both, presided over by George Washington, and planning the improvement of the waterway. By the twenties friends of the project had converted it into the Chesapeake and Ohio Canal and, taking advantage of the current enthusiasm for waterways, had won financial assistance from the national government and from the cities it was designed to benefit. But as time passed, Virginia lost interest since the canal was on the Maryland shore; Maryland lost interest for Baltimore merchants preferred to invest in the Baltimore and Ohio Railroad; and the railroad and the canal hampered each other by their struggles for precedence along the route and for the favor of subscribers. In 1850 the Chesapeake and Ohio Canal staggered into Cumberland on the upper Potomac eight years behind the railroad. The Ohio, on the other side of the mountains, was still unattained.

THE WATERWAYS OF THE NORTHWEST

Except on the east, the old Northwest was bounded by waterways. The Mississippi above St. Louis traversed its western reaches, the Ohio washed
its southern edge. Both of these routes through their connection with the main river and New Orleans were natural avenues for commerce and transportation. On the other hand, the utility of their northern boundary, the Great Lakes, really waited upon the breaching of Lake Erie by New York's big ditch. Even then, though these vast inland seas presented unique possibilities for navigation, their use was greatly retarded by minor disadvantages. First of all, the lakes were not properly connected. The only channel between Lake Erie and Lake Ontario passed over Niagara Falls; the St. Mary's River fell sharply several feet in its course from Lake Superior to Lake Huron; and between Huron and Erie were the flats of Lake St. Clair, where a tortuous, shallow channel wound back and forth between acres of wild rice. The lakes, too, were subject to sudden and violent storms, and the lack of sea room compelled sailing vessels to make for harbor rather than run out the gale. Good harbors did not exist, and the mouths of affluent rivers which provided the natural sites for improved harbors tended to silt up even when jetties and walls were built to form a protective basin. Improvements by dredging and canals were delayed at first by the thinness of settlement and later by the Congressional conviction that the lakes were merely gigantic frog ponds and that state funds should finance harbor improvements. Although a canal had been early constructed through Canadian territory around the Niagara barrier, Michigan did not complete a canal through its territory around the St. Mary's Falls until 1853–55. Navigation was then possible from the tip of Lake Superior to the sea.

Although the Walk-in-the-Water, the first steamboat in the Great Lakes above Niagara Falls, was launched in 1818, commerce on the Great Lakes was not important for several years. As on the Missouri River later, the early steamboats derived their cargoes and revenue from the fur trade. But the opening of the Erie Canal brought a revolution. In five years the tonnage, steam and sail, entering Buffalo increased six times. Before 1800 there was hardly a vessel on the lakes larger than an Indian canoe; in 1860 the merchant marine of the northern lakes aggregated 463,123 tons, of which 90 per cent was under sail. For the pre-war era was the one of the lake schooner, whose grace and usefulness made her the peer of the Atlantic coastal carriers. Like her eastern cousins, the lake schooner carried bulk cargoes—lumber, grain, and after 1855, ores from Lake Superior. Relative tonnage figures, nevertheless, certainly underestimate the importance of steam. Until the railroads encircled the more eastern of the Great Lakes, the passenger steamers, mingling splendor and squalor, carried travelers, businessmen, and immigrants along these inland seas; propellers, using less fuel and better adapted for passing the interlake canals, were freight carriers; and tows helped long lines of becalmed or wind-baffled schooners in straits.
and harbors. In 1851 the value of the Lakes’ freight carriage was estimated at $326,000,000. A single item in the total of our domestic commerce, it nevertheless was equal to nearly three-quarters of our total foreign trade in that year. Such a development the Erie Canal had made possible. But the construction of western canals had, likewise, been an important contribution.

In 1818 Governor De Witt Clinton was writing to the projector of a canal in Indiana, “I have found the way to get into Lake Erie and you have shown me how to get out of it. . . . You have extended my project six hundred miles.” The New York governor exhibited a similar cordiality to the proposals for an Ohio system of artificial waterways, and was the dignitary selected by that state to turn the first shovelful of earth on its first through canal. This personal enthusiasm reflected the interest of New York, particularly New York City, in these western canals. For although the Erie Canal and the Great Lakes might be the main avenue of commerce, a series of feeder communications which would pour into it the surplus produce of the old Northwest was necessary for complete success. They were even more vital to the northwestern states. The produce of their central and northern portions was crying for a market; in the lack of it a population, living in the midst of fertility, was in poverty. Even when the western states had access to the rivers and to New Orleans they were discontented. Agricultural products shipped to that city often found the market glutted. “To leave one’s property at New Orleans is to abandon it to destruction; to wait for higher prices is to incur the dangers of an unwholesome climate. One must ship his flour or sell at a sacrifice—oft-times at a price that will not pay the cost of freight and charges,” wrote an Ohio committee on canals. An alternative market would have the desirable effect of competition. The committee calculated that if the flour shipped southward from Cincinnati to New Orleans in 1818–19 could have gone via canal to New York there would have been a saving in freight rates of $364,000 which would have given the farmer an increased profit. The magic wand of internal improvements would produce prosperity.

For the construction of canals the northwestern states had undoubted natural advantages. Between the Great Lakes region on the one hand and the Ohio and Mississippi basins on the other there was no formidable divide, and by easy portages a canoe could be carried from the streams flowing into the one to the streams flowing into the others. In Ohio one logical route led southward from the Cuyahoga flowing into Lake Erie at Cleveland either to the Muskingum, which joined the Ohio at Marietta, the oldest settlement in the state, or along the rich Scioto valley to Portsmouth. Near the western border of the state the Maumee and the Miami suggested a connection between Cincinnati and Lake Erie at Toledo. Indiana was bisected by a
remarkable diagonal highway. Between the headwaters of the Maumee in the northeast corner of the state and the Wabash, which eventually entered the Ohio after serving as part of the boundary between Indiana and Illinois, there was a low marshy portage of but eight miles. A similar trivial barrier separated the headwaters of the Chicago River, emptying into Lake Michigan, from an upper branch of the Illinois, which eventually joined the Mississippi River. Here was the possibility of connecting at one stroke the great north and south artery of the Mississippi with the Great Lakes. Furthermore, the territory through which these channels passed was rich in the natural materials necessary for canal construction, wood and stone.

The difficulties confronting the utilization of these routes had already been suggested by the history of the eastern canals. Some of them were political. Each section was jealous of the others and eager to gain for itself the demonstrated advantages of internal improvements. In spite of these sectional handicaps, the routes for canals were selected with great wisdom, and their engineering and commercial feasibility was later demonstrated by the fact that the railroads, constructed by presumably canny private capitalists, followed the same lines. In Ohio two trunk canals were constructed. The eastern one, the Ohio Canal, connecting Cleveland and Portsmouth, included both the Scioto and Muskingum valleys, and a western one, the Miami Canal, connected Cincinnati and Toledo directly. These canals crossed the great agricultural districts of the state. In Indiana and Illinois, although the construction of the Wabash Canal and the Illinois and Michigan along the routes mentioned above had been early authorized and undertaken, the latter was not finished until 1848 and the former, the longest canal in America, until 1853.

Financial handicaps dogged all these western undertakings and few really paid for themselves. They were nevertheless, of service for a time, and the greatness of the Lake cities—Buffalo, Cleveland, Toledo, and Chicago—was due directly to the trade which they created and developed.

The Commerce of the Canals

The new canals became almost at once the avenues of travel and of emigration. Packet boats pulled by four horses and with frequent relays introduced speed for the first-class travelers. On the Erie Canal through packet boats moved at the rate of four miles per hour. Fare on these vessels was three or four cents a mile. Expeditious and cheap as this new means of travel was, it was a hardship which the squeamish did not enjoy. The roof was low, and crowded under it were the quarters for the crew, the ladies' cabin, the main cabin (which did duty as the men's dormitory at night), the bar, and the kitchen. Daytime might be made endurable by sitting on deck or
walking along the towpath, but night was a different story, for the passengers were herded into berths in a room which lacked ventilation. The bullfrogs and the mosquitoes of the American swamps effectively banished any possibility of sleep in surroundings which in summer constituted a “Turkish bath.”

But the canals were more important for the stimulus which they gave to westward settlement.

Then there’s the State of New York where some are very rich,
Themselves and a few others have dug a mighty ditch,
To render it more easy for us to find the way
And sail upon the water to Michigania
Yea, yea, yea, to Michigania.

Westward movers who thus celebrated in song their means of emigration traveled on line boats, which Horace Greeley once described as “cent and a half a mile, mile and a half an hour.” On the lakes they secured a cheap passage on some old steamer and then changed at some lake port to canal boat or wagon transportation. This tide of emigration, which carried westward New Englanders or New Yorkers who had earlier stemmed from New England, included the foreigner. It was estimated that nearly 30 per cent of the immigrants landing at New York settled in the various states which were served by the Erie Canal and its western connections.

But the most important function of the canals was to transport goods. They enabled people to live in these newly settled areas by carrying away their produce and by returning with the necessities and the comforts which a new country required and which it could not produce for itself. In this quickened and enlarged domestic commerce, lower freight rates were the fundamental factor. On the Erie route the old wagon charge on goods, $100 a ton from Buffalo to Albany, fell at once with the opening of the canal to $10 or $12, and between 1830 and 1850 the charge averaged $7.78 a ton between Buffalo and Albany and $8.81 a ton for the whole journey from Buffalo to New York. Canal transportation thus made possible the carriage of bulky products, grain and livestock, stone and timber. Its arrival in transportation-starved communities was that of a deliverer. The Scioto Gazette, describing in 1830 the effect of the Ohio Canal upon an inland Ohio town, said it “has reduced the price of salt from 87 to 50 cents a bushel, and reduced carriage on every article imported from abroad in a corresponding ratio. It has advanced the price of flour from $3 to $4 a barrel, and wheat from 40 to 65 cents per bushel.”

Though the commerce on the James and Kanawha, the Chesapeake and Ohio, and the Pennsylvania “main line” might serve as illustration of the
interchanges between seacoast and interior accomplished by the canals, the
Erie was the best illustration. Before 1830 receipts at its Buffalo terminus
from the West were small, for the canal at first secured its greatest cargoes
in western New York, a region whose development it greatly hastened. But
by 1835 the construction of the Ohio canals began to make a mid-western
surplus available for eastern markets, and the trade through Buffalo com-
menced. Lumber products were usually the first commodities sent by any
new western district to Buffalo. Then came a tide of grain—by 1840 the re-
cipts from the West surpassed those from western New York—and ship-
ments of pork, beef, and other food products. Lumber, grain, and meat, in-
deed, remained the great trades from the West. They bulked larger than the
commodities traveling from the East, but the latter were the more valuable.
They were the mélange of manufactured or exotic articles required by the
new settlements. Their enumeration—dry goods, boots and shoes, hardware,
machinery, paper, drugs, medicines, sugar, molasses, coffee, tea, tobacco, salt,
fish—reads, with few exceptions, like the manifests of the inbound cargoes
of our foreign trade at an earlier period. From 1836 to 1853 these eastern ex-
ports multiplied nearly ten times in value.

Since the ambitious projects of Virginia and Maryland never really reached
the West, the Pennsylvania main line and the Erie with its western feeders
were the magnets which twisted into new directions the lines of commerce
within the old Northwest. By the forties the attraction of the Mississippi was
yielding to that from the East. In 1846 for the first time the arrival of wheat
and flour at Buffalo surpassed that at New Orleans. For a time this increase
in northern commerce could be regarded as an addition to New York’s traf-
ic created by new transportation facilities rather than by a subtraction from
New Orleans’ total. But there was no debate when New Orleans began to
lose the Ohio valley. By 1847 Cincinnati had shipped flour direct to New
York, and a few years later St. Louis succeeded Cincinnati as a purveyor of
western produce to New Orleans. A close analysis of the trade in the Ohio

² Articles shipped eastward by the canal from Buffalo (Andrews, I. D., Report on the Trade and
Commerce of the British North American Colonies and upon the Trade of the Great Lakes and Rivers, p. 92):

<table>
<thead>
<tr>
<th>Articles</th>
<th>1835</th>
<th>1850</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flour, bbl.</td>
<td>86,233</td>
<td>984,430</td>
</tr>
<tr>
<td>Wheat, bu.</td>
<td>95,071</td>
<td>3,504,647</td>
</tr>
<tr>
<td>Corn, bu.</td>
<td>14,579</td>
<td>2,608,967</td>
</tr>
<tr>
<td>Provisions, bbl.</td>
<td>6,502</td>
<td>146,836</td>
</tr>
<tr>
<td>Ashes, bbl.</td>
<td>4,419</td>
<td>17,504</td>
</tr>
<tr>
<td>Staves, no.</td>
<td>2,565,272</td>
<td>159,479,504</td>
</tr>
<tr>
<td>Wool, lb.</td>
<td>140,911</td>
<td>8,805,827</td>
</tr>
<tr>
<td>Butter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cheese</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lard</td>
<td>1,030,632</td>
<td>17,534,981</td>
</tr>
</tbody>
</table>
canals showed that lumber and grain usually sought the northern outlets, although whiskey and meat products still tended to follow the down-river track. There was no comparison between up-river shipments and the shipments from the East along the Erie and its extensions.\footnote{The rival commerces of New York and New Orleans in 1851 (Adapted from I. D. Andrews, \textit{Report on the Trade and Commerce of the British North American Colonies, and upon the Trade of the Great Lakes and Rivers}, pp 895–97):}

Although the complete defeat of New Orleans in the Ohio region was postponed until the day of railroads, citizens of the Crescent City began to be alarmed at the unnatural tendency of commerce to defy the laws of gravity and to flow uphill. \textit{De Bow's Review}, Southern protagonist of the Mississippi route, demonstrated conclusively that ton-mile rates on the river were only one-half to one and one-half cents, on the canals one and one-half cents exclusive of tolls, and on the lakes three cents. But the distance down the river was longer, the rates of insurance were higher, the liability of products to deterioration through climate was greater, the ocean rates from New Orleans to Liverpool were nearly twice those from New York, and with the larger ocean vessels it was more difficult to navigate the wearisome stretch from the Gulf up the river to New Orleans.

**The Railroad**

The essential elements of the railroad—a track of steel rails laid upon transverse wooden ties set in a ballast of crushed stone or gravel, and the steam locomotive—are so simple in an age of mechanical complexity that it is hard to realize the slowness and the difficulty of their evolution. The railroad, in fact, united two unrelated developments. The first was the invention of the prepared roadbed, the second was the application of the steam engine to locomotion. As early as the seventeenth century in England plank roads had been built at collieries for the transportation of coal to tidewater, and in the next century attempts to protect these planks with iron had led to the invention of iron rails with flanges to keep the wheels on the tracks. Over such railways cars were hauled either by men or by horses, or, with the proper grades, they might coast down by gravity and be brought back under animal power. The only effect the invention of the Watt and Boulton steam

\footnote{A. Comparative value of property sent from the seaboard to the interior via the Hudson and via the Mississippi:}

<table>
<thead>
<tr>
<th>Years</th>
<th>Hudson</th>
<th>Mississippi</th>
</tr>
</thead>
<tbody>
<tr>
<td>1841</td>
<td>$56,798,447</td>
<td>$30,768,966</td>
</tr>
<tr>
<td>1851</td>
<td>$80,739,899</td>
<td>$38,874,782</td>
</tr>
</tbody>
</table>

\footnote{B. Estimate of comparative total value of articles landed at tidewater via the different routes in 1851: Hudson, $53,727,508; Mississippi, $108,051,708.}
engine had upon these roads was to suggest that a series of inclined planes might be constructed to surmount the steeper grades and that cars could be hauled up by a stationary engine at the top. Railroads which embodied some or all of these features were numerous in England and had even been built in the United States for short distances to carry gravel, stone, or coal from the mine or quarry to a lower level.

Meanwhile inventors had been experimenting with means for driving vehicles by steam. Since the Watt and Boulton condensing low-pressure engine was too bulky for such use, both Englishmen and Americans had sought other types of engine with considerable success. Finally in the late twenties George Stephenson demonstrated the right to be called the creator of the steam railroad. Although his achievements were made possible by the experiments of his predecessors and the contemporary assistance he received from others, the basis of his success was his own scientific study of transportation, which demonstrated to his mind that the locomotive to be successful must run upon a fairly level prepared road in order to avoid the resistance produced by steeper grades. Employed as engineer for the Liverpool & Manchester Railway, he prevailed upon the owners to allow him to apply his theories of construction. Incident to the construction he helped build an engine, the Rocket, embodying the forced draft and the multitubular boiler to keep up the steam pressure, which on a trial trip in 1829 attained a speed greater than twelve miles an hour. On June 14, 1830, a train made the whole journey at the rate of twenty-seven miles an hour. The railroad had not only been invented, it had demonstrated its success.

Americans watched these trans-Atlantic developments with curiosity and eagerness; for here and there in their own country they had already built short railroads on which cars coasted down inclined planes or were drawn by horses. By the end of the twenties the more foresighted were convinced that the new means of transportation had obvious advantages. Unlike all waterways, it did not freeze in the winter; unlike canals, it might penetrate terrain which lacked the water resources and natural channels for artificial waterways. In 1830 there were forty miles of railroad in the country, and a steam locomotive imported from Great Britain had already traveled on American track. From then on construction was rapid. For two decades the states along the Atlantic seashore were the chief centers; in 1850 they had approximately 80 per cent of the nation’s mileage. Then with a rush the railroad leaped the Appalachians, built a network of shining track through the old West and crossed the Mississippi into the first tier of states beyond. Indeed it had practically caught up with the frontier. In 1860 of the national total of 31,246 miles, nearly half was in the states west of the moun-
tains. Even the railroads of the East were in a sense western, for cities great and small along the Atlantic coast, while they were developing rail connections with each other and building up immediate hinterlands, were also raising their eyes to the horizons of the West and dreaming of annexing its mounting commerce to their prosperity and growth. Like the canal, the railroad was a weapon of urban imperialism.

In the East, after a moment of prudent hesitation, Boston embraced the new means of transportation. She had need of some avenue to commercial salvation for her deadly rival, New York City, threatened to divert thither the trade of western and even central New England. The projection and completion of the Erie Canal, by which New York tapped the West, was cause for further alarm until the more cunning Yankees conceived of hitching the Erie to their cause by a canal across Massachusetts to Albany. A report to the Massachusetts legislature asserted that such could be built for some $6,000,000. It was obvious to other schemers that if the Berkshires could thus easily be surmounted the Green Mountains and the White Mountains were no insurmountable barrier, and soon New England was crisscrossed with imaginary artificial waterways.

Fortunately, no definite step toward construction of these arteries was taken. News of the success of English railways filtered to this country and their superior adaptability to the New England terrain was so obvious that the railroad party in Massachusetts triumphed over the canal partisans, and in 1830-31 the state legislature began to charter railroads which were actually built. One of these pioneer enterprises, the Boston and Worcester, was pointed toward the Erie; even before the former's completion in 1835, the Western Railroad was chartered to extend to the Massachusetts state line, there to connect with a line from Albany. In 1841 the road was completed. It had more than a regional importance, for its successful passage of the Berkshires showed railroad promoters and builders everywhere that the railroad could climb. Nonetheless, Boston capitalists and merchants, far from satisfied with this achievement, promoted and financed roads that it was hoped would reach the West by Montreal or by a port on Lake Ontario. They were also enthusiastic over the construction of end-to-end roads which

<table>
<thead>
<tr>
<th></th>
<th>1830</th>
<th>1840</th>
<th>1850</th>
<th>1860</th>
</tr>
</thead>
<tbody>
<tr>
<td>New England States</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle States</td>
<td>30</td>
<td>1,566</td>
<td>3,105</td>
<td>6,634</td>
</tr>
<tr>
<td>Trans-Mississippi West</td>
<td>40</td>
<td>80</td>
<td>2,905</td>
<td></td>
</tr>
<tr>
<td>Southeast</td>
<td>10</td>
<td>512</td>
<td>1,717</td>
<td>5,331</td>
</tr>
<tr>
<td>Old Southwest</td>
<td></td>
<td>74</td>
<td>336</td>
<td>339</td>
</tr>
<tr>
<td>Old Northwest</td>
<td></td>
<td>111</td>
<td>1,276</td>
<td>9,533</td>
</tr>
<tr>
<td>Total U.S.</td>
<td>40</td>
<td>2,818</td>
<td>9,032</td>
<td>31,446</td>
</tr>
</tbody>
</table>

4 Railroad Mileage in the United States
were paralleling the Erie Canal through the heart of New York State and they invested in them. The success of Boston's western connections alarmed rival cities. The grain products of the West went directly to New England without detours through New York City, and the New England manufacturers consigned their products directly to western merchants instead of utilizing the forwarders of New York and Philadelphia.

In the South, as in New England, topography discouraged canal building. The rivers, particularly in the Piedmont, followed such narrow valleys or gorges that the parallel construction of canals was expensive; the frets of rivers after sudden rainfalls threatened canal works; water seeped away from canal beds through the porous soil. These handicaps the railroad avoided. Consequently a series of southern ports, from Norfolk and Richmond to Charleston and Savannah, either as yet undeveloped or anxious over their declining commercial glory, turned to the railroad as a means of growth and redress. Charleston was the most alert. Chasing at the realization that the navigation of the Savannah River gave to Savannah a better means of reaching the cotton-growing Piedmont, and that the trade of the Georgia city prospered as that of their own languished, the Charleston chamber of commerce secured from the legislature in 1828 a charter for the South Carolina Canal and Railroad Company. Ignoring the alternative first offered by its title, the corporation chose to construct a railroad from Charleston across the state to the head of navigation on the river of their rival and thus puncture its commercial lifeline. Surveyors and promoters found the country between the termini an easy one; the road of 136 miles was opened for traffic in 1833; three years earlier one of the first locomotives used in the country, The Best Friend of Charleston, had been tried out on a portion of the route and had demonstrated the usefulness of steam power. At the time of completion the railroad was the longest in the world. In the elation of the early thirties, it was natural to project extensions into the cotton belt and perhaps even northwestward into the grain regions of the Ohio valley. The cereal and livestock areas would send a down traffic to the cotton belt, the cotton belt would send a down traffic to Charleston, and that city would become the entrepôt for all the manufactured products desired for this great region. Charlestonians in convention assembled therefore resolved that "the period has now arrived when the work can no longer be neglected without a criminal supineness and fatal disregard of our own best interests, as well as the duties which we owe to ourselves, and to posterity." But the costs were staggering. After the panic of 1837 and the cotton collapse which followed, the enterprise sank beneath the waves of liquidation. Meanwhile Charleston's first railroad had been pushed westward across northern Georgia.

The meaning of these portents Savannah at first disdained to notice. But
in 1833 she struck back with a railroad of her own. The Central of Georgia Railroad and Canal Company, paralleling Charleston’s enterprises hardly fifty miles away, moved westward from Savannah into the interior of the state. Soon the competitors saw it was to their advantage to reconcile their rivalries and induce Georgia to charter and build a western connection for both. In 1836 the state legislature obligingly ordered the survey and construction of the Western and Atlantic. Outwitting the Appalachians, it was to begin at some point in southeastern Tennessee on the Tennessee and end at some point in northwestern Georgia on the Chattahoochee, indefinite termini which later developed into Chattanooga and Atlanta. Though it met with the customary financial difficulties, the road was opened to traffic in 1851. The Virginian ports reached Chattanooga somewhat later over a more unsatisfactory route. Thus the Western and Atlantic gave Georgia the first western connection in the southern states and made it the king-pin of the whole southern railroad system.

These railroads threatened to alter the historic channels of southern commerce. By 1850 they had connected the interior cotton belt with the Atlantic seaboard and alarmed Mobile and New Orleans. Even before the completion of the Western and Atlantic, the cotton receipts at Charleston rose from 261,000 bales in 1848 to 438,000 in 1849, and Savannah’s increased from 255,000 to 391,000. At the same time receipts at New Orleans fell off nearly 100,000 bales. The Gulf cities felt the necessity for a railroad counterattack. Mobile and New Orleans both projected railroads northward to the Ohio River to beat off the invasion from the East, whether it came from New York or Charleston, and New Orleans dreamed of a railroad to the Pacific. The latter ambition was unrealized until the eighties. The roads to the Ohio after discouragement and delay were completed just before the Civil War. If the truth must be told, the real beneficiary of southern construction was Atlanta, once a spot in the wilderness but by 1860 a flourishing commercial center of ten thousand inhabitants.

In the Middle Atlantic states the completion and success of the Erie Canal was of central importance. As we have seen it sharpened the desires of New York’s rivals to reach the West—to that extent its influence was beneficial. On the other hand, success brought disadvantages. Complacent over their possession of the magnificent Erie, Yorkers too long remained blind to the superior advantage of railways. Instructed by the experience of their northern neighbor and dazzled by the Erie, Pennsylvanians chose to reach the West by the inefficient “main line” rather than by a railroad. Even in Maryland where the leading Baltimoreans succeeded in committing their city to the Baltimore and Ohio Railroad, since a canal along the Potomac would not reach Chesapeake Bay at their wharfs, the state for decades was schizo-
phrenic, dividing its allegiance and resources between canal and railroad. Moreover, once the states had financed and built their canals, railroad competition would reduce the returns from them and thus perchance throw a financial burden on the taxpayers. The states were frozen to an antiquated system of transportation. As a curious by-product of this dilemma, legislation in New York forbade railroads paralleling the Erie to carry freight or, if they did, compelled the payment of tolls to the state, and opinion was hostile to other railroad enterprises proposing to connect the Hudson and Lake Erie. In Pennsylvania, the charter of the Pennsylvania Railroad taxed the enterprise to recompense the state for the loss of revenue on the state works. Nevertheless the financial strength, the agricultural and industrial resources, the density of population, the strategic situation and driving energy of the region enabled the Middle Atlantic states to surmount all complexities. Their railroads were the trunk lines which, uniting with others west of the mountains, formed the broad zone of trunk-line territory from the Atlantic to the Mississippi.

In this area the Baltimore and Ohio played for railroads a pioneering rôle very much akin to that of the Erie for canals. Chartered in 1827, it got under way at a time when railroad engineering was in its infancy and it was still a question whether the horse or the locomotive would furnish the motive power. Even when these technical doubts had been settled and engineers had been trained on the job, the road pressed slowly westward along the Potomac. States, hostile or eager, harassed and cajoled it; court battles with the Chesapeake and Ohio Canal threatened to block its route; and financial disaster descended again and again upon it. Finally, at the end of 1852, surmounting the Appalachian barrier, it at last reached the desired western terminus at Wheeling on the Ohio. The “main stem” of the road was 379 miles. In the railroad race Pennsylvania and Philadelphia were laggards. Concentrating every effort on the expensive state works and plunged into financial darkness by their eventual collapse, it was not until 1846 that a genuine alarm at the success of others led to the chartering of the Pennsylvania Railroad to run between Harrisburg and Pittsburgh. From the former terminus the state railroad extended the line to Philadelphia. Once under way, a driving energy pictured subscriptions to the stock as a patriotic duty and thrust the rails across the state with an engineering daring that conquered mountain difficulties. The road was opened in 1852. Five years later in a legislative coup d’etat it purchased the state’s main line.

New York’s two trunk lines were curiosities. One, the New York and Erie or Erie Railroad, projected and chartered in the thirties, was to give the southern tier of counties in New York State some compensation for the Erie Canal and wean them from dependence upon Philadelphia and Balti-
more. To fulfill the last purpose the road was forbidden to make connections
with railroads from other states and its constructors chose the unusual gauge
of six feet to hinder the interchange of traffic. After years of tortured history
the Erie Railroad was completed in 1851 to Dunkirk on the Lake, and Presi-
dent Millard Fillmore, a New Yorker in the White House by succession,
took the trip celebrating the completion of "this great work of art." Since
the state now suffered a railroad to challenge the canal, the legislature with-
drew in the same year the protective prohibitions upon the cross-state car-
rriage of freight. Two years later, in 1853, a special enabling act permitted
the fourteen local railroads ambling between Albany and Buffalo to coalesce
into the New York Central after an interchange of stock. The thralldom
which waterways still held over the New York mind was revealed by the
fact that the eastern terminus of the Erie Railroad was not at New York
but on the western bank of the Hudson well above the city, and though
two railroads east of the Hudson connected New York with Albany neither
crossed the river by a bridge to the New York Central.

As this recital has demonstrated, the through routes from the East forced
their way to the edge of the West in the early years of the eighteen-fifties.
The railroads already in the area had tended to follow the pattern of the
canals, connecting the Great Lakes with the Ohio and Mississippi. There
was a north and south tendency to these enterprises. The sudden eruption
of the newcomer from the East gave a wrench to the pattern. For these east-
ern railroads now raced for distant western termini which in turn reached
out an iron handclasp. The way was easy. Physiography was not a severe
tyrant. The rolling terrain and the prairies offered a greater variety of routes
than where river valleys and mountains shaped inevitable lines of commu-
nication. Moreover, the West, less thickly settled than the East, did not impose
on the railroad network the discipline of serving established centers of pop-
ulation or industry. The whole region boiled with the ferment of construc-
tion. In the South an extension of the Western and Atlantic came down to
the Mississippi at Memphis in 1857 and southern eloquence marveled at the
completion of the only through east and west route in the region. North of
the Ohio this achievement and celebration was multiplied many times as the
railroads shot forward or away from the ambitious cities fringing the old
Northwest: Cincinnati, St. Louis, Milwaukee, Chicago, Detroit, and Cleve-
land. After a herculean battle, two roads from the East secured admission to
Chicago in 1852–53 and trains over the Erie and the New York Central
could now reach the booming Lake metropolis. The Pennsylvania Railroad,
not to be outdone, followed a few years later. In 1857 the Baltimore and Ohio
pushing westward struck hands with a connection driven eastward from St.
Louis. After-dinner enthusiasm described the valleys and mountains between
Baltimore and St. Louis "as level'd and made straight, for the swifter march of the armies that shall achieve the Industrial Millenium."

Meanwhile St. Louis, Milwaukee, and Chicago fanned out their roads to engross the trade of the Missouri and the upper Mississippi. In the distribution of prizes St. Louis and Milwaukee were left to envy or to sulk. Chicago made itself the real northern terminus of the Illinois Central, a railroad chartered in the thirties and reborn with a Federal land grant in 1850 to commence at the southern tip of the state and traverse as it moved northward the fat interior counties of the state. Chicago pushed westward across the Mississippi in 1856 over the first bridge south of St. Paul. The railroads of Iowa and of northern Missouri were a part of the Chicago network. In short, Chicago's strategic location, not far from the lower tip of Lake Michigan and at the end of a canal from the Mississippi, made her the railroad capital of the Middle West.

** Railroad Problems and Achievement **

The construction of the American railroad network was a gigantic experiment. Like the construction of the American canals, it involved the gradual acquisition of experience, the independent solution of problems, and the adaptation of European precedents to American circumstances. The conditions of railroad construction in a new country introduced a modifying influence of great importance. A scarcity of investment capital made it desirable that construction should be as cheap as possible, and the building of railroads through a country whose traffic possibilities were potential reënforced this consideration. American railroads were, therefore, built with grades that Europeans would have leveled, with curves that they would have straightened, and with materials that they would have despised. The penalties for this temporary construction were the constant repair or entire reconstruction of roads and a railroad accident list that led observers to believe that the railroad "go-ahead" age was indifferent to the loss of life.

Referring to the American railroads of 1837, an English observer asserted, "There are hardly two railways in the United States which are made exactly in the same way." Indeed, it was possible to find in a single railway, such as the Baltimore and Ohio or the state works of Pennsylvania, successive forms of construction which revealed railroad history as stratifications do geological development. At first, patterning upon European experience, Americans used a solid construction. The rails were heavy pieces of granite laid on a stone substructure in the earth and protected at the inner edge by a plate rail; or square granite blocks, sunk into the right of way, were used as support for wooden sills, upon which wooden rails protected by a plate rail were in turn laid. Such roads were too inelastic, and the constant pounding of the
train quickly wore out the iron plate rail and the rolling stock alike. Even when a lighter roadbed was devised, the use of wooden rails protected by a thin metal strap or plate rail presented difficulties. The rail was apt to break loose at the end and curl up through the car, and it wore out quickly. All forms of construction were upset by the action of frost and portions of the road’s bed had to be relaid each spring.

In England many devices had been used for keeping the cars on the rails. In some cases the flange was on the rail itself. But in 1789 a rail was patented by which the rail was set on edge, an “edge rail,” and the flange placed on the car wheel. Early in the nineteenth century such rails had been proposed in this country by John Stevens, prophetic advocate of steam for water and land transportation, but it remained for his son, Robert L. Stevens, in the thirties to work over the edge rail into the T rail and lay such rails on the Camden and Amboy Railroad in New Jersey. Gradually American railways came to use such iron edge rails; wooden ties were laid transversely in sand or gravel without stone or wooden subsills; and the rail was fastened to the ties by an iron chair or by spiking through an iron plate. American railways were light and the short iron rails wore out rapidly.

Railway equipment was also fashioned by the new country. As in England, experiments with various forms of power had been tried. The Baltimore and Ohio used a sail car, which Philip Hone found in 1830, “the wind being strong from the north west,” went off “with great rapidity a short distance, . . . a very pleasant mode of travelling.” On some of the early roads horses were first used either to pull the cars or to work a treadmill engine. Apparently the first railroad engine to run on the tracks of a regular railroad in this country was the Stourbridge Lion. Imported from England, it had a short trial on the Delaware and Hudson in 1829. Though importation continued, American iron works and machine shops were soon trying their hand at building the locomotive. Most of the early engines were too heavy or too rigid for the American roadbed. Taking advice from others, John B. Jervis, engineer and innovator, devised a front truck of four wheels attached to the body of the engine by a swivel. The weight of the engine was spread more evenly upon the track and the loose truck enabled it to conform to the curves. In 1832 these principles were embodied in the Experiment, the first American-type locomotive. With the aid of the American “equalizing beam,” another American invention which permitted the driving wheels to rock on a fulcrum without twisting the superimposed power plant, the locomotive was able to surmount the inequalities of a track which would ordinarily have derailed it. American locomotive works, like the Norris and the Baldwin, by 1860 had manufactured engines weighing twenty-five tons and
THE RISE OF DOMESTIC COMMERCE

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capable of sixty miles an hour. The American engine had become so famous
that it had been exported to England, Austria, and Russia.

The success of the railroads in the face of stage, wagon, and canal boat
which they aimed to displace depended upon convenience, speed, and rates.
An old stage driver recalled a fellow driver once saying, "something that
impressed itself on me very strongly, while he was running a very fine stage,
with six beautiful white horses, and his opponent running very poor horses.
He said one day: there sir, I will take my coach, and run it with my team
straight from here to heaven, and he will run his straight to hell and I will
run empty and he will run full; and all at half price. It is the price in the end
that governs." The railroads found little difficulty in winning the passenger
traffic. They were fast; they set their fares at the outset lower than their
rivals and by 1855 the average passenger fare was approximately two cents a
mile. The average fare, it must be remembered, was usually the fare nobody
paid.

As for freight rates, a period of experimentation was needed before the
untired possibilities of the railroad as a freight carrier could be ascertained.
At first rates were high. Freight classifications did not distinguish properly
between bulky products of a low value per unit of weight and manufactured
articles of higher value. The possibility of through long-distance traffic at
low rates was not realized. As late as 1848 the board of directors of the Pennsyl-
vania Railroad was unwilling to encourage a coal traffic over its properties
because coal could not profitably stand existing rates of carriage. The coal
should be left to the canals; "railroads must be used exclusively for passen-
gers and light freights." Experimentation, often through the granting of re-
bates to special products or favored shippers, more sanguine conceptions of
money-making possibilities, a competition compelling railroads to scramble
for their share of the business and carry products at low prices to meet the
railroad's fixed costs—all this put a new face on affairs. By 1855 freight rates
per ton per mile perhaps averaged three cents; five years later two cents was
not exceptional.

By the fifties the coming triumph of the railroad should have been clear
to the discerning. It is true that in 1852 rails carried roughly only one-
seventh of the tonnage transported within the nation.5 But this was early in

5 Commerce carriers, 1852 (Andrews, I. D., Report on the Trade and Commerce of the British North
American Colonies and upon the Trade of the Great Lakes and Rivers, p. 905):

<table>
<thead>
<tr>
<th>Tons (Net)</th>
<th>Value</th>
</tr>
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<tr>
<td>Coasting Trade</td>
<td>$1,659,518,686</td>
</tr>
<tr>
<td>Canal Commerce</td>
<td>594,000,000</td>
</tr>
<tr>
<td>Railway Commerce</td>
<td>540,750,000</td>
</tr>
<tr>
<td>Aggregate</td>
<td>3,179,269,686</td>
</tr>
</tbody>
</table>
the decade. Before it was done railroads had come with a rush and many of the gaps and inadequacies in the railroad network were at last removed. Though the trade along the Atlantic coast and on the Mississippi was only partially or indirectly effected by railroads, canals were shutting up shop from New England to Pennsylvania and Ohio. Even the patriarchal Erie felt the pressure. By the end of the decade it had lost to the railroads passengers, general merchandise and manufactures, animal and dairy products. It retained its domain over products of the forest, corn, wheat, and flour. The total tonnage carried by the Erie Railroad and the Central was very near that carried by the canal. No wonder the friends of the latter talked wildly of means for "Rescuing the Canals from the Ruin with Which They are Threatened."

FINANCING INTERNAL IMPROVEMENTS

The construction of transportation improvements exceeded the financial resources of the nation. Little wonder, therefore, that promoters and builders of turnpikes, canals, and railroads resorted to a multitude of financial devices. As we have seen, this national search for expedients turned early in the 1790's to the private corporation as a means of building and maintaining turnpikes. Previously governmental bodies had built highways; now a group of investors, animated by the hope of direct or indirect gains and perhaps by a civic glow, was given a state charter to do so. For a time in the late eighteenth and early nineteenth century turnpike charters, along with similar ones for toll bridges, constituted the most numerous group of charters granted by state legislatures. In short, along with banks they educated Americans to the use of the corporation for the attainment of economic purposes.

As profits proved less generous than anticipated and the need of the community just as great, it was natural for government to come to the assistance of such enterprises, to "interpose its superior credit," as the phrase went, through the sale of its securities and the investment of the proceeds in the stock of the turnpike corporation. Though whole regions, like New England, furnished no example of the process, Pennsylvania began investments in 1806 and Ohio twenty years later. The former's turnpike holdings amounted to $2,320,312 at their height and constituted 44 per cent of all investments in such enterprises. Ohio, operating under a general law which authorized the state to match private investors dollar for dollar, had turnpike investments of $1,921,675. Unlike the mixed corporations in the banking field, where a strong motive for state participation was gain, the chief reason for state assistance to turnpikes was promotional. Their construction would advance the economic progress of the community. As it turned out, that was
the one consolation to the states; their turnpike stock shared in the same sorry returns which private investors received.

The canal era introduced a somewhat different situation, though the need for investment funds was just as insatiable. To be sure there was a continued resort to the private corporation to raise money, construct the works, and operate the enterprise. Under such arrangements the canals of New England and New Jersey came into being; and of the major enterprises earlier noted, the Chesapeake and Ohio and the James River and Kanawha, at least in one incarnation, were corporations. To encourage canal enterprises, the state gave favors, often granting, for instance, a banking privilege to buoy the less attractive enterprise; or changed these corporations into mixed ones by its own participation or by permitting cities and towns to invest therein. The promotional reasoning, much the same as that in the case of turnpikes, was reënforced by the truism that canals were more expensive undertakings than highways. Maryland, Virginia, and Pennsylvania were the pace setters in this sort of financing. In a few instances the storm of arguments in behalf of government assistance found a way through the crevices in the constitutional and other arguments against national participation. Thus in 1828 Congress appropriated $1,000,000 to purchase stock in the Chesapeake and Ohio, the “great national project.”

The really novel feature of the canal era, however, was the general decision to finance, construct, and operate these enterprises as public works. Here the example of the Erie and New York was overwhelming. Pennsylvania, Ohio, Indiana, and Illinois followed the same program. Sometimes the earlier failure of private or mixed enterprise to accomplish things hoped for was a partial reason for the policy. Favoring arguments, not always consistent with each other, went beyond this explanation. The state must undertake these risks for its own development, rather than asking individuals to do so, and at the same time it was likely to enjoy such high profits on its investment that taxes could be reduced. Only the state could bring together the funds for such huge undertakings; and yet if the task were given to a corporation it would become a dangerous monster. State works would give employment, stimulate industry and agriculture, enhance the value of landed property, and quicken commerce. As the clamor died down, the promotional idea emerged as overriding and the realization that state credit could alone raise the required millions was a hard fact. The states plunged. In 1838, some time before the appropriations and expenditures had reached their zenith, the total state debt for canals was $60,202,000. Pennsylvania was the leader with a figure of $16,580,000, New York had invested $13,317,000, both Ohio and Indiana had debts for this purpose of over $6,000,000, Maryland was close behind.
Although these state works received no financial assistance from the national government the War Department aided by providing army engineers, a resource almost as scarce as capital, to make surveys. In the twenties Congress likewise turned to the national domain as a means of financial assistance. Sales of such lands had provided funds for the Cumberland Road and for assistance to western states in road building. Now land grants were given to the states for canal enterprises. Ohio, Indiana, and Illinois received 3,258,806 acres for their cross-state canals. In 1852 Michigan received 750,000 acres for the St. Mary's canal at the Soo. The last grant could be located on vacant public land near the canal. From the three other grants emerged the standard procedure of bestowing upon the state alternate sections from a strip of the public domain five miles wide on each side of the canal; the Federal government retained the remaining sections. The canal thus passed through a checkerboard ten miles wide in which the red sections belonged to the state and the black to the nation. Such land grants were an admirable compromise method of Federal aid, for the opposition to them was allayed by the prophecy that the reserved sections would so rise in value as to compensate the government for its benefactions. Such land grants were not a liquid asset. Their rise in value and their profitable disposal depended upon the construction of the canal. On the Illinois and Michigan Canal their eventual sale paid for 90 per cent of the original cost of construction, an exceptionally favorable outcome.

Much of the canal or state stock, issued for canals, was bought by eastern capitalists and merchants who were interested in the extension of trade to the Northwest. But the Atlantic seaboard had demands upon its own investment capital for its expanding industry and particularly its own internal improvements. European capital was, therefore, for the first time called upon to finance American development in an extensive fashion. England was the chief contributor, for her citizens with surpluses secured in trade, industry, and agriculture were desperately seeking some sound investment. The state banks of the South, described in a later chapter, were one outlet. The projects for internal improvements in the North were equally attractive. English canals had been extraordinarily profitable, and their American prototypes were coining money. State securities, moreover, were highly regarded because the United States government had paid off its own debt in 1835 and English investors, unacquainted with the political dualism of America, did not always distinguish between the state and the Federal governments. These American securities found their way into the hands of British investors through American banks and the English banking houses, like Brown Brothers and the Barings already mentioned in connection with the organization of American foreign trade. Often state loans were placed directly in England
by agents of the various state governments. Probably by the late 1830’s Britishers had placed over $110,000,000 in American stocks. If foreign investments were apportioned among the different economic objectives of state policy in the same percentages as the total state debt was, about $36,000,000 of the former sum was in canals.

Unfortunately, the financial history of most public works did not duplicate that of the Erie. Pennsylvania and Ohio most closely approximated it, for they forced the main systems through to completion. The builders of some western canals followed a more pernicious plan. In Indiana and Illinois the commissioners of internal improvements either were compelled by the legislature or chose of their own accord to begin constructing all the projected works at once and in scattered localities. In 1838 the governor of Illinois described such a procedure as cutting up “the whole system of railroads into so many parts, disjointed and disconnected one from the other for the time being, that it would appear in the attitude of a ‘jointed snake,’ which had been whipped into so many pieces that some of them would be decayed and rendered useless before they could crawl to each other’s relief.”

When the panic of 1837 ushered in five years of acute financial stringency the defects of these methods were apparent. Some states had no completed system of public works earning money to meet the interest on their investment nor could they float new loans to complete their internal improvements and thus place them upon a paying basis; others lacked sources of taxation adequate for their floating debts. By 1842 eight states were unable to continue the payment of interest. Ohio, by herculean efforts, kept out of their company. A movement for repudiation met with partial success in Michigan, which refused to recognize a portion of its debt. Pennsylvania and Maryland by governmental economies, taxation, or the funding of arrears of interest resumed payments on their debts before the end of the forties. Indiana and Illinois worked out compromises with their creditors paying their debts from taxes, the sale of land grants or of the works themselves, and from such revenues as the finished canals finally yielded.

Even before this debacle of public enterprise, the sudden burst of railroad incorporations in the early thirties hinted a return to the conceptions of the turnpike: chartered companies were to finance and operate the transportation system. The financial difficulties of the states during the depression after 1837 hastened this reorientation. Although the number of transportation companies never dominated the charter field as it had in the turnpike era, railroad corporations became the most important in the nation. As time went on the size of their capitalization made them the largest business enterprises in state after state, and their issues were the pabulum which kept the stock exchanges of the nation active. Railroads were the leaders in devising
new forms of securities. When sales of stock no longer provided the resources to construct or enlarge their enterprises, the railroad builders issued preferred stock with a prior lien on dividends. Short-term borrowings on notes gradually evolved into long-term borrowings or railroad bonds, secured by a mortgage on the property. When even this method of “financiering” was inadequate, the chief promoters or the contractors “interposed” their superior personal credit, taking the road’s securities as collateral. Imperceptibly, this last service developed into the construction company, not an engineering but a financing device.

The reappearance of the corporation, however, did not mean the end of governmental assistance. That the states had incurred debts of $42,871,084 for railroads by 1838 clearly demonstrated continued participation in transportation enterprises. In spite of exceptions, like the Western and Atlantic, few governmental bodies built, owned, or operated railroads. The favored means was the mixed corporation. In contrast with an earlier era when state assistance predominated, large subscriptions to such enterprises were now made by cities, towns and villages. Smarting under losses during the panic years, popular pressure forced amendments to state constitutions either limiting the size of the state debt or prohibiting loans of state credit to private enterprises. Since such restrictions were neither instantaneous nor universal, the state governments, nevertheless, continued to play a part. In some jurisdictions governmental assistance, whatever its source, was episodic, given to projects of exceptional financial formidability, or in periods of financial crisis as after 1837, or for roads whose immediate construction seemed a matter of life and death. From Massachusetts where the Commonwealth aided the Western to the tune of $5,000,000, through New York which donated to the New York and Erie, to Virginia and Maryland where both subscribed to the Baltimore and Ohio, the story was the same. From Portland, Maine, where the city invested $2,000,000 in the Grand Trunk, to Philadelphia where the municipality contributed $4,000,000 to the Pennsylvania Railroad, and to Baltimore which subscribed $3,500,000 to the Baltimore and Ohio, it seemed as if only Boston and New York City remained untouched by the contagion. In some states, usually southern, financial assistance approached the paper dignity of a system. They contributed a major fraction of the capitalization of railroads selected for assistance, or matched dollar for dollar, or authorized a grant of so many thousands a mile.

The national government for a while in the twenties and thirties aided railroad surveys and construction by furnishing its trained engineers. Such assistance was even provided for private corporations. Through the forties no assistance of any sort was forthcoming. Then in 1850 Congress authorized the traditional contribution to transportation, a land grant. The recipi-
ent was the Illinois Central, whose interests Stephen A. Douglas, senator
from Illinois, now took in hand. He was the first statesman of the railroad
age, for he both understood and spoke its language. Adroitly he mollified the
various theoretical and sectional objections to the proposed donation, and
his manipulation was aided by the increasing liberality shown in the disposi-
tion of the public domain. The epochal grant for the Illinois Central resulted.
The national government was to transfer to the State of Illinois for every
mile constructed by the Illinois Central "every alternate section of land,
designated by even numbers, for six sections in width on each side of said
road and branches." The other sections were reserved to the national gov-
ernment and were to be sold at a double price, $2.50 an acre. In case the
granted sections were preempted, the squatter could pay the price to the state
or the state could indemnify itself by other sections within fifteen miles of
the railroad. The total grant aggregated approximately 2,595,000 acres.
After 1856 the grant for the Illinois Central, at the time an exceptional case,
formed the pattern for an habitual government policy. State after state re-
cieved assistance.

In view of the widespread assistance from governmental bodies, the claim
has been made that government funds provided the major share of railroad
funds. This seems unlikely. In their timing, none the less, such contributions
were of critical importance. Without them some roads would have been built
later; others not at all. The government provided the venture capital. On the
other hand private investors probably met the bulk of the railroad's needs.
These funds came from the eastern financial centers, by the fifties better
braced to meet the emergency, and from Europeans who had resumed their
lending. In 1853, when the latter process was still getting under way, the total
of railroad stocks and bonds held abroad was estimated at $52,100,000. After
their experience with state tardiness and faithlessness in the forties, these
foreign investors naturally preferred to buy the issues of corporations rather
than of states.

**The Regulation of Transportation**

Though there were frequent controversies over the feasibility or wisdom
of details, the state almost without question controlled or regulated transpor-
tation. Charges and services were so vital to the welfare of the community
that they could not be entirely surrendered to determination by competition.
Besides, as we have seen, the shade of monopoly hung over transportation
enterprises, whether they were monopoly grants of a route to corporations,
as was universal in the case of turnpikes and occasional in the case of early
railroads, or a "state work" from which the legislature wished to fend the
competition of a corporation. To turnpike and railroad the legislature had
also given that attribute of sovereignty, the right of eminent domain. These transportation corporations were ones affected with a public use; they were not private and beyond the pale of state surveillance and direction.

State regulation and management was facilitated by financial participation. Theoretically, in mixed enterprises states might have appointed state directors to which the corporation, in view of the state’s investment, would have to listen. Usually states neglected this device; if they employed it, they did so inefficiently. For public works the state alone could determine policy. Here, too, there were grave breakdowns. Boards of canal commissioners were poorly selected and confined to a narrow area of administrative discretion. State legislatures and sometimes even constitutional conventions meddled in management. Timidity alternated with extravagance; wide vision with local interests. Rigidities were everywhere.

In the formal area of regulation, the turnpike era was the forerunner of the railroad one. The individual charters or the rarer acts of general incorporation regulated rates with great particularity for every sort of animal and vehicle. A common supplementary device was a percentage limitation on the returns upon the investment. Turnpikes had to keep records and present them for official review. All this was repeated when the railroads arrived. In some states, as in Massachusetts, charters placed a percentage ceiling on returns and allowed legislatures to reduce rates if a higher profit was secured. In other states, as in New York, the legislature laid down maximum passenger fares on a mile basis. Railroads were to make annual reports to some state body. As time went on, legislation moved into other areas. Charters had specified capitalization, now general laws applied safeguards—or so they were regarded—to the issue of new kinds of securities. When the novel agency of transportation disclosed through accidents a horrid capacity for the destruction of property and lives, legislation determined the size of train crews, provided for warning devices at crossings and on locomotives, and prescribed cautionary running rules. When railroads could not agree upon terms of connections and rates for their joint business, the state interfered in these matters also. The locus of power in this process was the legislature, its railroad committee, and occasionally small administrative groups appointed for special purposes. Even before the Civil War, these arrangements proved too clumsy and inflexible and a few states, mostly New England ones, had appointed railroad commissions with limited powers.

In the area of management and regulation, as in others, all was adventure and experiment. Yet the changes in transportation—steamboats, turnpikes, canals, and railroads—worked for the economy as a whole in one direction. While they broke down local self-sufficiencies, they spurred a regional specialization within the United States and the world. The South could be
wedded to her staples. The West could specialize in wheat, corn, livestock, and lumber. Confronted by an agricultural competition she could not meet, the East turned increasingly to manufacturing and shipped its manufactured products to the markets of the West. A similar effect, in a more diffused fashion, was felt across the Atlantic. England, devoting her energies more exclusively to her industrial development, found in the new West of the United States the cereals and the flour which her population required. So fundamental was this resource that the Anti-Corn Law League in its campaign for the abolition of the English Corn Laws advanced the argument that only by taking the wheat of the Mississippi basin could Great Britain prevent the growth of a manufacturing civilization there which would compete with her own industry, and English capital looked with favor upon investments in American internal improvements since these agencies would cheapen the food supplies of Great Britain. The shot eventually heard round the world was the Erie Canal.
CHAPTER VIII

State and Nation in Banking and Finance

WAR FINANCE

The colonies entered the Revolution with a political case formulated with such persuasiveness and force as to inspire admiration. It had the quality of timelessness. Their military operations, vexed though they were with frequent defeat, were carried to eventual success by the French alliance and the fortitude of the army and its commander-in-chief. Their financial resources, the sinews of warfare, were lacking at the outset of the conflict and in ruin at its close.

For the central government, if one can apply the phrase to a Congress which was really a large committee, had few means of raising the essential revenues. It could not levy taxes. Though it could make requisitions upon the states, these were rarely and reluctantly honored. Nor were the colonies, taken separately, either willing or politically able to tax heavily within their own jurisdictions. The Revolution was in part a protest against taxation. One alternative was loans. However, not until the revolutionists had demonstrated some possibility of success or until alliances brought about a common interest in victory was it feasible to market securities abroad. By the end of the war the foreign debt was $7,830,000; in 1790 when the new nation placed its financial house in order, the total, with new borrowings and arrears of interest was $11,710,000. The French and the Dutch were the chief investors. Loans in the domestic market implied an accumulation of free funds which simply did not exist. A large share of the national indebtedness accordingly represented government certificates given in payment for supplies. Interest payments fell behind. In 1790 Hamilton estimated the domestic debt at $42,414,500. The states, which had likewise borrowed in behalf of the common cause, had revolutionary debts of $18,271,000.

These sums, considerable as they were, were quite inadequate for the task at hand. Within a week of Bunker Hill the Continental Congress began issuing “bills of credit.” The good faith of the government was pledged to their redemption; in large measure they were made legal tender in payment
of debts. Actually they became irredeemable paper money. By 1780 when the central government had issued $241,552,000 and the states an amount almost as much, a galloping inflation had reduced their value in terms of specie and goods. For its own paper Congress then made an attempt to supplant the old issues by a new one. The exchange was to be at the ratio of 40 to 1. Neither simplicity nor soundness resulted. Nonetheless, the central government in the post-war period avoided a continuation of paper issues. Finally, in 1790 when this period came to an end, it accepted as subscription to its new stock its own earlier emissions at the ratio of 100 to 1. In essence, this writing down of the value of the currency was taxation. The losses of note holders were contributions to the government. As a system of taxation it had the merit of bearing upon a wide constituency and operating slowly over a considerable period of time. Such a serene view of events, however, was possible for few contemporaries.

The inflation of the currency during the Revolution was the chief cause of an accompanying rise in prices. Other factors contributed: dislocations in foreign and intercolonial trade, poor harvests, destruction and loss on sea and land, fluctuations in purchasing policy by the government. From the tumbling confusions of the time some individuals were able to wrest a gain. Merchants could put their deprecating money into non-perishable goods; farmers, in a position to supply the market, sold their grain at higher prices. Those unable to increase their incomes or incapable of skillful speculation were the sufferers. Scarcities, like that of salt, and the high price of bread fanned discontent. Spectacular changes in price relationships were a departure from the customary and, hence, the just. With frequent resort to such epithets as "greed," "avarice," "hoarding," and "monopoly," the colonies launched upon price-fixing. Congress made suggestions, town and county committees drew up lists of proper prices and arranged for their proper reduction, many New England states attempted a regional program. The ineffectiveness of these measures and the stagnation of trade which resulted soon caused as much discontent as the original grievances. Nonetheless, a nation without a bank until 1781 or a banking system, without a mint and almost without specie, had won a war. The only modern touch was a huge debt.

The Federal Constitution, written and adopted in 1787–88, established a more effective central government than the Articles of Confederation. Furthermore, the specific provisions of the document cleared the way for national action on matters of finance. The Republic received the power to "lay and collect Taxes, Duties, Imposts and Excises, to pay the Debts and provide for the common Defence and general Welfare of the United States" and to "coin Money, regulate the Value thereof, and of foreign Coin." Con-
versely, the states were forbidden to "coin Money; emit Bills of Credit; make any Thing but gold and silver Coin a Tender in Payment of Debts" or without the consent of Congress, lay any "Imposts or Duties on Imports or Exports." George Washington, the first President, Alexander Hamilton, the first Secretary of the Treasury, and Congress proceeded to utilize these enumerated powers to the full; from other provisions of the Constitution, they inferred authorizations for additional financial undertakings, notably the establishment of a national bank. In 1819 in McCulloch v. Maryland the Supreme Court set its approval upon the constitutional justification for a bank. On occasion the learned justices were also compelled to interpret the specifically stated financial clauses of the Constitution. Somewhat touched by the radicalism of the Jackson era, the Court in 1837 declared that, although states could not emit bills of credit, banks in which the state was a stockholder could do so, provided such bills were not made legal tender. The convenient constitutional silence on the question of whether the Federal government could make paper money legal tender was another matter. Hamilton thought the spirit of the Constitution forbade it. In this respect he did not anticipate the future. In 1871, during the nationalist era after the Civil War, the Supreme Court found such a procedure perfectly constitutional. The majority of the Court asserted that to believe that the government was forbidden to use "freely, every means, not prohibited, necessary for its preservation" was "unreasonable."

The Metallic Currency

Buttressed by undoubted constitutional authorization, the national government had meanwhile attacked the problem of the currency with system and intelligence. When the Republic began its existence the metallic currency was a motley assembly of coins derived chiefly through the channels of foreign trade—the English guinea, crown, and shilling, the French pistole and crown, the Spanish pistole, "reals," and the Spanish milled dollar, and Portuguese coins of different varieties. Coins of the same sort, moreover, were not always equal to each other, for many had been sweated or abraded or worn away by use. Another complication was the fact that no matter what the national or colonial origin of the coin might be, accounts were kept in terms of English money. The need of a regular, uniform coinage was obvious. In 1792 Congress took the first step when it established a mint and a currency. This act, for whose details Alexander Hamilton, the Secretary of the Treasury, was largely responsible, established a decimal metallic currency whose unit was the dollar. Hamilton rejected the idea that this coinage should be restricted to a single precious metal, since it was likely "to abridge the quantity of circulating medium; and is liable to all the objections which
rise from a comparison of the benefits of a full, with the evils of a scanty circulation.” Gold and silver were, therefore, to be minted, but since the two metals were clearly not of equal value he calculated a coinage ratio of 15 to 1 between them. Then and later foreign coins continued to circulate in the United States and to constitute in part the shipments of specie required in the foreign trade. Legislation recurrently determined their value.

For nearly fifty years the metallic currency of the nation, established by these early acts and modified by later legislation, collided with one aspect or another of Gresham's Law. This statement of certain economic tendencies bears the name of a sixteenth-century London merchant who did not even formulate it. It has been briefly and therefore only approximately phrased, “Cheap money drives out dear money.” Some of the difficulty arose from the attempt to circulate the two metals on a parity. One market for them was the mint, where value relationships were fixed by law; another was the bullion market, where prices were determined by supply and demand. Furthermore, the mint valuation in different countries was not identical. Owners of the precious metals will utilize them in the dearest market. Hamilton's ratio of 15 to 1 proved to overvalue silver at the mint: silver was accordingly presented for coinage, and the possessors of gold, even if it were coined in the United States mint, either exported it or sold it in the open market for silver. Consequently, in 1834 and 1837, new coinage laws fixed a new mint ratio, essentially one of 16 to 1. Since this overvalued gold, the country was for all practical purposes placed upon a gold basis. Eventually even the silver coins necessary for small transactions were melted down and exported. As for metallic currency, the country got along with a polyglot collection of worn silver coins from abroad and a gold currency based upon some gold production in the southern states and importations from abroad.

In the fifties man and accident began a new era. One act established a subsidiary silver coinage, whose proportion of precious metal was so arranged as to make the pieces useless for export, and another act withdrew the legal tender quality for all foreign coins. The reign of the dollar sign was now complete. This legislation was in turn made possible by an event of underlying importance, the discovery of immense gold supplies. In 1848 gold was discovered in California, and in 1851 production in the state reached $56,000,000. In the same year gold was discovered in Australia and the “goldbugs” rushed to the land “down under.” The gold production of the world in the decade 1851 to 1860 was $1,332,981,000—greater by 8 per cent than the total production for the first fifty years of the century. As for American production, the balance of international payments was such that the nation retained within its borders a large share of the precious metal. Gold coinage at the mint rose from $3,775,000 in 1847 to $83,395,000 in 1861. The
new tide of gold, sweeping through the channels of trade, also transformed the currency situation of the world.

Perhaps in some primitive community or one so inspired by Spartan simplicity as to condemn material expansion, gold and silver might be made to suffice for the purposes of trade. Such prerequisites hardly prevailed in the United States in the period under discussion nor had they for centuries in the expanding economic systems of western Europe. To be sure, gold and silver were necessary in foreign commerce, but only for the discharge of balances. A mechanism of exchanges and credit really supported and facilitated these operations. To be sure, gold and silver were necessary for the myriad commercial transactions within the nation, but the latter were primarily supported and facilitated by credit arrangements to which the precious metals bore some relationship about whose precise character, as we shall see later, there was considerable dispute. Nonetheless, there was a considerable and influential group of Americans who felt that gold and silver were the only true money. They were the only constitutional money. The states could make no other legal tender; the central government had no explicit constitutional permission to issue paper money. If paper were issued, it must be backed dollar for dollar with bullion. The lineage of such hard-money conceptions can be traced from Thomas Jefferson and John Adams, among the Founding Fathers, through Andrew Jackson and Thomas Hart Benton, whose significant nickname was “Old Bullion,” to the Secretary of the Treasury who in 1853 expressed the pious hope that the gold output of the decade would so increase that the nation might yet return to a purely metallic currency. This fundamentalist outlook had its impact upon the banking structure of both state and nation. It was quite incompatible with any planned progress for the community, whether by individuals or the government. The supply of the precious metals cannot be increased or decreased at will. In short, the hard-money school would have chained the American economy to nature’s bounty or niggardliness.

"Keep Out of Debt"

As for the public debt, a condition and not a theory confronted the first administrators of the Republic. No abstractions about its benefits or evils could dispel the simple fact that the nation owed approximately $54,120,000 and the states, for their revolutionary expenditures, $18,271,000. At least that was the face value. In the eighties these governmental evidences of indebtedness had sold for only a fraction of par. To Hamilton these were contracts between the government and its creditors. It was a matter of honor for the former to fund its debt with new securities, dollar for dollar, and for reasons just as cogent to assume the debts of the states. It was also a matter of wis-
dom. The political advantages need not detain us. From the process of funding and assumption Hamilton also foresaw desirable results for the private economy of the nation. Government securities, properly funded and paying interest, answer "most of the purposes of money"; they are "equivalent to payments in specie." The country lacked money. With the debt funded, merchants, farmers and manufacturers would have new resources; interest on money, "always in a ratio to the quantity of money," would be lowered; lands would increase in value and be more easily sold. In brief, the debt could be used to stimulate the economy. He called up British experience as evidence. Under proper circumstances the public debt was a "national blessing."

Such sanguine possibilities, if carried to excess, Hamilton feared led to "prodigality." The creation of the debt should be accompanied by means for its payment. Jefferson had deeper reservations. They were based upon morality. "The earth belongs in usufruct to the living." If a public debt ran for a long term, the dead were binding their posterity. His objections were based upon observation. Reading English experience in quite different fashion than Hamilton, he saw debt with its mounting taxes as a burden on the laboring community. Quite literally the citizen worked for his government fifteen out of sixteen hours and won for himself a mere subsistence. "The English career was one of debt, corruption and rottenness, closing with revolution." These were rather sophisticated versions of the copybook maxim that the prudent and thrifty man should keep out of debt and probably most Americans regarded governmental indebtedness as analogous to private indebtedness.

The Jeffersonian outlook prevailed, partly because of an ideological triumph and partly because of good fortune. The first factor explained in large measure governmental economy in expenditure. When he became President Jefferson inaugurated a policy of thriftiness in this matter and the limited functions permitted by opinion to the national government made continuance in later decades possible. Revenues poured in. Though excise taxes on domestic production were ultimately almost all abolished, duties, even under the low tariffs of the forties and fifties, provided the bulk of revenue and land sales, a device for living off capital, supplemented them. At times Congressional committees complained of the inconveniences of an overflowing treasury and the national debt in the mid-thirties was for all practical purposes momentarily extinguished. In only twenty-one years between 1791 and 1860 did the expenditures of the national government exceed its receipts. In general, these years were after the depressions of 1837 and 1857, or in times of war. Even purists of governmental economy admitted the latter occasions as justifications for an increase in deficits. They insisted on their removal in times of peace. For lesser governmental bodies the situation was
different. If they saw fit they could undertake expenditures forbidden to Washington. In so far as these departed from purely political undertakings, they have been described in an earlier connection.

From 1790 to 1815, in spite of the herculean attempts at economy by Jefferson and his admirers, the financial heritage of the Revolution and the Napoleonic Wars prevented the attainment of permanent debt reduction. The debt, $75,000,000 at the beginning, of the period, was $127,000,000 at its end. In proportion to the population and national income there had been some decline. In the next forty-five years, however, problems of size and management were so unimportant that the national debt probably had as little meaning for the economy as at any period in American history. Though its total in 1859 was $59,000,000, its amount per capita was only $1.93; as a percentage of the national income, the figure was 1.3. The change from the situation of Hamilton’s day was spectacular.

**The First Bank of the United States**

Debt management was interrelated with banking policy. Alexander Hamilton coupled his early state paper on the public credit with one on the establishment of a national bank. The statutes arising from both communications caused intense Congressional concern. Perhaps the bank was the more controversial issue. For the funding of the debt aroused no question of constitutionality. On the other hand, the keenest-eyed searcher of the Constitution could wrench from it no explicit authorization for chartering a national bank. Hamilton had to infer it from other provisions of the Constitution. For the administering of the specific powers given the central government a national bank was useful, convenient, and necessary; hence it was authorized. Aside from this juridical controversy, the issue was important because the forms and functions of banking were sure to direct the development of the American economy.

Americans, whether they approved of banking or not, recognized that it enlarged the circulating medium. Banks did so through creating and loaning credit. The visible evidence of this transaction might be checks drawn upon a sum loaned by the bank and entered upon its books as a deposit to the credit of the borrower. Actually, though this form of credit or circulation was understood by some in the United States before 1800, it was of later general use. By 1830 deposit liabilities of this sort constituted perhaps one half the loans of banks; by 1860 they were the dominant method of loaning. In the period as a whole between the Revolution and the Civil War, note issues were the predominant form of credit advance. Bank notes were more acceptable than checks. Printed in unit values rather than written for specific sums, they were passed from hand to hand and did not require frequent recourse
to the banks, and they could be used for most of the small payments which a primitive country required. Both notes as well as checks added to the amount of currency in circulation for it was not necessary for the bankers to keep a dollar in specie to redeem every outstanding dollar, since all notes were not presented simultaneously for redemption nor were all deposits at once drawn upon for their full amount.

Whether in the form of deposits or notes, banks loaned credit on various terms. Commercial banking, a comparative novelty in late eighteenth-century America, made its loans for short periods, perhaps sixty days, and did not renew them. Such loans financed the sale of crops, the movement of goods, and other short-time operations. They arose, it was said, from actual transactions in course of development. Banks run on these mercantile principles had to have a reserve of specie on hand to redeem their notes promptly; their loans coming due at frequent intervals made them highly liquid. But their usefulness in an agricultural and immature economy was limited to a small group. If banking could create and loan credit, why could it not with equal safety do so for those permanent improvements by which an enjoyable profit might be derived from the potential resources of the nation? In agriculture it could be used to underwrite the pioneer while he purchased his piece of land from the government, transported himself, his family, and his goods to the new farm, and grew his crops. The marketing of his products depended upon improved means of transportation, which involved heavy investments, whether they were turnpikes, canals, steamboats, or railroads. If manufacturing was to be undertaken it required funds for machinery and for plant. This creation of capital for investment might well be on behalf of the state when it, rather than private persons, undertook to finance enterprise.

Such loans were for long periods; they were made on “accommodation” paper, supposedly renewed again and again. In short the banks were to create capital for permanent investments. The value of the property—land and stock, for instance—was the security for the bank notes. Since banking thus “melted down” property into currency, specie reserve was hardly necessary. Unhappily the bank notes usually had to be redeemed when presented at the bank and the property, unlike gold and silver, was not there to be shoved across the counter or instantly converted into specie. This sort of banking, wanted by many Americans if they wanted any, was not commercial banking.

Banking operations could be carried on by individuals, singly or associated in partnerships. This was often called private banking. But the functions just described were so far-reaching and so influential that the government usually chartered corporations to assume them. The connection of these bodies with
the government gave them a public character. In the right to issue notes they had an attribute of sovereignty. Also they were supposed to come to the financial assistance or service of the government. Thus bank corporations were not private bodies free to carry out purely business purposes and to seek their own profit in their own fashion. Furthermore, from the government viewpoint it was frequently deemed useful to have banking functions in the hands of monopolies which the government might regulate or in which it might participate. On their part, many early theorists on commercial banking in this country felt more than one bank in a state or a community was a business impossibility. One would destroy the other by despoiling it of specie reserves through the ruthless presentation of notes for redemption. Whatever the reasoning, a bank charter was the grant of a privilege. Actually, those who governed the state often conferred such privileges upon favorites or at least the like-minded or party supporters. This charter grant yielded profits. Popular opinion was prone to regard them as fabulous.

So much is prelude, essential to an understanding of Hamilton's proposals for a national bank in 1790 and of the First Bank of the United States given a national charter the following year. Hamilton had precedents. One was the Bank of England, chartered and organized in 1694. Another, nearer home but patterned after the Bank of England, was the Bank of North America, incorporated in 1781 by the Continental Congress, given monopoly powers for the duration of the war, and brought into being to help solve the financial complexities of the Revolution. Though vicissitudes had compelled the bank to switch to a Pennsylvania charter, the election of its president to the presidency of the First Bank was a fitting evidence of genuine continuity between the two institutions.

Nonetheless, the First Bank was a far more powerful mechanism. Its charter guaranteed that the national government would incorporate no rival. It was to last for twenty years. The capital was placed at the immense figure of $10,000,000, one fourth of which was to be paid in specie and the remainder in the securities of the United States. In this fashion some owners of the public debt were given a banking privilege. Though the government was to subscribe $2,000,000, this was only to assure specie for the institution and to permit the government to participate in its profits. It did not involve government participation in management. In Hamilton's mind to secure "confidence" it was essential for the bank to "be under a private not a public direction—with the guidance of individual interest, not of public policy" which in certain circumstances would be "too much influenced by public necessity." Hamilton's pattern, the Bank of England, was, as late as 1945, a private bank in this sense; furthermore, from the context, it was clear that the inflationary experience of the Revolution, still fresh at hand, dictated an
institutions of this sort. The Secretary of the Treasury was the liaison between government and bank. The latter was to assist the former in its financial operations and also by creating credit through its circulating medium of notes and check to "enlarge the mass of industrious and commercial enterprise." The bank was to be run on mercantile principles. Hamilton gave the idea that it might loan on land a verbal pounding.

After warning that almost all simple descriptive terms for the bank are misleading, it can be called a public bank. It operated under national charter; it loaned money to the government; though not the sole depository, it held the majority of government deposits and moved such funds from place to place at its own expense; it aided the government in foreign exchange operations. It developed into a central or controlling bank. In addition to its main office in Philadelphia, the nation's capital in the nineties, it established eight branches in the chief commercial ports and oversaw their activities. It collected the largest specie reserve in the country and through this fund and its large capital managed to regulate the discount and note issues of private and state banks. As lender it came to the aid of the nation's banks in emergency. Nevertheless, it aroused antagonisms. Its monopoly frightened democrats; its Federalist character and personnel chilled some political rivals; its "paper circulation" antagonized those who believed solely in the precious metals; personal distastes added bitterness to the struggle. In 1811 by the narrowest of majorities, Congress refused an extension of the charter. For an interval of five years private banks and those chartered by the states constituted the system of the nation.

The Monster of Chestnut Street

From the moment the national government disestablished the First Bank, powerful businessmen and politicians embarked upon a campaign for the charter of a successor. Whether they would have succeeded or not without the War of 1812 is doubtful, for during the second conflict with Great Britain there was a repetition of the financial disorders which had occurred during the first. The banks outside New England had so expanded their note issue and were so drained of coin that they had announced their inability to redeem their obligations in specie. Again the government was in financial difficulties. The treasury notes it issued, though they bore interest, were receivable for government dues, and were to be redeemed at a later period, became toward the end of the war perilously like continental currency. The administration sold loans at high rates of interest or at values well below par. In an orderly fashion a national bank might serve as escape from this confusion and bankruptcy. More particularly the holders of government securities would see the latter gain in value if a banking privilege was added to
them. The Second Bank of the United States—the BUS in the alphabetical
verbiage of the day—was chartered in 1816.

There were similarities to its predecessor. Again there was the mo-
monopoly privilege of twenty years; the subscriptions of private investors were
to be a quarter in specie and the remainder in government securities; to the
enlarged capital of $35,000,000 the government was to subscribe a fifth. There
were also contrasts. So valuable was the banking privilege esteemed the
corporation was to pay a bonus of $1,500,000 to the national government for
it. The precise character of the government subscription—cash or specie—
was not fixed. More significantly, a fifth of the directors, of whom there were
twenty-five, were to be appointed by the President of the United States with
the consent of the Senate. As it turned out two of the bank’s three presidents
were chosen from this panel of government appointees. One of the latter,
Nicholas Biddle, ruled the institution from 1823 to 1836. In short, the bank,
even more than its predecessor, was a public institution.

As a central or controlling bank it was better equipped than the First had
been. Its capital was larger, it operated by 1830 twenty-eight branches, and
it was the sole depository of government funds. Furthermore, Nicholas Bidd-
dle, its president, was one of the great bankers of his generation and a pio-
neer, albeit partly an unconscious one, in the art of central banking. Scion of
a distinguished Pennsylvania family, Princeton graduate, litterateur, he was
essentially the scholar of literature, law, and economics. By dealing in do-
mestic and foreign exchange with considerable ingenuity, he kept the notes
of his bank at uniform value throughout the nation. They constituted a
quarter of the total circulation. By this superior performance he gave exam-
ple to the other banks. He also had a weapon of regulation in that the re-
ceivers of customs and the land offices were now permitted to take state bank
notes from those who owed the government and these notes ultimately were
deposited with the BUS. The state banks were thus debtors of the central
bank. Biddle could press for payment either in specie or notes of the Second
Bank or bills of exchange. He could thus influence in considerable measure
the loan policy and note issue of other banks.

A central bank should be able to bring about an expansion or contraction
of credit. Through the issue and contraction of notes Biddle attempted to do
so. In the absence of the lavish statistical data now available for policy deter-
mination in this matter, he used as indices the condition of foreign exchange,
the movement of specie in America’s foreign commerce, and the amount
of specie in his vaults. He kept a reserve of one dollar for each three dollars
of notes. He failed to realize he should have kept a reserve for deposits, the
coming shape of credit, as well. To the distress of the bank’s stockholders,
he tried to run the institution not for maximum profits but for the benefit
of the economy. At least such were the features of his administration until, badgered and bewildered by the attacks upon the bank and himself in a political struggle for which he was ill-fitted, he deviated from his own standards and developed an illusion of personal indispensability.

For the existence and operations of the Second Bank heaped up a mountain of popular hostility. On the one hand there were those skeptical of the morality or expediency of all banking operations. Writing in 1811, John Adams had declared, "Every dollar of a bank bill that is issued beyond the quantity of gold and silver in the vaults represents nothing, and is therefore a cheat upon somebody." John Adams was certainly no demagogue, but the title was applied profusely to Thomas Hart Benton, "Old Bullion," and Andrew Jackson who informed Biddle, "I do not dislike your Bank any more than all banks. But ever since I read the history of the South Sea Bubble I have been afraid of banks." There were variants on the arguments. Bank notes could not possibly provide a stable or uniform currency. This "paper system" led to speculation and overexpansion and since these privileges were given to aristocrats, they grew richer at the expense of the producer. It was charged that the Bank of the United States never raised a pumpkin. This hard-money philosophy appealed to agrarian interests both East and West. That the national bank was a monopoly made it all the worse. Benton expressed this discontent as he roared in the Senate: "All the flourishing cities of the West are mortgaged to this money power. They may be devoured by it at any moment. They are in the jaws of the Monster! A lump of butter in the mouth of a dog! One gulp, one swallow, and all is gone." Nor did "paper" aristocrats and "monopoly" appeal to artisans and laborers in eastern centers. At the other extreme were those who disliked the Bank because it checked their zeal for expansion. These did not want "no bank," they wanted more banks or different banks, ones that would lend more generously on the prosperity of the future. Spokesmen of this sort were not farmers, used to ancestral ways, but merchants who had not secured bank charters for themselves, bankers like those in New York City eager to wrest financial dominion away from Philadelphia, and a new class of businessmen and speculators, East and West, on the make. These interests preferred state banking systems and to their support they could summon the provincial loyalty of states rights. For Biddle's bank not only controlled the state banks but it competed with them.

All this hostility took a host of forms. By its constitution Illinois, for instance, forbade any banks but state banks within its borders; other states attempted exclusion by statute. But the favorite method of discrimination was heavy taxation upon "foreign" banks. Maryland levied a tax of $15,000 upon the Baltimore Branch of the BUS, Ohio and Tennessee taxed each
branch $50,000, and Kentucky was the most extreme with a tax of $60,000. After some preliminary diffidence on the part of the Bank, cases involving these taxes were brought before the Supreme Court, and that body, presided over by John Marshall, in two famous decisions—McCulloch v. Maryland (1819) and Osborn v. The Bank of the United States (1824)—swept aside as unconstitutional these barriers which the states had attempted to erect. When Andrew Jackson, however, became President of the United States by the revolution of 1828, popular feeling had at last a channel of expression. The whole bank issue became inextricably entangled with party and personal politics. Jackson announced that he would not approve of the recharter of the Bank and carried his point in the ensuing bank war. In 1836 the Second Bank of the United States ceased to exist. Eight years later Biddle died, discredited by the failure of the bank for which he had secured a Pennsylvania charter. His foes thought he should have died in the penitentiary.

Finally, in 1846, by enacting a bill for an independent treasury the nation formally withdrew from central banking. The decision thus taken was not reversed until the Federal Reserve Act of 1913. In the large sense these early and promising steps toward a modern system were discarded because they were premature. Our polity was federal; our economy was agricultural. As soon expect from this setting a successful central bank, as anticipate from the poets of the young Republic an epic for a nation that as yet had no history.

The rest is postscript. As the Bank died, the Federal government put its funds in banks chartered by the states. Some were founded to secure them. All banks, whether depositories or merely relieved from supervision, enlarged their activities. Credit expansion and speculation were rampant. This result of their own policy dismayed the hard-money men. Benton lamented, "I did not join in putting down the Bank of the United States to put up a wilderness of local banks." It took some time to find a solution for these dilemmas and to induce the nation to accept it. The answer, as we have already seen, was the subtreasury system or Independent Treasury. The government was to build its own depositories and store its funds in them. Furthermore, all the receipts of the government from duties, taxes, sales of land and other sources were to be paid in gold or silver or in treasury notes issued under the authority of the United States. All outgoing payments were to be in specie. Though banks might fail, government finance or government hoarding would be soundly based on specie. The national government was, in short, to divorce itself from banking. John Quincy Adams wrote incredulously, "A Divorce of Bank and State! Why, a divorce of Trade and Shipping would be as wise to carry on the business of a merchant. A Divorce of Army and Fire-Arms, in the face of an invading enemy, a divorce of Law
and a Bench of Judges to carry into execution the Statutes of the Land, would be as reasonable!” Nonetheless, this was the policy of Jackson, his supporters, and followers. Enacted first in 1840, it was repealed a year later. The statute of 1846, reëstablishing the system, endured.

But as Adams and others had foreseen, a complete separation of the national government from banking was impossible. Individuals, in order to obtain specie for the payments to the government, would present notes for redemption to the banks; the government competed with the banks in the accumulation of specie, which ultimately underlay the credit granted to private enterprise. Of course partisans of hard money rejoiced. But a sympathetic Secretary of the Treasury pointed out that the Independent Treasury might “exercise a fatal control over the currency, the banks, and the trade of the country, and will do so whenever the revenue [of the government] shall greatly exceed the expenditure.” But the small scale of government finance, the gold discoveries in California, and the occasional purchase of government securities by the Treasury, restoring specie to circulation, prevented complications before the Civil War.

**Varieties of State Banking**

By the end of 1791 when the First Bank of the United States obtained its charter, there were six banks in the country; in 1811, when it went out of existence, there were eighty-eight. In 1816 when the Second Bank was incorporated, there were 246 banks in the nation; twenty years later when Jackson triumphed 713. By 1860 the number was 1,562. Such figures demonstrate the hastening multiplication of banks once the restraining hand of a national institution was removed. They reflect much more; the impact of an expanding economy upon banking and the changes in state banking policy. For in the period between 1783 and 1862, the year of the National Bank Act, the spectacular history of the First and Second Bank was an interlude. State banking policy and banks chartered by the states, year in and year out, provided the enduring banking structure.

As the eastern states, the first to do so, laid down the lines of their banking systems in the late eighteenth century, they were still under the spell of monopoly. Each one proceeded to charter a bank of considerable magnitude in its metropolis. The Bank of North America in Philadelphia was the first instance. Within a decade the chief seaport cities had similar institutions. Though explicit grants of monopoly were not made, their titles, Bank of New York, The Massachusetts Bank at Boston, the Bank of Maryland at Baltimore, and the provisions in some instances that these should be the depository of state funds, reveal an implicit assumption of monopoly. The system, however, soon disintegrated. Even in the chief cities merchants, who
could not get credit or who hoped to cut in on the profits of the banking business, and groups in the community—small storekeepers, artisans, and mechanics—not served by mercantile banking institutions, sought and obtained charters for rival institutions. Small seaports set up a clamor for banks of their own; interior towns voiced a demand for “country banks” as they were later called. Probably by 1850 the idea of state, regional, or even community monopoly was well on the way to disintegration.

It was soon reborn in the Northwest. In their constitutions Indiana, Illinois and Missouri explicitly provided for a state monopoly of banking; their legislatures could charter no others. The recent charter of the BUS was the cogent explanation and example for this development. In the thirties legislation gave flesh to these constitutional provisions. Each state had a central bank with branches or offices. Those that confined themselves to short-term paper, as in Illinois and Indiana, survived into the fifties. Then they succumbed to the drive for a free incorporation. In the United States twenty years was apparently the normal life expectancy of monopoly privileges.

Whether the banking privilege was a monopoly or not, it was a nearly universal practice for the state to participate in the banking business by investing in bank stock. In the national field, the charter of the First Bank set the precedent. Apparently its example inspired others, for soon in Massachusetts and Pennsylvania the state governments were insisting that existing banks make room for a government stockholding or that new ones permit it from the beginning. The example spread north and south along the coastline. The chief motive was to participate in a profitable enterprise and through bank dividends reduce the state taxes. Soon it was realized that the privileges were so valuable that banks would pay bonuses to the state for renewals and alterations of old charters or for the granting of new ones. Biddle’s incorporation of the Bank of the United States was won from Pennsylvania by a bonus of $4,500,000, temporary loans to the state of $1,000,000 and a permanent loan of $6,000,000. Such windfalls could be used for specific or general purposes. To some extent, state investment was also an avenue by which the state could have a voice, through the choice of directors, in the conduct of the corporation. In the East such representation generally turned out to be ineffective.

In the East the sale of state securities was not essential to getting banks underway. Local or European capital was available, and the states eventually made their investments from state revenues. On the other hand, the banks in the western states could not rely upon private investors nor the states upon sufficient income. State loans were essential. In the monopoly state systems of the Northwest, the states provided at least half of the banks’ capital and the state appointed the president and at least half the directors. Though the
hope of making money from an investment operated here as in the East, the
ambition to promote the welfare of the state and to control the business
methods of the bank was just as significant. In the lower South such insti-
tutions took the form of property banks or plantation banks. Starting in
Louisiana, in the twenties they spread by contagion to the regions where
plantations, slaves, and the growing of staples promised new wealth if expan-
sion could only be financed. These banks were mercantile ones, issuing notes
and loaning them on current transactions. They were also mortgage banks.
The private stockholders subscribed to them by tendering mortgages on
their lands; they thus secured the right to borrow from the bank up to a
certain percentage of their mortgaged property. When the bonds based on
these borrowings and issued by the banks failed to secure a market, the state
was induced to give its own bonds to the bank for sale or guarantee the bank
loans. These state securities were generally sold abroad. Some of these insti-
tutions were mammoths. The Union Bank of Mississippi, for instance, origi-
nally had a capital of $15,500,000 to be secured by the sale of bonds issued by
the state. This process of state investment in mixed corporations, partly state
and partly private, was but another evidence that banking corporations were
business enterprises saturated with a public interest.

The cessation of state investment was gradual and seems to have been
frequently dictated by sheer economic necessity. Some states had either
ceased the practice or liquidated their holdings before the panic of 1837. That
cataclysm had shattering repercussions. To secure funds to meet its obliga-
tions, often incurred for other purposes than banking, Pennsylvania sold its
bank stocks in 1843. Over the land banks of the South hovered a universal
chaos. Planters who were borrowers could not meet their payments of inter-
est and amortization: the states could not pay on their securities. Four
went bankrupt. Three met their obligations by an execution against property
and heavy taxation. Mississippi elected a different path. At first the state
legislature announced that to repudiate its bonds was “a calumny upon the
justice, honor, and dignity of the State.” But by 1842 state dignity and pain-
ful necessity had been reconciled by the discovery that the whole banking
transaction had been contrary to the state constitution. A committee of the
legislature took high ground. “The low and grovelling consideration of
dollars and cents has nothing to do with the merits of the question... Higher
and holier motives than mere pecuniary considerations actuate them.
They have determined that they never will submit to an invasion of their
Constitution by either foreign or domestic foes.” In other but more realistic
words, the purchasers of the state’s securities would not get back their
money. In the fifties, as we have seen, the states in the Northwest likewise
abandoned government financing of banks.
Meanwhile a conjunction of events in the thirties set in train a movement destined further to divorce the state governments from banking enterprises. One element in the situation was the ferment of the Jacksonian era with its dread of monopoly, its suspicion of private or "soulless" corporations, and its hostility to banks. The resulting policies, it should be repeated, were not always those that the presidential godfather of the era, Andrew Jackson, would have approved. In any case the current of democratic opinion now demanded that banking become a "business," that it be "free," that it be opened to any individual or association of individuals—for the hated word "corporation" was cunningly avoided—who conformed to certain general stipulations. In addition to this argument for equal rights, the disestablishment of the BUS and the depression of 1837 seemed to justify a series of new banks to redress the absence of currency. Fundamental all along was the desire of Americans to invest in a presumed profitable business like banking and the widespread American craving for capital creation through banking operations. These varied forces came to a head simultaneously in Michigan and New York. The first passed a free banking law in 1837, the latter in 1838. Since Michigan was a frontier community just emerging from territorial status, New York's measure was more important. By 1861 free banking laws had spread to all portions of the Union.

The technical details established by the new system were of importance. Banks were to deposit with a state official public securities, state or national, which might be purchased with a small down payment, and mortgages. They were to receive in return the bank notes whose issue would constitute their circulation. With a shout promoters fell upon these devices. Banks multiplied; note issues soared. Perhaps the West was the more extravagant. According to the free banking plan, if the notes were irredeemable, the state officials could sell the deposited securities. But the bank would be out of business. So whenever they could the bankers disappeared into the wilderness or did business on an Indian reservation or set up shop at some forgotten crossroads—all localities which noteholders bent on redemption would have difficulty in finding. Even if the office were unearthed, it would open only a day or so a week or a few hours a day. Professional misdirectors directed inquirers in the wrong direction. Requirements for specie reserves were met by mobile ones whisked about from institution to institution just in advance of the examiners. This was the heyday of the wild-cat bank. Fraud, inexperience, laxness led to a flood of failures. Later regulatory legislation did something to remedy defects. The idea of free banking persisted. The corporation or association became less the agency of the state and more the weapon of the individual. As one legislator complained of free banking: "It was founded on the fallacious assumption that the business of banking should be
conducted solely with a view to private gain and in total disregard of the public interests."

At the same time the fundamentalist wing, the hard-money Jacksonians, were sure that the correct solution was an absolute prohibition of banks. Then there would be neither corporations nor bank notes. As arguments against both, a theoretical preference for a bullion currency was less impressive than actual experience with the bank failures, specie suspensions, and the worthless notes of the late thirties and forties. Where they were powerful enough to carry out their program without compromise, for example in some western states, these purists proceeded in state constitutions to forbid the incorporation of banks. Texas took the lead in 1845; four others followed suit; Oregon closed the trend in 1857. In spite of the absolutism of these arrangements, private banks or companies chartered for non-banking purposes carried on a banking business in one fashion or another and the notes of banks in other jurisdictions poured across the boundaries. In this respect, as in others, prohibition did not prohibit.

Banking Regulation

Only incidentally has this description of the form of the banking system and of the direct participation of the state in it dealt with banking regulation. Except where solons cleaned the slate by dispensing with banking altogether, the former process was continuous and unquestioned as to right. Individual charters and general legislation were alike the means of its exercise. As in the case of all corporations legislative ingenuity coped as best it might with qualifications of bank officers, details of capitalization, and the powers and duties of stockholders. There were limitations on interest rates and directives to banks run on mercantile principles that they must make a portion of their loans to farmers. But a primary concern in every jurisdiction was how to make banks safe or, in a narrower sense, how to assure their ability to meet their obligations to depositors and note holders. Conceivably merchants, brokers, and other men of wealth might through their position be well enough informed to avoid such losses; the worker, artisan, and farmer had neither the opportunity of forming a judgment of the worth of the bank notes he received for wages or produce nor the independent position enabling him to refuse the unsound ones. Every bank suspension, it was universally observed, bore with peculiar hardship upon the poor and industrious classes. Here and there, in partial and diffident fashion, legislation frowned upon "accommodation" paper or tried to arrive at some safe ratio between the amount of circulation and of capitalization.

In 1829 New York, again a banking pioneer, established a safety fund system by which all the banks became jointly liable for the debts of an in-
solvent one. By installments each was to pay into a common bank fund 3 per cent of its capital; this accumulation was a sort of joint insurance. By the same act New York inaugurated a thorough and regular inspection of the banks by a Board of Bank Commissioners. In this state as elsewhere there had been previously requirements for reports and occasions for examination. New York introduced system and expertness. This was the greater contribution of the act of 1829, for the safety fund neither worked satisfactorily nor inspired wide imitation. Bank commissioners became commonplace. Somewhat more slowly, a few states realized the necessity of providing in the banks a specie reserve for notes and deposits, even though such requirements hampered the expansion of the currency for which so many Americans thirsted. Chastened by the banking collapse of the late thirties, Louisiana in 1842 required that the cash liabilities of its banks "be represented by one-third of the amount of such responsibilities in specie and at least two-thirds in satisfactory paper, payable in full at maturity and within ninety days." Since New Orleans was its metropolis, the state was in part a commercial one and could undertake this experiment. Later, particularly after the closings and losses in the panic of 1857, a few other states groped toward similar solutions.

Voluntary Banking Systems

When Congress in 1846 finally decided to build a wall between bank and national government, a national banking system by statute was, of course, impossible. No state, whatever it might do for itself, could erect a substitute and common action between all states was currently out of the question. Nonetheless, commercial transactions were on a regional and national basis. Agricultural materials moved toward the populous centers of the East and of Europe. Manufactured articles were in turn purchased there and shipped back. Inevitably these interchanges created at Boston, New York, Philadelphia, Baltimore, and New Orleans—to mention no others—a series of trading centers. Buyers and sellers, borrowers and lenders met there. Their banks and other financial institutions had great areas tributary to them. Consequently the commercial habits and practices of numberless individuals and institutions built, if not a national, at least regional banking systems. These were de facto rather than de jure.

New England had such a system. Early in the nineteenth century Boston had a dual system of paper currency. The city banks furnished notes which circulated at par because they could be redeemed easily; the country banks furnished "foreign money" which circulated at a discount because it could not. The city banks were distressed because their own note issues were restricted by this competition; the Boston merchants were angered because
they had to shoulder the discounts on the "foreign money" they secured in the course of trade. After a considerable period of trial and error, the Suffolk Bank by 1824 emerged as a redemption agency for most New England bank notes. If any bank kept with the Suffolk a permanent fixed deposit and a redemption fund, the Suffolk would not call upon its members to redeem their notes in specie, but would accept notes of any other sound New England bank. If any bank would not consent to this arrangement, its notes were presented regularly and insistently for redemption. So successful was this clearing-house arrangement that by 1857 five hundred banks were members of the system and New England enjoyed a bank-note currency which, however various its origins, circulated everywhere at a common value. So profitable was the procedure for the Suffolk Bank that in the late fifties a rival was established. The Civil War and national banking legislation made both unnecessary.

In New York strenuous efforts, both voluntary and legislative, never achieved the elimination of discounts on the notes of country banks, even those within New York State. Nevertheless, since New York City became the great commercial emporium of the nation, there was a steady flow of money toward it and the resulting rate of domestic exchange was usually in its favor. Outside banks could make profits by selling exchange upon New York; in order to follow this practice they kept balances in the New York banks. Thus the funds flowed into the city's banks from banks in New York and from neighboring states, from institutions in the West and in the South. State legislators, often grumbling, authorized these balances, if they were in cash, to be counted as part of the reserve of the local banks. In 1860 bankers' balances in New York were set at $25,000,000, heavily concentrated in a few city banks. Even before the Civil War the latter were in the habit of putting these out at loans on a demand basis, largely upon security collateral.

These arrangements join with others set down in this and the previous chapter to reveal the triumph of certain conceptions in the field of government finance and banking. In view of the many jurisdictions and institutions entrusted with policy and act, that triumph could be neither uniform nor clear cut. Ideas discarded in one place were picked up in another; trends in one direction were countered elsewhere by trends in another. On the whole, however, the idea of monopoly gave way to that of competition. Governmental enterprise gave way to the enterprise of individuals. The state regulated but it ceased to participate.
CHAPTER IX

Markets and Machines

Handicaps to American Manufacturing

As far as the frailty and folly of planners and administrators and the hard facts of reality would allow, the mercantilist philosophy of Great Britain had shaped the economic fate of the colonies. Independence freed the United States from this thralldom. But it did not diminish the attempt to direct our economic development in accordance with some design; rather, by opening a free field for American vision and energy, it stimulated activity in the realm of economic planning. Within fifteen years rival thinkers had formulated programs for the new America. One group led by Thomas Jefferson looked with complacency upon the continued existence of an agricultural civilization and expressed a distaste for commerce and manufacturing. Another, for whom Alexander Hamilton became spokesman, advocated a government policy to stimulate trade and industry. The foundation of the First Bank of the United States, the funding of the national and state debts, the construction of internal improvements at national expense—all these were means of implementing their objectives. But the establishment of manufacturing required more than this. In 1791 Hamilton determined to instruct the nation in the advantages of the new order. His famous state paper, “Report on the Subject of Manufactures,” undertook the task.

Hamilton had to admit that the dominant occupation of the country was agriculture, and that the farming population supplied its wants for non-agricultural commodities through foreign trade and the rudimentary methods of manufacture which had prevailed in colonial times. Such an exclusive preoccupation with the soil Hamilton lamented, and he marshaled his arguments for an admixture of manufacturing and agriculture as a basis for national economy. The development of the former would make possible a more efficient division of labor; it would give “additional employment to classes of the community not ordinarily engaged in the business”; it would promote immigration from foreign countries; it would give “greater scope for the diversity of talents and dispositions, which discriminate men from
each other”; and finally it would furnish a more certain and steady domestic market for the products of agriculture. This last argument, for quite obvious reasons, received a detailed and persuasive statement in Hamilton’s treatment of the subject.

One barrier to the nation’s entering this better state was the popular impression that “agriculture is the most beneficial and productive object of human industry.” This delusion, for Hamilton thought it such, the report in part was designed to remove. The report, however, had to face other barriers less easily overcome. Such were the scarcity of skilled labor and the difficulty of obtaining even unskilled labor in view of the attractions offered by cheap and abundant agricultural land; the customary investment of the country’s capital in agriculture, land speculation, and commerce rather than manufacturing; and, as Hamilton phrased it, “the strong influence of habit and the spirit of imitation; the fear of want of success in untried enterprises; the intrinsic difficulties incident to first essays toward a competition with those who have previously attained to perfection in the business attempted.”

While realizing many of these handicaps, the report pointed out detours around them. The lack of a labor force would be obviated by the employment of women and children and by the arrival of immigrants induced to come to the United States by the industrial opportunities. The higher wages paid in this country would have a makeweight in the cheapness of raw materials and a nearness to markets. The scarcity of capital would be overcome by the establishment of banks in this country, by the investment of funds from abroad, and by the funding of the public debt, a procedure which, he hoped, would create a class in this country with money to invest. Although his statements on the question are not emphatic, Hamilton realized the importance for manufacturing of the extent of the market and, indeed, directed his attention to the

... facilitating of the transportation of commodities.... There is perhaps, scarcely anything which has been better calculated to assist the manufacturers of Great Britain than the melioration of the public roads of the kingdom, and the great progress which has been of late made in opening canals.

It was easy enough in a state paper to prescribe corrective exercises for the puny physique of American manufacturing. It was another thing to see if they worked in practice. Part of Hamilton’s genius as a statesman consisted in his ability to wed actual means to the attainment of ideal ends. Manufacturing was no exception. Two weeks before the submission of his report to Congress, the legislature of New Jersey incorporated “The Society for Establishing Useful Manufactures,” more conveniently known then as the “S.U.M.” With a projected capital of $1,000,000, the concern proposed to
manufacture an array of products from paper to brass wire. Whoever actually originated the Society, Hamilton sponsored it with all the ardency of his temperament. Although a large share of the capital was contributed, a mill site was purchased by the falls of the Passaic, now Paterson, a town was laid out, and factories with machinery were built, within five years the S.U.M. was a failure. The real cause for this disappointment was the attempt to tilt against the fundamental economic conditions of a new and an agricultural nation. Labor of a sort was secured from immigrants and women and children, but the first were often impostors or ignoramuses. Wages were higher than those paid by foreign employers. The subscribers of capital had neither the power to stay through times of adversity nor the knowledge how to direct such a business. It was not possible to secure engineering talent for constructing so vast an enterprise or managerial talent to run it. In a larger sense, an observation of an anonymous English writer, penned years before, applied alike to Hamilton's report and the practical effort to give it embodiment. "But it is not enough that a few, or even a greater number of people, understand manufactures; the spirit of manufacturing must become the general spirit of the nation, and be incorporated, as it were, into their very essence. Knowledge may be soon acquired; but it requires a long time before the personal, and still longer time before national habits are formed."

Since the national system of production could not be changed by a stroke of the pen or the successful example of an overwhelming corporation, a slow historical evolution rather than a startling revolution outwitted the obstacles which Hamilton had enumerated. Capital was accumulated for manufacturing purposes and a labor force was recruited and disciplined—how, will be discussed later. Some national assistance to manufacturing was eventually furnished by a protective tariff though the effect of such measures, as we have seen, was limited to certain times and certain industries. But the chief reason for the industrial transformation of the nation was the growth and character of the American market. The growth was effected first by the improvements in the means of transportation. As long as the carriage of goods was slow and costly, it was not feasible to erect large factories at points where power, materials, and laborers were available, for the resulting greater product could not be profitably distributed and sold. By 1860 this handicap had largely disappeared, except on the continually recurring frontier or in back eddies of settlement left untouched by commerce. The new avenues of transportation also brought to the factory a market not only larger territorially but greater in terms of consuming public. The population of the nation increased roughly from 4,000,000 in 1790 to 31,443,000 in 1860. The consuming tastes of these millions were to an unusual degree standardized. Advertising, a modern development, did not create this condition. Rather it was
the result of settling a continent under democratic institutions. In this new
country differences of taste and artistry disintegrated before the common
necessity of a common task. American life may have produced “characters”;
it seldom created “individuals” whose standards of use were trained or un-
usual. The American democracy, equalitarian in consumption needs, was a
market whose requirements were met by the large-scale production of stand-
ardized products. The factory fitted such a people.

THE INDUSTRIAL REVOLUTION IN ENGLAND

The Americans, however, neither invented the factory nor initiated that
industrial revolution which is as inescapable in a college course as Aristotle
or the amoeba. Unhappily while the latter two are definable, the industrial
revolution is so vague that many economic historians have denied its exis-
tence. In spite of reservations, it is clear that during the second half of the
eighteenth century in England a series of mechanical inventions altered the
methods of production—notably of textiles and of the metals—and that a
new source of power had been discovered in the steam engine. The machines
were grouped in factories which employed a considerable number of work-
ers. It is clear also that by the 1830’s observers of the contemporary scene
were definitely conscious that an important transformation of industry had
taken place. More is gained than is lost by accepting the conventional
idea that the industrial revolution consisted of the changes in production
wrought in the eighty years from 1750 to 1830. Two provisos must, however,
be made. In the first place, the swiftness and extensiveness of the transfor-
mation in industry seems revolutionary only when this period is contrasted
with the years before it. The heightened tempo of industrial change begun
in the eighteenth century has continued and increased ever since. In the
second place, the ideas underlying the inventions can easily be traced into an
earlier period, and the factory and even capitalism anticipated the date 1750.
But every period has to have its antecedents.

England in the late eighteenth century was ready for the industrial revo-
lution. Methods of organizing capital for commerce and industry had been
forged by her banking system and the joint-stock company; England’s in-
ternal commerce, unhampered by restrictions, and her foreign commerce
crossing the seven seas reached a market extensive enough to absorb large
quantities of manufactured articles; her government and upper class did not
despise “trade” but were favorable to it; her natural resources of coal and
iron were so abundant and so conveniently placed that they became the basis
of her transformed industry. Finally, the spirit of the century was favorable
to mechanical invention. The old interest in religion and politics had relaxed.
In its place had come science. The inventions of the industrial revolution
were not, therefore, solely the achievements of individuals. To be sure, the completed machine often bore the name of an inventor. But this person was usually the one who contributed a single vital element to convert the failures of his predecessors into success, or the one who made commercially successful the workable ideas of others, or the one who arrived first with the solution of a problem upon which many were working simultaneously. Invention was not so much the work of a few heroic inventors as it was a social process. An examination of the production changes in textiles, iron metallurgy, and power will illustrate this as well as other features of the industrial revolution.

The central processes in textile manufacturing were spinning and weaving. The former was the last step in a series of manipulations which cleaned, straightened, and compacted the animal or vegetable fibers into yarn. Weaving made the product into cloth by passing back and forth through the warp, the yarns that ran the length of the cloth, the woof or filler which ran across it. By 1760 in the British cotton industry the weavers' demands for yarn could not be met by the spinners, for the former had generally adopted Kay's flying shuttle, a manual device which speeded weaving operations. The discrepancy between spinning and weaving was met by the perfection of three spinning machines. The first of these was the water frame, patented in 1769. This machine fed the roving—a loosely twisted strand of fibers—through a series of rollers operating at different rates of speed, and then wound it upon vertical spindles. In this fashion the fiber was drawn out and twisted in a continuous operation. This water frame is indissolubly connected with Richard Arkwright, a barber. His contributions, however, were not those of an inventor. The models and skills of others were responsible for the technical details. But he did supply the ability to borrow money, to organize textile production with water frames and other machines on a factory basis, and to accumulate a fortune and a title.

The water frame, however, spun only coarse yarns. Hargreaves* spinning jenny, patented in 1770, made a finer product. This machine was nothing but a multiplied spinning wheel in which at first eight spindles—later as many as one hundred—were set in motion by the operation of a single wheel. The spindles were placed at one end of the frame of the jenny. As these spindles were rotated, the roving was fed to them from a clasp bar which was moved by hand first away from the spindles and then toward them. This intermittent process, as distinguished from the continuous process of the water frame, drew out the fibers as they were twisted. This gave a finer yarn of greater strength. Nevertheless, even the self-acting jenny was a comparatively slow apparatus.

In 1779 Samuel Crompton, a jenny spinner, brought together features of
the jenny and the frame into one machine which, because of this hybrid character, bore the name of the mule. Rollers were substituted for the clasp bar of the jenny as a means of paying out the roving; the spindles, now set on a movable frame, moved away from the rollers, stretching the roving, and then wound up this yarn as they returned to their original position. The operation of the mule required manual skill at first, but slowly became automatic. It was a remarkable instrument. A few years after its invention it produced yarns much finer than those made by the most skilled hand workers of India.

Meanwhile a friend of the Rev. Edmund Cartwright had called to that divine’s attention the disproportion between spinning and weaving. The former processes had been so transformed by invention that a power loom was needed. Cartwright analyzed the motions involved in weaving and then sought to accomplish them automatically by the application of power. By 1787 he had a machine which he could patent. Its operation, however, was halting and difficult. The further improvement of the power loom proceeded slowly. By 1802 an attachment was devised for stiffening the warp to prevent the frequent breaking of the yarn. But it was not until 1822 that a compact, strong, practical loom was placed upon the market by Sharp and Roberts, machine builders. The power-weaving process never achieved so great a relative superiority to the old methods as had the inventions in spinning. Machine spinning was a new process, machine weaving simply applied power to manual operations.

Meanwhile inventions in the metallurgical industries revolutionized iron-making. Before their advent the iron industry of Great Britain had depended upon charcoal. This material was mixed with the iron ore in the furnace or smelting process which produced pig iron; it was employed even more lavishly in the refining process or forge where iron was reheated again and again and worked under a hammer to remove impurities, reduce the carbon content, change the crystalline to a fibrous structure, and finally shape the mass into bars and plates. The use of charcoal decimated the English forests. The Darbys, a family of Quakers, partially emancipated the iron industry from this dangerous situation. As early as 1709, the first Abraham Darby successfully smelted iron with coke. The novelty of his invention, allowing the use of charred coal rather than charred wood, probably consisted in the use of a stronger and more continuous blast which brought about a complete fusion of the new fuel and the iron. Cast iron made from these “Pit Coal pigs,” was thus so cheapened that cast-iron products supplanted to some extent those made of wood, brass, and even wrought iron. Charcoal was still necessary for the smelting of such iron as was later refined into high-grade bar, and all refining operations at the forges used charcoal
prodigally. An army of inventions and patents in the middle of the eighteenth century attests to the demand for improved methods.

The inventions which finally displaced charcoal are, nevertheless, deservedly connected with the name of Henry Cort. Interested for years in improved methods of iron-making, he took out patents in 1783 and 1784 for puddling and rolling. In the puddling process a reverberatory furnace was used. Heat produced by coal in one compartment passed over a wall and boiled the pig iron on the other side. From time to time this mass was stirred by a workman. The process freed the iron of sulphur and other impurities. After the puddled mass had been hammered into half-blooms, it was passed through a series of rollers. In this rolling process, Cort's second invention, "the force of the rollers consolidates the metallic parts into bar iron, and the dross is squeezed out and falls under the rollers." Cort was justifiably called the "Samuel Crompton of the Iron Industry." His coördination of various fragmentary processes made it possible to produce iron rapidly, cheaply, and without charcoal for every purpose except the then comparatively unimportant process of steel-making.

The history of the steam engine, or "fire engine," is closely interrelated both as cause and effect with the history of coal-mining and of iron-making in Great Britain. The deepening shafts of coal mines required some effective power to work the pumps which rid them of water. The first practical steam engines in England were devised to perform this operation. In 1698 an Englishman, Thomas Savery, patented "The Miner's Friend or an engine to raise water by fire." This engine was improved by Thomas Newcomen, who built a cylinder in which a piston was moved to and fro. The cylinder was open-headed; the piston was raised by the weights and pulleys attached to a lever beam; it was sucked down into the cylinder by a vacuum created by injecting steam into the cylinder and then condensing the steam with a jet of cold water. This "atmospheric" engine eventually became automatic, but it moved slowly and wasted heat and energy in the cooling and heating of the cylinder.

James Watt, to a degree unusual in the history of invention, was the inventor of the steam engine. Trained as an instrument maker, he practiced his craft at the University of Glasgow. Into his hands there came a model of the Newcomen engine for repair. He was impressed by its wastefulness. In 1764 he conceived "that as steam was an elastic body it would rush into a vacuum, and if a connection were made between the cylinder and an exhausting vessel it would rush into it and might be condensed without cooling the cylinder." To this original conception of a separate condenser he later added the notion of placing a cap on the top of the cylinder, introducing steam alternately above and below the piston, and surrounding the cylinder
with a steam jacket. This engine was not only less wasteful than its predecessors, it was more powerful. It was a new machine. Not until 1769 did Watt take out a patent for his engine, and several years passed after that before it became a commercial success. Small-scale models performed admirably, but the iron and machine industries were not enough advanced to turn out a large engine with parts of the necessary precision. Matthew Boulton, a manufacturer, and John Wilkinson, a great ironmaster, helped in overcoming these difficulties, and the engine came into its own. It cheapened the production of coal by pumping the mines; installed in the iron mills, it cheapened all the processes from smelting to rolling; in turn it stimulated the iron industry by affording an exacting market for the iron products used in the manufacture of engines and of machinery propelled by the steam engine.

In the true tradition of mercantilist nationalism, Great Britain attempted to reserve for her citizens the advantage of the new machinery. In 1765 an act prohibited the emigration of trained operatives; this statute was followed by others which specified the workers in certain industries. In 1774 an act forbade the exportation of textile machinery, plans, and models. This original prohibition was succeeded by others. Many of these enactments lasted well into the nineteenth century. Such legislation was rarely effective. In spite of prohibitions knowledge of the new inventions was widely disseminated in America, and the utilization of the new machinery was delayed hardly at all if other conditions for its employment were favorable. This reservation, as Hamilton’s report had foreseen, was the heart of the matter.

So the Americans adopted, without any formal planning, what accorded with their situation. Thus since the Northeast, where the industrial revolution was first domesticated, usually had abundant water powers, industry avoided the wide use of the steam engine until its smaller and then its greater streams had been harnessed. Better water wheels, like the turbine, perfected in France, and larger dams generally postponed the advent of steam power in New England until the fifties. Elsewhere, particularly in the West and South, steam was earlier and more widely employed, though users preferred the high pressure engine of Oliver Evans, cheap and compact, to the imported Watt and Boulton. Americans, lacking engineering skill and capital, focused on those industries which could employ a labor force with little training and dispense with a high investment per worker. Such a preference partly explained the slow development of the iron industry, as compared with Great Britain. But more fundamental in determining the avenues of America’s industrial growth was the presence of needs and the presence of resources. As a consequence, the new country first turned to the satisfaction of the elementary human wants—food and clothing. Since the United States was at the time an agricultural nation, it had at hand the natural resources
upon which such manufacturing could be based. In 1860 the chief industries of the nation, judged by the value of product, were in order: flour and meal, cotton goods, lumber, boots and shoes, men's clothing, leather products, and woolen goods.\(^1\) On the whole these were consumer rather than capital goods industries. Where England's industrial revolution contributed in no direct or novel fashion to their production, Americans built in their own independent fashion; where England furnished precedents and stimulus, Americans made alterations.

**The Food Industries: Packing and Flour**

Improvements in transportation and the consequent enlargement of the market rather than any technological innovation explained the growth of a packing industry. Though farmers everywhere continued the old ways of slaughtering their own beef and pork and preserving the meat by smoking and pickling, towns and cities along the edge of the livestock belt undertook these operations on a large commercial scale. As early as 1818 Cincinnati embarked upon this business. In the words of a contemporary, it was that city "which originated and perfected the system which packs fifteen bushels of corn into a pig and packs that pig into a barrel, and sends him over the mountains and over the ocean to feed mankind." At first farmers slaughtered their hogs and then brought them into the city and turned them over to commission merchants, who packed them and charged for labor and materials and for marketing. This arrangement had several disadvantages. Farmers slaughtered their hogs carelessly, and the carcasses did not improve in cleanliness or freshness during the journey from the farm. The commission merchants, therefore, began to pay cash for "live" hogs and to undertake packing operations on their own account. These packers turned the animals over to the slaughtering houses for butchering. By the forties the process had been so perfected that five men cut up, weighed, and trimmed hogs at the rate of more than one a minute, and observers, impressed by such speed and dexterity, found comparisons only in the classic efficiency of Adam Smith's pin factory. The carcasses were then hauled through the city to the packing establishments, where they were soaked in various pickling solu-

\[1\] Manufacturing: 1860

<table>
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<th>Annual Value of Production</th>
<th>No. of establishments</th>
<th>No. of Workers</th>
<th>Workers per Est.</th>
<th>Investment per Est.</th>
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<td>Cotton goods</td>
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<td>40,597</td>
<td>33</td>
<td>24,683</td>
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MARKETS AND MACHINES

tions and then cased in barrels. Even the utilization of by-products had become a feature of the industry. The cheaper fats were rendered into lard oil, which the Cincinnati packers hoped would displace whale oil as an illuminant, and which they meanwhile used to adulterate the latter product; soap and glue factories were built; and three establishments dressed hog bristles for brushes.

Until 1850 Cincinnati enjoyed such a supremacy in this typical western business that it proudly bore the sobriquet, "Porkopolis." One factor in its preeminence was transportation. Its original strategic location on the Ohio was improved by its canal and railroad connections. A second explanation was the expansion of the market to which the city catered with great discrimination. England, Germany, New England, the merchant marines and navies of America and Europe, the plantations of the South and the West Indies consumed the different varieties of pork which Cincinnati prepared for them. The city had other advantages. Its excellent banking facilities provided the funds for an industry in which the long interim between the purchase of the animals for cash from the farmers and their eventual sale to distant markets placed severe demands upon credit. The large population of Cincinnati furnished an ample labor force for a seasonal industry which began with the onset of cold weather and operated hectically as long as the temperatures were low. Subsidiary industries or services—trucking, coopering—were also developed. Such supremacy, however, did not last. The movement of grain and livestock farther west and the convergence of railroads in the fifties upon Chicago meant the appearance of a new center. In 1861–62 the Lake metropolis packed more hogs than Cincinnati; no longer was the latter "the most hoggish place in all the world."

On the other hand, flour milling was aided by revolutionary technical improvements. In the very year that Hamilton wrote his report on manufactures Oliver Evans received a patent for the flour-milling methods which he had previously invented; and the adoption of the Evans system was rapid once its usefulness had been demonstrated in the mills along the Brandywine. Although Evans' inventions, by which power twice carried the grain to the top of the mill and the cereal was cleaned, ground, cooled, and sifted in its descents, stimulated large-scale production by their cost of installation and operation and savings in wages, other factors were more important in transforming grist milling into a commercial industry, localized at a few great producing centers: Baltimore, Richmond, Rochester, Oswego, and St. Louis. All except St. Louis had remarkable water powers and all, including the last, were centers of distribution.

Baltimore drew the wheat of the Middle Atlantic States to her; after 1852 she tapped the Ohio valley with the Baltimore and Ohio Railroad. By her
sea trade she sent flour to the Caribbean, South America, and the southern states. In the decade before the Civil War the city was producing annually 500,000 barrels of flour in large mills representing a heavy investment of capital and utilizing the best technique. Although Richmond millers would have resented the comparison, the flour-milling industry grew in that city for the same reasons as in Baltimore. The James and Kanawha Canal penetrated westward into the wheat-producing areas of Virginia, and vessels drawing fifteen feet of water could sail within three miles of Richmond to fetch the flour cargoes for foreign and domestic markets. In the fifties the Richmond mills, fewer and larger than those of Baltimore, ground 400,000 barrels of flour.

Meanwhile the mills moved away from the sea to the lifeline of the Erie. In the decade after its opening Rochester sprang to glory. Prospering on local wheat supplies and then those brought from the West and Canada, she built large and well-equipped mills. One of them “stands upon the edge of the canal... A boat laden with wheat may be run alongside of the mill, the wheat shoveled into a chain of ascending buckets and carried through every process of cleaning, grinding, cooling, bolting, and being conveyed into the barrels into which it is pressed by the machinery, ready for the cooper, as the last office, to clap on the head. And the wheat is carried through all the different processes by being handled but once.” In the fifties the Rochester mills produced over 500,000 barrels a year. For a few years in that decade, Oswego, which had water power and transportation, surpassed Rochester, but its history as a producing center was shorter. Sooner or later the westward movement of wheat would drag the anchor of milling after it. So it was natural that in 1851 St. Louis should grind 400,000 barrels. She marketed her flour down river through New Orleans or sent it eastward along the Ohio and its affluents. Her location in the midst of the soft red winter wheat area gave a further advantage.

But these commercial centers must not obscure the real picture. In 1860 there were 13,868 gristmills in the country. Only a tiny fraction of these were in the great milling areas just described.

**Boots and Shoes**

Nor was the boot and shoe industry revolutionized by importation of practices or machines from Britain’s industrial revolution. There was simply the gradual transformation of an already existing way of manufacture, the putting-out system, into large-scale production. Massachusetts will illustrate the change, for in 1860 her establishments still turned out half the value of the national product.

Toward the end of the eighteenth century artisans and handicraftsmen
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were no longer confined to making shoes on individual order; they were turning out a cruder product, which had found a wider market in the South and the West Indies, since the masters of slaves were quite content to shoe their workers with stiff, heavy, clumsy brogans. A group of shoe merchants—farmers, storekeepers, or shoemakers—proceeded to organize production for those and other markets. They furnished and distributed the raw material to artisans in their employ. With the assistance of his family and apprentices, the artisan working at home, perhaps in the kitchen or an ell or a little shack, the "ten-footer," cut the leather, "fitted" the "uppers" by sewing them together, "made" the shoe by attaching the sole, and turned over the product to the shoe merchant. The latter took the responsibility of marketing the product.

This method of production was inefficient. The individual worker might be wasteful in cutting out shoes, either through ignorance or through dishonesty. There was a temptation to cheat, for the scraps which the shoemaker saved provided a separate source of income when he sold them to the scrap leather buyers who toured the country. There was also a lack of inspection of the product during the course of manufacture. The merchant was confronted with the finished product; its unsatisfactory workmanship might cause him financial loss. There was also a continually expanding market for shoes and a greater competition among shoe merchants to supply it. The merchant was successful who cut costs and ordered production. Consequently, by 1815 or 1820 the shoe merchant had set up a "central shop," perhaps in some attic over his store or in his own "ten-footer," where an employee or so cut the leather. The uppers were then put out to families and artisans to do the "fitting"; they were returned to the central shop and issued with rough-cut soles and thread to "makers" who would complete the shoe. Then the shoe would be inspected and finished at the central shop. This phase of the domestic system came to an end with the panic of 1837, which wiped out many of the shoe merchant-manufacturers.

After the panic new conditions confronted the shoe industry. The distant markets for which the shoemakers manufactured were enlarged by the settlement of the Middle West and of California. Easterners who would have purchased custom-made shoes and boots back home bought ready-made footwear on the frontier. The tastes of the whole market grew more exacting, and the slipshod production of shoes so characteristic of the period before 1837 could no longer be tolerated by shoe merchants. Standardization and refinements were new notes in the industry. By the end of the forties patterns for cutting were utilized, and in the fifties the old practice of making "straight" shoes with no distinction of rights and lefts was abandoned for the production of "crooked shoes." In the old days shoes were thrown
into barrels or packed in casks. The individual customer tried on shoes until he found two that fitted him. By the fifties the “double packing” of fine shoes began, when a cardboard box contained a pair of shoes which were of the same size. Greater attention was paid to finish, greater care given to packing and transportation.

These changes put an emphasis upon standardized and supervised production. After the panic of 1837, therefore, the merchant-manufacturers who entered the business devoted their entire abilities to it. In production the central shop became so important that it was often known as a “manufacturer.” In it more operations were gathered; in it simple machinery was placed. Machines for pegging brogans and cheap shoes had been invented; a stripper cut soles more exactly; a leather rolling machine did away with the old necessity of hammering sole leather; by the fifties the sewing machine had been adapted to shoemaking and had come into use. Not only these changes but the fundamental need for uniformity and attractiveness of product, systematic supervision, labor regularity, and other savings account for the shoe factory which had appeared by 1860.

In 1860 the Massachusetts shoe industry manufactured a product valued at $46,230,000; it employed 62,000 workers. In the country as a whole the product was valued at $91,889,000; the employees numbered 123,026. These were the achievements of an industry in which the features of the factory were just recognizable.

THE WOOLEN INDUSTRY

In this country the production of textiles was the industry most influenced by the industrial revolution in Great Britain. The significant inventions had come first in Great Britain’s cotton industry; that industry in America was the first in which the industrial revolution was domesticated. In both nations changes in the woolen industry came more slowly.

In 1788 the first concern that specialized in the factory production of woolen cloth was established at Hartford, Connecticut. This enterprise, dignified by Alexander Hamilton as a “precious embryo” in his famous Report on Manufactures, was stillborn. For some years it beat against barriers which Hamilton had pictured and conquered on paper—the absence of capital, skilled labor, proper superintendence, and suitable machinery, and then it went under. Factors peculiar to the woolen industry which contributed to the failure of the Hartford pioneers were the poor quality of American wool and the attempt to produce broadcloth fabrics in which the long established skillful British industry had an undoubted advantage. Briefly, then, in the America of 1790 the coarser cloths were still made at home; the finer cloths
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were imported. If the machine industry were to become Americanized, it would have to make its way against these two competitors.

The machine first successfully invaded the finishing and preparatory processes. In colonial days small fulling mills were widely established which performed by power the laborious finishing process. The difficult carding process, which straightened and mingled the fibers into a roving, preparatory to spinning, was the next to fall. In 1793 John and Arthur Scholfield, Yorkshiremen, brought to this country a knowledge of the power-driven carder, a machine whose cylinders armed with wire teeth broke up the tufts, pulled out the fibers, and wrapped them together. The Scholfieards wandered around New England setting up their apparatus. It was so simple, inexpensive, and required so little water power that owners of fulling mills often installed power cards and did carding as they did custom fulling for their patrons. Though this carding machinery reduced the time of that process from hours to minutes, it was far from perfect. Its rovings were short, and the slightly swollen joint, formed when they were joined by rubbing the two ends together with the fingers, so interfered with their use in factory spinning that an intermediate process was necessary. In 1826 an American, John Goulding, patented the “American card.” In this machine the cards were so arranged upon two small cylinders which removed the fiber from the final cylinder that the wool came off in narrow bands which were then led through revolving tubes and wound upon spools. This condenser produced not only a continuous roving but also one of finer quality. The industry in European nations paid tribute to this “American card” by adopting it.

Meanwhile these early mills began to encroach upon the central spinning and weaving processes, still household occupations. The jenny, introduced by the ubiquitous Scholfields and worked by hand, was used alike in the home and the factory, but the jack, a related machine, became a factory denizen. The jack somewhat resembled the mule, for it had spindles upon a movable frame, but its rollers operated in a different fashion from those in the cotton spinning machine. Like the mule, it was at first extremely dependent upon the manual skill of the worker, and not until the Civil War did it become completely power-driven and automatic. At the same time the factory owner began to organize weaving operations. In some cases hand looms were set up in the mills. Such looms might weave for the manufacturer’s own account or they might operate, like the carding and fulling machinery, on a custom basis. Factories without hand looms sold their yarns to individual weavers or developed a putting-out system. The power loom cut short these stages of transition. Once the machine was introduced after the War of 1812 American woolen manufacturers showed greater alacrity in adopting it than their rivals in England or on the Continent and they applied it to the
production of plain weaves or fabrics with simple stripes. From this monotonous fate the loom was rescued by William Crompton, an Englishman in America who had invented an automatic loom for weaving fancy cotton fabrics. At the insistence of Samuel Lawrence, agent for the Middlesex Mills, Crompton adapted his device to woolen manufacture, and in 1840 produc-

DECLINE OF HOME INDUSTRIES AND GROWTH OF MANUFACTURING

DECLINE OF HOME PRODUCTION OF TEXTILES IN NEW YORK

1825

1835

1845

1855

Each symbol represents 1 yard produced per capita

GROWTH OF TEXTILE MANUFACTURING IN THE UNITED STATES

1820

1831

1840

1860

Each spindle represents 400,000 spindles

In spite of this technical advance the defeat of home manufacture by factory production was repeatedly postponed. The former persisted on the frontier and in the agricultural regions. As late as 1860 when factory production was clearly victorious, the census still listed numerous carding and fulling mills, accomplices of the home industry, in the western and southern states. Nor was the factory able entirely to conquer importations. In times of war,
as during the Napoleonic period, or at times of extreme protection, as in the twenties, shipments from Great Britain fell away. On the other hand, by 1860 the proportion of the market supplied from abroad was larger than thirty years earlier. The continuing explanation was that the American industry failed to master the efficient production of finer woolens, such as broadcloth, and lagged in the manufacture of blankets.

The domain of the American factory lay elsewhere. As a substitute for broadcloth it produced cassimere, not so highly finished a fabric, but one which could be turned out with fancy designs in large quantities by the Crompton loom. Then came satinets or cassinettes, coarser fabrics, often designated "Negro cloths." Both could be produced cheaply, for their cotton warp and coarse wool filler endured machine production and made few demands upon semi-trained workers. In 1830 satinet probably constituted half the output of the American factory. The third cloth suited to American manufacturing conditions was flannel. It had a national market, for flannel was used everywhere for underclothing, shirts, and petticoats. In the manufacturing processes little finishing skill was required; it simply had to be washed and pressed. There were few style changes to disturb quantity production. Finally, flannel could be satisfactorily manufactured from the medium fine fleeces of American sheep.

The American woolen factory which produced these products in the middle of the century was an evolution from the small establishment. Thus one of the Scholfield brothers in 1802 simply ran a fulling and carding mill, and placed the spinning jacks and a loom in his small house or its outbuildings. His labor force consisted of his family. Although such small establishments persisted in the East as well as in the West, there were larger factories. In 1830 the Middlesex Woolen Company of Lowell struck the new note. Patterned after the cotton establishments of that city, its capitalization was placed at $100,000 and it had a labor force—men, women, boys, and girls—of 185 persons. Fifteen years later its capitalization was $1,000,000 and it employed 1,500 operatives. Such large establishments were confined to the East, particularly Massachusetts, where the woolen industry was largely concentrated. In 1860 the state's mills produced over a quarter of the yardage in the country. In spite of such concentration, dispersal of production persisted. Thus Ohio had only 14 per cent fewer establishments than Massachusetts but turned out only one-thirtieth of the latter's production.

**The Growth of an American Cotton Industry**

The cotton industry brought the industrial revolution from Great Britain to the United States. In the period of industrial ferment after 1780 several American establishments were attempting cotton manufacture with new
machinery. From Maryland to Massachusetts societies for encouraging manufacture or enterprising individuals, alone or associated, experimented with carding machines, jennies and water frames. When industrial pioneers from Providence decided to enter the textile business in 1788 they used some of these innovations as models. According to Moses Brown, a member of the famous commercial family of Providence, “these machines, made here, not answering the purpose and expectations of the proprietors, and I being desirous of perfecting them, if possible, and the business of the cotton manufacture so as to be useful to the country, I purchased them.” Nothing could be done with the Arkwright water frame, but the jenny was tinkered up and “was performed” in different cellars of dwelling houses in Providence. It turned out weft for the cloths which the firm of Almy and Brown made up through the putting-out system. Meanwhile Moses Brown hoped to discover a person sufficiently acquainted with the water frame to make that successful.

The answer to his quest was Samuel Slater, later hailed as the “Father of the Cotton Manufacture of America.” Slater was born in England in 1768 and served an apprenticeship by which he came to know the Arkwright machinery and system of production. During the last years of his employment he was general overseer of the making of machinery in a cotton mill. His attention was directed toward the possibility of transferring the new methods to America by the announcement of premiums offered by societies or states in America for the introduction or construction of the new cotton machinery. Evading the English law which prohibited the emigration of artisans acquainted with the new methods of manufacture, Slater sailed secretly for the United States in 1789. Upon his arrival in New York he obtained employment in a small cotton enterprise but was dissatisfied. He soon learned of the attempts at Providence, and on December 2, 1789, he wrote to Moses Brown. “My encouragement is pretty good, but should much rather have the care of perpetual carding and spinning.” Moses Brown, by a letter reflecting alike his Quaker caution and his zeal for the undertaking, induced Slater to come to Providence.

For nearly a year Slater was engaged in perfecting the machinery and getting it into working order. The previous machines he discarded as impossible of improvement, and in their place he built from memory two carding machines and a water frame of twenty-four spindles, with some other equipment. He had some difficulty in constructing workable machines from his models. This equipment was set up in a fulling mill at Pawtucket where there was a water power. By 1791 he had hired the small labor force that was necessary and had begun the successful spinning of cotton yarn upon the water frame. This achievement was announced in an advertisement in the Providence Gazette:
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Cotton Manufactory
To Be Sold By
Almy and Brown

At their Store, opposite the Baptist Meeting House, by Wholesale and Retail,
A Variety of Cotton Goods,
manufactured in this Town, among which are, Cords of various Sorts, rib and
plain Thickset, Stockinet, rib and plain Denim, Jeans, Jeanets, Fustians, &c. &c.
... Also, Cotton Yarn of various Sizes, spun by Water, suitable for Warps or
Stockings, superior in Quality to any spun by Hand, or upon Jennies. Those who
are engaged in manufacturing Cotton, either in Factories or in Families, are in-
vited to make Trial of its Quality, and those who wish to encourage the Manu-
factures of their Country, to lend their Aid to establish in it this useful Business,
by wearing Cloth of its own Manufacture. ... They have also for Sale, a few
barrels and Half Barrels of Beef and Pork, with a Variety of other Articles. They
want a Quantity of Tow Cloth, for which they will exchange Cotton, Flax, Wool,
&c.

N.B. Cotton, and Cotton and Linen Goods, of all Kinds, are dyed and finished at
their Dye House, by an experienced Workman from Europe.

The first Slater mill proved to be a nursery of the American cotton indus-
try. The members of the original partnership, Almy, Brown, and Slater,
did not retain a permanent alliance. But Browns and Slaters and their rela-
tives by descent or marriage built new mills in Rhode Island and Massachu-
setts near Providence. The employees of the Slater mill went out to aid in
the founding of other enterprises patterned upon it as far away as upper
New York State. All this was in the future. In the 1790's the cotton indus-
try was strewn with failures. After 1807, however, the interruption of im-
portations, the low price of raw cotton and the high selling price of yarn, the
development of markets in the middle and western states tempted capital and
managerial ability, particularly from foreign trade, into the industry. By
1815 the number of spindles was 130,000.

It is important to remember that this cotton industry, as far as machinery
was concerned, was a yarn-spinning industry. At first the product was sold
in a purely local market, but as factory output increased more distant mar-
kets had to be developed. The correspondence of Almy and Brown reflects
this development. In 1791 they sold the yarn through their own store and
shipped some to other merchants in Rhode Island and Connecticut. A decade
later they sold throughout New England and shipped to Albany, New
York, Philadelphia, Baltimore; in 1809 they were finding selling agents at
Norfolk and Richmond in Virginia. By 1814 two-thirds of their cloth and
yarn was marketed through Philadelphia either for the use of the master
weavers of that city or else for forwarding to the West. The scattered agents
of Almy and Brown were merchants who carried other imported and domes-
tic merchandise. They sold the yarns on a commission basis as a part of their general business. Meanwhile, in order to meet the demand for cloth, particularly in the West, manufacturers everywhere attempted to organize the weaving processes. One recourse was the putting-out system, but as in the shoe industry, this brought careless workmanship and irregular output. Another expedient was the installation of hand looms in the factory. Almy and Brown wrote in 1809, “A hundred looms in families will not weave so much cloth as ten at least constantly employed under the immediate inspection of a workman.” But power weaving, supplanting these arrangements, brought in the matured cotton industry.

Americanization of the power loom was the work of two unrelated individuals. One was Francis Cabot Lowell, Harvard graduate and one-time importing merchant. Traveling through Great Britain in 1811, he derived from every possible source knowledge of the textile machinery there in use. On his return to America he was one of the incorporators of the Boston Manufacturing Company, chartered in 1813 with a paid-in capital of $300,000. This concern purchased a water power on the Charles River at Waltham. Lowell now pooled what knowledge of the loom he had with the practical talents of a machinist named Paul Moody, and by 1814 they had perfected a power loom. Years later one of the incorporators recalled “the state of admiration and satisfaction with which we sat by the hour, watching the beautiful movement of this new and wonderful machine, destined as it evidently was, to change the character of the textile industry.” In truth, the Lowell-Moody machine differed in so many ways from the English predecessors that it was a distinctly American creation. Lowell and Moody were really inventors and not copyists. A year later another foreign artisan with a knowledge of English machinery landed in Boston. This was William Gilmour, who brought a knowledge of the “Scotch” power loom—really an English machine. Though this loom was not equal in operation to the Lowell-Moody loom, it was simpler and cost much less to manufacture; the south-of-Boston area adopted it.

Cotton manufacture was predominantly a New England industry. Within that area two districts with distinct characteristics had developed. One was north of Boston. The germinal center of this region was Waltham, where the Boston Manufacturing Company had first undertaken operations. Although its cottons originally met unreasoning popular prejudice, the concern eventually forced a market and began to expand. By 1820 the available water powers at Waltham had been utilized. The incorporators now cast about for an additional mill site, where they hoped to undertake the manufacture and printing of calicoes. This cloth would supplement the manufacture of coarse sheetings, which was the Waltham specialty. Eventually the water
power on the Merrimac at East Chelmsford came to their attention. Determining to establish here their new industrial locality, they proceeded to acquire from "The Proprietors of the Locks and Canals on Merrimack River" the title to a small unprofitable canal around the falls and to buy up most of the available real estate in the locality. Because of the despatch and secrecy with which the transaction was executed merely nominal sums were paid for land and canal rights.

The first concern at the new site was the Merrimack Manufacturing Company. Capitalized at $600,000, it included among its shareholders not only the Massachusetts merchants and mechanics who were to transform the industry, but also the Boston Manufacturing Company. In 1823 the Merrimack Company began the production of cloth, and a few years later it added to its operations the weaving of fancy fabrics and the printing of calicces. Although improved printing from engraved cylinders had been introduced into this country much earlier, the Merrimack Company undertook the operations on a characteristically large scale. Finally, in 1826, the new industrial locality was set off as a town and named Lowell in honor of Francis Cabot Lowell. At Lowell the Merrimack Company soon transferred the ownership of the canal to a separate entity, "The Proprietors of the Locks and Canals," which sold land, dug canals, erected factories, and built textile machinery.

In the first of these operations it made fabulous profits. The Merrimack Manufacturing Company expanded its capital; new company after new company, many involving the incorporators of the Merrimack or else their friends and relatives, was established. By the middle of the century these gigantic concerns had a capital of $12,000,000. They manufactured not only the finer goods for which Lowell had been built, but coarser products the demand for which Waltham had eventually proved unable to satisfy.

When the proprietors of the original Merrimack Manufacturing Company had "perambulated" the site of their water power in 1821 they had found "less than a dozen houses in what now constituted the city of Lowell." In 1860 the population of the city had grown to 36,827. In 1821 it had not a cotton factory to its name. In 1860, 403,696 spindles turned in its factories and 12,190 looms wove these yarns into cloth. Years earlier a trained English textile man wrote, "The Factories of Lowell produce a greater quality of yarn and cloth from each spindle and loom (in a given time) than is produced in any other Factories without exception in the world."

The influence of this unusual factory city spread to the other textile towns built north of Boston. Along the Merrimac the water powers at Manchester, Nashua, and Lawrence were harnessed to factories on the Lowell model. Many of these concerns budded from the Lowell corporations. On the lower reaches of the Piscataqua and Saco other mill towns with a few large facto-
ries were constructed. In the old seaport towns, Salem, Portsmouth, Newburyport, large steam factories were built. In all of these enterprises Boston capital played so large a part that Boston became a rival of its predecessor, Providence, as the center of a textile district. Already some hint of the characteristics of this north-of-Boston area has been given. Its dominant form of capital organization was the large corporation. These concerns carried on every manufacturing operation from carding the fiber to printing the calico, a centralization of operations which had been unique when first applied by Francis Cabot Lowell at Waltham. Technically these factories were equipped with machinery as automatic as had been invented, run at high rates of speed. In the spinning processes, therefore, they relied upon the throstle whose continuous operation was more like the water frame than the mule. Their product was large quantities of standard cloths. They had, finally, an unusual system of labor organization.

The center from which the cotton industry south of Boston spread was, of course, Providence-Pawtucket. From this nucleus factories, utilizing the frequent water powers, spread along the small rivers into Massachusetts and Connecticut. In eastern New York along the upper Hudson and the Mohawk was a westward offshoot from this Rhode Island area. The mills here had been established by emigrants from the latter district, and their type was somewhat similar. To the east of Rhode Island the cotton industry germinated first at Fall River. Here an extraordinary water power was furnished by the Fall River, which descended one hundred and thirty feet in less than half a mile. It was fed by a series of ponds which, as natural reservoirs, kept the amount of flow nearly equable, and it ran along a granite channel. Mills were built on its banks and the wheels were set directly in the stream. Though textile mills were started in 1813, the pattern of future development was really set in the twenties when Bordens and Durfee's, a genuine industrial dynasty, started the Fall River Iron Works, whose lavish dividends, obtained from making nails and other iron products, were poured into the construction of textile factories. In 1834 the group established the American Print Works, which between 1840 and 1850 paid heavy dividends, divided $200,000 as a bonus among its stockholders, and contributed funds to the purchase of a steamboat line between New York and Fall River. The Bordens also financed the construction of connecting railroads and owned iron mines in Maryland to supply their profitable ironworks. It was not until the decade of the forties that New Bedford, beyond Fall River, began its history as a textile center.

This region differed in organization and characteristics from that to the north of Boston. Although it had some large industrial cities and large plants, there was no counterpart of Lowell. More typical were the mill vil-
'ages which were strung end to end along the little rivers, with their rows of operatives' dwellings, their small water power and factory, and the big house on the hill where the superintendent or owner lived. In place of corporation control there was ownership by individuals or partnerships. Certain important families exerted a pervasive control over several localities or many enterprises. The industry was equipped with the English rather than the American loom, and mule spinning was common. The southern New England and upper New York cotton areas produced finer cotton goods and greater varieties than the district north of Boston. They also had a distinctive labor system.

In the middle states, the third important district, the industry was increasingly centralized about Paterson and Philadelphia. More than two-thirds of the spindles in New Jersey were in Paterson, and the same proportion of Pennsylvania's spindles were located within thirty miles of Philadelphia. Here small mills prevailed. The spinner, the weaver, the printer, the finisher had separate establishments, and the yarn or cloth was passed along by direct sale from one person to another or else through a cloth merchant. The area produced a great variety of goods of a high quality. It depended for its success less upon machinery than upon the skill of its craftsmen. In 1860 the cotton industry of these middle states had only 1,000,000 spindles compared to the 3,800,000 of New England.

Even less important was the South. Here were several ostensible advantages—water power, raw material, a labor force of idle whites. But since managerial energy and capital were devoted to staple agriculture, the South lagged. During the years of the embargo and the War of 1812 cotton spinning establishments utilizing water power were set up in Georgia, South Carolina, and North Carolina. These and later establishments did not use power looms, and they generally produced for a local market. After 1830, also later than in the North, the power loom was introduced and sizable factories appeared at Richmond, Petersburg, Columbia, and Augusta-Hamburg. In the forties an agitation for industrial development welled up when the price of cotton fell and the Southerners felt the inferiority of their economic development to that of the North. Conventions stressed the importance of establishing manufactures; authors added a written appeal. Southern merchants with capital and commercial experience began to be attracted by the possibility of profits. William Gregg was one of the agitator-pioneers. In 1845 he published in collected form his *Essays on Domestic Industry*, which pointed out to an agricultural people, as Hamilton had done fifty years earlier, the advantages of manufacturing and the methods by which it could be introduced. Then with other capitalists he made a going concern of a large cotton factory at Graniteville, ten miles from Augusta. He turned
out sheetings and other coarse cloths. In spite of the fact that in 1860 there were fewer spindles in the whole South than in the city of Lowell, the South had made a start.

By 1860 the industrial revolution had established a vigorous and independent American cotton industry. In 1790 Samuel Slater’s machinery in the Pawtucket fulling mill was the alpha and omega of the improved cotton manufacture. In 1860 the industry had 5,235,000 spindles, it employed 122,028 workers, and turned out a product valued at $115,681,774. Yet it must not for a moment be imagined that the American cotton industry was the peer of the British, from which it had first stemmed and then diverged. At mid-century England had 21,000,000 spindles and turned out cloth of a greater variety and fineness. Yet America was unexcelled in the production of substantial and standard grades, which found a market among the population of this country.

**The Metal Industries of the United States**

In 1860 the most considerable branch of the iron industry, the manufacture of steam engines, turned out a product only 10 per cent more valuable than that of sugar refining. Far behind the latter was the value of iron castings and forgings. This inferior position reflected the simple needs of an economy essentially agricultural. Its need for ironware and for tools could be satisfied by a primary industry whose units of production were somewhat like the grist and sawmills of the day, though they required somewhat more skill and capital. As the market enlarged, however, the industry responded with innovations in technology and scale of organization. Before 1860 the most compulsive of the new demands came from transportation—for steamboat engines, for locomotives, and for iron rails. As a result the first of America’s heavy industries was born.

The iron industry in the United States was revolutionized backwards. In Great Britain the first inventors had transformed the smelting of iron; Cort’s improved methods of refining iron were not devised until 1783–84. In this country his puddling and rolling processes were introduced first. Probably the earliest American establishment to utilize these two inventions was erected in 1816–17 on a creek flowing into the Monongahela River some seventy-five miles south of Pittsburgh. The mill contained two puddling furnaces and a rolling apparatus. Although the Cort process had the great advantages of using coal, a cheaper fuel than charcoal, and of saving labor, it spread slowly. In the West the product made by this method was condemned as inferior to that refined directly with charcoal and then either hammered or rolled. The comparatively crude product of reverberatory puddling furnaces supported this condemnation. In the East, since American puddled and rolled
iron confronted the merciless competition of the imported British commodity, ironmasters continued to manufacture the slightly superior product refined by old methods. By 1840 technical improvements had abated the difference in quality between the charcoal-refined and the puddled and rolled iron, and the latter processes were on the eve of a remarkable expansion. The demand for rails, caused by the frenzied extension of the American railway system, had become so voracious that it could be satisfied only through the puddling and rolling processes. The first great mills, erected in the later forties, all used this new process. They also contained blast furnaces utilizing coal instead of charcoal for smelting their iron.

Until 1854 charcoal was the predominant smelting fuel, although coal was apparently cheaper and the methods of using it in the furnace industry had long been known in this country. The reason for this delay varied with the regions in which the smelting industry was located. In many places where iron was plentiful, coal was either lacking or inaccessible from the want of transportation facilities. When such conditions prevailed, the ironmaster fell upon the inexhaustible and cheaply purchased woodlands and converted them into charcoal for his furnace operations. The defects of transportation could hardly account for the absence of smelting with coal in the valleys of either eastern or western Pennsylvania, where transportation by river or canal was available. In the East, however, the accessible deposits of anthracite could not be employed in the British process, which used coke produced from bituminous coal. Only after the nineteenth century was well under way were methods for utilizing anthracite devised almost contemporaneously in the two countries. The American inventor was a Lutheran clergyman, the Rev. Dr. Frederick W. Geissenhainer, who apparently had the taste, means, and leisure for scientific experiment. In 1833 he patented a method of smelting by anthracite coal which employed a blast of air. "The blast may be of common atmospheric or of heated air. Heated air I should prefer in an economical point of view." The hot blast was the essential feature of the idea. Geissenhainer's patent a few years later was consolidated through purchase with that of the English inventor of the same process. By 1840 the commercially profitable smelting of iron with anthracite coal was a fact. In that year six furnaces were using anthracite coal; in 1856 one hundred and twenty-one in the country were using it. In 1855 anthracite smelting had definitely passed charcoal smelting in the nation's output of pig iron.

In the West bituminous coal was abundant. In many places there were easily mined outcroppings. This coal was suitable for coke, as the later exploitation of the remarkable Connellsville deposits has shown. Coal deposits were near avenues of water transportation, so that there was no difficulty in bringing coal and iron together. Yet the charcoal smelting persisted. The
explanation lay in the demands of the market. The West was an agricultural
community. Blacksmiths and, to a less extent, farmers demanded a product
which they could work up into simple tools and ironware—nails, tacks,
spades, shovels, forks, picks. Such products required an iron which would
serve as the lowest common denominator for them all. It had to be tough,
malleable, easily welded; these qualities charcoal iron provided better than
any other. Although in the forties a few great iron establishments began
the use of coke, the spread of the new fuel was slow. In 1856 there were
twenty-one coke furnaces in use in Pennsylvania, and there were only a few
others outside that state. Pig iron production in that year by bituminous
coal or coke was less than one-sixth that of anthracite. It was not until 1869
that coke and bituminous coal smelting passed charcoal, not until 1875 that
it passed anthracite.

The use of new fuels had been accompanied by changes in blast-furnace
technique. The hot blast was heated in ovens. At first these were placed on
top of the stack, but later they were set on the ground and the hot gases from
the stack were led to them. The escaping gases were also used to heat the
boilers which produced the power for the engines running the blowers. In
the charcoal era, water power had been common for the blowers; steam en-
gines and improved blowers were introduced after 1840. These changes ef-
ected an economy in fuel and increased the annual product. Furthermore,
ironworks began to assume a modern air of integration. One of the great rail
mills of Pennsylvania gathered in a single enterprise the furnace, puddling,
and rolling processes.

All these changes hastened a more compact localization of the industry.
By 1840 the bog iron industry from Delaware to New England had practi-
cally disappeared. The charcoal iron industry of western Virginia and east-
ern Tennessee and Kentucky sent its pigs to northern rolling centers and
to Richmond where the Tredegar Iron Works under skillful management
rolled rails, built locomotives, and acquired a momentum of experience
which was to make the concern invaluable to the Confederacy during the
Civil War. The real iron centers of the nation were the northern river valleys.
Farthest north was the Hudson-Housatonic-Champlain region producing
rich ores used for special purposes. Along the Delaware, the Schuylkill, and
the Susquehanna, all with easy access to anthracite, was the chief area of
the iron industry in the nation. West of the mountains the Ohio River re-
gion, embracing districts from northeastern Ohio and western Pennsylva-
nia to Kentucky, revealed a growing power significant for the future. By
1860, five years after the opening of the Soo Canal, this region was smelting
ores from Lake Superior. If states be the measure, Pennsylvania held for pig
and rolled iron the position of Massachusetts in shoes and woolens. Of
course production in the nation had expanded incredibly since the days of Alexander Hamilton’s report. He was silent as to the exact tonnage of American furnaces but declared that “iron works have greatly increased in the United States.” In 1860 the tonnage of pig iron from the nation’s furnaces was 987,559.

In the reproductive metal industries, which made articles ranging from heavy castings to pins, the United States made more rapid progress than it did in the primary iron industry. The shaping of metal into finished articles by forges, to be sure, saw little advance. Such establishments generally contented themselves with manufacturing small standardized articles, such as anchors, shovels, and axes. The markets for these products were large, and the hammers required to form them were light ones. On the other hand, foundry operations for making castings were transformed, in this country as in Great Britain, by the enlarging market for their product. The colonial foundries had turned out hollow ware and had done some custom work for clients. Now the industrial revolution increased the employment of castings. They were assembled into steam engines, they formed the parts of the water turbine, they were used in place of wood in the machinery of the new factories, they created new industries, as stoves of castings made the fireplace obsolete. Such forge and furnace industries were not necessarily tied close to raw materials. They were dispersed near markets, as in eastern cities, or along avenues of transportation like the Ohio.

Makers of small metal articles in America were compelled to relinquish their occupations to a host of machines. Machines to make nails, tacks, screws, spikes, bolts, files, chains, buttons, wire flowed from the brains and fingers of American inventors. To an astonishing degree these machines were invented in New England. “Yankee ingenuity” was proverbial and was the convenient explanation of this New England supremacy. Inborn gift was in part responsible, but the necessary attention which New England paid to other activities than agriculture and her earlier start in industrialization gave the region an atmosphere in which invention flourished.

It is needless to sketch the history of all these inventions; samples will be adequate. The nail maker who cut the nail rods into nail lengths and pointed and headed them with hand tools was superseded by the nail-making machine invented about 1790 by an ingenious Newburyport artisan, Jacob Perkins. Although small nail-making factories spread over the whole country, the center of the industry remained fixed in Massachusetts, in whose southeastern counties the hand industry had been concentrated. Forty years later the supremacy of Massachusetts in wire-making was won in an equally casual fashion. Ichabod Washburn, from Rhode Island, had undertaken in Worcester, Massachusetts, to manufacture cards for textile machinery, in the pro-
duction of which that city had specialized. Although card-making was a ma-
chine process the manufacture of wire for the cards was carried on by artisans
in a slow and inefficient fashion. Washburn turned his abilities to the perfe-
tion of wire-drawing machinery. Successful in 1830, he built up at Worces-
ter the greatest wire industry in the nation. New uses, particularly the tele-
graph, made a larger market for his product.

In the manufacture of firearms, however, Americans made their greatest
contributions to industrial practice. A gun was not a single piece of metal;
it was an assembly of pieces. Gunsmiths made and fitted the pieces together.
It was an inefficient method of making guns in the first place; and it made
their repair an individual item. The idea of applying machinery to the man-
ufacture of identical and hence interchangeable gun parts had certainly been
conceived in France in the late eighteenth century. But American organizer-
inventors brought the method to success. One of them was Eli Whitney,
who by 1798 was convinced that his cotton gin would never enrich him, and
who received in that year a government contract for 10,000 muskets which
he intended to manufacture on a “new principle.” In the following year
Simeon North, a farmer turned scythe and pistol maker, received a govern-
ment contract for pistols. Whitney slowly installed his system at a village
outside New Haven. North manufactured his pistols at Berlin and later also
at Middletown. The two experimenters thus worked within a few miles of
each other.

Whitney’s hopes and success have received the greater literary attention.
They certainly had the greater influence. He prepared “to substitute,” as
he put it, “correct and effective operations of machinery for that skill of
the artist” and to “make the same parts of different guns . . . as much like
each other as the successive impressions of a copper-plate engraving.” The
several parts of the muskets were manufactured by machinery whose opera-
tion required little manual skill; these parts were made “with so much pre-
cision that when, in the later stages of the process, [they] came to be put to-
gether, they were as readily adapted to each other, as if each had been made
for its respective fellow.” Whitney’s interchangeability was not that of the
twentieth century. In guns made at Harpers Ferry in 1824 “the joint of
the breech block was so fitted that a sheet of paper would slide loosely in the
joint, but two sheets would stick.” Nevertheless Whitney cast forward over
the decades a shadow which was to touch Henry Ford, in whose factories
some parts were made with a precision of 1/10,000 of an inch.

The principles which Whitney and North applied more or less contempo-
raneously were perfected in their shops, in government armories, and in other
firearm establishments in the United States. Workers or superintendents in
such establishments invented and improved lathes, millers, cutters, grinders
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—all varieties of machine tools. The system was then applied to other articles. By it Chauncey Jerome built his cheap clock with brass works. In 1848 another American, A. L. Dennison, defying the tradition of centuries of artisan production, established the American Watch Company at Waltham and attempted the manufacture of watches by machinery. He was eventually successful. The sewing machine, patented in 1846, was within a few years produced by the same uniquely American methods. All in all, by 1860 American machine tools were as original, various, and efficient as those of Europe. What is more, they had been organized in a new fashion, and it is significant that in Europe the Whitney method was known as "the American system."

THE ORGANIZATION OF INDUSTRY

In spite of Hamilton's hope that the lack of capital for investment in manufacturing could be overcome, Albert Gallatin, another Secretary of the Treasury, declared nearly twenty years later that the deficiency of capital was "the only powerful obstacle" to the "introduction and advancement of manufacturing in America." Indeed, the problem of securing capital was not easily solved until after the American Civil War. At first such American capital as sought investment gravitated to enterprises which were more certain in their possibilities of profit—speculation in agricultural land, turnpikes, canals, or railroads, and even foreign commerce. Nor was European capital tempted into the gap. Funds from overseas were not available for factories whose dividends were problematical and whose success would curtail imports from European industries. Nor did the state see fit to come to the rescue as it did with transportation or banking enterprises. The risks were too great and the public need not so clear. The occasional grant of small loans and subsidies, or of tax exemption for a limited period, or the right to run a lottery, was as far as such direct assistance usually went and even then it was more general in the early part of the period than in the later.

In spite of these handicaps industrial capital was accumulated. The census of 1820 placed the sum so invested at $50,000,000; in 1850 it was $500,000,000; a decade later it had doubled to $1,000,000,000. These sums were variously recruited. Some professional men and farmers invested their surpluses in manufacturing. In other cases the artisan or handicraftsman developed into a manufacturer. This evolution, to all appearances a natural one, was retarded by the artisan's inability or unwillingness to be a merchant for his product and his devotion to the high standards of craftsmanship. A larger source of capital was the merchant class. Members of this group had funds, they had access to markets in which they could dispose of their products, and they had selling abilities. Some of these merchants were in for-
eign trade, among them Almy and Brown of Providence, and the Appletons and Lowells of the cotton industry north of Boston. There was a notable transfer of funds from foreign commerce into domestic industry when the Jeffersonian policy of peaceful coercion and the War of 1812 interrupted American international trade. Domestic as well as foreign commerce furnished the means and the personnel for industry. Illustrations of this transfer have already been given in the case of meat packing and shoemaking. The iron industry of Pittsburgh gave further illustrations of this process. As early as 1828 an English observer closed his description of that city with the prophecy, "If the capital of her citizens should eventually be drawn from any branch of commerce, it will probably be thrown into manufactories, where the profits will be as great, and much more permanent." Some twenty years later an analysis of the great majority of the owners of the rolling mills of Pittsburgh showed that they had been connected with commerce of one sort or another, as merchants, wholesale grocers, wholesale dry-goods merchants, commission and forwarding merchants, and canal transporters.

Merchants provided not only the capital for overhead investment in industry, but also the funds for keeping it running. Probably this was their greater contribution. It is not surprising, therefore, that mercantile functions were often carried on simultaneously with those of manufacturing. The store and the factory were married. The former afforded a local outlet for the products, or it sold the diverse products which were often taken in exchange for the manufactured commodity. Often the profits from the store would tide over a mill which failed to make money. Finally the store goods were used in payment of wages to employees.

Industry itself was, however, the greatest source of capital for industry. Early enterprises reinvested their returns in the business. In some instances the incorporators of an enterprise pledged themselves to turn back the profits for an initial period of years. Profits were ample for this purpose. To be sure, many concerns were failures; and the rate of return varied excessively from year to year even in single establishments. But the growth of large concerns from small units all over the country can usually be explained only through the reinvestment of earnings.

The organization of industrial capital was at first on a simple scale. The customary form was either a partnership or else a joint-stock company which was really a larger partnership. For the latter as for the former articles of agreement were signed fixing the conditions of association, the duration of the arrangement, and the shares contributed. These shares might be in property—mill sites, water power, building materials—or in money. No authorization from the state was necessary for such a concern. The Hartford Woolen Manufacturing Company was such a joint-stock company.
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Thirty-one shareholders owned its stock of £2,150. Some of these owners were merchandising companies of Hartford. Throughout the first half of the nineteenth century individual partnerships or joint-stock companies were the most important methods of business organization. They were usual in the iron industry; they predominated in woolens; and even in cotton textiles they were typical in certain geographical areas like Rhode Island.

As in the case of banking and transportation, the corporation finally made its way into manufacturing. Though in view of the number of jurisdictions involved, the advance was necessarily uneven, manufacturing and mining corporations constituted after 1830 in most eastern states the largest group of enterprises granted charters. There was plenty of opposition to charter policy. The general arguments against all corporations, that they were special privileges granted to an aristocracy and tending toward monopoly, were repeated on this occasion. In addition, opponents asserted that manufacturing corporations were opposed to "individual enterprise," identified in this instance with simpler forms of ownership and organization. "Individual enterprise" was both more democratic and more efficient. "No company can prosper that is exposed to the competition of individuals upon a perfect footing of equality. The employment of agents and the natural carelessness of men who perform a duty with no feeling of direct interest are such drawbacks upon profits as must in such cases necessarily ruin a corporation." Though these were the words of politicians, the sentiment would have appealed to Samuel Slater, who expressed the old belief that those who furnished the money for enterprises would have the greatest spur to manage them wisely.

On the other hand, legislators nearly everywhere exhibited toward manufacturing corporations a more cordial attitude than to those in banking and transportation. After all, the first seemed more local in character, less menacing in magnitude, and by their very number more likely to be rivals than monopolies. These considerations, coupled with the competitive promotion of manufacturing within their borders, early induced many states to pass acts of general incorporation for manufacturing enterprises. New York led the way in 1811; New Jersey, Connecticut, and Massachusetts, among the important industrial states, followed suit before 1851. Though some of these measures were restrictive and the process of special chartering continued, a mere conformity with the provisions of a general incorporation act in general removed the stigma of favoritism and aided the formation of corporations. As manufacturing corporations, often along with others, picked up the advantages of greater permanence and of a liability for the debts of the enterprise limited to the individual stockholder's investment in it—a privilege conferred by Massachusetts legislation, for instance, in 1830—and as the
amount of capital to launch an industrial enterprise grew, the corporation became increasingly popular—at least among incorporators. They were even emboldened to claim for their concerns a private character as distinguished from corporations in banking and transportation. The two last had a slightly public air; in their affairs the intervention of the state might be justified. Manufacturing corporations were "private" corporations and, by inference, free from regulation and control.

Such pretensions to immunity the course of labor legislation partially challenged. Nor were all contemporaries of the corporate trend satisfied on other scores that the appearance of the chartered manufactory contributed to the public benefit or answered the arguments of its early foes. Thus as late as 1863 a large shareholder in the Lowell enterprises unveiled, from motives partly self-interested, the malfeasances of his fellow capitalists. A small clique perpetuated its control of numerous corporations by chicanery. Stockholders were induced to sign proxies in its behalf when they received dividends. Annual meetings were called in small rooms that would not hold all the stockholders, and at these meetings by one subterfuge or another the machine programs would be forced through. Meetings were called on short notice or for several different concerns in different places but at the same time in order to divide the opposition. Through an insurance concern of which it had the control the clique loaned money to various industries, and then it manipulated the industries or their securities for its advantage. In this way twelve or fifteen Boston capitalists controlled most of the great corporations of the state. One man was a director of twenty-three companies and president of eleven. High salaries, easy jobs, nepotism, and other unsound business practices were the charges collected by this inner ring from the companies it controlled.

The physician must watch his patient with care and skill, . . . the merchant tradesman, or proprietor of property must assiduously guard his interests; the politician must serve his constituents. . . . Only the managers of our Manufacturing Corporations can outrage right and common decency, and then with impunity defy their employees, owners, and all the world.
CHAPTER X

The Formation of a Laboring Class

Recruiting a Labor Force

The new factories required workers. Hamilton in his report on manufactures, while admitting their scarcity, had canvassed with characteristic hopefulness the sources of supply. Skilled workers could be recruited through immigration, for the material and religious advantages of the United States would tempt "foreign artists" to this country. In a measure these anticipations were realized, for there was a considerable emigration of artisans from Great Britain and Ireland. Some of them were scamps, who sold a knowledge and skill they did not have; others, like Slater and the Scholfields, were the agency by which industries were transferred to the United States. Such immigrants, however, did not furnish the unskilled labor which ran the new machines. They were the foremen or overseers or even the manufacturers. Not until the decade of the forties did immigrants become numerically important parts of the industrial army. Then industrial centers everywhere illustrated the change. In 1826 the Fall River operatives were American; in 1846 an Irish element was noted; in 1860 English and Irish formed the majority of the working population. In the Rhode Island textile region the same transformation was concurrently taking place. Even in the factories of Lowell the foreign operative displaced the American at the middle of the century. This invasion alarmed the native worker, and the Native American movement of the fifties capitalized the competition of the European laborer, with his lower standards of living and his necessitous condition, to fan into flame an anti-foreign campaign. The papers of this party and those of the workingmen attacked the capitalist who imported cheap labor in order to pay lower wages or to break strikes, and called for legislation which would protect the American workingman against the pauper labor of Europe just as the manufacturer was protected by the tariff against its commodities.

Although the labor force was long predominantly American, it was not solely a masculine one. American males found the opportunities of com-
merce and agriculture more attractive, and American employers disliked paying the high wages necessary to tempt them away from such occupations, especially since it was not always necessary. The subdivision of labor and the invention of power machinery made it possible to use the strength of women and children; these could become the "little fingers . . . of the gigantic automatons of labor-saving machinery," as one of the advocates of the new system of production wrote. Tradition, national advantage, and altruism happily combined with material advantage to make the employment of women and children not only natural but a positive human good. Women had always manufactured. Spinning and weaving had been done by women in the home, and they had been helped by the children. The simple translation of this operation and this labor force to the factory raised no doubts in the minds of the early factory promoters. What is more, the employment of these people opened the door to an El Dorado. Their work would increase the national wealth. Hamilton in 1791 wrote of their employment, "Women and children are rendered more useful, and the latter more early useful, by manufacturing establishments than they would otherwise be." Individuals as well as the nation benefited from the labor of women and children, for while the farmer tilled his fields his wife and children might be earning money in the factory.

Nor was the sole advantage a material one. Puritan thinking—and it was by no means confined to New England—had looked upon work as a means of righteousness. Now the possibilities of salvation through labor were enlarged. Employed in factories, women "would be kept out of vice" and children would be given not only a vocational training but a moral education. Inured in their formative years to the habits of industry, they would grow up to be serious and industrious citizens. Finally, poverty might be abolished through the factory system. Widows and children or those who were otherwise helpless might find in the new industry a way of employment which would give them independence and free the community of their care. The early factory promoters from Samuel Slater to Francis Cabot Lowell were not regarded as the exploiters of the unprotected classes of the community. Rather they were the benevolent heralds of a new day.

The "Advantages" of Child Labor

The proportion of women and child operatives employed in the new factories varied from industrial district to district. But, from the first, child labor predominated in the textile regions south of Boston. The original labor force of Samuel Slater’s water-frame factory was a young one. During the first week of January, 1791, he had at work nine operatives, seven boys and two girls, all of whom were between seven and twelve years of age. Unfor-
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Fortunately, as factories grew more numerous the statistics of child employment became fewer and vaguer. It was not until the census of 1870 that a fairly complete enumeration of employed children was made. But such figures as are available for the first part of the nineteenth century show the continued concentration of child labor in the textile regions which stemmed from the Slater enterprise. In 1831, of Rhode Island's cotton mill labor force of 8,500, 3,472 were children under twelve years of age. The other states where child labor was prevalent—New York, Connecticut, and New Jersey—made no approach to this figure or percentage. Southern New England's preeminence in this respect was due, in the first place, to Slater's example. He brought to this country not only a knowledge of the English machinery but also an acquaintance with its labor policy. Since the early English cotton factories were run by children, Slater followed the same policy in his own factories. The mule spinning which became characteristic of the region also led to the greater employment of children, since this machine required one adult operative and two child assistants.

These child-labor forces were not, however, recruited as in Great Britain. There was no wholesale transfer of children from the poorhouse to the factory; nor was the apprenticing of children successful. Rather the family system of employment predominated. Newspapers in the industrial regions were filled with advertisements which illustrated its prevalence. A typical advertisement in the Providence Manufacturers' and Farmers' Journal of January 14, 1828, reads: "Families Wanted—Ten or Twelve good respectable families consisting of four or five children each, from nine to sixteen years of age, are wanted to work in a cotton mill, in the vicinity of Providence." There were several advantages to the family system. Since the children and their families were not separated and the parents could protect the morals of their offspring and discipline their waywardness, the arrangement helped to break down the American prejudice against the evil conditions of child labor in the English factories, gave stability and order to the mill village, and exempted the employer from all responsibility for the care of his employees. That was a parental obligation.

Although children were put to work in the factory at very tender ages, very few were younger than seven. Probably most of the children were between the ages of ten and twelve. They worked the same number of hours as adults, from eleven to fourteen a day. Their tasks, however, were the lighter ones. Girls put empty bobbins upon the machines and removed them when they were full; boys carried boxes of bobbins from place to place; children pieced broken threads upon the mule. Children simply policed the machinery. Machinery, moreover, was run slowly and with frequent interruptions. Probably the comparatively leisurely nature of the factory explains how chil-
dren could work the long hours required of them. Nevertheless, even con-
temporary observers were impressed by the disadvantage of confining young
spirits and bodies within noisy, ill ventilated, poorly lighted factories. In 1801
Josiah Quincy visited one of Slater’s establishments. He wrote that the
attendant was “very eloquent on the usefulness of his manufacture and
employment it supplied for so many poor children. But an eloquence was
exerted on the other side of the question more commanding than his, which
called us to pity these little children, plying in a contracted room, among
flyers and cogs, at an age when nature requires for them air, space, and
sports.”

The helplessness of these children tempted occasional overseers into severe
disciplinary measures. The labor papers featured such instances of excessive
brutality as undoubtedly occurred. Probably whipping was common. It was
said that the whipping room was an appanage of most mills. With pharisa-
ical superiority Massachusetts boards of investigation inveighed against the
barbarous use of the strap in Rhode Island. That children had to be struck
or sprinkled with water in order to keep awake is not surprising in view of
the hours they worked. Universally severe punishments were, however,
much less common than in the early factories of Great Britain. So many
were the possibilities of escape from economic and social disadvantages in
this country that employers had to go a long way to conciliate their workers.

Although child labor persisted through the first part of the nineteenth
century, the argument that factory employment was a moral and intellectual
force in the training of children quickly withered. Obviously the children
in the factories had neither time nor opportunity to learn to read and write.
Nearly everyone recognized that such a situation was a danger to a demo-
cratic society. Apparently manufacturers admitted the validity of the argu-
ment. Samuel Slater founded a Sunday school not for the religious training
but for the secular education of his little children. It met on Sunday so as
not to interfere with their daily labor in the factory. Other Rhode Island
manufacturers established evening schools for the same purpose and reason.
In 1813 Connecticut, probably inspired by the traditions of the apprentice
system, compelled proprietors of manufacturing establishments to provide
for the education of child operatives. These arrangements did not answer the
need. Children working six days were obviously not eager for learning on
the seventh, nor were those working fourteen hours a day likely to benefit
much from evening instruction. In both Massachusetts and Rhode Island
there was an agitation for the passage of laws which should compel children
to attend school for at least a fraction of the year. In 1836 Massachusetts re-
quired all children under fourteen years of age to have three months’ school-
ing in the year preceding their employment. Four years later Rhode Island,
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whose problem was more intense, passed a diluted imitation of this law. In 1848 Pennsylvania took a further step with an act which forbade the employment of children under twelve years of age in textile factories.

More significant than such feeble legislation was the fact that in the debates between the supporters and opponents of such legislation the employers were on the defensive. They affected to believe that they gave children work as an act of charity to keep them and their families from want. Or else they pictured themselves as besieged by parents who demanded jobs for their children. Undoubtedly the cupidity and laziness of parents was a partial explanation of the employment of children. A cotton manufacturer observed that often parents "were disposed to live upon the labor of their children rather than upon their own." Yet this parental laziness was enforced by factory policy. Large families with many children were sought in factory advertisements; space in factory tenements was determined by the number of children who worked in the factory, not by those who attended school. Child labor, in short, was employed in American factories because it was one answer to the problem of obtaining an inexpensive labor force.

WOMAN'S WORK

In 1860 women workers constituted 20 per cent of factory workers. Three industries were conspicuous for their employment: boots and shoes, men's ready-made clothing, and cotton textiles. In the first women were 40 per cent of the total employees; in the latter two about 60 per cent. Such employment was not necessarily the result of the industrial revolution. In the shoe industry, as we have seen, the factory and the machine came late; women were predominantly employed in the putting-out system. It was the putting-out system, also, which organized women in the clothing industry. A central shop cut out the garments and women workers in charitable institutions, on the farms, or in city tenements did the sewing on a piece-work basis. Competition forced wages down and necessitous women workers had to labor incredible hours to gain a pittance. These conditions aroused less attention and comment—they were traditional and they were dispersed—than did the employment of women in cotton factories. For here women left their homes and worked under novel conditions. Observers were particularly interested in the north of Boston region where throstle spinning, with its lower requirements for strength and skill, facilitated the employment of women. In 1831 four-fifths of the workers in Massachusetts textile mills were women, and at special times and places the percentage was much higher. Most were in their late teens or early twenties.

The employment of young women was a deliberate policy on the part of the industrial pioneers in the Boston Manufacturing Company. They real-
ized, however, that in order to recruit such a labor force they would have to dispel the impression that factory work was degrading and immoral, an impression created by disclosures of conditions in the English factories. The Waltham capitalists, as Appleton later wrote, "could not perceive why this peculiar description of labor should vary in its effects upon character from all other occupation. . . . It was not perceived how a profitable employment has any tendency to deteriorate the character." But they took precautions that it should not. They created the "Waltham system." This system was in turn applied at Lowell and then copied in most of the other textile centers of this area. Its paternalistic care of the operative was originally devised to break down the popular suspicion of factory labor and to satisfy the sense of obligation which the first incorporators of the company undoubtedly felt for the moral welfare of their help.

Only persons of good character were employed in the mills. The Lowell Manufacturing Company in 1836 stated that it would not "continue to employ any person who shall be wanting in proper respect to the females employed by the company, or who shall smoke within the company's premises, or be guilty of inebriety or other improper conduct." Girls were discharged for laziness, for lying, for profanity, and one factory at least had a rule providing for the discharge of people who attended dancing school. It was natural when so much attention was paid to morality that church attendance should be expected of all operatives. The keepers of the company boarding houses were required to report operatives who did not attend divine worship, but only one company taxed its operatives to support a church. Requirements were made of even the highest operative. Overseers in charge of the workrooms were selected with greatest care. Most of them were married men, and many of them were teachers in the Sunday schools which the religiously inclined operatives attended.

The companies provided boarding houses for the workers and in most cases compelled them to live there unless they had families in the city. The companies paid the board of the operatives to the keepers of these houses. They were often women whose character was vouched for by decent widowhood and a few small children, and they were supposed to run their establishments with the strictness of a girls' school or a nunnery. They were to keep a watch over the habits of their wards and expel undesirable callers. Doors were locked at ten o'clock, and no girl was admitted thereafter without a very special excuse. The same careful oversight followed the operatives to the factory. Near the door sat the overseer at his desk, and no girl was to leave the room without his permission.

This elaborate protective system was crowned by the blacklist. Whenever an operative was honorably discharged she was given a paper to that effect.
THE FORMATION OF A LABORING CLASS

If an operative was dishonorably discharged, her name and offense were entered upon a book and the unpleasant news was “sent around” to the other mills. Occasionally the names of culprits and their misdemeanors were sent to other textile centers. Without an honorable discharge it was impossible for a worker to secure other employment in textile mills. People were blacklisted for offenses ranging all the way from prostitution to fixing looms incorrectly. Furthermore an honorable discharge was not granted by a Lowell mill unless the operative had worked a year and had given a proper notice of withdrawal. More effective than such disciplinary action, however, was the character of the girls themselves. They were their own most successful moral police.

In its first bloom the Waltham or Lowell system undoubtedly created unusual factory conditions. Visitors to Lowell were greatly impressed by the flower boxes at the windows of the factory, by the bits of verse or scriptural quotations which the operatives tacked upon the looms to memorize as they worked, by the full attendance of workers at the Lyceum when Emerson spoke, by the girls’ societies for studying French and German and for debating, by the “Improvement Circle” which published the Lowell Offering—filled with nostalgic descriptions of country life, Cinderella stories of the operative marrying the rich young man, and some verse of moderate merit—and by the educated and modest demeanor of the operatives. In fact the girls went to Waltham and to Lowell because it was the equivalent of an education. Home industry was breaking down, and other occupations such as teaching had not yet been opened extensively to women. Restless, energetic young women wanted freedom and the chance to make money. One of them wrote:

In plain words,
I am a schoolma’am in the summer time
As now I am a Lady of the Loom.
... inside these factory walls
The daughters of our honest yeomanry,
Children of tradesmen, teachers, clergymen,
Their own condition make in mingling.

Some of these “Ladies of the Loom” were eager to show that women could take a place in the world and make their own living. They were not permanent operatives. If work was slack they would return to the parental roof until business picked up again. At the end of four or five years, after a glimpse of the world and a smattering of culture and with a little money, they would return to their schooling, go back to the farm, or marry. The hardships of industrialism did not bear heavily upon such as these.
About 1840 the pretty features of this industrial idyl began to fade. On the one hand the textile centers north of Boston began to develop a class of permanent factory operatives. The girls who earlier had come to the mills in Lowell as to a boarding school began to go elsewhere. Miss Farley, the editor of the New England Offering, the successor to the Lowell Offering, wrote that she saw “the Great West open for our girls away there, with all this clamor for teachers, missionaries, and wives.” The owners of the mills found it so difficult to recruit farmers’ daughters close at hand that agents were dispatched to northern New England and paid premiums for the girls whom they secured. These newcomers tended to form a permanent operative class, since they lived so far from home that it was not easy for them to leave the industrial centers. At the same time immigrants began to displace the native workers. In the late forties Irishwomen, who earlier had done the cruder manual tasks about the mills, began to tend machines. The creation of this operative group from “the Irish and low-class New England girls,” as Miss Farley described them, was hastened by the lowered wages which the employers were paying. Meanwhile the character of the employers had altered. The pioneers of these textile enterprises, with their sense of paternal responsibility, were leaving the scene, and their places were taken by capitalists and absentee stockholders, whose major interest was dividends and profits.

In their hands the Waltham or Lowell system became an efficient and dread agency for punishing revolt and preventing change. Through the blacklist discontented spirits were deprived of a livelihood. Beyond the blacklist lay the pervasive control of the industrial cities by the corporations. In Lowell many overseers in the mills were also aldermen in the city, the clergy were well aware whence the support for the churches came, employees who voted the wrong ticket were told they would lose their jobs, people were afraid of expressing sympathy with “reform” lest they offend the corporations, and the press was used to influence opinion in Lowell and elsewhere. Even the workers’ papers, the Lowell Offering and its successor, the New England Offering, were fathered by the corporations. With few exceptions their articles viewed the Lowell system optimistically, a literary trait which was helped by the fact that Miss Farley, one of their later editors, was not then working in the mills but looking back at them through the haze of reminiscence.

**The Dawn of Labor Organization**

Factory laborers were not the first to organize into associations to protest against their conditions of labor or to seek better conditions. In fact, the first strike of textile workers did not come until 1828, and unions of textile workers were never very effective. The first unions came in the handicraft
trades. With the widening of the market through transportation and the resultant reorganization of production, the merchant capitalist, as we have seen, for instance, in the shoe industry, displaced the old artisan as the center of authority. These newcomers had capital or knew how to borrow it; they purchased the raw material and made arrangements for its manufacture; they advanced credits to the retail merchants who disposed of the product. Since they were competing intensely with each other in the growing markets of the country, they were interested in lowering costs so they could undersell rivals. The most feasible way was to reduce prices through lower labor costs. Work was subdivided, emphasis was placed upon quickness and cheapness in production rather than skill. Boys, apprentices, women, and children—greenhorns all—were employed to do the simpler operations and wages were reduced. Thus it came about that printers and shoemakers (or cordwainers as the latter were called), both skilled trades, had the first and most continuous labor organizations in the United States. Other craftsmen in the building trades—carpenters, shipbuilders, plasterers, masons—were menaced by a new mobility of labor, or the organization of their calling by “bosses” or “speculators” seeking to produce for an urban market a low-cost product through cheap standards and less expensive ways of production. Associations of craftsmen protested not against machinery, because that was a matter of indifference to them, but against the factors which were altering their trades. They resented the lower wages required on “market” products, the lowering of the standards of workmanship, and the invasion of their trades by unskilled or semi-skilled competitors. They regretted, above all, that the control of their trade had passed from the “members of the profession” into the hands of “capitalists.”

Such labor organizations as existed before 1860 were rarely permanent bodies. They were generally called into existence by some particular grievance, and dissolved when they had succeeded in remedying it or had been defeated. There were times, however, when grievances heaped up and when the possibility of redressing them was favorable. Such were the periods of mounting prices and national prosperity. Then the rise of commodity prices outran the increase of wages, and the workers, feeling the pinch, demanded higher wages. At the same time the rising market made the employer more willing to yield, for he could pass his concessions along to consumers in the form of higher prices. On the other hand, periods of national depression, when prices were falling and men were discharged or had their wages cut, were not favorable to labor organization. The worker no longer thought of cooperating with his fellows to remedy industrial injustice or to improve his condition; the mere keeping of a job absorbed his whole attention. If organizations were able to ride through these depressions, they changed their aims
from the realistic details of jobs, hours, and wages to more distant and ideal goals, the reorganization or regeneration of society. These generalizations were illustrated with particular clearness after 1830.

From 1830 until 1837 the nation was in the grip of one of the most extravagant eras of speculation and expansion in its history. Labor organizations multiplied prodigiously. In the industrial centers new crafts—plasterers, bricklayers, blacksmiths, plumbers, even women workers—organized societies for the first time, and the existing organizations of other handicrafts increased their membership. The next step was the natural coalescence of the craft societies of a single industrial city into a central organization to protect and promote the laborers' common interests. Such cooperation between different crafts had taken place in the late twenties; now more permanent organizations were formed. These organizations of craft societies were called trades' unions. "The Trades' Union," wrote a labor author in 1836, "is a system of our National Government in miniature. It is composed of delegates elected by the Societies represented in proportion to their number of members, the same as the Congress is composed of delegates from the people." These city trades' unions carried on propaganda through a labor paper already in existence or created for the purpose; they collected strike funds by dues from the craft union members; they authorized strikes and conducted such outbreaks to a conclusion. The first trades' union was organized in New York in 1833; by the end of 1836 there were at least thirteen in the country.

In these dynamic early thirties even organizations on national lines were created. If "a Union of the Trade Societies . . . should be carried into effect throughout the United States," wrote a contemporary, "the rights of each individual would then be sustained by every workingman in the country, whose aggregate wealth and power must be able to resist the most formidable oppression." Such protection was necessary, for even though the railroad age had not yet arrived, there was already a national labor market, and employers in one city were undermining the strength of local labor organizations by importing workers from other places. Accordingly in 1834 delegates from six industrial cities assembled and established the "National Trades' Union." This organization was supposed to federate the existing city trades' unions. In this task it did not succeed. Conventions remained its only activity. Representation at the next two—there were only three in all—was meager and incomplete, and resolutions and debates were its only contributions to the American labor movement. At the same time a few crafts were establishing national craft unions. The leadership was naturally taken by the pioneers in organization, the cordwainers and the printers, but their national
unions, formed in 1836, were abruptly destroyed by the panic of the following year.

Before the blasts of hard times began to blow in 1837 the labor movement had exhibited real vigor. The union membership in the industrial centers of the country had increased between 1834 and 1836 from 26,250 to 300,000; and in the five years between 1833 and 1837 nearly 175 strikes, many of them aggressive ones, had been waged.

The methods of these early American labor organizations have a curiously modern ring. In spite of its difference in lingo, a strike of 1799 in Philadelphia might have taken place a hundred years later. In that year the journeymen cordwainers had a "turnout" in order to raise the wages paid for the making of boots. A "tramping committee" was appointed to patrol the shops lest the journeymen should become "scabs" and resume work. When the strike was over the association demanded the discharge of workers who had been "scabs"—a hint of closed-shop policy—and when employers refused to obey they "scabbed" their shops.

However customary such labor unions and strikes may seem in the twentieth century, they were a disquieting novelty in the United States of the late eighteenth and early nineteenth century. It seemed to employers and to others that they obviously violated the common law which forbade combinations and conspiracies to injure others. In quite typical fashion, therefore, labor quarrels were transferred to the courts for legal if not trade adjudication. The first criminal conspiracy trial in the country occurred at Philadelphia in 1806. It dealt with the organization and activities of the Philadelphia cordwainers, one of whose "turnouts" has already been described. The counsel for the union, appealing to the American shibboleths of liberty and democracy, pictured the employers as attempting to oppress the poor worker. The prosecution, on the other hand, described the employers as defending the liberty of those individuals who wanted to work and as "the guardians of the community from imposition and rapacity." But they had more potent appeals to self-interest. Prices would be increased if higher wages were paid, and the industrial position of the city was menaced. It was no wonder that the jury accepted the judge's charge that "a combination of workmen to raise their wages may be considered in a twofold point of view: one is benefit to themselves . . . the other to injure those who do not join the society. The rule of law condemns both." This decision struck the laborer as a ridiculous travesty of justice and fact. " Shall all others, except only the industrious mechanics be allowed to meet and plot; merchants to determine their prices current, or settle the markets, politicians to electioneer, sportsmen for horse-racing and games, ladies and gentlemen for balls, parties, and
banquets; and yet these poor men be indicted for combining against starvation?"

Decisions in later cases avoided the extreme assertions of this early one, for judges tended to emphasize not so much the mere unlawfulness of the combination as the unlawfulness of the methods it pursued and the object which it had in view. It was usually discovered that in its methods and purposes the union was injuring something or somebody— the employer, other employees, the state, trade, or commerce—and hence was illegal. But in 1842 the case Commonwealth v. Hunt was decided by the Massachusetts Supreme Court. Chief Justice Shaw, a great American jurist, wrote the opinion. The alleged injury had been an attempt by Boston cordwainers to enforce the closed shop. Incidentally the decision declared this purpose lawful. Its great importance, however, derived from its opinion on the legality of labor unions, their purposes and methods. Toward the close of its opinion the court said,

We think, therefore, that associations may be entered into, the object of which is to adopt measures that may have a tendency to impoverish another, that is, to diminish his gains and profits, and yet so far from being criminal or unlawful, the object may be highly meritorious and public spirited. The legality of such an association will therefore depend upon the means to be used for its accomplishment. If it is to be carried into effect by fair or honorable and lawful means, it is, to say the least, innocent; . . . if by falsehood or force, it may be stamped with the character of conspiracy.

This decision became a precedent for other courts. It definitely recognized the legal right of labor unions to exist. Furthermore, by refusing to punish the demand of the laborers for a closed shop it legalized an existence which was not circumscribed but broad and free.

Factory Wages

For the period before 1860 it is impossible to make exact statements concerning the amount or tendency of industrial wages. In the first place, adequate data of the wages paid do not exist. In the second place, there is no precise way of measuring the qualifications which must be introduced in dealing with daily and weekly money wages. Allowances, for instance, should be made for unemployment, for the total wages earned by a family, for the manner in which wages were paid, for changes in the cost of living.

Unemployment for the first time became a recognized evil in the years of depression after 1819. One guess placed the total for the country at 500,000. The phenomenon recurred with the panic of 1837. In Boston, Philadelphia,
Baltimore, and New York, editors were alarmed at the disquieting phenomenon of men idle because they could not obtain work. Horace Greeley estimated that in 1837–39 one-third of the working population of New York City was unemployed. It is obvious that such figures must be taken into account in estimating real wages. Throughout the country, however, the grim realities of unemployment were, even as late as the thirties, generally concealed by the fact that industrial work was still interrelated with other occupations. Farmers’ daughters returned home to “help out” when the mills were shut down; the laborers in the towns and villages of the nation usually had a small truck garden, some poultry, and a pig to keep away want when money wages ceased or were pathetically small.

Another complicating factor in wage discussions was the wage received by the family as contrasted with that earned by the so-called breadwinner. The family system under which small children labored long hours for pitiful wages might be socially undesirable, but it might accumulate a total wage which permitted group survival. A classic example of this arrangement was the contract made between Dennis Rier and a Lancaster, Massachusetts, cotton mill:

1815, Jan. 27, Dennis Rier, of Newberry Port, has this day engaged to come with his family to work in our factory on the following conditions. He is to be here about the 20th of next month, and is to have the following wages for work:

<table>
<thead>
<tr>
<th>Name</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Himself</td>
<td>$5.00</td>
</tr>
<tr>
<td>His son, Robt. Rier, 10 years of age</td>
<td>.83</td>
</tr>
<tr>
<td>Daughter, Nancy, 12 years of age</td>
<td>1.25</td>
</tr>
<tr>
<td>Son William, 13 years of age</td>
<td>1.50</td>
</tr>
<tr>
<td>Son Michael, 16 years of age</td>
<td>2.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>10.58</strong></td>
</tr>
<tr>
<td>His Sister, Abigail Smith</td>
<td>2.33</td>
</tr>
<tr>
<td>Her daughter, Sally, 8 years of age</td>
<td>.75</td>
</tr>
<tr>
<td>Son Samuel, 13 years of age</td>
<td>1.50</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4.58</strong></td>
</tr>
</tbody>
</table>

House rent to be from $20 to $30. Wood cut up $2. per cord.

Rier’s own wage was probably inadequate for the support of this entourage, but when the wages of his relatives and little ones were added to his own he probably made shift to get along.

When the Boston Manufacturing Company paid its hands cash wages, it introduced an innovation which still had elements of unusualness as late as
1850. Much more common was the “store order” or “truck system” under which the worker was paid by an order entitling him to purchase goods to a certain amount in the store owned either by his employer or by a merchant with whom the former had made some arrangement. Occasionally the workers were paid off with a share of the products which they had manufactured. All these arrangements had a natural origin. The putting-out system had grown around a storekeeper who paid the workers in commodities when they brought in the finished products; many early factories were erected and operated by those who were at the same time retail or wholesale merchants; in a country where currency was scarce barter or “payment in kind” was a necessity. However justified the store order system was in the first place, it became a means of making profits for the manufacturer and of exploiting the workers. Employees were forbidden to trade elsewhere than at the company store, and when they arrived at the employer’s store or at the one with which he had made contractual arrangements they found the price of goods was usually marked up to make greater profits. Often fraud increased these excess profits. Since the store order system prevailed in Fall River, it applied to Hannah Borden, one of the Borden family and a star weaver in their mills. Sensing that she was being cheated, she was able to compel an accounting because of her family position, only to discover that she had been charged for various articles of male wearing apparel which “Ladies of the Loom” were not then in the habit of wearing. It was conservatively calculated that under the store order system the real value of wages was reduced at least 25 per cent.

Focusing merely upon money wages, we can safely say that they were higher in 1860 than they had been in 1790. The rise had by no means been uninterrupted and uniform. In view of the inadequacy of data, the difficulty in defining job classifications and of determining how many people were paid what wages, all figures on the extent of the rise are pure surmise. One index of money wages, apparently on a day basis, has them increasing 91 per cent from 1791 to 1820; another index, much more carefully compiled, has them increasing an additional 30 per cent from 1820 to 1860. If these figures are conjectural, it is piling conjecture upon conjecture to synchronize them with changes in the cost of living to determine real wages. On this count the two indices provide a substantial increase as well: one of 22 per cent for 1791 to 1820 and of 39 per cent for 1820 to 1860. Within the second time span, real wages fell sharply in the late thirties and throughout the fifties. In the latter decade they failed dismally to keep abreast of the rise of prices and the worker was distinctly worse off than in the forties.

In 1851 Horace Greeley published in the Tribune a weekly budget for a
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family of five. It will give some concreteness to the shadowy statistical ab-
stractions about wages

Barrel of flour, $5.00, will last eight weeks $0.62 1/2
Sugar, 4 lbs. at 8 cents a pound .32
Butter, 2 lbs. at 3 1/2 cents a pound .62 1/2 [sic]
Milk, two cents per day .14
Butcher’s meat, 2 lbs. beef per day at 10c per lb. 1.40
Potatoes, 1/2 bushel .50
Coffee and tea .25
Candle light .14
Fuel, 3 tons of coal per annum, $15.00; charcoal, chips, 
matches, etc. $5.00 per annum .40
Salt, pepper, vinegar, starch, soap, soda, yeast, cheese, eggs .40
Furniture and utensils, wear and tear .25
Rent 3.00
Bedclothes .20
Clothing .20
Newspapers .12

Total $10.37

The last item might well be regarded as a luxury by any except an editor, but
Greeley asked:

Have I made the workingman’s comforts too high? Where is the money to pay
for amusements, for ice-creams, his puddings, his trips on Sunday up or down
the river in order to get some fresh air, to pay the doctor or apothecary, to pay for
pew rent in church, to purchase books, musical instruments?

At the moment anthracite coal miners in Pennsylvania were getting $6.96 a
week; New York carpenters $12.00; spinners, weavers, and overseers in a
Massachusetts cotton mill $2.55, 2.46, and $12.00 respectively; and black-
smiths in a New York machine shop $9.78.

“WORK, FOR THE NIGHT IS COMING”

Throughout the country at the beginning of the nineteenth century the
normal working day was from sunrise to sunset. Outdoor workers con-
formed to this schedule, and when employment was seasonal, as in the case
of carpenters, they were driven during the summer months from early in the
morning until late in the evening. Factory operatives had equally long days.
Hannah Borden went to the mills and had her looms working at five
o'clock; she took an hour for breakfast at 7.30, worked from 8.30 until noon, when she allowed half an hour for dinner, and then worked until 7.30 in the evening; all in all she tended looms thirteen hours a day. At first such factory operatives worked fewer hours in winter than in the summer, when "good light" lasted longer, but later the introduction of artificial illumination helped to even out these irregularities. The average, however, remained high; in the Lowell mills in 1839, twelve hours and thirteen minutes. As if the hours of industry were not long enough, factories sometimes prolonged them by various devices. The chief stratagem was to start the machinery in the morning by "solar time" and stop it at night by clocks which were several minutes slower. This was euphemistically described as "factory time." In this way something between twenty and twenty-five minutes was added to the length of the working day.

The excessive length of the working day was not determined solely by the desire to make profits. At first long hours seemed natural to nearly everyone, for the farmer in his fields, the clerk in the store, the woman in the home all worked from dawn to darkness, and factory work differed very little in intensity from that in these other occupations. The moral outlook of the community also approved the custom of long hours. Religion stressed the duty of industry and diligence; leisure was equivalent to idleness, and idleness was a temptation to vice. Finally the new factory masters, largely because of their inexperience, felt that long hours were necessary in order to earn money on their investment. Machines were much more expensive than tools, and their cost could be recouped only if they were used more continuously. By the forties, when these original arguments for the long day were contradicted by the increasing tempo of machinery and the severity of factory discipline and by the profits received from machines in spite of their cost, it was discovered by the employers that the long hours were demanded by the operatives themselves. They gathered at the factory gates long before they were lifted, they cut short their meal hours, and they could hardly be turned away from the machines at night. The explanation of this excessive devotion to labor was the low piece rates. Factory operatives who wanted to make high wages had to labor long hours.

At first the advantages of children's and women's labor were so commonly and widely esteemed that there was little tendency to treat the hours of these workers as a separate problem. Hours of all workers, men, women, and children, were lumped together for common consideration. This refusal to make distinctions contrasted sharply with the contemporary situation in England, where legislation for the protection of these dependent groups was being enacted. Although little legislation was passed in this country, public opinion was prepared for action by debate and controversy. The need for educat-
ing children had, as we have already seen, resulted in laws which required some months of schooling for child factory workers. Massachusetts had passed the first legislation. This state took the next step in 1842, when it passed a law fixing the length of the working day at ten hours for children under twelve years of age employed in factories. The argument for this legislation seems to have been the need for enforcing the earlier statute on education and also the realization that the long hours which children were required to work "must be permanently injurious to their health." About 1850 other states began to pass similar legislation. All these acts were laxly enforced.

As for women a vehement controversy began as early as the thirties over the effect of the hours of labor upon their health. Opponents of the long hours asserted that the hot, ill ventilated factory rooms, saturated with moisture and cotton lint, so weakened the workers that after a few years in the factory they went home to die. On the other hand investigators declared that the factory by its training in regular habits and the requirements for physical exercise actually benefited the health of the women workers. They went home from the factory after a few years stronger than when they had come. Elisha Bartlett, M.D., of Lowell, wrote in 1841 *A Vindication of the Character and Condition of the Females Employed in the Lowell Mills*. The overseer of one spinning room in which fifty girls were employed thus classified his charges: "'Looks well,' 25; 'rosy,' 9; 'fat and looks well,' 4; 'looks healthy,' 2; 'very healthy looking,' 2; 'fat and rosy,' 2; 'fat and pale,' 3; 'thin,' 2; 'pale,' 4." This analysis was hardly scientific. It was not until 1849 that an impartial appraisal was made by Dr. Josiah Curtis in a report given before the American Medical Association. He made mathematical calculations of the amount of air required by each person and then discovered that even in the best Lowell mills his standards were not approximated. He concluded: "There is not a state's prison or house of correction in New England where the hours of labor are so long, the hours for meals so short, and the ventilation so much neglected as in the cotton mills with which I am acquainted." Yet in Massachusetts there was no separate movement to regulate the conditions of women's labor. Nor was there anywhere else. The drive for shorter hours, the ten-hour-day, was designed to benefit all workers.

**The Ten-Hour Movement**

Just why ten hours should have been picked upon by the laborers as the proper working day it is difficult to discover. At any rate, after a time it seemed to the workers that "ten hours well and faithfully employed is as much as an employer ought to receive, or require, for a day's work; and that it is as much as any artisan, mechanic or laborer ought to give." This was the
resolution of the "mechanics and others assembled" in New York City in 1829 to remonstrate against any further increase in the hours of labor. This resolution expressed more than the conviction of the workers; it was evidence that in the late twenties a ten-hour movement was under way. Indeed, in this matter New York craftsmen were a little belated. Skilled workers in Philadelphia had already launched a campaign for this objective with the argument that a longer day than ten hours was physically disadvantageous and gave no time for self-improvement, and they had met with partial success.

Theoretically, the cultural argument should have carried more weight in the "Athens of America," Boston. Instead a strike there for ten hours was a failure, perhaps turned back by the counter argument that this action was

... a departure from the salutary and steady usages which have prevailed in this city, and all New England from time immemorial; ... if this confederacy should be countenanced by the community, it must, of consequence, extend to and embrace all the Working Classes in every department in Town and Country, thereby effecting a most injurious change in all the modes of business, and in the operations of agriculture and commerce, opening a wide door for idleness and vice, and finally commuting the present condition of the Mechanical Classes, made happy and prosperous by frugal, orderly, temperate and ancient habits, for that degraded state by which in other countries, many of these classes are obliged to leave their homes, bringing with them their feelings and habits, and a spirit of discontent and insubordination to which our native Mechanics have hitherto been strangers.

In the early thirties the ten-hour movement gained impetus because employers, anxious to make money during the years of prosperity, worked their laborers hard and because the latter effectively resisted. In 1835 a ten-hour campaign swept the country. The workingman's appeal for such a working day did not stress its necessity for the physical welfare of the laborer or even a possible gain in efficiency which would compensate the employer for giving shorter hours. Although both of these conditions were mentioned, the real war cry was the benefit of leisure for the workingman. It would give him time for moral and mental improvement. Particularly was this necessary in a democracy where the worker had the ballot. He should be allowed to prepare himself for its intelligent use. Although such assertions were undoubtedly advanced to win public sympathy, they apparently represented a genuine conviction on the worker's part. The slavery of long hours was a barrier preventing that equality of opportunity and of station which the common man in the era of Jacksonian democracy felt was his inalienable right. Strikes sputtered along the eastern seaboard.
Within the next few years there was a measure of success. When the National Trades’ Union met at the close of 1835 its committee on the ten-hour system recorded triumphs everywhere except in Boston, where only a tiny proportion of the building trades enjoyed this shorter day. Meanwhile artisans and mechanics employed on government work began an agitation for the shorter working day. They were not particularly successful in their petitions to Congress or to the Cabinet heads under whose jurisdiction they were employed. In 1836 workers in the Philadelphia navy yard hit upon the idea of appealing to the President. They were so successful that others followed their example. In 1840 Martin Van Buren, a president whose political career had been made years before by a campaign for the extension of the suffrage to the common man of New York, issued an order directing that on the public works of the government all workers, “whether laborers or mechanics, be required to work only the number of hours prescribed by the ten-hour system.”

The early movement for the ten-hour day had been undertaken by the mechanics, artisans, and handicraftsmen whose occupations had been untouched by the machine and the factory. Their success had not affected the factory workers, who still worked from twelve to fourteen hours a day. Occasionally such operatives felt that they could stand it no longer and had a “flare-up” or strike for the shorter day. Even in the prosperous thirties such demonstrations were generally failures. Factory operatives, including a large proportion of women laborers, had so little handicraft skill that the mills could get along without them and found it easy to recruit strike breakers and new workers. During the early forties strikes of all sorts were ineffective in the face of the industrial depression. More commonly factory workers, therefore, sought to obtain the ten-hour day by legislation in the various states. The background of such legislation was a campaign of popular propaganda, and then pressure upon the legislature, especially through enormous petitions. Although more subtle methods have now replaced this form of lobbying, the labor organizer of the forties brought it to a high degree of perfection. Although such methods were novel, no new arguments for the ten-hour day were advanced by this factory agitation of the forties. A Lowell petition of 1842, for instance, asked such a law for

... it would, in the first place, serve to lengthen the lives of those employed, by giving them a greater opportunity to breathe the pure air of heaven, rather than the heated air of the mills. In the second place, they would have more time for mental and moral cultivation, which no one can deny is necessary for them in future life.
The first state legislature to surrender was New Hampshire. Petitions from the industrial centers began to assail the legislature in 1845, and two years later they had become so numerous that an enactment was passed whose first section declared “that in all contracts for or relating to labor, ten hours of actual labor shall be taken to be a day’s work, unless otherwise agreed by the parties.” The labor press was jubilant. Horace Greeley, examining the law with the detachment of a New York editor, declared it to be a “milk-and-water” enactment. He was right. That conditional phrase “unless otherwise agreed by the parties” was an exception as wide as all outdoors. Before the law went into effect the Nashua and Manchester corporations announced that they would discharge all employees who did not sign special contracts for longer hours. There were indignant mass meetings of operatives who pledged their “lives and sacred honor” not to work more than the “legal number” of hours. This was mere whistling against the wind. Discharges crushed such opposition, and the blacklist followed obstinate operatives not only in the New Hampshire industrial centers but even to Lowell.

A second hollow victory was won in Pennsylvania. As a result of agitation the state legislature passed in 1848 a labor statute which tangled together regulations of child labor and the ten-hour day. Ten hours was to be a “legal day’s labor” in textile and paper factories. The act, like its New Hampshire predecessor, had a saving clause making exceptions for special contracts. These the employers insisted the employees would have to make. Pennsylvania cotton factories operating on a ten-hour basis, they said, could not compete with New England’s twelve-hour industry, and to add a spur toward the acceptance of special contracts they threatened to transfer their mills to a “western Lowell” somewhere in Virginia. The operatives in the western part of the state, unimpressed by these arguments, struck to enforce the legal day of ten hours. But eventually they went back to work upon an agreement which recognized the ten-hour day but reduced the wages by one-sixth.

Massachusetts was the chief factory state of the Union, and there the agitation for the ten-hour day was most intense. The first petitions came from Fall River and other centers, most of which were south of Boston. Then Lowell joined in the fray. The number of such documents annually increased. In 1845 these reached a climax when petitions signed by 2,139 persons were presented to the legislature. Stimulating this flood of petitions were various organizations and individuals. In some industrial centers an ephemeral group might be collected for this purpose. In Lowell the women operatives were organized in 1845 into the Lowell Female Labor Reform Association. Its ultimate goal was the better organization of society, but for the moment it devoted itself to uplifting the moral and intellectual level of the operatives, repelling slanders upon their good name, holding socials, and
THE FORMATION OF A LABORING CLASS

working for the ten-hour day as a means of securing leisure for the operatives' improvement. Its creator was Sarah Bagley. A striking contrast to the sweet Hannah Farley, she harassed the Lowell capitalists with her sharp tongue and her mordant wit. The Female Labor Reform Association and others united with the New England Workingmen's Association, an organization interested in utopian ends, to sponsor the ten-hour day. Aid was also contributed by a vigorous labor press. Under such direction the petition procedure was systematized, discordances among demands for the ten-hour day were harmonized, and in 1846 petitions with 10,000 signers were presented.

Meanwhile the Massachusetts legislature was compelled by the clamor to make an investigation of the factory system. A committee of the House responded in a report mingling reprimand and uction. It found no cause for so unusual a procedure as state intervention in business affairs. It pointed out that "labor is intelligent enough to make its own bargains, and look out for its own interests." State legislation would put Massachusetts factories at a disadvantage in competition with those of other states. Even if mill conditions were bad, they could not possibly damage operatives such as these farmers' daughters. The committee did, however, find abuses, but these should not be remedied by the legislature. "We look for it [the remedy] in the progressive improvement in art and science, in a higher appreciation of man's destiny, in a less love for money, and a more ardent love for social happiness and intellectual superiority." The operatives refused to accept such consolation; Sarah Bagley announced that her testimony had been misrepresented; the Lowell Female Labor Reform Association deplored the findings of the legislative committee and petitions continued to pour in—all to no avail. One of the reasons for the failure of this well directed and enthusiastic ten-hour campaign in Massachusetts was the fact that the leaders were unwilling to accept empty legislation like that in New Hampshire or Pennsylvania; and another was the prestige and influence of the corporations in the Massachusetts legislature. Probably the most important factor in their defeat was the conservative Puritan tradition of Massachusetts, which valued diligence as an aspect of godliness.

But the battle for shorter hours was not without its victories. In 1847 the Lowell corporations, in deference to public opinion, lengthened the "nooning" period and thus reduced the average day to just under twelve hours. The country through, hours had been greatly reduced since the first of the century. Years later the so-called Aldrich Committee of the United States Senate, using figures sampling a fair range of industries, concluded that in 1840 the day's work averaged 11.4 hours; there was so little change during the next decade that the average for 1850 was 11.5; in 1860 it had declined to 11. Though some handicrafts, like the building trades, had won the treasured
ten hours, workers in cotton and woolen factories still labored 12.2 and 12.7 hours a day respectively.

The Struggle for Status

The American labor movement did not restrict itself to the matter-of-fact issues of wages and hours, nor was its attitude on these practical questions sheerly materialistic. Agitation for shorter hours, for instance, had been inspired by the desire to secure time for leisure and for self-improvement. In other words, the laborer sought for himself a recognized position in the community. He wanted the dignity of his work admitted and, although he did not insist upon an equality of property and possessions, demanded the equality under the law and the equality of opportunity which a democratic country should afford him. The labor movement was, in brief, concerned with the status of the worker.

By the decade of the twenties the course of industrial change had gone far enough to create in the eastern urban centers a working class distinct and self-conscious enough to realize the discriminations under which the “producer” was laboring. The laborer felt that the law courts were too expensive for the poor man, and that the state was creating monopolies in transportation and banking which made rich men richer and poor men poorer. He objected to the state militia system, which snatched every man from work for a period of training and compelled him to equip and find himself during this interval. The system by which debtors could be thrown into jail for inability to pay their creditors bore with special hardship upon the working classes and the unemployed. In 1829 the Boston Prison Discipline Society estimated that 75,000 persons were imprisoned on this charge in the ill ventilated, unsanitary, crowded jails of the nation, and that a large proportion of this number owed sums of but a few dollars.

But the greatest social concern of the labor movement was the school system. Free, public, non-sectarian schools to which the worker could send his children did not exist throughout the nation. To be sure, most New England states had a public school system, but some workingmen objected to the “ecclesiastical air” of these institutions, and poor parents in any case had to put their children to work. In the middle states the educational system was a hodgepodge of sectarian schools and schools run by philanthropic societies, such as the Public School Society of New York City, to provide education for those who could not pay for it. About the former there was an atmosphere of religious dogma; about the latter there was the taint of poverty. In the middle states the number of children who were not in any school was amazing.
THE FORMATION OF A LABORING CLASS

This condition the workers hoped to remedy. A report written by Philadelphia workingmen in 1830 declared:

When the committees contemplate their own condition, and that of the great mass of their fellow laborers; when they look around on the glaring inequality of society, they are constrained to believe, that, until the means of equal instruction shall be equally secured to all, liberty is but an unmeaning word, and equality an empty shadow, whose substance to be realized must first be planted by an equal education and proper training in the minds, in the habits, and in the feelings of the community.

The monopoly of education by a class created castes, and the lack of it by the workers perpetuated their inferior status. Consequently the working-class movement poured forth a rich variety of educational schemes. Some were indigenous to the workers; others were grafted upon the movement by outsiders. In some instances emphasis was placed upon manual and vocational training, but the workers still felt that they ought to be allowed to share in the educational fare of the aristocrats. Compulsory attendance was advocated. But there was no doubt in the laborer's mind that the state should provide free education for all classes.

Progress toward social goals could obviously not be made through strikes. It could be won only through political action, and by the twenties the liberalization of the suffrage requirements in the American states put the weapon of the ballot into the hands of the workers. They began to form political organizations, to elaborate programs, and nominate candidates. Most of them developed in the eastern cities from the strikes which were waged for the ten-hour day. Most were short-lived. In some cases they were destroyed by internal dissensions. In others they fell a prey to the practical politicians, who directed idealistic agitation of the workingmen to their own political ends. After 1834, moreover, the labor union movement swung away from political measures for social ends to strikes for higher wages. Mounting prices and American prosperity made the change in emphasis both necessary and effective. Although the political movement failed for the moment, it had profound ultimate consequences. Its program slowly converted popular opinion, and state legislatures gradually repealed the laws for imprisonment for debt, swept away the provisions for militia service, and established public common schools.

In the decade of the forties the labor union movement returned to this preoccupation with status. One reason for this emphasis was the business situation, for after the panic of 1837 genuine, continued prosperity failed to return until the California gold rush of 1849. In this period of hard times
economic action through the strike for limited ends such as hours and wages was difficult. But a greater reason for the emphasis upon the worker as a citizen was the realization that the new American industrialism was a challenge to the American dogma of equality. An assembly of Boston workers declared:

It is our belief that the same causes of evil and suffering are operative in this country, that, in the Old World, are developed to giant magnitude, and are crushing the producers of wealth to the very dust, and that unless a speedy change can be effected in our social condition the time is not far distant when the laborers of the United States will be as dependent, as oppressed, and as wretched, as are their brethren in Europe.

There was a frantic search for an escape from the inevitable. This was true even in such movements as had their origin among the rank and file of the workers. But the utopianism of the forties can be traced more generally to the reformers who were clamoring to show the worker the avenue by which he could be free and if necessary push and pull him along it. As Horace Greeley, one of this tribe, pointed out, it was easier to get ten thousand people to work for the workingman than to get him to work for himself.

From the welter of programs and platforms two emerge as symptomatic of the industrial malaise. One was Association—or Fourierism, as it was called after its originator, Charles Fourier, a French thinker and pioneer socialist. The Fourier philosophy was transported to America by Albert Brisbane, a wealthy young man who had no first-hand knowledge of working-class conditions, but compensated for this difficulty by an extreme dogmatism. In 1840 he published *The Social Destiny of Man, or Association and Reorganization of Industry*, which put the master’s teachings in a language which Americans could understand. Fourier’s or Brisbane’s ideas then appealed to the sympathies and aspirations of Horace Greeley. The columns of his various newspapers proceeded to explain this new method of production and exhort their readers to embrace it.

Fourierism in its American form planned the establishment of phalanxes. These communities were to have several hundred members and ample resources of land and equipment. The capitalist was by no means eliminated; he was in fact to receive four-twelfths of the annual production of the phalanx. Within the community industry was to be made efficient. Individual housekeeping with its needless duplication of processes was to be superseded by co-operative establishments. In order to release the energy of the workers labor was to be made attractive. One method was the alternation of tasks in order to avoid monotony; another was the arrangement of different occupations into categories of difficulty and unpleasantness and the payment of
higher wages for the less attractive employments. Association had a wide appeal to the intellectuals of America. Brook Farm, a cooperative experiment, was made over on Fourieristic lines, and over forty phalanxes were established in the United States.

For one reason or another all of the phalanxes were failures. In many cases the burning of barns or other accidents terminated their existence. Internal controversy was a second factor in dissolution. Since the pioneers of such enterprises had to be strong-minded individuals, they quarreled violently with their fellow associates over the age-old controversies of religion and the nature of the family tie. Their strangeness also aroused the hostility of their neighbors and made it impossible for them to compete in a matter-of-fact world. The failure of the Fourier phalanx must not obscure the reason for its protests, the changed status of the workers. One of the Fourierists wrote in 1850 that the real question was not unemployment, low wages, or long hours: "The labourer does not belong to himself, has no right to be, and exists upon sufferance. He is emphatically a wage slave. Herein is the fundamental evil to which he is subject." The methods by which Fourier hoped to obtain a more dignified status for the workers were bizarre, but they exhibited a considerable degree of insight into human psychology; and they were so little revolutionary that they appealed to middle-class Americans and aroused the ire of real American radicals.

If Association was an escape from the evils of the present by a flight forward to the future, Agrarianism proposed the desired change by a back track to an earlier America. The chief prophet of this gospel was George Henry Evans. Evans, English-born, had come to this country in 1820 and for years as a labor editor was the spokesman for radical ideas. In 1844 he aided in the establishment of the National Reform Union to spread his philosophy. In an address to the People of the United States in 1844 this organization pictured the onrush of machine industry with so efficient and complete a technical equipment that the number of laborers required to produce commodities was greatly diminished. Unemployment and low wages were the results. There is the possibility of wrestling "with this monster," but:

As well might we interfere with the career of the heavenly bodies, or attempt to alter any of Nature's fixed laws as to hope to arrest the onward march of science and machinery. The question then recurs—the momentous question: 'Where lies our remedy? How shall we escape from an evil which it is impossible to avert?' . . . Our refuge is upon the soil, in all its freshness and fertility—our heritage is on the Public Domain, in all its boundless wealth and infinite variety.

To land, in Evans' mind, man had a natural right just as to air, water, and light. These rights were equal and they could not be disposed of by their
possessors. As for practical measures Evans and his disciples felt that the public domain should be given, not sold, to those who were landless. Although these settlers ought to be forbidden to sell or mortgage their land, an exception might be made if the land were resold to other landless persons. Since the public domain seemed inexhaustible, their system of escape might well last for a thousand years. These Agrarians, as they were called, got along very ill with other reformers. They expressed a contempt for Fourierism as a halfway measure compromising with capital. But Evans’ methods were more in accord with American conditions and ideals than those of the Associationists. He urged as a protest against industrialism not the phalanx but the use of political pressure to secure legislation; he had as an objective not the ideal community of the future but the use of the public domain to perpetuate what he fancied was the ideal America of the past.

But the Agrarians miscalculated the emergency as badly as the Associationists. Although under the terms of the Homestead Act of 1862 the national government practically gave away the public domain to actual settlers, it was an expensive business for the eastern industrial worker to reach free land in the West, and by 1890 the frontier was gone anyway. For years before its passing the American labor movement wistfully continued to turn to the West as a means of its salvation—but only as an afterthought. Even by the middle of the nineteenth century, whatever a fringe of dreamers or resolution passers might assert to the contrary, the workers realized that the here-and-now of their job was the main problem. Near the head of an address to the journeymen printers of the United States issued by a convention of such workers in 1850 were the words: “It is useless for us to disguise from ourselves the fact that, under the present arrangement of things, there exists a perpetual antagonism between labor and capital. The toilers are involuntarily pitted against the employers.” Although conditions were much better in this country than in Europe, this statement justly recognized one inevitable result of the industrial revolution in America.
CHAPTER XI

The Railroad Age

IN 1791 Alexander Hamilton was pleading that national advantage would be better served if the predominant agricultural occupations of the country were tempered by some admixture of manufacturing. A century and a quarter later the nation, alarmed by rural depression, began the trying task of saving the farm and relieving the farmer. In other words, the decades following the Civil War witnessed the end of the agricultural era and the emergence of the industrial state. The typical American implement was no longer the plow but the electric motor; the hero of the crowd no longer the farmer but the industrialist or the financier. These surface changes were but symbols of a transformation of the whole of American civilization.

An examination of the causes of this overturn should place the responsibility upon improved means of transportation. About 1850 the railroad became of age. Extending rapidly into the western regions, it soon outran the course of settlement and changed the technique of pioneering. It was now possible to travel with comparative ease into the midst of the government domain, to secure provisions and supplies while the land was put under cultivation, and to grow specialized products for markets in the United States or in Europe. Coupled with the inducements of the government land system, the railroads settled the West with the rapidity of a prairie fire. While this change was taking place in the western regions the railroads facilitated the concentration of manufacturing in the eastern United States and the distribution of its commodities to a national market. With the processes of exchange thus enlarged both in manufacturing and in agriculture there appeared an elaborate marketing organization with salesmen, clerks, brokers, middlemen, advertisers, wholesalers, whose growing importance has been one of the most significant economic facts in the twentieth century. In the railroad world first appeared the problems of business organization which have dwarfed technical changes in importance. The capital requirements for railroad finance were so great that the investment banker found here one of the first openings for his activities and later his control; the stress of competition was from the out-

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set felt so sharply in railroad construction and operation that experimenta-
tion with new forms of business organization and consolidation was early
undertaken; and finally the connection of the railroad with the prosperity of
the whole community was so vital that the national government was com-
pelled to interfere in the operations of private enterprise. It is no exaggera-
tion, therefore, to denominate the period between 1860 and 1915 as “The
Railroad Age.”

The Transcontinentals

In this age the process of railroad pioneering, now generally completed in
the East and the old West, moved into the western half of the nation. There
were similarities—and differences. For now rails and locomotives entered an
area largely unsettled and partly in a stage of territorial organization. Except
for the wagon train, the pony express, the stagecoach and such sidewheelers
as had extended Mississippi steamboating to the Missouri, Sacramento, San
Joaquin, and Columbia, there was no previous system of transportation.
Neither the Indian nor the buffalo had quit the region. If the words could be
appropriately applied to so modern a mechanism, the construction and opera-
tion of the railroad in this last West had an air, fresh and primal.

In view of the widespread fascination during the railway age for connect-
ing bodies of water by railways, it was not surprising that the daring project
of a Pacific railroad should occur as early as the thirties to individual dream-
ners. It was not until the next decade that the project gained weight and dig-
nity. Then it was taken in hand by Asa Whitney, a New York merchant
engaged in the China trade. In 1845 he presented a memorial to Congress
suggesting the construction of a railroad from Lake Michigan to the mouth
of the Columbia. The supreme advantage of its construction would be a new
and direct route to the Orient, which would divert through the central states
and New York the fabulous trade of the Far East. This vision appealed to
the imagination of sanguine Americans. Here at last was a means of outwit-
ting the geography of the Northwest Passage and the Isthmus of Panama,
and satisfying the search which was as old as Columbus—“Sail to the West
and the East will be found.” Such aspirations received further point when
the gold rush to California and the agricultural migration to Oregon created
settlements in the Far West separated by a gap of unsettled territory from the
nation to which they belonged and of whose government they formed a part.

In 1853 the practicability of a railroad had so impressed Congress that sur-
veys were authorized. Reviving an earlier practice, government engineers
traversed these western areas and described five practical routes, most denom-
inated by parallels of latitude, for a possible transcontinental project. But the
roads did not come. The explanation for the delay was a furious competition
among the cities along the Mississippi and the Great Lakes for the eastern
terminus of the road. Duluth, Minneapolis, Chicago, St. Louis, Memphis, and New Orleans, all boasted their advantages and decried the claims of their rivals. This urban rivalry was heightened and complicated by the larger sectional controversy between North and South. These quarrels had a profound effect upon the course of political history in the United States, but as far as building the railroad was concerned the pessimistic prophecy of a California senator was justified: "If any route is reported to this body as the best those that may be rejected will always go against the one selected." Even the mounting desire to settle and develop the Great Plains rather than merely to reach California failed to effect compromise. The Civil War finally made possible a decision, for it removed from the National Congress the proponents of the southern routes and gave an impetus to a railroad connecting the loyal segments of the Union. The northern route of Whitney was impracticable from a business point of view since it ran through an uninhabited country. The logic of the situation dictated the Platte route, which stages, freighters, and the pony express were following to the West. In 1862 Congress passed an act to aid the construction of the first transcontinental road.

The major portion of the construction was entrusted to two large companies. One was the Central Pacific of California. This company had already been incorporated by four Sacramento merchants—Leland Stanford, Collis P. Huntington, Mark Hopkins, and Charles Crocker—and others. They were then men of moderate financial resources, but the first left behind a heavily endowed university and the second a fortune which in a nephew's hands was spent for a priceless library of manuscripts and rare books. The second company, the Union Pacific, was incorporated by the Federal act of 1862. Roughly speaking, the Central Pacific was to build eastward from Sacramento and the Union Pacific was to build westward from some designated point. Eventually the Central Pacific group secured a terminal for their road at San Francisco. As for the Union Pacific, in spite of the cancellation of claims brought about by the secession of the southern states, the selection of an eastern terminus was still bothersome. An "initial point" was finally selected on the hundredth meridian near Fort Kearney from which the Union Pacific could depart westward over the plains. Connections with lines to the East were to be constructed either by the Union Pacific or by other corporations.

One thing or another delayed the construction of the road, and it was not until after the Civil War that the work began in earnest. Then a feverish activity characterized the undertaking, for the government had offered by later acts such financial and material assistance that both segments of the road were eager to obtain for themselves as large a share of the grants as possible. The Central Pacific had a severe task through the mountains, and the securing of material and of labor was difficult. Railroad equipment was
shipped around Cape Horn, and Chinese were imported to do grading, lay ties, and spike track. The Union Pacific found fewer difficulties of terrain, but the problem of supplies was even greater. There were no forests along the right of way from which the necessary timbers could be cut, and before 1867 there was no railroad connection to bring supplies to the "initial point." The recruiting of a labor force could not be solved as easily as in California, and there was the further danger of the Indians on the prairies. The company finally secured its laborers from demobilized officers and soldiers and from the "wild Irish." Eventually on May 10, 1869, the two roads were brought together at Promontory Point, Utah, although it took a legislative enactment to effect this junction and prevent both from building parallel lines to get the government bounty. The nation paused to celebrate the event. As the last spike was tapped home the telegraph carried the blows of the sledge, bells were rung, cannon fired, speeches delivered, and verse published. In this literary flood Bret Harte's poem, chronicling the dialogue of the two engines "facing on a single track, half a world behind each back," alone was worthy of the occasion.

"The country," wrote the editor of the Nation in 1883, "can never feel again the thrill which the joining of the Central and Union Pacific Line gave it." This nostalgic reflection was elicited by the completion of another transcontinental, for in the early eighties many a wedding of the rails marked the fruition of decades of dreams and expenditures. In the extreme South, New Orleans at last got her railroad, but hardly through her own efforts. Fulfillment came from California. When the little group of capitalists interested in the Central Pacific failed to unload that enterprise upon investors, they used the Southern Pacific to secure a practical monopoly of California's railroads. First pushed eastward to seize the natural gateways into southern California, the road was later extended across the southwest to St. Louis and New Orleans. Meanwhile the Atchison, Topeka and Santa Fe, a local road in Kansas without grandiose ambitions, moved westward along the route of the old wagon trade to Santa Fe and then crawling across the deserts of New Mexico and Arizona bludgeoned and negotiated a way to the ports of southern California.

For the area north of the equator of the Union Pacific-Central Pacific, Congress launched the Northern Pacific to fulfill the dream of Asa Whitney. The charter had many vicissitudes until Jay Cooke, with the halo of his Civil War successes still about him, undertook in spectacular and, as it proved, disastrous fashion, to finance the road. Some years after his failure, Henry Villard, a German immigrant who fashioned a career from political reform, news-
paper reporting and high finance, seized the road by a financial *coup d'état* and, skillfully fitting it in to his transportation monopoly of the Northwest, completed the Northern Pacific to termini on the lower Columbia and Puget Sound. A decade later, in 1893, another immigrant and "empire builder," James J. Hill of Canada, completed the Great Northern. This outgrowth of a little line, which Hill had originally purchased to further his forwarding business between the Mississippi and the Red River of the North, connected Duluth and St. Paul with Seattle over a route singularly free from excessive grades and curves. One more route was to follow suit. In 1909 the Chicago, Milwaukee and St. Paul, chartered in the mid-century to enable the "iron horse" to "drink at Lake Michigan and slake his throat at the Mississippi," reached Seattle and Tacoma on Puget Sound.

The construction of these western railroads created a new series of railroad centers. Duluth contended with St. Paul and Minneapolis; Kansas City undermined the dominance of St. Louis. On the Pacific coast the battlegrounds were divided. The Northwest of Oregon and Washington was geographically and economically so separated from California that only one north-and-south railroad connected them. In the former area Portland on the lower Columbia would naturally expect to draw the resources of that basin to her merchants and shippers. On the contrary, Seattle, cut off from the Columbia by the Cascades, developed more rapidly, for the close interaction of railroad traffic and ocean commerce on the Pacific directed the preference to the better harbors afforded by the cities of Puget Sound. In California the rivalry between San Francisco and Los Angeles was notorious. Between the railroad centers on the Pacific coast and those along the Mississippi, the Missouri, and the Great Lakes only one center of importance has developed—Denver. Although the Union Pacific passed her by, a group of energetic local capitalists spent decades transforming her into a railroad center in spite of opposition.

By 1915 the trans-Mississippi West had roughly half the mileage of the country. The achievement was impressive but misleading. The region really saturated with railroads remained the Northeast. In 1915 the states with the highest proportion of mileage to area were in order New Jersey, Massachusetts, Pennsylvania, Ohio, Illinois, Indiana, and Connecticut. Expressed in another way, the roads within "Eastern Territory," which according to the boundaries drawn by the Interstate Commerce Commission lies north of the Potomac and Ohio and east of Lake Michigan and a line from Chicago to East St. Louis, carried over twice as many passengers and tons of freight as did those in the Western District. Furthermore, within the former terri-
THE RAILROAD AGE

Tory railroad mileage, in spite of the network built before the Civil War, multiplied by nearly four times between 1860 and 1915.¹

THE EXPANSIVE FORCE OF COMPETITION

Without question the most important spur to eastern construction in the railroad age was competition. One phase of this rivalry was governmental, for state competed with state and metropolis with metropolis. Even the smaller eastern cities, to whom an approach to the West had once been only a dream, now proceeded to put together or build the most impracticable routes toward this El Dorado, as misled as the Spaniards who centuries earlier sought the City of Gold in mid-America. Every community with a single railroad wanted another, in order to secure the lower rates and other benefits of railroad rivalry and places without any railroad whatever realized by this time that the advent of the railroad meant economic salvation and its absence atrophy. The railroad corporations were prey to the same impulses and enthusiasms. There were a few strategically situated lines, at least so it was charged, that renounced ambition and sat back to enjoy the flood of dividends. Such were exceptions. Most railroads were driven to irresistible expansion, either by leases, acquisitions, or construction. If a new traffic suddenly materialized, oil in western Pennsylvania, copper in Michigan, or coal in West Virginia, they must share in it. Beyond their farthest railheads beckoned the tantalizing will-of-the-wisp of “new resources,” “undeveloped areas,” “future water powers.” Of course the strong and the aggressive grasped for these opportunities. So did the weak and the improvident with the added

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New England:    Maine, New Hampshire, Vermont, Massachusetts, R. I., Connecticut
Middle States:  New York, New Jersey, Pennsylvania, Delaware, Maryland, D. C.
South Atlantic: Virginia, West Virginia, North & South Carolina, Georgia, Florida
Old Northwest:  Ohio, Michigan, Indiana, Illinois, Wisconsin
Old Southwest:  Alabama, Mississippi, Tennessee, Kentucky, Louisiana
Southwestern:   Missouri, Arkansas, Texas, Kansas, Colorado, New Mexico, Oklahoma
Northwestern:   Iowa, Minnesota, Nebraska, North & South Dakota, Wyoming, Montana
Pacific:        Washington, Oregon, California, Nevada, Idaho, Arizona, Utah
stimulus of desperation. For any addition of carriage and revenue would, it was thought, head off bankruptcy and turn business failure into success.

It was soon seen that railroad competition was the most extensive and virulent form in the United States. This was so because of the nature of the railroad. In the first place, railroad executives and observers realized that the investment in the roadbed and terminals of a railroad was fixed in any case, and that the operating expenses did not increase proportionately to the amount of traffic carried; a certain minimum of payment was necessary, whatever the extent of operations. As a consequence the railroad was desperately eager for traffic volume, and it would continue operations under any circumstances which promised a return. Deficits on some traffic would be borne if they could be recouped on others; periods of extended loss would be undergone in the hope of future profits. In the second place, the competitive area was not limited to the mere rivalry of parallel lines. The Industrial Commission of 1900 commented upon the "extreme fluidity of freight... once loaded upon a car, it appears to make little difference whether the distance hauled be 500 or 1,500 miles. Twenty-five years ago there were twenty competitive routes between St. Louis and Atlanta, varying in length from 526 to 1,855 miles respectively. ... Freight transported from New York to Denver may be carried more than 3,100 miles via New Orleans, as against 1,940 miles direct, one route being 62 per cent longer than the other."

These competitive phenomena first appeared on a large and devastating scale in trunk-line territory where in the mid-fifties the Baltimore and Ohio, the Pennsylvania, the Erie, and the New York Central were reaching out for the same western traffic and desiring to carry it to the Atlantic seaboard. As early as 1855 the President of the Pennsylvania in his annual report chronicled efforts made by the railroads to prevent the "ruinous competition" for passengers and to supersede with some form of harmony the "army of drummers and runners, spread over the country and paid by each company." The events of the fifties were but a preliminary skirmish to the larger conflict which began in the sixties and grew steadily in intensity for nearly forty years. For one thing, new commodities were involved, as the railroads demonstrated their ability to transport bulky products. The quarrel was no longer over passenger traffic, but over the carriage of coal, oil, grain, and animal products. To get their share in these through traffic or to prevent their diversion to others, the great trunk lines, it was apparent by the mid-seventies, were breaking out of the mold which had shaped them as feeders for one municipality. From this welter, however, New York and Chicago stood out as of supreme importance.

Whatever its earlier allegiance, each road now sought through construction, purchase, or lease some entrance to New York City in the East and to Chicago and St. Louis in the West. Even to the New York roads the former
task was not always easy. The Central achieved it under the leadership of one of the great railroad kings of the era, Cornelius Vanderbilt. At the time of the Civil War the "Commodore," now nearly seventy years old and in possession of a fortune of $20,000,000, was drawn into a railroad career which be-

![Map of the United States showing railroad routes in 1855 and 1925.](image)

**THE RAILROAD AGE**

**THE GROWTH OF A RAILROAD SYSTEM**

gan with a speculation and ended with the creation of a great system. By 1864 he had consolidated the two lines between Albany and New York City and emerged from the speculative flurries to which the stocks of these concerns were subjected in Wall Street with enormous winnings. He began the purchase of stock in the New York Central Railroad, and in 1866-67 the domi-
nant stockholders persuaded him to perform with it a legerdemain similar to that of his other roads. He did so. In 1869 the road was consolidated with its New York connection and a single concern ruled from there to Buffalo. Alarmed by the possibility that his trunk line rivals might cut him off from Chicago, the Commodore now proceeded to bring under his dictatorship the necessary western connections. On his death in 1877, he had a through route of 953 miles from New York to Chicago. At the same time he had compiled a personal fortune of $100,000,000, relaid his track with heavy rails, built sturdy bridges, scrapped defective equipment for better, and reduced the running time between New York and Chicago from fifty hours to twenty-four.

The death of the Commodore did not end the progress of the Central. His son, William H. Vanderbilt, less flamboyant than his father but just as able, and the House of Morgan continued the expansion of the road. In 1915 the system owned and operated 14,491 miles of track. Its lines were stretched from St. Louis to Boston and from Detroit to Cincinnati.

Meanwhile a similar growth had taken place for similar reasons on the other trunk lines in the northeast competitive territory. As for the Erie, its possession by a gifted plunderbund more interested in stock manipulation and personal enrichment than running a railroad, for years stalled operational achievements. Finally, in 1880, through lease and construction it secured an entrance both to Chicago and to Cincinnati and was in a position to compete with its rivals. Farther south the Pennsylvania Railroad had been more steadily aggressive. In 1869 it leased a connection with Chicago, and in the following decade it began an expansion which extended its tracks in the West to St. Louis and in the East through New Jersey to New York harbor. Feeders were pushed south to the Ohio and the Potomac, north to a row of ports on the Great Lakes. Then early in the twentieth century at a cost of $100,000,000 it tunneled the Hudson to New York City, erected an echoing basilica, the Pennsylvania Station, and tunneled the East River to Long Island, whence it secured connections with the New England lines by the magnificent Hell Gate Bridge. In 1915 its system aggregated 11,823 miles. Meanwhile the Baltimore and Ohio, stung by the same competitive goad, forced an entrance into Chicago with memorable difficulty in 1874 and then fought its way with construction and lease north and east from Baltimore to Philadelphia and New York. Like the Erie, it looked across the Hudson to Manhattan.

Outside trunk-line territory, competition was at work in the same fashion and to the same purpose, expansion. In the South the thinness of traffic and the economic disorganization following the Civil War inspired the railroads with the same ruthless spirit which bankruptcy had induced in certain northern lines. In the West the vastness of the territory, the size of the railroads, and the need to control strategic canyons and passes as a location for ones
line made the competitive struggle for independence and power through construction a battle of the Gods. Thus construction and expansion were spurred by the desire to avoid dependence upon associates who at any moment might prove faithless or to prevent competition. The Atchison, Topeka and Santa Fé, which in its original design touched neither the Mississippi nor the Pacific, was under the necessity of expanding to Chicago, the Gulf of Mexico, and into Mexico and California. The Union Pacific when it discovered its western outlet, the Central Pacific, in the control of a transcontinental rival, the Southern Pacific, built a short line to Portland, Oregon, to protect itself and also to develop the trade of the Pacific Northwest.

Mere growth, however, proved no charm against the evil eye of competition. Indeed it heightened the severity and anguish of the disease by increasing the strength of the sufferers. Certainly they needed every resource when a competitive seizure fell upon them. Almost any incident might bring one on. In trunk-line territory, for instance, the arrival of the Baltimore and Ohio in Chicago in 1874 so elated its president that, trumpeting defiance in his new freedom, he announced that "like another Samson, he could pull down the temple of rates upon the heads of these other lines." Two years later Vanderbilt brought on another affray, because he saw no reason why the Baltimore and Ohio should be allowed by an agreement to charge less on grain traffic between the West and the seaboard. Although the Baltimore and Ohio had a shorter route, the Central had a road with an easier grade. The Baltimore and Ohio's attempt to secure a connection into New York City in the eighties precipitated a conflict in rates with the Pennsylvania. As late as 1888 the Grand Trunk made a bid for a larger share of the dressed-beef traffic from Chicago, and soon all the roads were carrying this article in trunk-line territory at a loss. In such engagements the bankrupt roads or those on the verge of that disaster had an advantage. They had everything to gain and nothing to lose. Rates, of course, sank like a plummet. During the war of 1874 the freight rates on grain from Chicago to New York fell from 60 cents per 100 pounds in December, 1873, to 30 cents in March, 1875. Passenger fares from Chicago to New York and Boston fell from $22 to $15. The chief hardship of the rate war fell upon the railroads, for rates were cut below the cost of handling the business and dividends were imperiled. The public, moreover, was not always benefited, for the vacillation of rates unsettled orderly business. Sooner or later the disease became so severe that the railroads adopted the curative measures of agreements or arbitration. But these were only of temporary efficacy.

The competitive struggle also shaped the rate system, the magnitude of investment in the railroad network, and the ethics of railroad operation. One well-nigh universal outcome was the rebate, a reduction from the published
tariffs which the railroads granted to corporations or individuals in order to secure their traffic patronage. Mutations of this simple and almost universal privilege, embodied in rate jugglery, billing, and service charges made rebating a fine art. Perhaps the rebate system had once had a justification. It enabled railroads to experiment piecemeal in lowering rates; later these reductions were often generalized for all shippers. By the railroad age this excuse was overshadowed by grave disadvantages. Rebates were given to those who had the power and the unscrupulousness to demand them; more insignificant and more squeamish shippers were at a disadvantage. As a matter of fact, the railroad became the irresponsible arbiter of the success and failure of individual businessmen. It occupied the same unofficial position in regard to communities. Localities served by competing railroads enjoyed low freight rates; localities without this benefit had their rates maintained at higher levels or even jacked up to make good the losses in traffic carried from competitive points. What the traffic would bear was the principle in rate making. Reputable railroad managers did not relish the exercise of these secret and arbitrary powers. One of them testified in the mid-eighties to a Senate Committee:

The railroad managers... no longer controlled their own business. Under the threat of losing freights they were forced to make concessions which they knew were wrong. They were annoyed by applications which it was impolitic to refuse, and met with suspicion and charges of treachery from the very men who were being made rich by rebates, yet feared that someone else might be getting better rates.... No wonder that railroad managers accused each other of fraud and deception. Men who in all the other relations of life were blameless winked at falsehoods, and dallied with deception, not because they were morally debased, but actually because they knew not the way out of the toils.

Competition also led to an overinvestment in railroad facilities. Sometimes this was the result of thinly concealed blackmail. There were specialists in promoting parallel or competitive roads, to sell as soon as they were built or even earlier to the enterprise already in existence. A group of these brethren paralleled Vanderbilt's line from Buffalo to Chicago; Vanderbilt opened a ruinous rate war upon this upstart, but eventually he purchased the line at a price which it was rumored was so high that he thought the road laid with rails of "nickel plate." The story may be true or not; the name survived. Later another group of capitalists determined to repeat the operation farther east, paralleling the Hudson River Railroad by a road on the opposite bank and building a line from Albany to Buffalo which would be visible all the way from the tracks of the New York Central. At the same time, 1883, reversing rôles, Vanderbilt was projecting a line which was to parallel the main line
of the Pennsylvania Railroad. This tangle was eventually unraveled when the Pennsylvania bought off its competitor and Mr. Vanderbilt purchased the West Shore Railroad.

But these were simply the showy and episodic outcroppings of a continuous process. Two roads were built where one would have sufficed; three where two were quite adequate. Less realized but probably more important was the increase in fixed charges effected by leases. The owners of strategic or nuisance lines dominated negotiations for such contracts, wringing from the lessee the last penny in the payment of interest on their road’s bonds and a guaranteed dividend upon their stock. An insider on the New York, New Haven and Hartford, the victimized road of many such holdups, wrote in 1900:

The New Haven has always been prone to underestimate the value of a competitor, and as a result of the delay, in very many instances, has paid a tremendous price, when, with very little effort, the competition could have been stopped at its inception and with very little expenditure. The road has been extremely fortunate in being so rich it could afford to pay the prices it has for its acquisitions, but is there not a limit beyond which even a property like the New Haven can go?

Overbuilding and overleasing overexpanded both plant and the fixed payments upon it. According to one canon, rates must be adjusted to provide an adequate return upon this overblown structure.

**Consolidation Is the Life of Trade**

Even before the Civil War, railroad owners and managers attempted by agreements to abate the more grievous forms of competition. Roads sharing in the same routes and traffics would together set rates and apportion traffics and territories. Such undertakings were predominantly local in character. From time to time roads operating in a larger area would send their officials to a railroad convention where through talk and exhortation they sought to reason each other into the adoption of a common policy. On these occasions some hard-headed or benighted disputant, with an individual view of his corporation’s advantage, usually prevented the attainment of harmony. After the Civil War these amateur endeavors gradually evolved into the pool, an institution for which there were English precedents. Broadly defined, a pooling agreement usually set an elaborate rate structure and then sought to divide among the members the available traffic upon some percentage basis. Uniform rates would then be maintained because there was no advantage in violating them. Although some attempts were made actually to send traffic over the roads in proportion to their allotments, this arrangement was
difficult. Generally, therefore, any road could carry all the traffic it wished; but if it exceeded its quota, the receipts, after a deduction was made for haulage, were divided among the other roads. In actual operation these schemes became very difficult to enforce. The roads which carried the traffic disliked paying sums to those which didn’t; there was a strenuous competition for greater allotments; new roads appeared and demanded to be taken into the agreement. Although fines for violations were imposed, although an impartial chairman kept the books and transferred the proceeds from one railroad to another, the operation of these pools was continually breaking down. Ruinous rate wars would then intervene and compel their restoration. At least such was the general experience of pools in the West, South and above all in trunk-line territory, where in 1877 the through routes established the Joint Executive Committee and appointed as its impartial chairman Albert Fink, a German immigrant, a practical railroad man, and a pioneer in the field of railroad economics and statistics. He was the “Napoleon” and “czar” who was to hold the roads to an harmonious policy.

That his strenuous labors as a railroad Sisyphus fell short of success was due to the inherent weakness of the pooling device. For one thing, such agreements were extralegal and the members could not resort to the courts to enforce them. Lacking these sanctions, the pools depended upon the sense of obligation and estimate of self-interest exhibited by individual railroad managers. This was a feeble reed. The hope of making money by violating agreements was too strong for whatever sense of honor dictated their observance. The unscrupulous, indeed, often signed these agreements with the idea that by violating their word they could enjoy a very considerable interim of profit taking before more honorable railroad men began their own infractions. Even if the managers acted in good faith, they found it difficult to control their subordinates. Charles Francis Adams, an experienced railroad official and railroad commissioner, gave a human insight into this unpleasant business:

The freight agent and the passenger agent is under a terrible strain all the time. He is working for his living. He is judged by results. All the time he has to meet the sharpest of sharp practices. If he is successful, and gets what is called his “share of the business” that is all right. . . . If he does not get his “share of the business” he is apt to be told some day that his services are no longer required. Accordingly, he will have recourse to every conceivable evasion. “Smartness,” as it is called, thus becomes the quality most highly prized, especially in subordinates. Honesty and good faith are scarcely regarded. Certainly they are not tolerated at all if they interfere with a man’s getting his “share of the business.” Gradually, this demoralizing spirit of low cunning has pervaded the whole system. Its moral tone is deplorably low. . . . That healthy, mutual confidence which is the first
essential to prosperity in all transactions between man and man, does not exist in the American railroad service taken as a whole.

After 1887 when the Interstate Commerce Act explicitly forbade pooling and the nineties when a series of adverse decisions under the Sherman Anti-Trust Act hampered the use of the device, it was obvious that some other form of consolidation was required. The chaos of bankruptcy through which the railroads had passed during the decade of the nineties afforded everywhere the opportunity for an era of actual consolidations. As road after road was reorganized, it became possible for the stronger roads to invest in the weaker ones or to provide the funds necessary for financial readjustment. The years of golden prosperity after 1898 introduced a period of giddy consolidation. Such immense railroad systems were formed that it was hoped they would be immune from the dangers of competition. In some cases these dangers were to be removed through the domination of a traffic territory by a single road. The Boston and Maine and the New York, New Haven and Hartford had thus divided New England between them. Or else several roads might be united through the ownership of one another's stock and through representation on one another's board of directors. In this fashion a harmonious policy which became known as a "community of interest" was established.

On every side the growth of this policy was illustrated. The Pennsylvania Railroad, buying into the reorganized Baltimore and Ohio, owned by 1906 nearly one-half of its preferred and over one-third of its common stock, and various Pennsylvania vice-presidents sat in succession on the board of directors of the Baltimore and Ohio. On their part the Baltimore and Ohio and the New York Central were buying into feeders of disturbing trunk-line competitors. And in the West shone the dazzling sun of Edward H. Harriman, the greatest exemplar of the community of interest program. His life coincided with the American formula of success in which both luck and hrewdness played a part. He started as an office boy in a Wall Street house, saved money, purchased a seat on the Stock Exchange, cultivated the friendship of the right people in society and business, made more money, and in the eighties became a director and finally guiding genius of the Illinois Central. He managed it so effectively and established its credit so soundly that after 1893, when the Union Pacific was in course of reorganization, he compelled the banking house which had undertaken that task to permit his participation. Once on the board of directors of the transcontinental, he made extensive stock purchases and secured an absolute control by 1900. The next year the Union Pacific purchased the holdings of the late C. P. Huntington and others to gain control of 45 per cent of the Southern Pacific's stock
—a dominating holding in view of the scattered ownership of the remainder—and Harriman became the latter’s president. These acquisitions gave him a strangle hold on the Pacific coast, with some important exceptions: the Atchison, Topeka and Santa Fé and the Northern Pacific and the Great Northern in the Northwest. After some skirmishes with the Santa Fé, Harriman convinced that road it should operate its lines in harmony with his. Two of the directors of the Union Pacific were in 1905 elected to the board of directors of the Santa Fé, and Harriman and his associates meanwhile purchased in the market approximately 14 per cent of its capital stock.

Meanwhile a community of interest was secured in the northern zone after a struggle for possession which became an American financial epic. As we have seen, James J. Hill was the overlord of the Great Northern; Hill and J. P. Morgan controlled the Northern Pacific after a reorganization in the nineties. Then these allies each secured an interest in the Chicago, Burlington and Quincy. The motive for this acquisition is controversial. It afforded connection for the Hill roads with Chicago, and it made it possible to divert the Mississippi traffic to the Northwest over the Hill lines and thus increase freight revenues. Both aims strengthened the competitive power of the Hill-Morgan systems, and the Chicago, Burlington and Quincy, reaching westward as far as Denver, was a portentous invader of the Harriman provinces. When the latter was refused a share in these arrangements, he began to purchase stock in the Northern Pacific; Hill and Morgan, tardily alerted to what he was doing, eventually tried to head him off. The contest which ensued in Wall Street was insane. On May 9 stock of the Northern Pacific ran up in an hour from $350 a share to $1000 a share, and none was to be had at that price. The simple fact of the matter was that the speculative fraternity had been selling stock that they did not possess and were now trying to purchase it in order to fulfill their contracts. Unless some arrangement was made the number of bank ruptcies would be appalling. In compromise lay salvation.

In 1901 the Northern Securities Company was chartered by the State of New Jersey. This concern was a holding company whose capital stock of $400,000,000 was exchanged for all the stock of the Northern Pacific and a great majority of the stock of the Great Northern Railroad, both of which, be it remembered, controlled the Chicago, Burlington and Quincy. The directors of the Northern Securities Corporation numbered fifteen; three of these directors were also directors of the Union Pacific Railroad, and Harriman, who was naturally one of the three, was also a member of the executive committee of the Northern Securities Company. By this single stroke the Harriman lines, Union-Southern Pacific and Illinois Central, aggregating nearly 21,000 miles, and the Hill lines, aggregating 20,000, were brought under the
benign aegis of the community of interest idea, and competition west of the Mississippi was effectively limited.

In 1904 the Supreme Court, as we shall see, ordered the dissolution of the Northern Securities Company. The Union Pacific, however, still retained a stockholding of $22,000,000 in the Great Northern and the Northern Pacific; from the sale of its other holdings in these roads it obtained a profit which it now proceeded to invest in other railways. Harriman made large purchases of the securities of the New York Central and Hudson River Railroad and poured the money of the Union Pacific like a flood into the Baltimore and Ohio, so that by 1906 over 18 per cent of its stock issue was owned by the former railroad. For a time it seemed the elimination of competition might be accomplished through a railroad despot. Apparently he believed it possible—on terms. Before the Interstate Commerce Commission in 1907 this small, nervous man, concealed by glasses and a big mustache, in response to the query, "Where is that thing going to stop?" replied, "I would go on with it. If I thought we could realize something more than we have got from these investments, I would go on and buy some more things." He felt that only the law prevented the concentration of every transcontinental road in his own hands. Before his more grandiose conceptions were realized or his boasts made good, Harriman died in 1909. Undoubtedly the greatest railroad man of the United States, if not of the world, he built his consolidations and held them together by personal power. His death in any case would have brought some recession. Meanwhile the government was proceeding to demolish the vast aggregation he had constructed. The steady pressure of the law destroyed the ties between the Union Pacific on the one hand and the Great Northern-Northern Pacific on the other.

Consolidation, nevertheless, had gone too far to be suddenly reversed. Harriman's example had been followed by numerous imitators. In 1900 the Industrial Commission calculated that one-quarter of the outstanding stock of railroads was owned by other railroads, a figure which represented a considerable increase from the middle of the preceding decade. By 1906 this proportion had increased to one-third. These interlocking stock ownerships were supplemented by a series of interlocking directorships. Connections between railroads were at the same time taking place through the medium of the investment banking houses, which supplied the funds for railroads and controlled their operating policies in varying degrees. In 1912 the firm of J. P. Morgan and Company owned stock, among others, in the New York Central and Hudson River Railroad; the New York, New Haven and Hartford; the Northern Pacific; the Erie; and the Atchison, Topeka and Santa Fé. Partners of the firm were also directors in these and other railroads, and
in many cases the latter’s stock was voted by a voting trust in which the firm was heavily represented. As the years went by, stock ownership in railroads became more dispersed. The importance of large holdings by individuals or families declined. But the process of consolidation through ownership, lease, interlocking stock ownership, and holding companies continued.

**Changes in Technique and Operation**

While the railroad network was building and its organization shifting from competition to consolidation, a series of innovations bestowed upon it a new scale and efficiency of operation. Some of these changes were technological. To be sure, the familiar American phenomenon of temporary and flimsy railroad construction was repeated in the new areas of the trans-Appalachian and of the trans-Mississippi West. Here lack of capital for investment in a permanent roadbed, the possibilities of speculative profit from an undeveloped country, the haste of construction—all contributed to the repetition of conditions which had characterized early American experimentation with the railroad. With the growth of population and the development of commerce, however, the American railroads passed through reconstruction after reconstruction until they compared in excellence and permanence with their European prototypes. Nevertheless, the conditions of American railroads were so different that unique distinctions remained. The long distances covered by American railroads, the mobility of population, the carriage of bulky products—coal, lumber, and the like—and the difficulties of the terrain put railroading upon an unusually large scale of operation in this country.

The weight and size of the American rolling stock illustrated this tendency. American passenger cars were larger and heavier than those of European countries. Development in this direction was compelled by the innovations of George M. Pullman, who in 1864 constructed his first sleeping car—the “Pioneer A.” It was so large that the roads which used it had to cut down their station platforms and alter their bridges. The later creations of Pullman, the diner and the “palace” or parlor car, were in the same tradition. Freight cars—coal cars, flat cars, and box cars—all increased in capacity and weight. In the sixties freight cars had a normal capacity of 15,000 pounds; by 1915 box cars on American railways fell primarily either in the classification between 30 and 35 tons or that between 40 and 45 tons capacity. Increasingly locomotives were differentiated for the services they were called upon to perform, passenger or freight, but all increased in size and weight. In the sixties American builders turned out an engine with six driving wheels, the Mogul, and then with eight drivers, the Consolidation. Later ten-coupled engines were constructed.

From the myriad improvements which have made these increases in
size and power possible—telegraphic operation, automatic signals, gigantic bridges of steel and concrete—it is possible to select two of fundamental significance, the steel rail and the air brake. In the fifties railroad men believed that the iron rail had reached the limit of its usefulness. Heavier rolling stock was impossible because it would destroy the roadbed. In the same decade Sir Henry Bessemer brought to perfection the improved methods of making steel which bear his name, and the English rolling mills began turning out Bessemer rolled steel rails. Their general use was retarded for a while by the expense of manufacture in this country. In the next decades, prices descended to ever lower levels. Over a hundred dollars a ton in gold in the early seventies, they hit $17.62 in 1898. By the end of the eighties most of the railroads had been relaid with the Bessemer rail. This rail was from eight to fifteen times as durable as its predecessor and it could support a much heavier traffic. In the nineties the use of the “open-hearth rail,” manufactured by an even superior process, began.

The other improvement vital to American railroad progress was the invention of an American, George Westinghouse. The weight of trains and the speed of their operations was severely limited by the difficulty of bringing them to a stop. In 1868 Westinghouse took out the first of a series of patents for an air brake—a series which was not to come to an end until 1907. All of his brakes relied on a complicated appliance, “the triple valve.” His first brake was the “straight-air brake,” which operated the brakes on all cars by air, compressed at the engine and sent the length of the train through an air line. It did not operate perfectly, however, because the last cars were stopped more tardily than those at the front of the train. By the seventies he had taken the first steps on a different principle, and after his failure at the classic Burlington Brake Trials, 1886–87, he feverishly perfected the automatic air brake which was standard equipment for twenty years. This automatic brake had an air-pressure reservoir on each car, and the air in the brake line was kept at a constant pressure; when the engineer reduced the pressure by a valve, the reservoir on each car set the brakes so quickly that there was no swinging or jerking by the rear cars of a long train and passengers in the last coach were not in danger of being thrown the length of the car. The adoption of this and other improved devices was, however, often compelled by state and, at the turn of the century, by national legislation as a part of the safety movement that characterized the era.

With the decline in the construction of new railroad lines after 1900 the period of dynamic changes in railroad technique seemed to come to an end. The day of great inventors, like Stephenson, Jervis, Westinghouse, was over; the engineer and accountant had reduced railroading to a formula and a profession. But the development of electrification defied this generalization. The
technical difficulties in the way of transmitting power in large amounts over long distances and then delivering it in proper shape to an engine pulling a heavy load baffled progress until the twentieth century. Then came the first large-scale electrification on the New York, New Haven and Hartford between New York City and New Haven. Even then the first two years of construction and operation were experimental, and engineers learned from the project. The operational economies of electrical power were obvious. The locomotives delivered a continuous power on grades, trains could be operated at higher speed, the saving in carrying coal was a large item. But the expense of installation was very heavy, and the wholesale scrapping of old equipment increased this item. Only railroads situated near centers of cheap electrical production or else operating through territory furnishing a heavy and dependable traffic pioneered with electrification.

Nor were all the operating advances of this era engineering ones. In spite of their snarling competition, railroads coöperated to create a national system. By the eighties most railroads had abandoned their insistence upon peculiar gauges and 4 feet 8½ inches had become the recognized standard. Most roads were relaid to conform to it. In the same decade, 1883, the American Railway Association adopted a scheme by which the country was divided into four time zones, roughly 15° in width, between which the difference of time was to be an hour. The advocates of "God's time" were outraged, but time tables were regularized. Somewhat later the provinciality, jealousy, and chaos displayed by the railroads in handling the freight business of the nation was modified. In 1889, largely at the insistence of the government, the country was divided into three great districts, within each of which classifications of commodities were uniform for all roads. Railroads also worked out arrangements for the interchange of freight cars on a mileage or a per diem basis, and thus freed the shipper from his dependence upon the fast freight-car lines which had developed during the sixties to prevent the necessity of transshipping freight when it passed from one railroad to another and to introduce into commerce that immense convenience, the through way bill.

The completion of the railroad network, technical and operational improvements, and the desperate competition for business and traffic brought about in the thirty-five years after the Civil War an almost unbelievable reduction in freight rates. In 1867 they had averaged, using the rather unsatisfactory "revenue per ton per mile," 1.925 cents; in 1900 they were 0.729 cents. They hovered for the next fifteen years in the neighborhood of this figure. More illuminating than such averages was the reduction in so critical a specific rate as that on grain from Chicago to New York: this fell from a high of 83 cents in gold per hundred pounds in 1865 to 9.6 cents in 1914, the
THE RAILROAD AGE

lowest figure for the whole period. Passenger rates did not decline in comparable fashion. The Civil War and the years that followed apparently brought about some increase over the fifties; at least in 1882 "the revenue per person-mile" was 2.447 cents. By 1900 it was down again to two cents and by 1914 just a little under.

THE GOVERNMENT LARGESS

Mountains might be flanked by passes and technical difficulties solved through invention, but neither of these achievements actually brought the railroad into existence. Capital somehow had to be enlisted to finance the surveys, purchase the right of way, do the grading, lay the rails, and finally purchase the railroad equipment and keep it rolling. To obtain the necessary capital had been peculiarly hard in early American history, and the conditions surrounding the construction of the railroads often heightened that difficulty. The projects which were entertained and set in train ceased to be purely local ones, involving a limited investment, and became transcontinental in aspiration. They were all built in advance of population and of traffic. Still the problem was met and met magnificently. In 1868 the cost of the railroads in the United States was estimated at $1,600,000,000; in 1915 the value of their stocks and bonds was $21,128,000,000. Such accomplishment depended on foreign as well as American capital; on government as well as private funds.

Government poured forth its largess. For at least a decade after the Civil War it seemed as if the enthusiasm and generosity of the earlier period of public aid, the thirties, had returned from some limbo to the American scene. So every governmental unit not prohibited by some constitutional restraint seemed eager to furnish credit to the railroad. The feckless habits of Civil War finance provided a general background for this extravagance. In the southern states the reconstruction of economic life required railroads and, since private capital was inadequate and timid, states issued their own securities or guaranteed those of private corporations. Too often individuals rather than the community were enriched by this process. In the North the general prosperity of railroads during the war had erased the memory of their financial difficulties during the fifties and fired enthusiasm for their extension. Experienced states like Massachusetts reëmbarked upon a policy of state aid and continued promotional investments. Local governments from Maine to Milwaukee gave assistance. The amount of these aids and investments has never been accurately determined. A government investigation in the nineteen-thirties concluded that by the end of 1927, states, counties, and cities had loaned $88,486,743 to railroads, guaranteed or endorsed railroad securities to the extent of $48,503,425, and subscribed to railroad stocks
and bonds $157,689,080. Since this report made no distinction by date, it is impossible to tell what proportion of these sums fell in the period between 1860 and 1915. The same difficulty handicaps any distribution of losses among decades. For losses there were. Railroads, for instance, repaid about 60 per cent of the sums mentioned in the first of the above series. We know also that many southern states, beginning in the seventies, repudiated their debts, debts in part incurred for railroad building. Thus the history of the forties was recapitulated.

As the railroad age got under way the chorus demanding Federal aid grew louder. Luckily the Illinois Central and other land grants furnished easy precedents for policy at the very moment the need was even more pressing. Consequently, in 1862 and 1864, the measure of government assistance was enlarged by the acts providing for the first transcontinental project. An atmosphere of uncertainty hangs over the reasons for the government’s generosity. The capitalists interested in the project financed a large lobby in Congress whose activities have never been disclosed, but the magnitude and daring of the project and its location through the territories rather than the states and through the “American desert” go far to explain Congressional liberality. The corporations involved, to whom the grants were now made directly, were authorized to take for each mile of the railroad constructed ten alternate sections of land on each side of the track. In addition to land the government granted a loan of national bonds. The amount for a mile varied according to the assumed difficulties of construction—$16,000 in the plains, $32,000 in the basin between the Rockies and the Sierra Nevadas, and $48,000 across those mountain chains. The reason for the innovation of financial aid was the belief that the road could not penetrate the difficult terrain without assistance additional to the land grants, the revenue from the sale of which in an unpopulated country was necessarily a future one. In a loose and ambiguous fashion the government attempted to protect the investment. Those thirty-year government bonds, upon which it was compelled to pay the interest, were to be a mortgage upon the railroads; their interest and principal were to be repaid by the railroads and every year the railroads were to apply “5 per cent of their net earnings” to the discharge of their debt to the government.

The financial assistance given by the Union Pacific and Central Pacific acts was not a precedent followed for many roads. In fact it was limited generally to connections or branches of that project. But the land-grant policy was pursued with mounting generosity. In the territories the most liberal grants sometimes gave twenty alternate sections on each side of the track and, in case some of these sections were already in private possession, extended the indemnity limit to sixty miles from the railroad. In these and
other instances the railroads were to carry troops and government property at reduced rates. The provisions of these acts were generally interpreted leniently by Congress or by the General Land Office, which was trusted with their execution. Writing in 1883, a critic of the policy pointed out that Congress allowed many railroads to retain grants although they had not fulfilled the requirements of construction within a certain period, that the General Land Office interpreted the indemnity clause for the benefit of the railroads in a manner contrary to the intention of Congress, and that in dealing with the actual settler possessing claims to land presumably granted to the railroads, the same office acted as if “every presumption is against him, and no mistake is ever made in his favor.” The total acreage of the grants is a matter of dispute. From the national government, directly or indirectly, railroads were granted approximately 223,000,000 acres; by 1943 they had secured final patents for 180,000,000. Between a fifth and a quarter of the total area of both Minnesota and Washington was granted to railroads.

As far as the national government was concerned, the period of assistance to railroad building came to an end in 1872, when the last land grant was made. The panic of the next year and the Granger movement of the seventies slowed assistance from local governments—state, county, and city. New state constitutions forbade the loaning of public credit to corporations or else hedged such procedure about with difficult conditions. Restrictive legislation or constitutional provisions were also passed by the states to curb the activities of local bodies. Today only limited survivals of this practice are legally possible. The reasons for a reaction against the once eagerly accepted policy of government aid are to be found in its results.

First of all, the effect of the policy of government aid upon the government was frequently deplorable. Although the railroads built under state aid often failed to pay dividends or were not constructed efficiently, the states still had to pay the interest and principal of the bonds which they had issued. When repudiation did not follow, heavy taxation and impaired municipal and state credit went in the train of local aid. As for the national government, the United States fortunately emerged from the loan of its securities without a major loss. After years of litigation in the courts, several prolonged Congressional investigations, and the well-founded fear that the railroad adventurers who ran the aided roads would use the roads’ income to pay dividends and finally force a foreclosure by which the first mortgage holders would receive the property before the second lien of the government became operative, the loss in interest and principal on all government loans was approximately $11,014,000; the amount repaid was $167,755,000. Undoubtedly the land-grant policy of the government stimulated fraud in Congress and in the General Land Office, and the resulting corrupt alliances
between individuals in government and in business was one cause of the de-
graded political morality in the period after the Civil War.

More important than the effect of government aid upon the donor was
the effect upon the railroads. Since the land secured from the government
was a valuable resource only if it could be sold to settlers whose payments
would furnish funds for financing the roads, and whose products would fur-
nish a traffic, the land-grant railroads often embarked upon extensive pro-
motion and colonization projects. The Illinois Central fixed prices of five to
twenty dollars an acre, gave six years' credit, advertised its lands extensively
in the East and published a guide to them in Germany; the Santa Fé land
department kept immigration agents in Europe and transported thousands of
Mennonites free of charge from Europe to Kansas; and the land department
of the Northern Pacific tried to colonize groups of Civil War veterans and of
English, Swedes, Finns, Norwegians, Bohemians, and Russians upon the
plains of Minnesota and Dakota. Such activity illustrated the reversal of old
pioneering conditions, where the settler pushed ahead of the means of trans-
portation. How much financial assistance the railroads received from their
land grants and their efforts to settle them varied from railroad to railroad.
One careful estimator places the total at half a billion dollars. In a sense
these figures are irrelevant. The real function of the land grant was to fur-
nish the railroads with a property which they could hypothecate as collateral
for credits. In some instances this possibility led to the promotion of rail-
roads for the sake of the land grant, to carelessness about construction costs,
to extravagant capitalizations and eventual losses to investors. On the other
hand without government aid many of these roads would not have been
built as early as they were and the development of the country would have
taken place more slowly. One further reservation: less than 8 per cent of the
mileage of the country was constructed with the assistance of Federal land
grants.

The Private Capitalist and the Railroad

Whatever the form of government aid, it was designed as a temptation to
the investment of private capital, the chief reservoirs of which were in the
eastern states and in Europe. In the East fortunes built up in other fashions,
particularly in foreign trade and in merchandising, were swung to the new
means of transportation. John Murray Forbes of Boston, who was interested
in railroad connections east and west of Chicago, had received his training
and his early start in the China trade; he enlisted the financial support of
others enriched by the same means. The original capitalists of the Illinois
Central included a group of merchants, some of whom traced the beginnings
of their wealth to the same source. Intermingled with the group of merchant
investors was another composed of successful railroad men who reinvested their money in new and promising undertakings. In Forbes's enterprises Erastus Corning, an Albany hardware merchant and first president of the New York Central, was heavily concerned. Among the investors in the Northern Pacific was a large Pennsylvania Railroad group which included Thomas A. Scott, vice president, and J. Edgar Thomson, president of that road.

In turn the eastern capitalists attempted to secure funds from their European connections. Forbes incessantly pointed out the advantages of American railroad investment to his European correspondents. When the great banking house of Jay Cooke and Company agreed to act as financial agents for the Northern Pacific, Cooke hoped to sell $50,000,000 out of an $80,000,000 bond issue to European investors. He approached the Rothschilds, who refused the proposition, and then the loan was peddled around Europe to one banking house after another in Holland, England, Austria, and Germany—all without success, although journalists were flattered with gifts and bankers were wined and dined on an elaborate scale. The failure of the Cooke promotion was not, however, typical. Dutch, German, and above all, English capital flowed into the securities of American railroads—although the regularity of such investment was violently interrupted by panics or by the occasional disclosures of the folly of the American promoters. Some roads like the Illinois Central were for a long period controlled by foreign stockholders, and for a time, 1890–96, a majority of the stock in five of America's early roads, including the Pennsylvania, was held abroad. In 1914 foreign investment in railroad securities, $4,170,000,000, was approximately one-fifth of the railroad capital outstanding at that date. Whether the funds came from the East or from Europe, the railroads of the West and South were largely constructed and operated by absentee capitalists.

As the railroad age got under way and the plain style of building a road through the issue and sale of stock was discarded for more complicated methods of financing, not all railroad managers, capitalists and investors by any means were animated by the simple ambition of constructing a needed public improvement and running it in sober fashion for operational returns. Fascinating vistas of quick and more certain gain opened in other directions. One was the construction company which evolved naturally from the earlier practice of paying off the contractor in the securities of the enterprise and of relying upon the superior personal credit of officers in time of emergency. In the post-Civil War era, these emergency arrangements became a regular reliance, whether or not they were needed. A small group, usually large investors and officials, formed a construction company and then contracted, often with themselves as representatives of the road, to finance the latter's
construction. For a construction company was a financial, not a building concern. This group then furnished current funds as they were needed and took in return the securities of the road. The famed Crédit Mobilier of America, the construction company for the Union Pacific, thus received government bonds, first-mortgage bonds of the railroad, land-grant bonds, and common stock—the last three items, particularly the stock, at figures less than their face value—and then raised the funds needed for construction by the sale of these securities or by borrowing upon them. Calculations as to the profit secured by the Crédit Mobilier differed from investigation to investigation. A modest one shows that the entire cost of the road to the contractors was paid for by the sale of the government and first mortgage bonds, and that they, therefore, gained for themselves all the value of the land-grant bonds and the capital stock, estimated at approximately $47,000,000; a sum which was about as much as the whole cost of the road to them. The members of the Crédit Mobilier claimed that the cash realized from the sale of the securities was such as to give them a profit of only 25 per cent on their operations! Whether such returns were justified as legitimate chance-taking on a daring project or not, the construction company, as used here and elsewhere encouraged extravagance and corruption when men in one capacity had the possibility of making money by awarding contracts to themselves in another; saddled the railroad with the burden of a large capitalization upon which it either must or was supposed to earn dividends; and created stock whose face value was far greater than the actual money payments made for it.

The construction company was only one of many devices for speculation. Since bonds by common understanding generally built the road, the value or equity of the stock was largely surmise. If it were disposed of for less than par, the process capitalized either favoritism or a haunting suspicion of its essential financial soundness. If capitalization were increased with the expectation that a consummated merger or amalgamation would bring higher profits, hopes were capitalized. Or perhaps the directors might simply manufacture stock as an incident to their speculative battles on Wall Street. At least that was the procedure on the Erie Railroad immediately after the Civil War. This railroad—perhaps, better, stock machine—was then commanded by three buccaneers of whose activities Charles Francis Adams and his brother Henry have given a classic disclosure. One of the trio was Daniel Drew, who had made his money in the fierce competitive warfare of the Hudson River steamboats and had become interested in land transportation. C. F. Adams called him "shrewd, unscrupulous, and very illiterate,—a strange combination of superstition and faithlessness, of daring and timidity." He was for many years treasurer of the Erie Railroad. His con-
frères and successors were Jay Gould and Jim Fisk. The former, a broker, was “an uncommonly fine and unscrupulous intriguer, skilled in all the processes of stock gambling, and passably indifferent to the praise or censure of society.” Fisk, his partner, a man of forty with “the instincts of fourteen,” “coarse, noisy, boastful, ignorant; the type of a young butcher in appearance and mind,” was “in respect to honesty . . . perhaps, if possible, less deserving” than Gould! The multitude and complexity of their transactions defy an abbreviated description. But by methods common to Wall Street they would unexpectedly throw upon the market large supplies of newly created stock, break the price, and collect from other speculators the difference between the new price and the higher one at which they had made earlier contracts for delivery. This “Fisk and Gould plan of conducting railroad operations,” coupled with the other procedures we have mentioned, resulted in watered stock, stock which represented no monetary or other actual investment. The degree of the evil was variously estimated. Poor's Manual in 1885 thought that a little less than one-third of the capitalization of the nation's railroads in that year represented water.

Another avenue of private gain was the lease, and less frequently its sequel, the amalgamation. Individuals or a ring would purchase at a price, usually a low one, the securities of the desired enterprise; forthwith these would be given a more pleasing value by an advantageous exchange for the stock of a higher-toned railroad or by a lease to the latter. Often this was a legitimate procedure. When executed by Drew and his “brother directors” it had quite a different connotation. Adams described how they made a worthless property of theirs worth while. “The road, it was stated, cost” them as purchasers and “financiers

... some $250,000; as proprietors they then issued in its name bonds for two million dollars, payable to one of themselves who now figured as trustee. This person, then, shifting his character, drew up as counsel for both parties, a contract leasing this road to the Erie Railway for four hundred and ninety-nine years, the Erie agreeing to assume the bonds; reappearing in their original character of Erie directors, these gentlemen then ratified the lease, and thereafter it only remained for them to relapse into the role of financiers and to divide the profits. All this was happily accomplished, and the Erie Railway lost and some one gained $140,000 a year by the bargain.1

In any discussion of these speculative practices it is difficult to secure a sense of proportion. It is wise to remember that a railroad president like Charles Francis Adams, who conscientiously labored to revive the Union

1 From C. F. and Henry Adams, Chapters of Erie and Other Essays, by permission of Henry Holt and Company, publishers.
Pacific by sound practices, should be placed against Jay Gould, whose malevolent touch ruined so many concerns. There were directors who scrupulously refrained, because of their fiduciary position, from speculating in the stock of their roads just as there were those who made a practice of doing so. The Pennsylvania Railroad, which followed sound financial policies, was a makeweight to the Erie, which had for many years violated them. Some construction companies were necessities; some stock dividends represented income plowed back into the railroad; railroad stocks might be wringing wet, but bonds in many railroads were copper-riveted investments which careful legislation or administrative ruling permitted savings banks, insurance companies, and trustees to own. Nonetheless, speculation and the overexpansion of the railroad network, in part the result of competition, set off many of the business panics which swept the nation in the railway age.

Long before 1857 observers were predicting that the hectic outburst of railroad building in the early fifties would be disastrous; and the panic of 1857 was the answer. The fearful prostration of the panic of 1873 was set in train by the collapse of Jay Cooke, who had miscalculated the willingness of the public to purchase the securities of the Northern Pacific. The panic of 1893, although less closely connected with railroad overexpansion, followed the railroad growth of the eighties. After these cyclones had blown over, the wreckage of railroad systems littered the business world. In the six years 1893–98 the courts foreclosed 67,000 miles of railroad—about one-third of the total mileage of the country. Among the failures were such great systems as the Union Pacific, the Northern Pacific, the Erie, the Baltimore and Ohio, and the Atchison, Topeka and Santa Fé.

One feature of the collapse of the nineties was the increasing recourse to bankers for assistance in obtaining the funds necessary for reorganization. Bankers, to be sure, had been previously concerned in the financial arrangements of the railroads, as the connection of Jay Cooke and Company with the Northern Pacific witnessed, and had indeed exercised some influence over the railroads for whom they acted as financial agents. In the case of a grant of aid for reorganization purposes the necessity for a sharper control seemed to exist. If a great banking establishment like the House of Morgan was to market the new securities through its prestige, some guarantee that the funds so obtained were used wisely was required. This might be exerted through placing a representative of the banking house upon the board of directors or through a "voting trust"—a few trustees appointed by the bankers to whom the voting power of the stock was surrendered for a period of years. In this fashion the House of Morgan in the period of reorganization became an influence in the affairs of many railroads. This development of "banker's control" was pregnant with possibilities for the future.
THE RAILROAD AGE

STATE REGULATION

Throughout the period before the Civil War there was a spluttering debate as to whether it was either feasible or wise to rely upon competition to govern the railroad world. Neither the question nor the frequent variant upon it, the degree of competition, received a definite answer. Meanwhile the states by charter provisions, statutory legislation, and the rulings of commissions regulated railroad practices. When the Civil War was over, the debate was resumed. Now, as a result of experience both here and abroad and of observation, railroadmen and economists proclaimed with greater certainty that the railroad was by nature a semi-monopoly and that competition, where it did exist, was not universally beneficent. The alternative was regulation. But it was quite impossible to win public approval for regulation of the railroads by the railroads themselves. Fink's failure to legalize the pool demonstrated that. On the other hand, public regulation by the devices hitherto employed was incompetent and uninformed. The answer was a new form of state railroad commission.

Massachusetts set one pattern. Her commission, established in 1869, was given general powers to investigate railroad practices and to consider complaints presented by an individual shipper or locality. The grievance might be the unreasonableness or inequality of rates, discrimination, defective service. The Commission issued findings; it could not compel obedience. It relied upon public opinion and the possibility of appealing to the legislature for a statute to bring the railroads to terms. This was no idle threat. The charters of practically all Massachusetts railroads allowed the state to alter, amend, or repeal them, and the state Supreme Court had convincingly supported the doctrine that the railroads were public corporations, created solely for the good of the public. A personal reason for the success of the Massachusetts way was the fact that Charles F. Adams was a member of the Commission in its first ten years of operation.

In the western states the abuses of early railroad construction and operation were peculiarly aggravated. The railroads were dilatory in fulfilling the conditions upon which the Federal land grants had been issued; states, local governments, and individual farmers had invested in railroad securities which like as not now failed to pay dividends; otherwise railroads were financed by absenteees who were foreigners whether they lived in the East or in Europe; railroad rates were high, for they failed to retreat rapidly from the inflationary level of the Civil War; and discriminations, particularly the incomprehensible higher charge for a short than a long haul, were rife. These specific grievances were all sharpened by the agricultural prostration following the Civil War. Farmers, since they could not easily prevent the over-
production of agricultural commodities, sought instead a legislative remedy for their ills. As a weapon for their program, they took over the Grange; ironically, for the Grange or the Patrons of Husbandry had been established in 1867 by Oliver Hudson Kelley, a New Englander, a Minnesota dirt farmer, a clerk in the Agricultural Department at Washington, as a secret organization to elevate farming through education, discussion, and social contacts. It frequently asserted that it was not a political party or party organization.

It was impossible, however, for an organization with a membership early in the seventies of perhaps a million, to refrain from using its power in behalf of ends urgently desired by farmers. Undeterred by a strict construction of political self-denying ordinances, meetings of state granges in the Northwest advocated, as means of preventing the abuses of the railroad, Federal assistance to a Great-Lakes-to-Gulf waterway or else the construction by the Federal government of a railroad from the Mississippi to the Atlantic seaboard. Either of these schemes would introduce rock-bottom and genuine competition. In the states they sought either through commissions or through legislation a more stringent regulation of railroad practices. Thus in Illinois they first inserted into the new state constitution of 1870 an injunction that "the General Assembly shall, from time to time, pass laws establishing reasonable maximum rates of charges for the transportation of passengers and freight" and "shall pass laws to correct abuses and to prevent unjust discrimination and extortion in the rates of freight and passenger tariffs." Three years of experimental legislation ensued before a statute of 1873 conquered inadequacies. Definiteness of definition and the denial of competition as an excuse for the practice put a headlock on discriminations. The existing board of railroad and warehouse commissioners was to draw up a schedule of maximum rates for passengers and freight, and upon the railroads was placed the burden of showing that these rates were unreasonable. This commission of three members no longer had to wait for complaints from shippers, who might be prevented by fear of the railroad from parading their grievances. Upon its own initiative it could "investigate and ascertain whether the provisions of the act are violated" and "immediately cause suits to be commenced and prosecuted against any railroad corporation which may violate the provisions of this act." However typical of Granger legislation these Illinois laws were, they were unique in their survival. In Iowa, Minnesota, and Wisconsin regulation was so extreme and so careless and the hostility of the railroads was so effective that the Granger laws were repealed or modified in the later seventies. In Illinois the railroads were hostile enough. They endeavored to obey the law in such a way as to make it obnoxious or ridiculous and attempted to educate the people and the
legislature to the necessity of repealing the legislation. When their campaign failed, the enforcement of the laws was fought year in and year out through the hierarchy of the courts.

It is not necessary to examine the detailed decisions of the Illinois courts, for the cases arising under the legislation of that state were united with cases from other states and decided by the Supreme Court of the United States in 1877. The first of these Granger cases, Munn v. Illinois, involved warehouse charges; its principles, however, were immediately extended to the railroad regulations just described. The majority of the court dismissed the pleas that such legislation violated the fourteenth amendment by taking property without due process of law and declared that the warehouse business was "clothed with a public interest" and could be regulated. Whether the rates established under such regulation were reasonable, was for the legislature, not the court, to determine. "We know that this is a power which may be abused, but that is no argument against its existence. For protection against abuses by legislation, the people must resort to the polls, not to the courts." To the objection of counsel that the regulation of warehouses was a regulation of interstate commerce, which was solely within the power of the national government, the court asserted that, "until Congress acts in reference to their interstate relations the state may exercise all the powers of government over them, even though in so doing it may indirectly operate upon commerce outside its immediate jurisdiction." In the railroad cases these principles were applied, and the defense of the railroads that their charters were contracts and were impaired by this legislation in defiance of the constitutional prohibitions was swept aside by the Supreme Court, which pointed out that these charters had been secured under general incorporation laws which allowed the state to amend, alter, or repeal them.

Although the Supreme Court might admit that the people had the right to pass such legislation, conservatives did not subscribe to its necessity or its wisdom. Railroad presidents talked wildly about the "confiscation of private property." A. T. Hadley, then a lecturer at Yale, felt sure it violated the immutable laws of trade; and one magazine writer, linking together the Pittsburgh riots of 1877 and the Granger laws in the Middle West, gave it as his considered opinion that the Grangers had "turned Communist" and begun "spoliation." It is impossible to tell whether the Granger laws despoiled the railroads. Many of them were too quickly repealed; the effects of those that escaped this fate cannot be disentangled from other important factors. Their influence upon public policy was profound. Other states of the Middle West and of the South in the late seventies and eighties reflected the Granger agitation on a smaller scale and passed less thoroughgoing legisla-
tion. Finally the Granger railroad philosophy, perpetuated by other organizations, united with the discontent of the East to force the passage of national legislation—the Interstate Commerce Act of 1887.

**National Regulation**

Soon after the Civil War it became apparent that railroad regulation was a national task. As the commerce over these new avenues of communication became increasingly interstate, Congressional debates on the constitutionality of national regulation showed that the constitutional theorists were aware of the new emergency, and the flood of petitions pouring in from the western states gave impetus to more practical activity. The burden of the Granger lament was the exorbitant freight rates on bulky products shipped from the interior to the Atlantic seaboard. At the same time some reformers and shippers in the East were seeking national legislation “to control and limit by law, within proper constitutional and legitimate limits, the rates and charges of existing lines of transportation.” By 1874 the anti-railroad movement had wrung from a select Senate Committee the voluminous Windom Report on transportation routes to the seaboard. The committee declared the heart of railroad problem to be the provision of “cheap and ample facilities” for the interchange of commodities among the different sections of the country. As permanent measures it suggested state legislation to prevent stock watering and national legislation to prohibit the consolidation of parallel or competing lines. The problem of “cheap transportation is to be solved through competition.” In order to preserve real competition the committee suggested the construction and operation by the government of a double-track freight railroad from the Mississippi to the Atlantic, but placed greater emphasis upon the improvement of waterways which, “when properly located, not only afford the cheapest and best-known means of transport for all heavy, bulky, and cheap commodities,” but “are also the natural competitors, and most effective regulators of railway-transportation.”

Before any further steps were taken the drive against the railroads assumed a different guise. Old issues had disappeared, for in the later seventies trunk-line competitive warfare and the extension of the railroad network had provided “cheap and ample facilities.” Now “the paramount evil” was, according to the Cullom Report, made by a Senate committee in the eighties “unjust discrimination between persons, places, commodities, or particular descriptions of traffic.” While local rates, where competition did not exist, remained at the old levels, rates between competitive points were slashed, and the discrimination of a greater charge for a short than for a long haul became frequent. The new transcontinental railroads demonstrated this phenomenon on a large and flagrant scale. The lavishness and injustice of personal
rebates increased. Although every investigation uncovered their existence, reproaches were ignored by railroads and shippers; and some concerns, like the Standard Oil, brazenly continued to furnish new illustrations. The widespread character of these evils made the attack against the railroads national rather than sectional. While the embattled farmers of the West were attempting in the eighties to revive some of the Granger legislation which had been repealed, eastern manufacturers and shippers were equally determined upon a redress for the rebate system.

At this precise moment the Supreme Court aided the movement for national regulation by its decision in the Wabash case in 1886. The assertions of this decision were certainly astonishing in view of the earlier Granger cases. Declaring unconstitutional the long-and-short-haul clause of the Illinois law, the court said that if each state is

... to establish its own rates of transportation, its own methods to prevent discrimination in rates, or to permit it, the deleterious influence upon the freedom of commerce among the states... can not be overestimated. That species of regulation is one which must be... of a general and national character, and can not be safely and wisely remitted to local rules and local regulations.

This common-sense utterance made national regulation inevitable if there was to be any regulation whatever. By impressive majorities the Interstate Commerce Act of 1887 was passed.

Its provisions derived from previous legislation and from the experience of the country with railroad abuses. The act declared that all charges were to be just and reasonable. It forbade rebates and personal discriminations of every sort. Railroads were forbidden to charge greater compensation “for the transportation of passengers or of like kind of property under substantially similar circumstances and conditions, for a shorter than for a longer distance over the same line, in the same direction, the shorter being included within the longer distance.” The Interstate Commerce Commission was authorized to make exceptions to this principle after investigation. All pooling and traffic agreements were prohibited. Railroads were compelled to make annual reports on their financial condition and their operation. The enforcement of the act was given to an Interstate Commerce Commission consisting of five members whose terms were to be for six years. Complaints were to be made to this body; its decisions were to be issued in the form of orders to the carriers; if one of these remained obdurate, an appeal was to be made by the Commission to the courts for a writ compelling obedience.

For a few years after its establishment the Interstate Commerce Commission secured the coöperation of the railroads. But when this era of harmony inevitably ended, the Commission was hampered by the clumsiness and de-
lays of its procedure. It operated upon complaints by shipper. If a railroad saw fit to resist an order of the Commission, that body had to obtain an order from the courts. The courts reheard the entire case and took new evidence. Then the case drifted through the hierarchy of courts until it came to the Supreme Court. On the average, appealed cases required four years for settlement; delays twice as long were not infrequent. Then through judicial interpretation the powers of the Commission were greatly limited. It retained its authority to prevent personal rebating. But in 1897 two judicial decisions struck down other activities. In one the Supreme Court found that while the Commission could determine the fairness or reasonableness of rates in the past and order redress, the Interstate Commerce Act did not give it "the legislative function of prescribing rates which shall control in the future." This decision, of course, prevented even passably thorough rate regulation. A few months later the Supreme Court in another case accepted a railroad's plea that competition between places and railroads could justify a charge for a long haul lower than that for a short one even under the definitions of the Interstate Commerce Act. On this occasion a dissenting Justice observed that the Commission "has been left, it is true, with power to make reports and to issue protests. But it has been shorn, by judicial interpretation, of authority to do anything of an effective character." Perhaps this judicial dejection might discover some makeweight in current railroad decisions under the terms of the Sherman Anti-Trust Act of 1890. Its declaration that every contract, combination, or conspiracy in restraint of interstate trade was illegal served in the late nineties to dissolve some of the most ambitious pools, protectively christened "associations," in railroad history. Nor had the state commissions adjourned regulatory action in areas still open to them.

With Theodore Roosevelt in 1901 came the progressive era, an era which endured until the United States under Wilson entered World War I in 1917. Presidents gave a drive to new legislation and the appearance of railroad giants, like the Harriman empire, gave reason to their cause. While the Sherman Anti-Trust Act successfully dissolved large aggregations, Congress passed a series of enactments which gave both a new thoroughness and a new turn to the regulatory process. Largely through statutory definitions, rebates were at last controlled. Prodded by Roosevelt and "decent railway men," to use his accolade, Congress made the proof of rebating before the courts easier by declaring that any departure from published tariffs, taken alone, was a misdemeanor, and some years later removed the clauses by which the railroads had escaped the prohibition of the long- and short-haul practice. Regulation was also enlarged to include pipe lines, express companies, shipping-car companies, railroad terminals, and railroad services. A reason for this greater inclusiveness was a desire to scotch, once and for all, personal
rebates, often disguised under preferences in services, such as hauling and storage.

Of course the heart of the matter was the regulation of rates. In 1906, after a lobby and legislative battle of exceptional severity, the Hepburn Act gave the Commission, upon complaint from shippers, the power "to determine and prescribe just and reasonable maximum rates." Pro-railroad and anti-railroad legislators fought fiercely over the procedure to be followed after this determination. The result was a compromise. The Commission was given the power to issue its own orders, the railroad, not the Commission, had to resort to the courts, and while the Circuit Court might set aside these orders, the presumption was to be in favor of the validity of the Commission's decision. Appeals from the Circuit Court were to be taken directly to the Supreme Court and were to have precedence on its docket. The Attorney-General was to conduct the formal prosecution in such cases. The railroads were still allowed to charge the old rate pending adjudication of the new. Four years later a supplementary act declared that the Commission, in prescribing reasonable rates and regulations for the future, could suspend any change in rates or practices proposed by the railroads for ten months, during which its reasonableness could be determined. The burden of proof of the reasonableness of the change was placed upon the railroad.

Admittedly these were technicalities. They were also matters of principle. Before the Hepburn Act the task of national regulation was conceived primarily in terms of staying or remedying past rates and practices. After 1910 the Commission was in a halting fashion permitted to shape rate policy for the future. The shift in emphasis was not complete but it was unmistakable. The grant of powers, ancillary to this main one, showed the same trend. The Commission gained wider authority to compel reports, examine railroad books, and finally in 1913, in the Wilson administration, to undertake a physical valuation of railroad property. Such an appraisal was an essential preliminary to proper rate-making. Rates should not be based upon watered stock but real value. The latter concept was not simple. Original cost, reproduction cost new, reproduction cost less depreciation, and other values and elements of value might be the test. Before this and other policies were worked out to any rational conclusions, the war intervened. Within a few months the freight congestion and its accumulated problems were too great for solution by private carriers, unwilling or unable to see the problem of transportation as a unified one, or by existing government bodies. Only a new agency would be able to provide the extension of the facilities and new equipment; only a new agency could give increased wages to meet the increased cost of living and also increase rates to underwrite these advances. At the end of 1917 Wilson took possession of the whole transportation sys-
tem of the country, coastwise and inland water transportation as well as railroads, and placed them all under the Secretary of the Treasury as Director General. This move was not influenced by the principles of the nineties when the Populist party had called explicitly for the government ownership and operation of the railroads. Rather on this occasion Wilson might well have said as Cleveland did on another, "it is a condition that confronts us—not a theory."

**Railroad Rivals: Dead and Alive**

As the Wilsonian order demonstrated, railroads even at the end of the railroad age had not entirely displaced water transportation. Nonetheless their victories had been substantial. Most river traffic went under. At the very moment when a government report was announcing in 1877 that the "Mississippi river is still and will always continue to be the most important avenue of commerce between the West and the South," the railroads were carrying the larger share of the grain and flour of the Northwest; and within a few years, instead of floating downstream, cotton went by rail to the Atlantic or the Gulf ports or made the whole journey by rail to the Northeast, crossing rather than following the Mississippi. By 1905 the total receipts and shipments by rail at St. Louis, once a river port rather than a railroad center, were more than one hundred times those by river. If the Mississippi capitulated to the railroad, it is not surprising that the other rivers did likewise. The upper Mississippi and the Missouri and the rivers of the Pacific coast ceased to be significant carriers and eastern streams sank to the level of carrying excursionists on the one hand and petroleum, lumber, sand, and gravel on the other. Practically the only surviving traffic of importance was carried upon the Ohio and the streams which united to form it. Coal was its salvation, for the mines along the Monongahela could dump their dusty cargoes directly into barges and it could be unloaded at the user’s or merchant’s yard on the lower streams without transshipment. But even this success meant twilight for the steamboat as well as the old ports it served. Pittsburgh and tugs and tows were the symbols of the new era on the western waters.

Even before 1860 the canals had begun to go under in New England, Pennsylvania, and Ohio. Some of the more strategic canals lived into the twentieth century. But only the willingness of the states which owned them to cut tolls and make up deficits from other funds made such endurance possible. Sacrifices of this order kept the Illinois and Michigan in operation. Although its offspring were dying all about it, the patriarchal Erie Canal still survived. That was all. The railroads were expanding their tonnage; all the Erie could do was hold its own. Alarmed, those interested in the canal
made it a "free" one with the abolition of tolls in 1882. It did little good. In 1900 only 5 per cent of the tonnage reaching New York from the interior came by canal and the Hudson. Once again desperate, the protagonists of water and the foes of railroads persuaded the state to build a Barge Canal at a cost of over $100,000,000, a project not completed until after World War I.

Such was the history of most waterways, natural and artificial. Some who interpreted it claimed the roads throttled water competition by buying up water fronts and boats, making transshipment difficult, and refusing to make just joint rates. Other interpreters asserted that the success of the railroads was due to their natural superiority. Canals froze up, rivers varied in depth and concealed hazards to navigation, railroads were the faster means of communication. There were variants to these advantages. Insurance rates for the carriage of goods by railroads were so low that they were assumed by the railroad, the shipper by canal or river had both the annoyance and the expense of an insurance upon his shipments. Railroads could go anywhere. Spur tracks ran to the factory door and eliminated the inconvenience and expense of teaming. Finally the country had so grown away from waterways that it depended upon the railroads to reach them or to connect them. In truth, American history was not unique in chronicling the victory of the railroads over the waterway. European experience had been similar. Where waterways had persisted, as in Germany, France, and Belgium, natural conditions were extremely favorable or else legislation checked the natural outcome of railroad competition.

To this general proscription of waterways the Great Lakes were a startling exception. Total shipments increased between 1889 and 1916 from 25,000,000 to over 125,000,000 short tons, and in the latter year one-third of the nation's merchant marine was employed on these waters. Great Lake ports had a commerce greater than that of the traditional cities along the Atlantic seaboard. One reason for the success of the Lakes in the face of railroad competition has been their location in a region producing bulky commodities admirably suited to water transportation. It was harder for the railroads to monopolize the grain traffic from Minnesota and the Dakotas to the Atlantic seaboard than it had been from Illinois and Iowa. At the same time the discovery and exploitation of the vast iron ranges around Lake Superior provided an eastward commerce in the ore consumed by the iron and steel industry at the other end of Lakes Erie and Michigan. Return cargoes, although not equal to the eastward commerce, were supplied by coal. Since coal and iron constituted over four-fifths of the traffic tonnage on the Lakes in 1916, they determined the lines of commerce. There was comparatively little local traffic
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except on Lake Michigan and Lake Erie; the chief lanes of lake commerce were from Lake Superior ports to those on Lake Erie, and the greatest lake ports were the two termini—Duluth-Superior and Buffalo.

A second explanation for the success of the Lakes was the continually evolving technical equipment. After the eighties sailing vessels declined and the steam vessel became the dominant carrier. At the end of the Civil War the average propeller had weighed 231 tons; by 1920 the typical carrier had a tonnage between 3,000 and 7,000. The cargoes were heavy, and the vessels were adapted to them. Hulls were long boxes with slightly shaped ends and straight sides; the wheel house and the engines were placed at the fore and aft extremities; the cargo space between was approached by a series of uninterrupted hatches. The docks fitted the vessels. Grain was shot down through batteries of spouts, coal and iron were dumped through chutes. Machinery likewise speeded the unloading process. Endless conveyors lifted the grain out of the hold, and a series of shovels, carrying both scoops and operating cabs, dipped out the coal and iron like the magnified tentacles of some restless insect. With waits at terminals reduced through efficiency, vessels could make trip after trip and multiply their usefulness and cheapness. Like other transportation marvels, the Great Lake vessels were generally owned and operated by railroads, great industrial concerns, like United States Steel, or large shipping corporations.

Another survivor of the waterways era was the coasting trade, both on the Atlantic and the Pacific. Larger and larger vessels, now built of iron and steel and usually driven by propellers rather than paddle wheels, were launched in every decade to provide for the overnight passenger business the convenience and luxury which railroads did not yet provide. In the carriage of bulk cargoes, there were losses, like that of cotton which took to land, and gains, like that of petroleum which sought cheap marine transportation. And the old standbys were standbys still. On the Atlantic coast lumber moved northward from the yellow pine belt of the southern states and coal from the rising ports of Hampton Roads and the traditional shippers of Baltimore, Philadelphia, and New York. On the Pacific the great new forest empire of the Northwest shipped southward from northern California, the Columbia and Puget Sound, and petroleum from California made the return journey. To carry these bulk cargoes builders, particularly those in the eastern yards, created the great multi-masted schooners; their acme, the Thomas W. Lawson of 1902, had seven masts and a steel hull and was of 5,218 gross tons burden. Actually as early as the eighties the tugs with tows of specially built barges or cut-down sailing vessels were exhibiting their operational savings. By 1910, if not earlier, these carriers, as prosaic as freight cars, had taken over the bulk
trades. The affinity with the railroads did not stop there. For railroads ever since the Civil War had been buying into the lines of coastal steamers in the Atlantic-Gulf of Mexico commerce or founding and developing them. The consolidation movement at the turn of the century brought these as well as independents into larger aggregates, big business salt-water variety.

Although waterways ceased in general to be its rivals, the railroad had to meet other challenges. On land the first serious competitor developed from the attempt to solve the problem of urban transportation. Horse busses gave way to horse cars; horse cars gave way to cable cars; and in the late eighties a new transportation device, the electric car, demonstrated its efficiency upon the thirteen miles of the street railway system of Richmond, Virginia. The familiar phenomena connected with a craze for a new method of transportation at once appeared. It seemed to be a simple and inexpensive matter to put a motor under the old horse car, string a wire above the tracks, dismiss armies of stablemen and hostlers, dispense with horses and barns, and make money. The arrival of the electric car also coincided with the heyday of nineteenth century promotion. The golden day for plunder in the railroad world had set, and now a group of buccaneers turned toward the rising sun of electric railways, or “public utilities,” as they were called. In New York, Philadelphia, and Chicago they controlled the political organizations which gave franchises and operated in business upon the dictum of C. T. Yerkes, one of their number: “The secret of success in my business is to buy old junk, fix it up a little, and unload it upon other fellows.” A host of other promoters organized trolley lines, extended them rapidly, brought about incorporations or consolidations swimming in watered stock, paid dividends when companies did not earn them, and neglected to make proper charges for depreciation.

Even in the fifties, as horse-car lines crawled toward the suburbs, the railroads were alarmed at the loss of passenger traffic and, as the mood stirred them, uttered either defiance or lament. Later, as lines became electrified and were formed into systems, they became even more efficient competitors. They owned their own roadbed rather than using the highways; rails often as heavy as seventy pounds per lineal yard were laid down; expensive and heavier equipment, even sleeping cars in some places, was purchased; high speeds were attained. Lines of such a sort, assimilated in character to the railroads, made inroads into the passenger traffic and then the light freight business. But the competitive position of the trolley had been undermined in general by its financial history. Persons familiar with the industry doubted if it could ever earn profits on its excessive capitalization. “Hopes were capitalized, hopes were sold.” The companies themselves ascribed their ills, mounting rapidly after 1910, to the extravagant demand of the employees, the high cost
of materials, and the evils of public regulation. More important were the traffic inroads of the automobile. In spite of its victory over the electric motor, few would have dared to prophesy the gasoline motor's later threat to the iron horse.
CHAPTER XII

The Industrial State

AFTER 1860 the industrial revolution came to full flower in the United States. Fortunately, it is not necessary to depend upon dollar value of product to demonstrate this transformation; such values fluctuate widely. Fortunately, also, enough figures of quantities produced are available to construct an index of manufacturing production. Though such formulations are not likely to agree, one concludes that manufacturing productivity multiplied twelve times between 1860 to 1914; another that it multiplied fifteen times between 1863 and 1915. In any case, the increase so greatly exceeded that in population as to show that industrial development was not merely relative but absolute. Indeed, the United States in this period became the most powerful industrial nation in the world.

Of course the vicissitudes of American political history have had considerable influence upon the rate and the direction of this industrial transformation. For one thing the nation had passed through two wars—the American Civil War and the war with Spain. While the second was essentially a "bow and arrow" conflict, the first stimulated a manufacturing development which was under way in the fifties and at its end the trend of things to come was clear. The policies of the national government in regard to currency and business regulation have also had a direct effect upon industrial history. In the realm of policy peculiar importance, if not sacredness, has attached to the protective tariff. The era of modern protection, as we shall see, came in with the Civil War; it was not seriously modified until the eve of World War I. This long reign of protection, however, did not greatly influence the general course of our industrial development. There were instances of its benign effect—the tin-plate industry, the silk mills, beet-sugar manufacturing—but even in these industries other factors have to be taken into consideration. As for our fundamental industries—meat packing, food preserving, lumbering, coal mining, petroleum, iron and steel, automobiles, electric equipment—the tariff was negligible. There were more fundamental explanations for the industrial power of the United States.
One explanation was the sheer growth of population. In 1860 the number of people living in the continental United States was 31,513,114; in 1915 it was 100,549,013. It was changes of this order that led a great railroad analyst to declare, "In no other country but our own is the annual increase of population an element of first-rate magnitude in the calculations of its statesmen." Although protected from outside competition by a tariff wall, this people constituted, with the exception of Russia, the greatest free-trade market in the world, and this free market was made accessible on a national scale for manufacturers by the improved means of transportation constructed during the railroad age. From the increased population was recruited in turn the army of laborers who were to man its machines and run its offices. Nor must the indefinable attribute, the national spirit, be ignored. For two centuries the American had been a pioneer, to be sure an agricultural one, but his habits of mind were easily transferred to another sphere. The restlessness and movement of American life had engendered a freedom from convention, an energetic interest in the novel, a devotion to material ends, and a belief in the value and certainty of progress. All these qualities were admirably adapted to stimulating industrial development once they were turned in that direction. Finally, the American people occupied an area packed with natural resources.

**Natural Resources and Their Use**

In 1860 American industry was dependent upon the natural resources most easily exploited by the backward economic organization of a frontier nation—"the products of the field and of the forest." By 1914 American manufacturing was still far short of outgrowing this reliance. Yet the merest glance at the industrial scene showed that the chief props of the industrial state were provided by other industries, most of which had come into being after the mid-nineteenth century. They were the heavy industries, the ones with prolonged and indirect systems of manufacturing, requiring large fixed investments and turning out, in general, producers' rather than consumers' goods. Of primary importance were those which provided extra-human power. No country could be transformed by the industrial revolution without possessing either coal, oil and natural gas, or water power; and with all of these the United States was generously endowed. Equally fundamental were iron and steel; the cornerstone of this industry rested upon natural resources of coal and iron. Dependent in turn upon the steel and other metal industries were the other giants of the industrial state—the electrical, the machine, and somewhat later the automobile industries. In short, at every hand American industry now depended not so much upon growing things as upon metals and minerals, capital supplies in the bank of the earth.
Coal was one illustration. In 1860 the country mined 14,610,000 tons; in 1914 nearly thirty times as much. In this period American coal production, surpassing that of Great Britain, the motherland of the industrial revolution, was the main source of power, the chief fuel, and, it may be added, the commodity providing half of the tonnage carried by the American railway. At first anthracite had the leadership. Its deposits, localized in five counties of northeastern Pennsylvania, were all discovered and utilized before 1835. Their association with the Wyoming, Lehigh, Schuylkill, and Susquehanna river valleys and their location near the most thickly settled parts of the United States gave them means of transportation and a market. After methods of burning it had been perfected, anthracite served as a fuel for industrial establishments, for locomotives, and for steam vessels, and its annual production generally exceeded that of bituminous coal until the decade of the seventies. By the twentieth century the output of its mines was apparently stabilized and its use was predominantly for domestic purposes.

The place of anthracite was usurped by bituminous coal. Securing the ascendency in 1870, its output increased until in 1914 it was over four and a half times that of its rival. By far the largest proportion of bituminous coal was used to raise steam under boilers, either in industrial establishments or in railroad locomotives; but in addition it yielded gas, after processing, for lighting and heating operations, it filled the bunkers of ocean and Great Lakes vessels, and, coked, it was an essential in the new method of smelting iron. Of the several varieties of coal blanketeted under the word “bituminous,” the United States had the greatest deposits in the world. They were scattered throughout the nation from Puget Sound through the Great Plains and Corn
Belt to the Appalachians. The greatest producing areas, however, were the
Appalachian fields underlying the plateau which runs nearly from Lake Erie
into northern Alabama. The Appalachian coals, generally speaking, were
of superior quality; the industrial centers were near at hand—these were the
reasons for their superiority.

Throughout the later nineteenth century there was really no fuel that
could challenge coal. Petroleum which was eventually to do so was in this
period primarily an illuminant. In the fifties those in search of a substitute
for whale oil succeeded in distilling from certain bituminous coals a usable
coal oil; the successful production of petroleum made unnecessary further
reliance upon coal. The year was 1859, for then an oil company drilled the
first commercial oil well in the United States near Titusville, Pennsylvania.
and began a new era in the modern world. The new method of obtaining
petroleum was so successful and the demand for kerosene so great that into
western Pennsylvania poured a tide of speculators and fortune seekers. Farm-
ers grew wealthy either as producers or as the surprised owners of this treas-
ure trove; wells were driven recklessly and oil ran to waste for lack of trans-
portation facilities; the oil town sprang into existence with its tatterdemalion
houses, stores, saloons, and houses of prostitution; Wild West order prevailed.
This pattern of hasty, reckless living was repeated with variations as new
centers of production were opened up. At the end of the century the business
took a new turn. The invention of the internal combustion engine placed a
premium upon the gasoline which the early producers had either wasted
or mixed, as far as inflammability would allow, with kerosene. The discovery
that heavier oils could be burned if sprayed under pressure created a market
for fuel oil first in railroad and marine transportation, where its lesser bulk
and automatic stoking furthered its use, and later for industrial plants and
even in domestic heating. In 1900 the total production of oil in the United
States over all the previous decades had been about a billion barrels; in the
next fifteen years it was 2,612,956,000. By then petroleum and natural gas were
furnishing about one-sixth of our annual power output, a percentage consid-
erably greater than that of water power.

These wider uses sometimes preceded, sometimes followed the opening
of new centers of production. The Appalachian field, smudged through west-
ern Pennsylvania, West Virginia, and eastern Ohio, was the first field of im-
portance. In 1885 production in the Lima field in northwestern Ohio was
undertaken and, uniting with a neighboring segment in Indiana, this new
area produced for a time over one-third of the oil in the United States. In the
twentieth century field after field swung into production, although in nearly
every case discoveries or earlier drilling had taken place. California, stimu-
lated by the example of Pennsylvania, had an oil craze in the sixties and
began important production in the nineties. In 1901 the Gulf fields were opened when a well in southeastern Texas was blown in with a flow of between 5,000 and 10,000 barrels a day. This new development spread eastward into Louisiana. Other fields crowded in; the Illinois and southwestern Indiana in 1904, the Wyoming district in the Rocky Mountain region, and then in 1911–12 the gigantic mid-continent field—northern Texas, Kansas, Oklahoma, and parts of Arkansas. All this feverish expansion fell well within the lifetime of John D. Rockefeller. He saw the discovery, the development, and the progressive decline of the Appalachian field, the rise of California to a position of primacy, and then its surrender to the mid-continent field.

Iron, together with coal and petroleum, was the third great resource of the industrial state. Deposits were scattered nearly everywhere, but their utiliza-

![Map of Petroleum Fields, 1919](image)

tion in industry depended upon the richness and quality of the ore, the ease of mining, and upon either the proximity of the coal employed in smelting processes or the cheapness with which iron could be transported to the furnace districts. Although the previous mining areas around Lake Champlain, in the river valleys of the Middle Atlantic states, and in the mountain nucleus of the Border states continued to furnish ores, sometimes into the twentieth century, it was new resources which built the post-Civil War industry. In the eighties the development of the remarkable deposits of the Chattanooga-Birmingham region, where the ores were closely interleaved with coking coal, got under way. The real revolution in the iron industry was the discovery and exploitation of the Lake Superior iron district. In 1844 a party of government surveyors in the upper peninsula of Michigan discovered iron near what is now Marquette, and a year later other explorers beheld "a moun-
tain of solid iron ore, 150 feet high.” This early description gave the name “ranges” to those iron deposits, for they were found along ridges, hills, and occasionally mountains. The development of the region waited upon transportation improvements, for it was remote from the coal deposits and the eastern markets. But the Great Lakes were at the doorstep, the continued improvement in the canals at the “Soo” encouraged large-scale transportation, railroads were built inland through the forests and swamps from the shores of Lake Superior or Lake Michigan to the iron deposits. Extensive mining operations began in the seventies or eighties. There were four ranges: the Marquette range lay south of Lake Superior, to the west of the present port of Marquette; the Menominee bordered that river and built an outlet at Escanaba; the Gogebic straddled the Wisconsin-Michigan line; the Vermil-

![Iron Ore Producing Localities 1919](image)

ion was due north of Duluth a hundred miles. Then in the nineties came the Mesabi. This new field, slightly to the south of the Vermilion, was nearer Duluth and had an area equal to that of all the other four ranges. The dominance of these mines mounted until in 1919 they produced nearly 85 per cent of the iron of the country. This extraordinary achievement was due to three factors. Extraction was easy, particularly in the Mesabi region; transportation was organized with such efficiency that the ores were laid down at the eastern lake ports at low prices; and the mines produced high-grade ores of many varieties. No country then had their equal.

Generally, the natural resources located east of the Mississippi River were discovered upon private property. In every case the owners of these resources did nothing to create them and in most cases did not realize their existence. In fact, this land had usually been alienated as agricultural land by the colo-
nies or under the provisions of the public land system of the national government. Now untold wealth descended upon the unsuspecting owners, and the theory of private property was so little questioned that they were not disturbed in its possession or enjoyment. The fantastic results of this arrangement were conspicuously demonstrated in the oil "game," an industry which deserved that vulgar appellation. In the sixties dazed Pennsylvania farmers became wealthy, and after 1910 sleepy-eyed Indians repeated the experience in Oklahoma. Some might utilize their wealth wisely, but since "Lady Luck" was the goddess presiding over the scramble, the "Coal Oil Johnny" who lit cigars with bank notes became the extravagant symbol of the industry.

The natural resources upon the government domain in the unsettled West might have been disposed of upon some intelligent plan, but for forty years after the Civil War Congress displayed neither the willingness nor the ability to deal with the question. Rather it shilly-shallied, passing special acts, vaguely worded, abounding in exceptions, and economically unsound. Coal lands were dealt with in a series of acts, the most important of which in 1873 provided for sale at prices varying from ten to fifteen dollars an acre; Mineral Land Acts of 1872, applying to other than coal lands, provided for their sale after a certain amount of exploitation and development at prices from two and one-half to five dollars an acre; and the Timber and Stone Act of 1878 sold land chiefly valuable for timber and stone and unfit for cultivation for at least two dollars and fifty cents an acre. In every instance this legislation aimed at the transfer of these natural resources to private hands. Even in this lavish process Congress was inefficient or careless. Startling exceptions were often made. The states of Minnesota, Michigan, and Wisconsin were exempted from the Mineral Land Acts, and the iron deposits of the Lake Superior region were, therefore, sold at even lower prices. Railroads received natural resources in their land grants; many of the timber lands were given by the government to the states as "swamp lands" and then transferred to the timber corporations at a pittance; and the Homestead Act and the Preemption Act, designed to create a nation of small farmers, were used to secure the resources for which Congress sought special treatment. The confusion of national policy and the rapacity of private individuals everywhere bred corruption.

The basis of any intelligent land policy was the classification of the land in the public domain and a special treatment based upon its value. The first effective step was taken in 1879, when the Geological Survey was established and authorized to make a land classification. In 1891 a second step in the new policy was taken in the passage of the Forest Reserve Act, which authorized the President to withdraw forest areas from entry. In these districts lumbering was carried on under special provisions. This policy of withdrawal was
applied to mineral and coal lands by Theodore Roosevelt, a vigorous cham-
pion of the conservation movement, and by Taft. The actual value of these
attainments remained, however, in doubt. Withdrawal was in many cases
simply a postponement of action; the final disposition was important.

To the exploitation of these resources their owners or lessees brought a
zeal fired by the hope of profits and by the fear that rivals would get ahead
of them. An era of intense competition ensued. Where the battle was stayed
through semimonopoly, as in the Vermillion iron range or the Lima-Indiana
oil field, an orderly and efficient development was possible. These instances
were exceptions. Nearly everywhere the owners skimmed the cream of the
resources. In timber cutting the best trees or those of a favored species were
selected; valuable timber was wasted in slash. Once the lumbering was com-
pleted no precautions were taken against forest fires. These raged for square
miles through the lumbered areas, charring the standing timbers, killing
growing trees, and in some cases actually destroying the soil itself. In the
extraction of oil the aim was to run off the oil in the oil sands through wells
on one’s own property before a competitor could tap the same underground
resource. Offset wells were first drilled along the property lines in order to
expedite this race for robbery. As a consequence oil fields were plugged with
far too many wells; wells were located with an utter absence of adaptabil-
ity to the needs of the field; overproduction was so great that prices crashed
and low-grade consumption uses were stimulated; oil in some of the gusher
fields was stored in great earthen lakes where it seeped into the soil, lost its
valuable qualities by exposure to the sun or was washed away by rain; the
natural gas, accompanying the oil, was allowed to dissipate into the atmos-
phere. The figures of some of these debaucheries are astonishing. Yet a west-
ern oil journal put it: “What do we care if millions of barrels of crude oil
are wasted and billions of cubic feet of natural gas go up into the air? After
us the deluge!”

This rapid exploitation undoubtedly created an inrush of material prosper-
ity almost unparalleled. Yet it was a mathematical certainty that the process
could not continue. The National Conservation Commission of 1909 asserted
that with the increasing rate of production the coal supplies of the country
would approach exhaustion before the middle of the next century, that the
high-grade iron ores would not “last beyond the middle of the present one,”
that petroleum faced the same future, and that in timber production there
was already a stringency calling for immediate measures. This pessimistic
inventory, however, failed to appreciate that in the past national resources
had on occasion been considered “exhausted” and that human inventiveness
had often outwitted limitations imposed by circumstance.
Technical Changes—Coal, Oil, Steel

Abundance of natural resources was, however, not enough. The economic development of the United States since 1860 has been due to the fact that raw material has been rapidly converted into goods through improved machinery. The age since 1860 may have been the “age of coal and iron” or the “age of petroleum” or the “age of electricity.” It was unquestionably the “age of the machine.”

Technical advances in the actual extraction of the material resources which nourished the industrial state were most uneven. Most coal and iron mines were underground; their exploitation required shafts, tunneling and shoring. The coal and ore had to be torn from the rock which grasped it, broken sufficiently for loading, and hauled and elevated to the surface. All these tasks belonged to the craftsman with his drill, powder, skill, and strength. To such work it seemed impossible to apply factory and machine methods, for as the Coal Age put it: “We cannot bring the work to the mechanism, but we have to move the mechanism to the work. . . . We have a factory which is always demolishing its own walls, and is faced with the herculean task of supporting the load of some hundreds of feet of overburden.” Nonetheless, shaft-mining was mechanized. From the eighties on, compressed air drove power drills, in the next decade machines undercut the seam of coal, the first step in its loosening, and in the twentieth century electricity took over the task of lighting and hauling. The most spectacular innovation was the decision in the early nineties to use steam shovels to shove aside the overburden of earth and then excavate the soft ores of the Mesabi range in open-cut or strip mining. In these immense, man-made ugly valleys the designers of the new method laid railroad yards and introduced the locomotive. In 1915 open-cut mines provided two-fifths of the output of iron ore.

The extraction of petroleum from the earth required the new application of old methods. Colonel E. L. Drake, who drilled the first oil well at Titusville, introduced the essential and standard equipment. A heavy drill suspended from the derrick was churned about in the hole by a donkey engine attached to the other end of a walking-beam; and as the drill punched its way downward, the well was lined with pipe to prevent the loose earth and water from seeping in. The later changes in this apparatus were chiefly in size. Only in the twentieth century was the rotary drill invented. Its use was confined to certain soils and rocks. This instrument was rotated through the earth like a gimlet and liquid mud, forced down through the stem, spurted out at the cutting edge and carried the loosened material to the top of the well. With such an instrument the driller could reach the oil sands in weeks rather than in months, and greater depths could be obtained.
Greater progress characterized the transportation of these raw materials to the point where they were used or refined. The carriage of coal was, of course, a phase of the railroad development. The transport of iron ore from Lake Superior to Pittsburgh combined in check perfection rail and water transportation. A steam shovel scooped the ore into cars; the cars, hauled to Duluth or Superior, ran onto the decks over pockets into which the contents of the cars were discharged when their bottoms folded outward. Chutes led the ore from the pockets into the hold of an ore vessel. At a Lake Erie port the vessel was unloaded by automatic machinery and the ore placed again in railroad cars; at Pittsburgh these cars were unloaded by dumpers which turned the cars on their sides and cascaded the ore into bins; finally skip cars carried the ore to the top of the blast furnace.

For petroleum a completely novel transportation system was invented. During the boom days in western Pennsylvania barrels, wagons, and boats had made shift to carry the petroleum from the wilderness to the consuming centers; then railroads were pushed hastily into the oil country and the tank car was invented. The final solution was the pipe line. During the Civil War the use of pipes to carry the oil from the wells to the railroad sidings had been undertaken. The idea of the pipe line was soon extended; pumping stations were placed along it to force the oil over grades; and in the late seventies the first trunk line was carried over the Appalachian Mountains. This feat demonstrated the feasibility of long pipe lines, and a network was laid down to the refining centers and constructed in the new fields as they were developed. By the twentieth century they were also carrying gasoline from the refinery to the consuming centers. Such lines constituted an important part of the nation's transportation system. In 1914 a trunk line carried oil from the mid-continent field to the Standard refineries at Bayonne, New Jersey—a distance of fifteen hundred miles.

The final step was the refining or smelting process. Although it may be stretching meaning to apply these words to coal, the consumption of coal in boilers and the coking of it in ovens were not revolutionized until well into the twentieth century. As for petroleum, the wresting of usable products from the raw material was in essence a simple process of distillation. When heated, the various elements passed off at different temperatures; the lighter gasoline first and then the kerosene. The so-called "straight" process sufficed as long as kerosene was the chief product desired. Only in the iron and steel industry did the early years of the industrial state witness a revolutionary break with the past. Steel, of course, had always been manufactured, but the expense caused it to be produced in small quantities and for specialized uses. Before modern civilization, draped over a framework of steel, was possible, the cost of production had to be lowered. The answer was a further
extension and perfection of the indirect process by which the ore passed to steel by way of pig iron.

The first step in that process was the smelting or furnace industry. In this operation the decade after the Civil War carried to a logical conclusion certain earlier tendencies. The use of charcoal and of anthracite coal as fuels declined. Coke took their place. The furnaces in which this fuel was piled with the limestone and ore for smelting introduced no startlingly new principles after 1860. But they were increased in efficiency and in size. Stronger blasts and higher temperatures were employed, the dimensions of the furnace and its attendant apparatus were enlarged, and a greater production of pig iron was obtained. The modern furnace was an industrial Laocoön of skyscraper specifications; a conglomerate of gigantic cylinders, surmounted by towering stacks, and tied together with thick coils of pipes and flues. In 1860 an American furnace made a record if it produced 45 tons a day; in a long run of nearly nine years after 1904 a single furnace averaged 427 tons a day. In 1894 the United States permanently surpassed Great Britain in the production of pig iron, and in 1906 she more than equaled the combined production of Great Britain and Germany.

Although a portion of the iron run from the smelting furnace was made directly into finished cast articles, most of it was manufactured into steel. Modern steel is an iron which has been cleansed of silicon and other impurities, and in which the carbon content is between one and two per cent and is well combined with the other elements. Since this carbon content is less than that of cast iron and is not crystalline and separate, steel lacks brittleness and combines strength and malleability. The inventions which made large-scale steel production possible came in the fifties. Henry Bessemer, an Englishman of an inventive turn of mind, discovered in 1856 that hot pig iron could be cleansed of its deleterious elements, carbon and silica, by forcing a blast of air through it. The oxygen consumed these impurities. Further experimentation was necessary before the exact conditions under which the process worked were appreciated, but Bessemer, like Arkwright emerged with a title and a fortune. Probably before Bessemer's discovery an ironmaster in Kentucky, William Kelly had happened upon the same principles. However satisfactory this fact may be to national pride, it instigated patent litigation which retarded the spread of the Bessemer process in this country. Eventually the two patents were consolidated.

Meanwhile a laboratory had been set up at the Wyandotte iron mills near Detroit, investigations into the qualities of iron ores were conducted, and in 1864 steel was produced by the Kelly-Bessemer methods. After a delay for further experimentation, the Bessemer process swept into use during the seventies. It was very inexpensive. A pear-shaped converter was filled with
molten iron, air was blown through, and when the color and length of the
flame issuing from the mouth of the converter were right, usually after ten
or twenty minutes, spiegeleisen was added and the machine tilted to pour
forth a stream of spitting steel. The early Bessemer process was known as
the acid process, for the converter was lined with an acid material. Such con-
verters thrrove on the Lake Superior ores, but they could not cope with phos-
phorus- or sulphur-bearing irons until two Englishmen during the seventies
substituted a lime or magnesian lining and gave their names to the new
method. The Thomas-Gilchrist process, or basic process, not only removed
the phosphorus from the iron but blended it with the lining to form a phos-
phate by-product which was commercially valuable.

Both the acid and the basic process were applied in turn to the open-hearth
method of making steel. The open-hearth has been named the Siemens-
Martin process after its German and French inventors. Pig iron, scrap iron,
old steel, and ferromanganese were piled into the shallow bowl of the fur-
nace, and the whole was cooked by heat which was outside of the molten
mass. The process was longer than the Bessemer one; but frequent samples of
the steel broth were taken, and it was thus possible to supervise accurately the
course of the operation. New elements could be added if they were needed.
The furnace used all varieties of ores and of scrap; in its early years it was
called in derogation the “scavenger.” Its use in this country was retarded by
patent quarrels and the satisfactory steel produced by the Bessemer converter
for rails, then the basis of the American steel industry. By the late eighties
both the acid and the basic process had been applied to the open-hearth fur-
nace, and this method of steel making had begun to make an impression.
In 1908 it surpassed for the first time the production of Bessemer steel. A
variety of factors contributed to this victory. When architects and builders
began to specify open-hearth steel for structural shapes and tin-plate makers
did the same for their material, the demands of this market forced compli-
cance upon the steel makers; the relative exhaustion of Bessemer ores turned
attention to processes which could use other varieties; and finally the produc-
tion of open-hearth steel was cheapened by large-scale production. Mean-
while a new method of refining appeared—the electric furnace. Like the
other furnaces, it was created by foreign inventors. It manufactured largely
the harder and more exact steel alloys required for tools, machinery, and
automobiles. The great expense of the method kept it from contributing
more than a small part of the total American production. In steel making
the same story of international leadership was written. In 1880 the United
States surpassed Great Britain in the production of Bessemer steel; twenty
years later it achieved the same record in the production of open-hearth steel.
It went on to overwhelming leadership.
The Industrial State

This brief narrative of the chief inventions in the primary steel process is evidence that the American industry did not owe its preeminence primarily to American inventive genius. Rather, that position was due on the one hand to abundant resources strategically located, and on the other to an insatiable and extensive market. First in importance were the demands of American railroads. The first steel rails in the country for commercial use were rolled in 1867, and only two decades later they had displaced iron on old and new railroads alike. Rolled steel plate first superseded iron in locomotives, and in ocean and lake vessels. After the nineties the market was dramatically expanded by the development of the American tin-plate industry, whose product, when made into cans, found novel and generous consumers in the oil industry and in the canned-food industry of the country. The cheap steel nail made the iron nail an antique; and the wire industry, transposed to a steel basis, made miles of barbed-wire and woven-wire fence to enclose the western prairies. Steel shapes, standardized in design and production, facilitated the rapid construction of bridges not only in the United States but across the rivers of the world. Then came the skyscraper and the huge factory, whose skeleton was a framework of steel. Toward the end of the period the historic connection of our metallurgical industries with transportation was reaffirmed by the construction of steel passenger and freight cars and by the reliance of the automobile upon steel alloys. These were but the major demands. Steel drove puddled iron, wrought iron, cast iron from even their smaller fortresses. The universal victory of steel was possible only by mechanical improvements in rolling, drawing, forging, and other processes.

Electricity

New industries were born by the hundreds in the industrial state. It seems invidious to single out any for distinction. In the realm of fabrics new machine industries—worsteds and silks—were created. The sewing machine, patented by Elias Howe in 1846, helped create the shoe factory some ten years later and gave the factory after 1910 a fighting chance in the ready-made clothing industry. In the field of food production the “roller process” ground new sorts of wheat into flour in a new way; the refrigerator car of the seventies and the cold storage packing plants of a later date revolutionized meat packing; the sterile tin can preserved foods and transferred cooking from the home to the factory; and in the twentieth century bakers’ bread, at last respectable, made in central shops by machinery, built one of the largest industries of the nation. Finally typewriters, cash registers, and calculating machines made legible, accurate, and rapid the communications and calculations of a business age. All these were important. But pervasive and essential were the automobile and electric power industries. The former, since its real influ-
ence dates from World War I, is treated in a later chapter; the latter now requires attention.

The first practical application of electricity came in the field of communications, for here the electric battery, perfected early in the nineteenth century, furnished sufficient current for operations. It is difficult to consider Samuel F. B. Morse the sole inventor of the telegraph, for Europeans before him had experimented with the possibility of "transmitting intelligence" over a wire; in this country Joseph Henry of Princeton and the Smithsonian Institution had invented certain essential features of telegraphy, and Alfred Vail and Ezra Cornell, both Morse's associates, seemed to have altered his instruments and devised means of making them work in practice. In any case, after a code of dots and dashes had been formulated and a patent secured in 1837, Congress was reluctantly persuaded to make an appropriation for an experimental line between Baltimore and Washington. In 1844 the famous first ceremonial message, "What hath God wrought?" was sent by Morse over this wire from the room of the Supreme Court, and a few days later the Democratic National Convention in Baltimore was informed by wire that its candidate for the vice-presidency would not accept the nomination. The spread of the new means of communication was unexampled in rapidity. By 1848 the "magnetic" had sent words as far as St. Louis; by 1861 a telegraph, subsidized by the government, spanned the continent and outmoded the Pony Express; in 1866 Cyrus Field, a retired American paper manufacturer, financed with English assistance the first permanently successful Atlantic cable. Its laying was a stirring drama of human patience and persistence.

A decade later at the Centennial Exposition in Philadelphia the telephone startled the Emperor of Brazil into exclaiming, perhaps apocryphally, "My God, it talks!" The instrument there on display Alexander Graham Bell, a teacher of the deaf and dumb, had patented a year earlier, on the very day that another American, Elisha Gray, had also applied at the patent office for a caveat on the telephone. The conflict between the two, soon rivaling in intensity that between McCormick and Hussey over the reaper, was eventually surveyed by the Supreme Court in patent litigation and decided in favor of Bell. But it was clear that at the time of his patent no words, only "noises or sounds," had been successfully transmitted over his wires. Once the telephone was invented, however, ingenious individuals introduced a host of improvements. The spread of its use was rapid. The first exchange was opened in 1878; the White House by the middle of the next decade had a telephone, regarded by Grover Cleveland with some disfavor; and in 1892 the American Telephone and Telegraph Company inaugurated with much ceremony a long distance line between Chicago and New York. In 1887 there
were 170,000 subscribers; in 1917 over 11,716,000 telephones were in use. No wonder Arnold Bennett remarked, "What startles and frightens backward Europeans in the United States is the efficiency and fearful universality of the telephone." Without it the tempo of modern American business would be impossible.

Until 1880 the electrical industry had been concerned chiefly with communication. But with incandescent lighting and the use of electrical power for transportation and industry, electricity began a new era. These novel demands required electric power in a full stream beside which the current used by the telegraph or the telephone was a mere trickle. Inventors of electric lights and of motors were consequently as concerned with dynamos and transmission as they were with their immediate apparatus. Electric lighting came first. In the first decade of the nineteenth century Sir Humphry Davy produced an arc between two pieces of charcoal. Later experimenters tinkered with the arrangement of these carbon pencils, the automatic formation of the proper gap between them, the prevention of rapid deterioration, and in the seventies arc lighting was placed upon a commercial basis. It was realized, however, that the new instrument gave too brilliant a light for domestic use and was far too expensive. This dilemma enlisted the attention of Thomas Alva Edison. The drama of his life story, typically American in its ambitions, in its scientific bent, and in its rise from train boy to the "Wizard of Menlo Park," has tended to obscure the contributions of predecessors and contemporaries. Incandescent lamps had been designed before Edison turned his attention in 1877 to the problem of devising a filament which would be inexpensive and durable and whose decomposition would not blacken the inside of the bulb. In this quest he had the assistance of a laboratory and field force and his own remarkable thoroughness of procedure and fertility of resource. Like other inventors, he had to build a dynamo suitable for his purpose. Then in a vacuum bulb he employed a platinum filament. This was too expensive. Finally on October 21, 1879, he turned current into a filament of carbonized sewing thread. The resulting glow lasted forty-five hours. The world was now ransacked for a better element; 6,000 vegetable growths were tested; finally a carbonized bamboo filament was found most satisfactory.

In the domain of electrical power George Westinghouse, air brake inventor, was the victor over Edison. To be sure, the latter in 1882 built the first central station, the Pearl Street Station of New York City, and distributed its current to the eighty-five buildings which were wired for electric lighting. This pioneer station set precedents in its generators, connections, and distribution system, but it produced a direct current. Such a current could not be transported long distances because of the cost of the wiring; in fact a mile was the limit of profitable distribution. But Edison remained the partisan
of direct current. On the other hand George Westinghouse became convinced that the future belonged to alternating current. In company with William Stanley he built generators and transformers to make its use practicable. The transformer stepped up the voltage, shot it along a small wire to great distances, and then a second transformer stepped it down to any voltage at the other end. He likewise purchased the patents of Nikola Tesla, a Serbian immigrant, for a simple, reliable motor using alternating current, and his organization brought it to perfection. Westinghouse apparatus illuminated the World's Fair in 1893, and in 1894-95 his principles were adopted in the installation at Niagara Falls, which transported power over the incredible distance of twenty miles. The alternating current victory was complete.

While this battle between alternating and direct current was on, electricity was applied to the field of transportation—the electric trolley and the electric locomotive—and then to the field of industry. The modern use of the electric motor to turn machinery began in 1893, when several were installed in a South Carolina factory. Growth was rapid. The electric motor proved ideal for machinery. The exact power ratio for each machine was now obtainable; the motor could be cut off and on as necessary; factories, since the interior distribution of power was now feasible without the weight of shafting and clutter of belts, became lighter and airier than the heavy work prisons of the nineteenth century. We have already seen how the employment of electricity had helped transform mining operations. In the fifteen years after 1902 electrical energy for industrial uses was multiplied nearly sixteen times.

Meanwhile the electrical industry had returned to its first triumph, communication. In 1896 Guglielmo Marconi, an Irish-Italian, patented in Great Britain the wireless telegraph. Others, theoretical physicists and even experimenters, had preceded him, but he was the first to be fired with an ambition to apply their principles to practical affairs. At first vessels merely used his apparatus to speak with the shore as they approached it, but by 1902 he was able to send a full message across the Atlantic. Meanwhile experimenters were seeking to replace Marconi's comparatively inefficient and noisy receiving sets with an instrument more capable of amplifying the tiny impulse that came over the air and perhaps to eliminate some of the frequencies that made wireless telephoning impossible. The best of the resulting devices, the vacuum tube, was patented by an American, Lee De Forest, in 1906. Predecessors had placed inside a glass bulb a filament from which a stream of electrons flowed across a gap to a plate; De Forest inserted a grid between these two elements. Several tubes of this sort used together were so sensitive and powerful that they could amplify the dots and dashes of the Marconi apparatus and also the sound of the human voice. De Forest, discouraged by his
efforts to promote his invention, sold it for a fraction of its value to the American Telephone and Telegraph Company. First they employed it as an amplifier in the first transcontinental telephone line opened with great pomp in 1915. Then their engineers scurried about the American coast, the Pacific islands, and Europe, installing apparatus. At the end of the year intelligible "hellos" and conversations originating in the United States were heard across the Atlantic. Regular wireless telephone service between London and New York came somewhat later.

MACHINES: THEIR BIRTH AND DISCIPLINE

Since inventive achievements which have altered old industries and created new ones depend upon machinery, the industrial revolution has brought into being a last fundamental industry, the manufacture of machinery. In the early days of the revolution this category included textile machinery, some metal-working machines, and the steam engine; additions were continually made, until in the twentieth century it included shoe machinery, agricultural machinery, typewriters, sewing machines, pumps, cash registers, scales, electrical apparatus, and, if the definition be sufficiently enlarged, transportation equipment on air, land, and water. The machines that made machines were machine tools. Over the decades their number and complexity greatly increased, their operation became more automatic and inclusive, and their precision more incredible. American contributions have been important. In the fifties the turret lathe, which brought tool after tool to work upon a single piece of metal, was perfected; in the sixties the grinding machine was put upon the market, and by the use of an emery wheel effected greater accuracy in the shaping of metal parts; in the same decade the universal milling machine was introduced. The automatic precision of these tool-machines was incredible. In the twentieth century automobile parts were often gauged to one ten-thousandth of an inch, and parts possessing this astounding accuracy were produced by automatic machinery. It is little wonder that a pessimistic observer declared that the machine had definitely escaped from the hands of man, its creator, for now the machine could reproduce itself.

But to discuss separate machines gives a false notion of the nature of industrial progress. More important was the scale on which these machines were utilized, for their advantageous installation required the large factory. Although such factories had heavy investment in overhead and equipment, they saved in labor costs through the substitution of machinery for hand labor or through the employment of less skilled operatives or through the more efficient organization of the labor force. Moreover, large-scale plants could turn their own by-products into sources of profit, they could economize on waste, they could afford to finance investigation and research.
Finally, before the day of electric power provided by an outside plant, large factories were the most efficient in the production and use of power. The statistical evidence of the drive toward size was incontrovertible. In 1859 industrial establishments employed on an average 9.3 workers and turned out a product valued at $13,429; in 1914 industrial establishments on the same average basis employed 25.5 workers and turned out a product valued at $87,916. In spite of these figures, the process of concentration in large industrial establishments slowed down after 1900; the last decades of the nineteenth century were those of most rapid progress toward industrial giantism.

Within these great establishments machines were increasingly arranged in obedience to the rules of "efficiency" or scientific management. These concepts were vague ones. But in the 1880's, as markets widened and new techniques were introduced, American mechanical engineers sensed the need of a science of management. Its first concern was differential wage systems. Wages and related labor questions were also the primary interest of Frederick W. Taylor, destined to become the prophet who provided a logic and a faith for the new movement. Forced to abandon a formal education by poor eyesight, he secured employment from the Midvale Steel Company. In 1882, when he became foreman, he began to put into practice some of his ideas, but it was not until 1895 that they received public recognition. In that year he delivered before the American Society of Mechanical Engineers a paper on "A Piece-Rate System." As the title suggests, his chief interest was in methods of obtaining maximum production from workers who, he believed, were loafing or inefficient. His solution was a "scientific" analysis of the job to determine the maximum speed at which work could be done, followed by an attempt to induce the laborer to attain this maximum by the payment of a higher piece-rate for a larger output. In the following years Taylor's ideas and interests were enlarged by experience, and in 1903 a second paper before the same organization on "Shop Management" contributed little new on the labor side of production but stressed the importance of machine arrangement and factory organization. On this occasion Taylor advocated the standardization of tools and equipment at the level at which they would do their best work, the routing and scheduling of work through the factory, and consequently a greater emphasis upon the organization of the factory and a planning department. Scientific management, thus conceived, was a necessary prelude to the later increasing divergence of ownership and control within the corporation. For without this accumulated knowledge, it would have been difficult to hire and instruct competent management.

Taylor's ideas were adapted, altered, and modified by a group of followers. Not only were machine operations analyzed, but manual operations
were scrutinized and more expeditious and efficient methods were suggested. Although the actual installation in factories of the Taylor system in its purest forms was limited, the influence of the ideas transcended applications. In 1911 scientific management was placed before the public in dramatic fashion when L. D. Brandeis employed it before the Interstate Commerce Commission in his brief against a rise in railroad rates; he argued that the railroads could save money through scientific management and thus avoid the necessity of the proposed increases. A bibliography of efficiency literature was at once created; conferences and organizations were formed to promote efficiency; colleges gave an academic benediction by offering courses in the subject; and efficiency became the war cry of a mechanically organized and mechanically minded age.

Scientific management was a single illustration of a much broader cause of American industrial development—the growing knowledge of pure science and its application to material affairs. With varying emphasis technical education sought to promote both these ends. In the first half of the nineteenth century engineering instruction had been largely confined to the United States Military Academy at West Point; but as the industrial age got under way the situation was almost immediately altered. In 1850 Rensselaer Polytechnic Institute at Troy, New York, established twenty-five years earlier, became an engineering school with a four-year course. Then in 1862 the Morrill Act gave a profound stimulus to engineering instruction by a donation from the public lands to each state for the support of a school or schools in which the “leading object shall be . . . to teach such branches of learning as are related to agriculture and the mechanic arts . . . in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life.” Most states established agricultural and mechanical colleges or universities; in other states the funds were given to private institutions which were chartered for the occasion, as Cornell University, or were already in existence. At first the students at such institutions were regarded as an inferior order of beings by cultural colleagues, but such snobbishness did not stay their development. They enlarged the scope of their curriculum to include branches of engineering other than civil; they gave a more thorough grounding in theoretical science; they appealed to a practical-minded age; and eventually Francis Amasa Walker, the creator of the modern Massachusetts Institute of Technology, surveying his world, pronounced it good. “In schools of applied science and technology as they are carried on to-day in the United States . . . is to be found almost the perfection of education for young men.” Rôles were reversed, the protagonists of Latin and Greek were put on the defensive. Nor was tech-
nical engineering confined to institutions of collegiate grade. Specialized schools for certain industries, like textiles, were established, and technical or vocational training was introduced into the grades and high school.

**The Geography of Industrial Power**

New England and the Middle Atlantic states together formed the historic center of American manufacturing. The industrial revolution in its transit from England had first alighted there. Water power had driven its mills and factories; capital acquired in trade or industry nourished its development; a native population, supplemented by arriving immigrants, manned its machines; a system of roads, canals, and later railroads, leading inland from the coast, and the ocean itself distributed the products of this region. On the eve of the Civil War the factories and shops of this region produced practically every variety of manufactured goods made in the nation and employed a majority of the workers engaged in manufacturing. In general it still retained an industrial preëminence when World War I arrived. To be sure cotton textiles since the nineties had begun to drift southward, but the woolen industry was even more heavily concentrated in the Northeast than before. Great iron and steel works, dependent to a considerable extent upon imported ores, gave the region a share of this magnificent industry, and the manufacture of finished products, from hardware to the new electrical equipment, either remained or settled in the Northeast. The region had the greatest markets, ample labor force, and available capital.

Still this historic industrial area was conducting essentially a holding operation. The great expansion of industry after 1860 was in the northern half of the great interior valley, particularly in the five states of the old Northwest. In 1860 manufacturing was just touching the region; in the next fifty-five years it transformed it. Railroad lines were constructed; population swarmed; and the natural resources of the country were at hand in the oil and natural gas of Pennsylvania and Illinois, in the omnipresent coal fields, in the forests of the Great Lake states, in the unequaled Lake Superior iron ranges; and it was still the center of American agriculture. It was the last factor that first accounted for the region’s industrial growth. With the refrigerator car and the cold storage packing plant, Chicago became the packing center of the nation; the enterprise of Minneapolis millers and water power made that city the flour capital; and the agricultural market drew westward manufacturers of reapers and wagons.

Natural resources not derived from agriculture—petroleum, gas, lumber, coal—also made the Middle West an industrial empire. But it was the Lake Superior iron deposits that gave her world leadership in the metallurgical industry. Since more coal than ore was required in smelting and refining
operations, the latter moved eastward to the river valleys of eastern Ohio and western Pennsylvania, to the southern shore of Lake Erie, and to the Chicago-Milwaukee district. This western area also became the home of the motor car. In the pioneer days of the automobile it was manufactured in New England and New York, and the pull of the market ought to have been sufficient to keep the manufacture there. But as early as 1905 Michigan was already the center of concentration. The supremacy of this state and of Detroit was explained by its nearness to raw materials—wood and iron—its previous specialization in carts and wagons and experimentation with marine gasoline engines, the myriad of small shops which could make machine parts, and the generous audacity of its businessmen, who took chances on the industry.

In the Far West of the Mountain and Pacific states and in the South, the first years of the twentieth century brought spectacular increases in industrial activity. But the achievement in both areas was far short of that already described for other regions. In this West industry was in general closely connected with the primary development of natural resources—lumber, petroleum, minor metals, and a small iron and steel industry. In the South the potentialities of a steel industry were slowly realized, in part because the ores of the Chattanooga-Birmingham area were not chemically suited to the acid process. On the other hand, the dream of decades, to bring “the spindles to cotton,” was on the eve of final realization. Local and outside investors provided capital; the mill villages with their paternalism and services drew workers from farms and southern highlands much as Lowell had done from New England homesteads eighty years earlier; cheaper wages for workers producing standard fabrics undercut northern producers just as surely as the more modern mechanization of southern mills undercut the older equipment of the industry along the Merrimac and the Fall River.

The Industrial State

However business was organized and however manufacturing centers moved west and south from their traditional homes, there was no doubt that industrial development had produced wealth and income surpassing the fabled riches of all lands and times. Between 1859 and 1914 the minor portion of the national income derived from agriculture multiplied four and a half times; the greater part derived from non-agricultural pursuits multiplied about eight. Fortunes larger than those of Croesus were the return of those lucky and able to stand at the top of the industrial pyramid; a standard of living undreamed of by serf or peasant was the reward of the toiler. A rich continent and the machine had indeed provided new and more abundant material satisfactions. Critics, however, deplored those chosen by rich and
poor alike. The huge sums spent by Americans upon candy and cosmetics were a commentary upon production and consumption. In a single decade of the machine age both the Ford Company, producing an inexpensive means of popular transportation, and a concern manufacturing patent medicines could both make annually over 100 per cent profits. Such contradictions make a mockery of any exact qualitative appraisal of American civilization.

Nor was the industrial advance an era of unbroken sunlight. Classes and individuals differed as to the justice of the division of wealth, and often, as prosperity halted and retreated before the onset of a panic, the whole economic order threatened to break down. These depressions varied in severity. But major crises, like those after 1873, 1893, and 1907, shattered values, caused bankruptcies, increased unemployment, and let loose a flood of agitated and apprehensive talk about revolution and the dissolution of the capitalist order. Remote from hysteria, economists were impressed by the rhythmic variations of these good and bad times and sought a generic explanation for them. After a century of analysis they advanced the hypothesis of the business cycle and concluded that such cycles were inseparable from a business civilization where producers, left each to his own resources, sought profits in a world where production was individually planned and consumption was incalculable and unregimented. In such uncertainty the systole and diastole of hope and pessimism, success and failure, were inevitable. “The steel machine had become a monster whose pastime was panic.”
CHAPTER XIII

Competition, Consolidation, and Control

THE RÉGIME OF COMPETITION

LIKE the railroads, the American industrial domain was governed without question by the private capitalist; and the rapid expansion, the technical development, the enlarged scale of American industry were due to the American manufacturer’s pride in bigness, his ambition for power, and his desire to make money. There was, however, one painful disadvantage to this arrangement: competition created uncertainty, introduced brutal ruthlessness into business operations, and diminished profits. Industrial competition had always existed, but it increased both in scale and in intensity after the Civil War. The spread of railroad systems broke down the protection against competition erected by distance and created a national market. The increasing size of industrial establishments intensified competition. So much capital had been invested that the owners could not afford to let it lie idle, nor could they easily transfer it from one industry to another. Within limits, therefore, business was run at a loss rather than not at all.

Features of the resulting industrial struggle inevitably aroused admiration. Read the account of the first decade of the Bessemer process in this country, written by Captain William R. Jones, the great iron and steel maker of the Carnegie group. The managers of the steel works were eager to demonstrate the capacity of their plants and the skill of their workers. When they made records some dispatched jubilant telegrams to friends or rivals; others worked on in secret, relying upon rumor to magnify their achievements. This “strong but pleasant rivalry of the young men who have assumed control of the works” and “the esprit de corps of workers” who were not “content until the rival’s record is eclipsed” had all the simple appeal of youth at play. But the stakes of such joyous sportsmanship were economic survival in the face of those who would take it away, pecuniary gain in the face of those who sought to deny it. It was a grim business. Any advantage was a legitimate one. H. O. Havemeyer, president of the Sugar Trust, gave the Industrial Commission a frank education in 1899. “Business is not a phi-
I do not care two cents for your ethics. I don’t know enough of them to apply them. . . . As a business proposition it is right to get all out of a business that you possibly can.”

Animated by such a simple purpose, businessmen rushed into combinations, consolidations, mergers, amalgamations. Profits for the creators and members of such organizations came from all directions. The combination could be capitalized at an excessive figure by issuing watered stock which could be sold to investors and outsiders with financial advantage to those on the inside. The ruinous effects of competition could be avoided, for the consolidation might diminish the number of competitors, or obtain a monopoly or semi-monopoly or stabilizing position in the industry, or effect economies and savings which would enable it to make more money as a competitive unit. At times these considerations operated with peculiar cogency. First let a depression spread ruin and chasten competitors; then let a period of ensuing prosperity stimulate the market for stocks; this was the recipe for an era of consolidations. Thus in 1899 the capitalization of new industrial consolidations reached the unusual sum of $1,866,000,000; in 1901 it was $1,632,000,000. Though it was a period of bigness, size could not submerge the generation of business leaders who gave the new forms to American industry. There was still room for individuals, but of an heroic, almost legendary stature. Some have christened them robber barons; other have regarded them as builders. Whatever the ultimate judgment, later business leadership seemed more drab, professional, and anonymous than in the pioneering era after the Civil War.

 Contradictions in Coal

The vital importance of railroads in the history of American business has been demonstrated again and again in the course of competition and consolidation. It was in fact through the railroads that the anthracite coal monopoly was created. Railroads built into the anthracite region of Pennsylvania were gradually driven, by competition for the coal trade and the desire to make money, to purchase mines. The competition became so intense in the seventies that they made attempts at harmony through pooling the business. The pools were, however, consistently violated. About 1900 an exceedingly workable community of interest had taken their place. Small and competing railroads had been leased or purchased; interlocking stock ownerships and interlocking directorates wove a web among the anthracite coal railroads; and the Temple Iron Company, in which five anthracite railroads, carrying nearly 72 per cent of the total shipments, owned stock and were represented by directors, met frequently to apportion the business among them. The Pennsylvania and the Delaware and Hudson, anthracite roads outside
this organization, coöperated with it. Independents were removed from the
field by contracts made between them and the roads in perpetuity. There was
an anthracite monopoly.

Bituminous coal had a very different history. The supplies of this fuel
were so vast that it was impossible to purchase and combine the coal-bearing
lands. The expenses of mining were so small that little capital was required
to commence operations. Every period of prosperity and rising prices
brought in a host of small miners—the “snowbirds,” the “country banks,”
the “fly-by-nights” of the industry. As the twentieth century wore on, large
holdings were created. Industries like the Bethlehem Steel Corporation,
United States Steel Corporation, Ford Company, public utilities, and rail-
roads bought and operated mines to supply their own demands. Aside from
these “captive mines,” large coal companies—Consolidation Coal Company,
Pittsburgh Coal Company—entered the industry. There were faint traces of
combination through holding companies, interlocking directorates, individu-
al stockholdings in many concerns, but most observers laid the undoubted
misfortunes of the bituminous coal industry to its violently competitive char-
acter.

Petroleum Pioneers in Big Business

Combination in the anthracite coal industry was the work of many hands.
The process had no eminent protagonist like John D. Rockefeller, who in
spite of his modesty and the generous ascription of genius to his associates
was the overlord of the petroleum business and the exemplar of many an
American businessman. First a bookkeeper who saved on a modest salary,
later a partner in a commission produce house which made money during
the Civil War, Rockefeller in 1865 cut loose and embarked whole-heartedly
upon the oil-refining business. Cleveland, where he lived, gave promise of
becoming a great center for this industry, for the city was near the Pennsyl-
vania oil fields and situated astride the great east-and-west avenues of trans-
portation. By 1870 various partnerships in which he and others were in-
terested were incorporated as the Standard Oil Company of Ohio, with a
capitalization of $1,000,000. Although it was the largest oil refiner in the
United States, the situation was an unhappy one, for, in Rockefeller’s
words, “the butcher, the baker, and the candlestick-maker began to refine
oil . . . the price went down and down until the trade was ruined,” every
refiner received railroad rebates in some proportion or other, and it was
necessary “to bring some order out of what was rapidly becoming a state of
chaos.” Rockefeller dreamed of some vast merger of refiners as the remedy
for this depressed condition.

Almost incidentally he first sought his end under the aegis of the South
Improvement Company, a corporation with very wide powers chartered by the Pennsylvania legislature in 1870. Two years later many of the largest refiners in the country, including the Rockefeller group, and representatives of three great oil-carrying railroads, the Pennsylvania, Erie, and New York Central, formed under its terms an alliance for their mutual benefit. It was a railroad as well as a petroleum undertaking. In order to prevent the roads from competing for the carriage of crude and refined oil, the organization apportioned shipments among them and the oil men acted as eveners in distributing this business. In return the refiners received such railroad rebates that few outsiders could hope to survive in business. The members of the scheme had rebates on their own oil and products; they also received a cash rebate on all the shipments made by their rivals; and finally they secured waybills of all rival shipments—waybills which gave a knowledge of the amount of their competitors’ business and the people with whom it was done. Although this scheme was drawn up with the greatest secrecy, details leaked out and a roar of disapproval coupled with pressure by injured parties upon the railroads forced the latter to abandon the device.

Meanwhile Rockefeller had sped to his Cleveland competitors; he explained to them the advantages which he had through the South Improvement Company, and invited them to sell their concerns for stock or cash at a value appraised by his representatives. Since the apparent alternative was business extinction, at least twenty sold out. Rockefeller’s later chaste recollection of this astonishing incident in competitive warfare was that “the conditions were so chaotic and uncertain that most of the refiners were very desirous to get out of the business.” Although the railroads had publicly agreed after the South Improvement Company episode that henceforth freights should be “on a basis of perfect equality to all shippers, producers, and refiners, and that no rebates, drawbacks, or other arrangements of any character should be made,” the pressure of competition was too strong; the railroads again granted and the Standard Oil Company again sought such concessions. Rockefeller later regarded this situation with high good humor. He told the story of the Boston merchant who announced, “I am opposed on principle to the whole system of rebates and drawbacks—unless I am in it.” Undoubtedly the jest accurately described the contemporary situation. Rebates were universal and businessmen, whether in steel, sugar, tobacco, hardware, or oil, shipped under this favored arrangement.

For the next thirty years the Standard perfected its technique of destructive competition. One weapon was the control of transportation. The early success of the organization had been aided by rebates from railroads, but now these favors were menaced by the construction of pipe lines. Quick to appreciate the urgency of the situation, the Standard built or leased lines,
COMPETITION, CONSOLIDATION, AND CONTROL

competed for the shipments of oil, and then consolidated in one way or another the competing interests. By 1879 most of the pipe lines in the Appalachian field were brought together in the United Pipe Lines Company, in which the Standard held a controlling interest. It thus had a practical monopoly of pipe-line transportation, which it could utilize both against the oil-well owner and against the independent refiner. To escape this monopoly these interests had undertaken the construction of a pipe line across the Appalachian Mountains to connect the oil producers with eastern railroads not involved in the rebate agreements and later with the seaboard. Against this Tidewater Pipe-Line Company the Standard struck by the construction of its own lines, by a whispering campaign against the financial solvency of the concern, by purchasing the refineries to which the Tidewater sold oil, and by struggles in the courts. Eventually in 1883 the two rivals signed a treaty of peace by which the Standard did 88 1/2 per cent of the business and the Tidewater the remainder.

A second weapon was the Standard marketing organization. This was drawn up on national lines, for the country was divided into great districts and these districts were subdivided. Everywhere operations were carried on efficiently and economically, and everywhere this marketing agency gathered information and opened fire in competitive warfare if occasion demanded. If the former activity was often indistinguishable from industrial espionage, Rockefeller was ready with explanations. Unethical actions, if they did exist, were individual rather than corporate. “An occasional employee . . . acted in connection with the business or perhaps in conducting his own affairs, in a way which might be criticized. Even in a comparatively small organization it is wellnigh impossible to restrain this occasional man who is overzealous for his own or his company’s advancement.” However they obtained their information, agents of the Standard used it to approach retailers and other consignees and threaten a price war unless purchases from rival organizations ceased and patronage was given to the Standard.

The price wars were the grand engagements in the long campaign of competition. In fact they were one of its justifications in the mind of the public, for they meant lower prices. But such performances were not to the taste of John D. Rockefeller. He regarded with great disfavor the individualistic businessman who was a law unto himself. “He was the one man who had to sell at less than cost, to disrupt all the business plans of others in his trade, because his individual position was so absolutely different from all the rest.” Since the business world, however, was governed by these “natural laws of trade,” it was inevitable that even in the petroleum industry there should be price wars. Indeed, the history of that industry can be regarded as one long war of attrition punctuated by spectacular outbreaks when dealers refused to
patronize the Standard organization. Such rare instances were the "greatly aggravated cases" when the selling price of oil was cut below cost of production. If in these contests there was popular hostility against the Rockefeller groups or its subsidiaries, bogus companies, wearing the mask of independence, were formed by the Standard. In such battles the Standard had great advantages. It made a gospel of technical efficiencies and low costs of production. Since it owned its own marketing system, it did not have to pay profits to middlemen; and since it was a large, nation-wide organization, it could effect great economies through distribution in bulk and charge high prices in one place to recoup the low prices in another. And then when peace settled upon the battlefield the victors collected reparations not from the vanquished but from the neutral bystander, the consumer.

Throughout the whole period Rockefeller moved ahead as the apostle of order in the industry. The incalculable must give way to the rational, strife to cooperation. With power and persuasion he converted other refiners. By the mid-seventies generally through the transfer of stock in the Standard Oil Company of Ohio, whose capitalization was recurrently enlarged for this purpose, the Rockefeller group had acquired refineries in Pittsburgh, Philadelphia, New York, Brooklyn, and Baltimore. In 1879 the Standard controlled 90 per cent of the refining in the country. In that very year S. C. T. Dodd, counsel for the Standard, one of the most ingenious of corporation lawyers, bent an old device, the trust, into a new method of consolidating many corporations. Three years later a higher form evolved. Under a trust agreement the stockholders surrendered their securities to nine trustees and received in return trust certificates. As owners of these certificates they elected the trustees, though the original nine were designated in the agreement. The trustees were to establish new corporations, if they saw fit, elect the directors and officers of all the companies whose stock they held, and "exercise general supervision" over their affairs. Though they thus controlled corporations, the trustees were not a corporation. No legislative act, no charter had given them birth or powers. Imitators in other industries rushed to copy this unique conception. It was not for long. In the nineties the law frowned upon this scheme so severely that a new method had to be discovered.

Whether by accident or by design the State of New Jersey came to the rescue of the harassed consolidators. Most states had generally forbidden corporations to own the stock of other corporations. From time to time legislatures, however, gave permission for this act and occasionally chartered companies with this power. The South Improvement Company was a holding company. Now New Jersey transformed incidents into a system. In 1888 she so amended her corporation laws as to read: "Any corporation may purchase . . . the capital stock of . . . any other corporation or corporations of
this or any other state, and while owner of such stock may exercise all the rights, powers, and privileges of ownership, including the right to vote thereon.” Business wise men read the meaning of this star in the East. The Standard Oil Company of New Jersey, already in existence, increased its capital stock in 1899 from $10,000,000 to $110,000,000. This new stock was issued in exchange for the stock of the constituent concerns, which refined oil, produced crude oil, owned pipe lines, carried on marketing operations, sold natural gas. The holders of the stock in the New Jersey concern elected its directors; these controlled the policy of the subordinate concerns, for the New Jersey company held and voted their stocks. The line between this holding company and the trust was indistinguishable. The directors of the New Jersey company simply took the place of the trustees; that they were practically identical is disclosed by a comparison of the personnel of the two boards. Of the fourteen directors in the New Jersey company in 1907 six had been trustees in the trust of 1882.

Under the aegis of the holding company the Standard group enjoyed its golden age. In the piping of petroleum the concern had practical monopolies in the Appalachian, Lima-Indiana, and mid-continent fields. In production a single Standard refinery used more crude oil than the seventy-five independent refineries in the country. The Standard produced 87 per cent of the refined products. In marketing there was the same story. The Standard marketed easily over 80 per cent of the American product both in this country and abroad. And how the money rolled in! From 1897 to 1906 the annual dividends on its stock, according to the Bureau of Corporations, fluctuated between 30 and 48 per cent.

**Integration in Iron and Steel**

Although an apostle of international peace, Andrew Carnegie was the warrior of the iron and steel industry. This young Scotchman, climbing the ladder of American success from bobbin boy to superintendent on the Pittsburgh division of the Pennsylvania Railroad, had amassed a small fortune and knew the right people on the Pennsylvania. Among his many investments were those in iron works—fabricating railroad bridges, wheels and axles for railroad rolling stock, and iron rails. He did not invade the furnace phase of the industry until 1870. More slowly impressed than his associates with the power of steel, he became in the early seventies a wholehearted convert and poured his money and energy into the construction of the J. Edgar Thomson Steel Works twelve miles north of Pittsburgh. They were designed by A. L. Holley, the engineer who gave the American steel industry its typical magnitude and layout; the plant was cannily named after the president of the Pennsylvania Railroad; and it was run by the redoubtable
ironmaster Captain W. R. Jones. In 1875 the works made its first blow and rolled its first rail. The new step was a profitable one. The Pennsylvania Railroad not only purchased its products but gave it rebates, a privilege which the Baltimore and Ohio was also insistent upon sharing; and the plant, managed with technical efficiency and executive skill, poured forth a great volume of steel at a lowering cost of production. Competitors were aghast.

Until the eighties the Carnegie enterprises exhibited few differences from the Standard Oil. Carnegie had received rebates from the railroads and had purchased competitors—the Homestead Works—as Rockefeller had done. But now began a career of expansion on other lines. The Standard, although controlling the refining, transportation, and marketing of oil, had left the production of the crude oil to other individuals. But the Carnegie companies sought to control their raw materials, to integrate the industry. First were the supplies of coke. Early in the eighties Carnegie consequently sought an alliance with Henry Clay Frick and bought into the Frick Company. Frick, through an early realization of the superiority of Connellsville coal for coking and through audacious borrowing, became the undisputed "coke king of Connellsville." Through his association with Carnegie he became the directing genius of the whole Carnegie organization. The second step was the control of iron ore. The Carnegie Company like others purchased its ore from various Lake Superior ore companies. Although Andrew Carnegie preferred to continue this arrangement, Frick and other advisors overcame his reluctance and forthwith the group made long leases of Mesabi ore-bearing lands. When it proved to be impossible to get rate concessions on the carriage of their raw materials, they established their own fleet of ore carriers on the Lakes and through purchase and construction obtained a railroad line between Conneaut on Lake Erie and Pittsburgh. Laid with heavy rails and running over low grades, the Pittsburgh, Bessemer and Lake Erie completed an efficient and economical transportation system. It is not surprising that the Engineering and Mining Journal in January, 1897, after surveying the efficient integration of the Carnegie properties, came to the conclusion:

This company is not only in a position to make steel cheaper than any other producer; it is so situated as to be absolutely in control of the market, and make the prices of steel what it will. . . . The situation is not altogether a comfortable one, and many are looking anxiously for the result.

However startling may have been the creation of the Carnegie power, it did not have a monopoly of the method of integration. During the nineties promoters, businessmen and bankers were assembling various aggregates. When the members of these groups who made finished products of steel
began to furnish their own ingots or buy them from business allies instead of from his works, Carnegie, in a rôle completely congenial to his genius, talked widely and well. It seemed that his company planned the construction of mills making wire rods, tubes, and steel sheets. He guilelessly asked:

Why should steel makers make plates for other firms to work up into boilers, when they can manufacture the boilers themselves? Or beams and girders for bridges, when they can turn out and build up the completed article, or plates for pipes when they can make pipes? I think the next step to be taken by the steel makers will be to furnish finished articles ready for use.

To carry to the limit the policy implied in this quotation would have unloosed a competitive war which would have cut prices and profits to the bone and would have bankrupted concerns lacking the financial stamina and natural resources of the Carnegie group.

From such a gloomy prospect steel men and bankers alike recoiled. A search for ways of peace revealed a larger consolidation as the best solution. Carnegie was anxious for a retirement in which to study and to spend his gains for philanthropies. The banking house of the Morgans, already heavily committed to investments in the steel world, was eager to prevent industrial warfare. It undertook the necessary negotiations. In 1901 the United States Steel Corporation, incorporated as a holding company in New Jersey, was launched with a capitalization of $1,400,000,000. This industrial giant illustrated compactly every motive for consolidation. Economies through integration were secured, competition was avoided, and the incorporators made money by a process which Andrew Carnegie had once described, “They throw cats and dogs together and call them elephants.” In view of the prices paid for the constituent concerns and the hopes capitalized, the securities of the United States Steel Corporation inevitably were heavily watered. The Commissioner of Corporations later estimated that the total capitalization of the concern exceeded the value of the property as determined by an “historical analysis” by $726,846,817. Opponents and supporters of the United States Steel Corporation argued violently as to the justice of this stock watering, but it undoubtedly brought an immediate advantage to the owners of the properties included in the consolidation. Among others who benefited by the formation of the concern was the syndicate headed by J. P. Morgan and Company, which underwrote the securities. The syndicate was recompensed in stock from the sale of which it made a profit over and above expenses and cash advances of $62,500,000.

After 1901 the Corporation continually strengthened its industrial domain. New concerns were purchased. The most conspicuous acquisition was the valuable Tennessee Coal and Iron Company, a producer in the Bir-
mingham-Chattanooga region and the owner of vast reserves of coal and ore. This was purchased during the panic of 1907 with the assent of President Roosevelt. At the same time the United States Steel Corporation continually enlarged its holdings of coke and ore through lease or purchase. It erected new mills, of which the metamorphosis of an empty spot on the shores of Lake Michigan into the steel city of Gary was, of course, the most dramatic. To its competitors, for they still existed, the United States Steel meanwhile preached the gospel of coöperation. For a time pools and associations were utilized but after the panic of 1907 E. H. Gary, chairman of the board of directors, inaugurated his famous dinners with the purpose, in his own words, of

thoroughly establishing, if possible, a friendly feeling amongst the steel makers, and of inducing, if possible, the manufacturers to state frankly and freely what they were doing, how much business they were doing, what prices they were charging, how much wages they were paying their men, and oftentimes what their methods were, and in fact furnishing frankly to the others all information concerning their business and to prevent by exhortation the wide and sudden fluctuation of prices which would be injurious to every one interested in the business of the iron and steel manufacturers.

These dinners were supplemented by committee activities. But under this arrangement the moral obligation to maintain quoted prices until due notice was given to the others was not sufficiently binding. The whole movement was dropped in 1911 when the government brought suit against the United States Steel Corporation. Ever since 1901, however, the prices that Big Steel had charged on rolled products were known to its competitors through the Pittsburgh plus system—prices at Pittsburgh plus the freight—no matter whence the product was shipped to the purchaser. The prudent recognized leadership when they saw it.

The Electrical Industry

The electrical industries exhibited almost at once a high degree of concentration. Since the first telegraph line had been constructed by the national government, there was the possibility of government ownership for this new instrument. Morse desired it. When Congress proved either indifferent or preoccupied, private capitalists, inventors, politicians, officials and employees of the government post office, and promoters chartered companies and threw lines about the country. These were immensely profitable if they possessed a monopoly of messages; financially sterile when faced with competition. In the late fifties a process of consolidation began, although many speculated skeptically how a "consolidation of failures [is] to escape failure?"
By the end of the Civil War the Western Union Telegraph Company had purchased its last great rival and in the act once more issued a flood of watered stock. The monopoly seemed invulnerable. It granted telegraph privileges to congressmen and political bosses and its exclusive contract with the Associated Press enabled it to still newspaper criticism. But the possibilities of competition had not been killed. The process of blackmail, exemplified by the railroads, was cheaper in the case of the telegraph, for the construction of parallel lines was less expensive. Chance-talkers built first to threaten and then to sell out to Western Union. The adroit Jay Gould in alliance with other railroad men performed this magic twice in the seventies and eighties; the second time he sold out for five or six times the value of his properties. Then John W. Mackay, the silver mine king, took hold of the Postal Telegraph Company and built a great concern of transcontinental lines and cables across both the Atlantic and the Pacific Ocean. Although in 1916 there were twenty-six companies in the telegraph business, practically 98 per cent of the commercial service was handled by companies affiliated with either the Western Union or the Postal Telegraph. For a time the telegraph and telephone were closely affiliated. The Postal Telegraph was the largest stockholder in the American Telephone and Telegraph Company and the latter for a few years after 1909 controlled the Western Union.

Patent ownership gave the telephone from the beginning the possibility of monopoly. And the owners of the Bell patents sternly determined to protect their rights at any cost. Within a quarter of a century there were six hundred patent suits. Some of them were minor engagements; others shook the patent office, the legal world, and the stock market. In every case the Bell companies were victorious. Then at the precise moment in the early nineties when their early patents expired, the Patent Office, suddenly deciding to be a kindly Mercury, brought tidings of great cheer; after fourteen years of delay it granted them a patent on an improved transmitter. Other branches of the government sought in vain to overthrow this decision. Meanwhile stock had been watered and the telephone empire had been organized. The Western Electric Company manufactured the instruments; the American Telephone and Telegraph Company constructed long-distance lines and provided service; and the American Bell Telephone Company leased its instruments to local companies. These permanent contracts arranged an annual rental for the equipment and provided that the parent company should hold stock in the subsidiaries.

In the nineties there was a renewed outburst of competition. Under the second presidency of Theodore N. Vail, who first came to the company from the United States Railway Mail Service, this threat was met by simplifying and centralizing the structure of the central company, now the American
Telephone and Telegraph Company, and by purchasing and incorporating within itself many of the competing companies. Vail also cultivated public good will. When the government expressed disapproval of the alliance with the Western Union in 1913, the telephone company disposed of its holdings, promised to acquire no more competing companies, and offered to cooperate with the independents in long-distance service. Since then the Bell company and the independents have delimited their areas. In 1917 the Bell system had 7,326,000 out of the nation's 11,716,000 telephones.

Edison and Westinghouse were the pioneers of electrical power. From each developed a gigantic manufacturing concern. In 1878 when Edison was struggling with his incandescent lamp, he formed the Edison Electric Light Company and various financiers—including J. P. Morgan and Henry Villard of Northern Pacific fame—were associated with him. Several years later Edison's interests were consolidated into the Edison General Electric Company under Henry Villard. Finally in 1892 the General Electric Company was established. It combined the Edison companies with the Thomson-Houston Company, an extremely important New England concern owning valuable patents. In this process of combination Edison sold out his holdings and the subsequent growth of the General Electric was due to other technicians and financiers. George Westinghouse, on the other hand, built up his businesses in a more personal fashion. He contributed the funds for growth himself or else solicited them from his friends. In 1891 the Westinghouse Electric and Manufacturing Company consolidated his previous interests. A few years later the General Electric and Westinghouse entered into an agreement which recognized the patents of each company and "the right, subject to certain exclusions, to a joint use thereof." For decades the two dominated the production of generators, transformers, motors, and control apparatus. Nevertheless, there has been no monopoly in the production of electrical apparatus. Thousands of small concerns were manufacturing specialties and part lines, and there was even competition between the full-line manufacturers, Westinghouse and General Electric. This competition, however, was not always in the crude form of price cuts. The General Electric Company, with its huge reserves, its uninterrupted flow of dividends, and its financial alliances, rivaled the United States Steel Corporation, the General Motors Corporation, and the American Telephone and Telegraph Company.

**Motors: The Big Two**

As in all new industries, the competition in the manufacture of automobiles was peculiarly feverish. Since technical changes were so rapid that manufacturers could hope to produce a taking car which would sweep the
market in a single year, and since the amount of capital required for starting business was small, the field was alive with “manufacturing gamblers,” “plungers,” “skimmers.” Every depression or reversal killed them off. Fortunately for the industry and the nation, trade associations in the automobile industry modified the most glaring disadvantages of competition. First of all, standardization was accomplished. Although the makes of cars had an individuality in inward and outward appearance, the thousands of small working parts were standardized, and varieties were reduced to a few necessary types. Then in 1915, when patent legislation threatened to retard the progress of the automobile industry, most makers through the National Automobile Chamber of Commerce signed an agreement by which the patents of one party were made available to all others without the payment of royalties. In addition patents were acquired for the common use of members. But the consolidators wanted more than this. As one of them put it:

Many of us thought that the industry was beset with difficulties and so came the desire to some of us to form a combination of the principal concerns . . . for the purpose of having one big concern of such dominating influence in the automobile industry, as for instance, the United States Steel Corporation exercises in the steel industry, so that its very influence would prevent many of the abuses that we believed existed.

As it turned out two concerns gave big business to the industry. One was General Motors. This corporation, chartered in New Jersey, was the creation of William C. Durant. Durant’s early years as a drugstore clerk and patent medicine salesman showed his talents for salesmanship and the appeal of his personality. Later he had made a remarkable success as a wagon manufacturer, and from that business he had been called to revive the fortunes of the Buick Company. He was successful. The Buick may be regarded as the nucleus of the General Motors. Durant then began a career of giddy expansion. He purchased all sorts of automobile concerns on the theory that the future might belong to even the most bizarre of them, but by 1910 he was placed on the sidelines while the bankers rescued his organization from bankruptcy. Meanwhile he purchased another small automobile factory and began the manufacture of the Chevrolet. With his customary wizardry he transformed this concern into a big business and secured the alliance of the Du Ponts, chemical manufacturers with capital, not only for this enterprise but for the recapture in 1915 of the General Motors Company through the purchase of its stock in the open market. Though financial misadventures later sent Durant into exile and gave to Morgan and Du Pont the control of the corporation, it became an industrial giant, manufacturing cars at all price levels.
Meanwhile Henry Ford grew on his own prosperity. By 1907 he controlled the majority of the stock in the Ford Motor Company. Expansion and integration were the war cries. Ford’s own plants began the manufacture of parts; blast furnaces and foundries were built; paper and glass factories controlled; timber lands, waterpower sites, coal mines, iron deposits were purchased; railroad lines knit together many of these properties. It was apparent that the automobile field was the preserve of the giant corporation. The benefits of large-scale production, the wide-flung nature of marketing agencies, and the sheer force of momentum gave them an advantage. In 1915 Ford and General Motors manufactured just under 50 per cent of the national output. In view of the fact, however, that Ford produced nearly five times as many cars as his rival and that his lead was more marked than it had been a few years earlier, perhaps the motor industry should be described in terms of the “big one” rather than the “big two.”

The Security Business

By now it is a repetition of the obvious to assert that after the Civil War the corporation became the dominant form of business enterprise. Once largely confined to banks, insurance companies, and transportation agencies, corporations now crowded individuals and partnerships out of manufacturing, spread from large concerns to tiny ones, and invaded even the field of construction and retailing. Wherever three or four persons engaged together in a common business a corporation was born. Between 1860 and 1914 an index of incorporation showed their multiplication by nearly sixty times. Many factors explained this phenomenon. For one thing, state after state eased the act of incorporation by statutes laying down general rules through compliance with which any promoter could establish a corporation, enlarged the corporation’s privileges—the holding company was a case in point—and granted the directorate a power of decision and management less curbed by the oversight or obstruction of stockholders. But a shameless rivalry in chartering was not the whole explanation of the fever for incorporation. Shareholders had a limited liability for the debts of their concern; the sale of securities gathered together in a mighty stream a thousand trickles of investment funds; and promoters, consolidators, and bankers made money through the sale and manipulation of securities.

For as the deluge of securities mounted, the market place in which they were bought and sold was broadened and its methods, technical and institutional, improved. In 1869 boards of competing brokers were consolidated into the New York Stock Exchange and in spite of competitors this modern Wall Street remained the security exchange of the country. The fodder coming to its mill exhibited the familiar sequence. Throughout the later decades
of the nineteenth century railroad securities were its favorites and the great banks loaning in the call money market refused to lend on other collateral; at the turn of the century a few industrials were on inferior terms allowed to join this aristocracy. Two decades later they enjoyed a superior respectability. Undoubtedly the Stock Exchange gave a continuous appraisal of security values and expedited transactions between buyers and sellers. But it also provided facilities for gambling on the prices of securities through methods understood by the expert and mysterious to the uninitiate. Public criticism mounted. And even the experts grew discontented when they were cheated by other insiders. So there were waves of reform. At one time or another the Stock Exchange passed rules for adequate and regular reports from corporations listed on its board, discouraged fictitious transactions, and punished “reckless or unbusinesslike dealing.” Outsiders were not, however, willing to trust the Stock Exchange to purify itself. The New York legislature passed some regulatory legislation; national action, often demanded, was continuously deferred.

Not every corporation listed its securities in the Stock Exchange nor did those quoted on the board always obtain funds through public offering of securities. In large part the methods of financing industry current in the early days of the industrial revolution persisted. The launching of an industry often required small funds; growth was financed out of profits. Thus the original investment in the petroleum business by Rockefeller and Clark in 1862 was only $4,000. As their business activities extended, the large profits were plowed back into the enterprise. No exact notion of their extent can be secured, but in a single company, the Standard Oil Company of New Jersey, the capital was increased from $3,000,000 to $625,000,000 between 1882 and 1922; about four-fifths of the increase represented the reinvestment of profits. In the twentieth century Henry Ford repeated this traditional story of growth. The capital stock of his third concern was $100,000, but only $28,000 was ever paid in cash. Other manufacturers sold him parts on thirty to ninety days credit, and since the purchasers paid a deposit on orders and cash down when delivered, Ford often sold the cars before his bill from the parts manufacturer had to be paid. Within fifteen months the Ford company paid 100 per cent in dividends. These profits financed his customary expansion; if he built gigantic new plants he either failed to reduce prices or raised them slightly for the moment. Between 1904 and 1923 the net worth of the company grew from $100,000 to $359,962,000. Nor were Rockefeller and Ford exceptions.

If established companies issued new stock, the law generally compelled them to offer existing stockholders the first opportunity to make additional subscriptions. But the sale of bonds in all corporations and of stocks in new
companies was generally effected in the first instance through the investment banker. Strictly speaking, he was simply a middleman who arranged for the sale of securities, issued by a corporation or a government, to the purchasers—individuals, estates, banks, insurance companies. He could perform this function alone or with others in a syndicate. His charges were in many forms—cash, stock, commission, fixed payments. Whatever form underwriting might take, the investment banker became of central significance in the industrial state.

The Civil War enormously stimulated a business hitherto largely unspecialized and in spite of the connections established between American and European bankers, largely localized in character. But now to handle the securities issued by the government during the Civil War and to refund them and the temporary debts after the war, banking houses expanded their organizations. New partnerships were formed, and new alliances were made with agencies overseas to sell the “governments” to European investors. In origin many of those early investment houses naturally sprang from mercantile businesses since the handling of goods required a large amount of capital and their importation had led to the establishment of financial ties with foreign banks. Thus the firms of J. and W. Seligman and Kuhn, Loeb and Company grew from clothing and merchandising companies. Even the House of Morgan had merchandising as a remote ancestor. To be sure, John Pierpont Morgan, who came to this country in 1857, was not a huckster, but the firm which he represented, J. S. Morgan and Company, had been originally established by George Peabody, an American who had made his money in dry goods, and was named after Junius S. Morgan, also an American and a former dry goods merchant. Merchandising, however, had no connection with Jay Cooke, appropriately christened the “Tycoon” by his associates, and, as we shall see, the banker who organized the sale of government securities during the Civil War on a colorful and effective basis. After the Civil War he was compelled to allow rivals to participate in the “jamboree” of refunding, and their association introduced the word “syndicate” to American banking practice.

Earlier he had perhaps introduced the practice by underwriting with seven others an issue of Pennsylvania Railroad bonds. The form of security was significant, for in the seventies government financing tapered away and railroad financing took its place. To be sure, Jay Cooke was ruined by the association as the Northern Pacific carried him down in 1873. But other banking houses, associated with the Union Pacific and the Pennsylvania, had prospered. Morgan also entered the field. His first great coup was in connection with the New York Central when W. H. Vanderbilt, the son of the Commodore, employed Morgan to sell part of his holdings abroad in order to avert
popular hostility and prevent the depression of the American market when the stocks were placed on sale. In the nineties, when railroad reorganizations were thick and fast, Morgan had the prestige and experience to carry out such operations. Roads like the Baltimore and Ohio, the Erie, and the Northern Pacific felt the touch of his magic. At the end of the century the industrial field gave new opportunities to the investment banker. Thus Morgan became involved in the promotion of steel consolidations forced by the threats of competition from Carnegie, and finally he was either persuaded or compelled to undertake the formation of the United States Steel Corporation in order to stabilize the industry.

Jay Cooke and J. P. Morgan and the others were private bankers; their concerns were partnerships. But it was possible also for incorporated banks to market securities. Biddle’s Second Bank of the United States, for instance, had been the channel by which American securities had reached European purchasers. In the later nineteenth century banks again emerged as dangerous and perhaps surreptitious rivals to the private banker-underwriter. Finally the practice was regularized by the creation of security affiliates, owned by the same shareholders as the bank and directed in harmony with it. Although the First National Bank of New York pioneered with this mechanism, establishing the First Security Company in 1908, the National City Bank was a more significant illustration of the complete process. In 1881 James Stillman, a cotton merchant who owned railroad and bank shares, became its president. He brought to the institution the advantages of a friendship with William Rockefeller, a member of the Standard Oil group, and in the nineties the great resources of the Standard Oil companies and their overlords began to find an outlet through the National City Bank. It was the “Standard Oil Bank.” Stillman aggressively sought alliances with other luminaries in the business world. At first repelled by Harriman, he later “went right after him,” regarding him as the next great promoter after the Standard Oil group. The Rockefeller, Standard Oil, Harriman, and City Bank alliance controlled railroads, metals, copper and iron, entered the public utility field, and from time to time pained Morgan by its aggression and success. Competition might be avoided by a community of interest. Various enterprises indeed brought the two groups together. The flotation of the United States Steel Corporation required their joint efforts; the racket about the Northern Pacific in 1901 had been stilled by an agreement which involved the two parties; and after 1907 these occasional notes of peace became a continuous harmony when J. P. Morgan and Company purchased $1,500,000 of the stock of the National City Bank and J. P. Morgan, Jr., sat on its board of directors. As in railroads and industry, community of interest replaced competition. Before 1908 the National City Bank had joined with
the House of Morgan in only one underwriting enterprise; by 1912 they had participated in sixty-seven common operations, aggregating in all over one billion dollars.

**Banker's Control**

Previous to the Civil War, investment banking in this country had been not only a small but a passive occupation. The investment banker was simply a merchant. But as he actually formed companies and aggressively sold their securities, he became interested in the institutional purchasers of his products—banks and insurance companies. Alliance with the former was more important, for not only did they purchase securities for their savings and trust accounts but they furnished the short-time loans which underwriters required until the securities they were marketing were sold, and they had large sums of money in the call market available for security trading. Thus after 1875 the House of Morgan was closely allied with the First National Bank of New York; in 1912 it was, with the exception of the bank's president, the largest shareholder, and three of Morgan's partners sat on its directorate. The First National Bank and the House of Morgan in turn controlled other banks which controlled other banks. As for insurance companies, Jay Cooke had organized and managed one in order "to lay out anchors for the obtaining of money." Morgan was so eager to tap this great reservoir of savings that in 1910 he purchased $51,000 par value of stock in the Equitable Life Assurance Company for $3,000,000. As an investment this yielded him one-eighth of one per cent, but the concern then had assets of $504,000,000.

As the banker cast aside his passive rôle, he was driven irresistibly to a greater interest in the enterprises whose securities he marketed. The relationship between Cooke and the national government at the time of the Civil War ironically illustrated the process. In order to secure issues for his house, Cooke had to maintain friendly, often dishonest relationships with both the Congressional and executive branches of the government. Twenty years later J. P. Morgan learned in his reorganization of the Baltimore and Ohio that he must retain some control over the concern whose finances he rehabilitated; otherwise it might relapse into evil ways and impair the estimate of Morgan's intelligence held by those who had purchased stock from him. On the other hand, there were often advantages for the corporation in continued association with the banker; his financial advice was valuable and new security issues could be marketed through him. Bankers either exercised control through a voting trust or began to sit on the board of directors of their debtors and dependents. In 1912 the House of Morgan, the First National Bank, and the National City Bank held in all 341 directorships in 112 corporations with aggregate resources or capitalization of $22,245,000,000. Among
others, their representatives answered directors’ roll calls on the Atchison, Topeka and Santa Fé, the Great Northern, the New York Central, the Northern Pacific, the Southern Pacific, General Electric, Pullman, United States Steel, American Telephone and Telegraph, and Western Union.

This network of directorships and stock ownership, tying together railroads, industries, public utilities, and banks, concentrated in the financier an immense power. Occasionally they denied its existence. In 1913 J. P. Morgan and Company announced that the concentration and merger movements in banks were due to the necessity of meeting the financial demands of large-scale businesses, that bankers held directorships in other concerns as a duty, not as a privilege, and declared, “It is preposterous to suppose that every ‘interlocking’ director has full control in every organization with which he is connected, and that the majority of directors who are not ‘interlocking’ are mere figureheads.” On the other hand, investment credit was essential to the industrial state, and the masters of capital thus exercised a power of life and death. Manufacturers outside their orbit trembled lest they be engulfed. Henry Ford, whose thoughts on the subject were not always lucid, arraigned the bankers, and annual conventions of the National Association of Manufacturers listened to abusive oratory on the subject. Undoubtedly the banker brought a new viewpoint. He was interested in commissions, in promotions, in uninterrupted profit, in market values, in financial stability, and in industrial cooperation. His contacts with men and materials of production were at second hand. All this marked so great a change from the days of the pioneer industrialists that observers christened the twentieth century the era of finance capitalism. At least the bankers thought the world good. George F. Baker, president of the First National Bank, although he felt in 1912 that the concentration of credit had “gone about far enough,” said, “In good hands I do not see that it would do any harm . . .” and “I do not believe it could get into bad hands.”

The Attack on the Trusts

The evolution toward business bigness challenged deep American folkways and transformed what were often at first only doubts and questions into active antagonisms. For after all here was monopoly, the ancient foe. As one critic surveyed the general scene of the eighties and nineties, “Business motivated by the self-interest of the individual runs into monopoly at every point it touches the social life—land monopoly, transportation monopoly, trade monopoly, political monopoly in all its forms, from contraction of the currency to corruption in office.” As this sentence suggests, the discontent of those decades was not focused upon partial areas of business consolidation but was an attack against the industrial order and its results. Thus Henry
George in his *Progress and Poverty* (1879), an eloquent and very American indictment, was disturbed by the sight of the rich getting richer and the poor poorer. Edward Bellamy, an inconspicuous fiction writer, in *Looking Backward* (1888), a book which sold 350,000 copies in two years, pictured a happier order in 2000 A.D. when a naive and elementary socialism had nationalized property, organized labor in industrial armies, abolished money, and given every one an identical yearly allowance. Henry Demarest Lloyd, an apostle of alarm and a newspaper crusader who had an income sufficient to enable him to be independent, catalogued in *Wealth Against Commonwealth* (1894), evils ranging from the silting of rivers to the organization of sweatshops and "coal pools with their manufacture of artificial winter." These volumes revealed the unlovely and dangerous aspects of America's industrial advance, punctured the smugness of the fortunate, and demonstrated that a mounting figure of pig-iron production was not an absolute good. But their cures were over-simple. Sometimes they sounded as if the only solution was the radical conversion of the human race to a new standard of values or else a new start on civilization with a new order of men.

Not surprisingly, measures against monopoly embodied similar confusion. While legislative and Congressional investigations, if the committees pressed hard enough against witnesses frequently evasive and often dishonest, might unearth the facts about the trusts, the selection of a feasible program against them was a complicated matter. States and territories nevertheless attempted legislation and by the time the Sherman Anti-Trust Act was finally passed by Congress in 1890, fourteen had constitutional provisions and thirteen had laws of an anti-trust character. The Federal anti-trust act bore ironically the name of Senator Sherman, chairman of the Senate Committee on Finance, who had little to do with its provisions. The first two sections of the act require quotation in full:

Section 1. Every contract, combination in the form of trust, or otherwise, or conspiracy, in restraint of trade or commerce among the several States, or with foreign nations, is hereby declared to be illegal. Every person who shall make any such contract or engage in any such combination or conspiracy, shall be deemed guilty of a misdemeanor, and, on conviction thereof, shall be punished by fine not exceeding five thousand dollars, or by imprisonment not exceeding one year, or by both said punishments, in the discretion of the court.

Section 2. Every person who shall monopolize, or attempt to monopolize, or combine or conspire with any other person or persons to monopolize any part of the trade or commerce among the several States, or with foreign nations, shall be deemed guilty of a misdemeanor, and, on conviction thereof, shall be punished by fine not exceeding five thousand dollars, or by imprisonment not exceeding one year, or by both said punishments, in the discretion of the court.
Although the Sherman Act appeared to be clear and definite, it was so only on the surface. Since the legally erudite believed there was no Federal common law, the anti-trust act simply put into a Federal statute the rules of common law. These were hardly precise. The common law against monopolies had been variously interpreted in England from the time of Cromwell to that of Queen Victoria. Though there was thus doubt at the core of the matter, something was clearly made a crime with penalties, something was made a statement of public policy. The cynical dismissed the performance as a prelude to the Congressional election of that year. Those of another mind, then and later, thought it a declaration in behalf of the good old days of competition. But the alert pointed out the solution was self-defeating. Senator Platt of Connecticut questioned the assumption that

... all competition is beneficent to the country and that every advance in price is an injury to the country. Unrestricted competition is brutal warfare, and injurious to the whole country. The great corporations of this country, the great monopolies of this country are every one of them built up on the graves of weaker competitors that have been forced to their death by remorseless competition.

As the national government experimented with the application of the Sherman Anti-Trust Act and the courts passed down decisions, a decade of perplexity ensued. The first important case involving an industrial trust was the E. C. Knight case in 1895. The facts were clear. The American Sugar Refining Company, through the purchase of four Philadelphia refineries, controlled 95 per cent of the refining of sugar in the country. The government sought to annul these purchase arrangements as contracts in restraint of trade. The Supreme Court declared that the

... contracts and acts of the defendants related exclusively to the acquisition of the Philadelphia refineries and the business of sugar refining in Pennsylvania and bore no direct relation to commerce between the states or with foreign nations. ... Commerce succeeds to manufacture, and is not a part of it.

Although the ineffective preparation of the government’s case somewhat explained this extraordinary decision, such judicial hairsplitting convinced the ordinary observer that the act was useless.

Though the learned judges soon discarded this artificial distinction between manufacturing and commerce, though they asserted “every contract” meant “every contract,” the status of the Act was entirely unsatisfactory. Its interpretations had been most contradictory, the most important cases decided under it had been those involving labor unions and railroads, certainly of minor interest to the framers of the act, and no important trust had been
brought to book. The exact apportionment of the responsibility for this outcome is difficult. As we have seen, the intent of the legislators was a mystery. Furthermore, the Department of Justice did not have the machinery or the funds to conduct extensive investigations into corporations and had no precedents as to the best method of pleading cases. Neither the Cleveland nor the McKinley administration was aggressive enough against big business to disregard court rebuffs. In the last analysis, however, the Supreme Court had to bear the major responsibility.

The Roosevelt administration determined to implement the Sherman Anti-Trust Act and to infuse new energy into its enforcement. Though he saw the trust problem partly as an administrative one of investigation and of new regulations, he determined upon a spectacular assault upon some outstanding monster. The Northern Securities Company, which as we have seen amalgamated the railroads in the northern trans-Mississippi zone, was selected for the test. The choice was a dramatic one. The corporation had just been created, and corporation counsel felt a holding company was legally impregnable. The bankers of the concern were much alarmed. Morgan departed for the White House in a quest for certainty and James J. Hill wrote plaintively, "It really seems hard, when we look back on what we have done . . . in opening the country and carrying at the lowest rates, that we should be compelled to fight for our lives against the political adventurers who have never done anything but pose and draw a salary." In 1904 the Supreme Court gave its decision. By a majority of five to four it declared the Northern Securities Company illegal under the Sherman Anti-Trust Act. The fact that it was a holding company, that the corporation was the creation by a single state, was brushed aside. The effect of the Northern Securities Company was to diminish the free competition which Congress felt was beneficial to the people. Though the immediate practical effects of the decision were negligible, the ardent opinion of the importance of the decision held by Roosevelt and others was not extravagant. It did apply the Sherman Act to big business and show that the government had the power to control it. Suits were forthwith initiated against the American Tobacco Company and the Standard Oil Company of New Jersey, gigantic combinations. The latter in popular mind was the incarnation of the whole trust movement.

In 1911, during Taft's administration, the Supreme Court passed down its decisions in these two cases. Verbally they were of immense importance for the judges apparently gave new meaning to the phrase "every contract, combination in the form of trust, or otherwise, or conspiracy." For a decade or so the majority of the Court had said again and again that "every" meant "every." Now the majority, but not the same one, guided by the Chief Justice, asserted these words were meant to have the meaning of common law at the
time the act was passed. Resorting to a somewhat different common law than that hitherto used, the Court declared that only restraints of trade which were unreasonable were prohibited. Defining the second section of the Act, which was “the complement of the first,” White wrote,

... the criteria to be resorted to in any given case for the purpose of ascertaining whether violations of the section have been committed, is the rule of reason guided by the established law and by the plain duty to enforce the prohibitions of the act and thus the public policy which its restrictions were obviously enacted to subserve.

This test did not exempt from the operation of the law the two corporations at the bar; they were dissolved, though with little immediate effect upon the renewal of competition.

As for the rule of reason, some contemporary critics complained that it introduced judicial legislation; other contemporaries, including the President, asserted the new rule made little practical difference. All the restrictions and restraints legally condemned before 1911 were unreasonable and would have been forbidden afterwards as well. In a sense, both observations were sound. The Court upheld the fundamental objective of the Act, the maintenance of competition; it exercised a baffling and frequently frustrating discretion in determining what was and what was not consistent with that purpose.

“Square Deal” and “New Freedom”

Roosevelt, though he used the Sherman Anti-Trust Act, was not convinced that it embodied the right policy toward big business. Mr. Dooley, the Irish saloonkeeper of Peter Finley Dunne, sensed a typically Rooseveltian current of thought after perusing the President’s first message to Congress in 1901. “‘Th’ trusts,’ says he, ‘are heejous monsters built up be th’ inlightened in therprise iv th’ men that have done so much to advance progress in our beloved country,’ he says. ‘On wan hand I wud stamp thin undther fut: on th’ other hand not so fast.’” As the years went on, Roosevelt’s fundamental caution led him to make frequent distinctions between the “good” and the “bad” trusts. Consolidation was the result of the economic process; it brought blessings in overcoming the wastes of competition and introducing efficiency. Instead of dissolving corporations by a purely negative statute, the government should supervise and regulate them to prevent abuses such as monopoly “achieved through wrong,” artificial raising of prices, artificial restrictions on productivity, and the elimination of competition by unfair or predatory practices. In a characteristic salvo, he declared: “we are against
crooked business, big or little.” Such was the summation of his thought and experience embodied in his “Confession of Faith,” the speech accepting the nomination of the Progressive Party in 1912.

In that campaign Woodrow Wilson was the victor over the ebullient Teddy. Wilson had been a conservative. Once he obliquely condemned government regulation of business as “socialistic” and expressed the belief that the evils of business could better be remedied through courts and the civil and criminal law than through commissions. But before he became President of the United States, he deserted these earlier dogmas and put himself in tune with the flood tide of reform. His policy was best expressed in the collected speeches to which he gave the title *The New Freedom*. He pictured the growth of combination and of combinations of combinations through community of interest and through banking alliances.

A trust is an arrangement to get rid of competition, and a big business is a business that has survived competition by conquering in the field of intelligence and economy. A trust does not bring efficiency to the aid of business; it *buys efficiency out of business*. I am for big business, and I am against the trusts. Any man who can survive by his brains, any man who can put the others out of the business by making the thing cheaper to the consumer at the same time that he is increasing its intrinsic value and quality, I take off my hat to.

To the objection that the restoration of competition fails to “observe the actual happenings of the last decades in this country; because they say it is just free competition that has made it possible for the big business to crush the little,” Wilson replied: “It is not free competition that has done that; it is illicit competition. It is competition of the kind that the law ought to stop, and can stop—this crushing of the little man.” Wilson claimed that the prohibition of unfair competition would actually liberate the energies of the people by giving to “outsiders,” small producers and investors, the chance to show their true worth. Although this thinking seemed to smack of the “good” and “bad” trust creed, it differed essentially from Roosevelt’s thought in its interpretation of the past, in its emphasis, and in the policy to be pursued. Like Roosevelt, Wilson had abandoned the mere idea of trust busting. Unlike Roosevelt, he regarded the state of competition as more normal than that of monopoly and he proposed to regulate the methods of the former rather than the practices of the latter. The policy was to be preventive rather than curative.

In 1914 a Democratic Congress to which Wilson gave vigorous and continual leadership passed the Clayton Anti-Trust Act and the Federal Trade Commission Act. This Federal Trade Commission was to be composed of five members. Designed to make more effective the operation of the anti-trust
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laws, it was given the power to investigate alleged violations, to draw up for the courts decrees relating to industrial combinations, to scrutinize the manner in which decrees affecting industrial combinations were being carried out, to investigate all corporations in interstate commerce except banks and common carriers, and to require reports from them. In brief, the Commission inherited the functions of the earlier Bureau of Corporations, and added other investigatory functions which made it a more serviceable aid of Congress, the President, the courts, and the Department of Justice. The most significant contribution of the act in its provisions governing business practices was Section 5: “That unfair methods of competition in commerce are hereby declared unlawful.” The Commission could issue orders to prevent such unfair methods.

It was hoped that the convenient vagueness of this phrase—“unfair methods of competition”—would be an adaptable instrument in the hands of the Commission and the courts for dealing with changing business situations. But the Sherman Act had likewise been vague, and the desire of critics for definiteness in anti-trust legislation was one reason for the Wilsonian program. So the Clayton Act embarked upon definitions, but came to port crowded with a curious medley of futile prohibitions. In the first place, price discrimination between purchasers of a commodity was prohibited “where the effect of such discrimination may be substantially to lessen competition or tend to create a monopoly.” This prohibition was also seasoned with plentiful exceptions for differences in grade, quality, quantity, transportation costs, selling costs. Secondly, exclusive contracts by which the purchaser or lessee agreed to deal only in the goods of the seller or lessor were prohibited when the effect “may be substantially to lessen competition or tend to create a monopoly.” Thirdly, one corporation might not acquire stock in another when the effect “may be substantially to lessen competition . . . to restrain . . . commerce or tend to create a monopoly.” But corporations might purchase such stock for investment and corporations might own the stock of subsidiaries formed for legitimate purposes. Finally, after two years from the passage of the Act “no person at the same time shall be a director in any two or more corporations, any one of which has capital, surplus, and undivided profits aggregating more than $7,000,000,” other than banks and common carriers “if such corporations are or shall have been theretofore, by virtue of their business and location of operation, competitors, so that the elimination of competition by agreement between them would constitute a violation of any of the provisions of any of the antitrust laws.” These last two provisions groped against interlocking stock ownership and interlocking directorates.

In his earlier objection to “socialistic” regulation, Wilson prophesied that
regulation would inevitably draw the government into the details as well as the larger aspects of business, and that eventually it would be ordering and conducting what it began by regulating. The outbreak of World War I in 1914, the entrance of the United States into the conflict in 1917, and the organization of the economy for war purposes prevented for the moment any certain commentary upon the President's forecast of history.
CHAPTER XIV

The Money Question

THE CIVIL WAR

SINCE the Republic had not fought a man-sized war for half a century and the Civil War turned out to be a novel sort of conflict, the early failure to appreciate its possible burdens was perhaps understandable. It was, also, unfortunate—unfortunate in a military sense and unfortunate in the field of finance which provided, as the phrase went, "the sinews of war." Governmental expenditures shot upward. Their annual total, which had been $63,131,000 in 1860, had mounted to $1,297,555,000 in 1865. Aside from national unpreparedness the auspices for an effective financial answer to the nation's need were not favorable. Since the depression of 1857, the Federal budget had run a deficit; the Republicans, who had to conduct the war, were an untried administration and an untried party; and the civilian officials, including Secretary of the Treasury Salmon P. Chase, who formulated financial policy, were even more uneducated in their field than their military counterparts in the field of battle. Indeed, it was not until the close of the war that Treasury and Congress, instructed by experience and aided by victory, coped adequately with realities. In the end the measures they took, both the improvised and the foresighted, set for half a century the American patterns of money and banking. Silver coinage was the one important exception.

To meet its requirements for income, the Federal government turned belatedly to taxation. The tariffs on imports were raised and raised again. An elaborate system of internal taxation was devised: taxes on liquor and tobacco, licenses for occupations, sales taxes upon industrial and agricultural products, and an income tax which at its height reached 10 per cent on incomes over $5000. The over-all practice, succinctly described by a contemporary, was "wherever you find an article, a product, a trade, a profession, or a source of income, tax it." In spite of this dragnet, total tax receipts during the war were roughly only a quarter of the total sum of Federal loans. The latter were issued in bewildering variety. Some were comparatively long-term government bonds. Early in the war the government issued the five-
twenties, callable in five years and maturing in twenty; the last loan, the
ten-forties, was christened in similar fashion. The early call years reflected
the habitual American belief, at least as old as Jefferson, that government
debt should not extend to later generations and should be reduced in times of
peace. These securities were sold most successfully when the Treasury trans-
ferred the marketing to the banking house of Jay Cooke. An apostle of the
Union and abolition and also in receipt of a commission on his total sales,
Cooke organized a vast organization of salesmen, conducted an advertising
campaign mingling God, justice, and patriotism, and sold millions to large
and small subscribers alike. These innovations and this experience launched
“Our Modern Midas,” as an enthusiast saluted him, on his career as
America’s first conspicuous investment banker. In addition the Treasury
poured forth a series of short-time notes, some running for three years, bear-
ing interest, and sometimes possessing the quality of legal tender. It was
thought these would be held by investors; actually they formed a part of the
circulating medium.

Whether or not these issues were paper money, the legal tenders, or green-
backs as they were called from the color of the ink in which they had been
printed, certainly were. Within ten months of Fort Sumter, early in 1862, the
national government resorted to financial measures reminiscent of the Ameri-
can Revolution and the Continental Congress. Congress permitted the Treas-
ury to issue $150,000,000 in fiat money, which was to be “legal tender in pay-
ment of all debts, public and private, except duties on imports and interest
on the public debt.” These notes bore no interest. Nor were they redeemable
in gold or silver. The only conversion which they had was an exchange, at
the request of the holder, for government bonds bearing 6 per cent interest.
Over a step so momentous there was a searching debate. Opponents with
considerable cogency questioned the constitutional power of the government
to issue paper money and with frequent recourse to historic example, in-
cluding the Revolution, pointed out its inflationary dangers. Every objection
was beaten down with the grim cry of necessity. No opposition delayed later
legal tender acts. The first measure was the critical one. Indeed, the last of the
acts in 1863 limited or withdrew the convertibility into government bonds
and left the question of redemption to the end of the war. Along with other
legal tenders, the greenbacks unleasched an inflation which increased the cost
of the war to the government by perhaps $589,000,000. The costs to the citi-
zenry were incalculable.

During the debate over paper issues some Congressional voices supported
the new currency with traditional anti-bank arguments: at least the legal
tenders were not bank notes, they were the money of the national govern-
ment. Such an attitude promised ill for the hope, clearly and stubbornly held
by Secretary Chase, of substituting for the chaos of state bank notes a uniform circulation issued by institutions under national charter. "We must have an exclusive national currency," he wrote privately. "The state bank currency must be driven out of existence." But the preoccupations and passions of war-times were so engrossing that the argument from "necessary" worked also for banking legislation. Using the devices of New York's free banking act, previously described, Chase proposed that the note issue of the national "associations," for such these banking corporations were ingeniously christened, be based upon the bonds of the national government. By conferring in effect a potential banking privilege upon these securities, Chase really enlarged the market for them. As further protective coloring, the national banks were to secure their supply of notes from the Comptroller of the currency. Clearly the whole proposal involved no re-creation of a central bank like the "monster of Chestnut Street."

In 1863 Congress passed a national bank act; in the following year this statute was so rewritten as to be in fact the charter of this new system. Existing state banks or new groups could alike secure a national charter. These alone could issue bank notes, for in 1865 a statute put a punitive 10 per cent annual tax upon all other bank notes. The basis of the note issue was government bonds. For the former, the act set a total circulation at $300,000,000, half apportioned among the states according to their population and the other half according to the demands of business. Against these notes and also against credit currency or deposits, the national banks were required to hold a reserve either in "lawful money"—for example, the greenbacks—or in specie. In the smaller places this reserve was 15 per cent; three-fifths of this reserve, however, might be deposited in national banks of "reserve cities," originally eighteen in number. In cities so designated, national banks were required to keep against their deposits a reserve of 25 per cent, half of which might be on deposit with banks in a "central reserve city," New York. Here national banks also had to maintain 25 per cent reserves. The whole ingenious structure was subject to careful examination by Federal officials.

When Appomattox finally stilled the civil strife, the nation confronted financially a strange mixture of ruin and promise. In nearly every bank in the country specie payments had been suspended since December, 1861, a collapse brought about in large measure by the ignorance and obstinacy of Federal officials. Legal tenders of the greenback variety were outstanding to the amount of $433,160,000. The business of the country was done by paper; the price level was stated in terms of paper dollars, badly depreciated in terms of gold. In April, 1865, $100 of greenbacks would have brought $64.73 in gold; in July, 1864, the low point of exchange was $35.09. Gold was still required for foreign balances, for customs duties, and for interest payments
on the public debt. But it had become a commodity traded on an exchange of its own at daily fluctuating prices. The national debt had increased from $64,844,000 in 1860 to $2,755,764,000 in 1866. For the former date the debt per capita was $2.06; for the latter $75.42. To measure the gross debt as a percentage of the national income, only figures for a ten-year rather than for a pre-war or post-war date are available. Between 1859 and 1869 this percentage moved from 1.3 to 37.3. Still the country had a national banking system.

Complicated and burdensome as these various financial problems were, it was the post-war period which made their solution so difficult and explosive. As we have seen, the years between the Civil War and the twentieth century were ones of shattering economic change. Industry became the ruler of the economy and new forms of business concentration ruled industry. Farmers and wage earners, confronted with the necessity of bewildering adaptations, chafed at the most galling of all inferiorities, a failure to share in the new wealth and a loss of power to direct social and economic affairs. Nor was their restlessness eased by general business conditions. Once the flush of post-war prosperity faded, the economy entered a prolonged down-swing, not really dissipated until the late nineties. Within this period two of the four great American depressions, those of 1873 and 1893, fell. The discontented struck back, as we have seen, against the railroads with the Interstate Commerce Commission and against big business with the Sherman Anti-Trust Act. Certainly the money battle was as central to the period as either of these statutes. It was probably more emotional.

The Public Debt

The first post-war task was the public debt—greenbacks, short-term notes of varied descriptions, and the longer term loans. As time went on, a large group, groaning at the immensity of the burden, proposed to discharge it, principle or interest or perhaps both, through the issue of legal tenders. Their proposal, however, is more appropriately considered in connection with the greenback crusade. Needless to say it hardly appealed to those of conservative temperament. The debt must be paid and it must be paid in conventional fashion. To tolerate a national debt was to tolerate a “mortgage upon the property and industry of the people.” At least this was the estimate of Hugh McCulloch, Secretary of the Treasury in this critical period. A national debt was immoral for it encouraged extravagance; it was un-American, for it created a monied aristocracy; it was “anti-republican” for it increased the patronage in the hands of the executive, filled the country “with informers and taxgatherers” and made “rigid national economy almost impracticable.” Such was the McCulloch indictment. It was authentically Jef-
fersonian. So he proposed to refund the short-term notes with long-term securities, refund the long-term securities at lower rates of interest, and pay off the debt with surpluses and sinking funds. The policy prevailed.

As the decades passed, it met with extraordinary success. A flood of revenue enriched the Treasury. As we shall see in a later connection, since no fundamental reduction was made in the tariff structure the customs revenues poured in. On the other hand, though the internal taxes and excises were gradually repealed and lowered—the income tax, for instance, ceased after 1872—the amounts annually collected on liquor and tobacco and other articles remained large. Indeed, returns from internal revenue were as novel in this period as the contemporary decline in the receipts from land sales. However accumulated, a treasury surplus resulted. Bonds were called at their minimum date and additional amounts purchased in the open market at a high premium. Secretaries of the Treasury laughingly surveyed their difficulties; Grover Cleveland puzzled over the evils of a surplus revenue; and politicians with an eye on the voters advocated increased expenditures for pensions and for rivers and harbors. By 1893 the debt had fallen to a low point of $961,432,000.

Thereafter depression years accumulated small deficits, the Spanish-American War brought a token increase in military expenses, and that the nation could shoulder expenditures for the construction of the Panama Canal, in the neighborhood of $400,000,000, was a matter of national gratification. In the first decade of the new century the debt reached a quiet plateau, a little lower in 1915, when Armageddon had engulfed the world, than in 1898 when America finished its “splendid little war” against the Spaniards. At the former date it was $1,191,000,000. The per capita debt was $11.83; expressed as a percent of the national income the figure was 3.7. If the anxious felt a Democratic revision of the tariff would destroy government revenues and make the continuation of “sound” governmental finance impossible, they might take reassurance from the Sixteenth Amendment, just ratified, placing beyond all legal question a federal income tax. For in spite of Civil War experience, the Supreme Court in the nineties had declared such a measure unconstitutional.

**The Rag Baby**

In his policy for funding the Treasury notes issued during the Civil War, Hugh McCulloch had a conservative policy; they were not permanently to form a part of the nation’s money circulation. His attitude toward the legal tenders was equally orthodox. Rejecting the primitive hard-money principles of Jackson and of Benton, he was nonetheless sure that the only sound paper currency was one convertible into coin. “By common consent of the nations, gold and silver are the only true measures of value. They are the necessary
regulators of trade. I have myself no more doubt that these metals were prepared by the Almighty for this very purpose than I have that iron and coal were prepared for the purposes for which they were being used." In short, the greenbacks were to be brought up to a specie standard. In proportions never made quite explicit by those in authority, some were to be withdrawn from circulation and the remainder made redeemable in coin.

Though the policy had wide support, the Civil War debates over the greenbacks gave warning that it would arouse opposition. For in the greenbacks many sensed the possibility of a currency managed not by the bankers but by the national government. Money as the measure of value and exchange was not the creation of God's ordinance but of legislation. This legal currency could be expanded or contracted at will, its amount would be based not upon a relatively inflexible reservoir of precious metals but upon "population," the "business needs" and "activities" of the country. Instead of preventing overissues beyond "a safe and just point" by tethering the paper currency, as bank notes were, to coin and "lawful money" some thinkers proposed the interconvertibility of legal tenders and government bonds.

Variants of the greenback philosophy appealed to certain business interests, notably those in iron and steel, because they promised low interest rates as one encouragement to production, freed manufacturers from the control of bankers, and operated as a sort of protective tariff through the devaluation of the currency. They appealed also to the farmers in the West and South. Immediately after the Civil War prices particularly on the staples declined drastically; within four years wheat halved and within a year cotton more than halved in value. The decline, interrupted by the eighties, was resumed in the early nineties. Meanwhile the agricultural regions were going heavily into debt; individual farmers for land purchases and equipment, and agricultural states, counties, and townships for improvements and for aid to railroads. Debts, wherever or however incurred, grew harder to pay in the midst of tumbling prices. Then the farmer had to raise more wheat, corn, or cotton to discharge his interest or his principal. Financial problems were stated for him not in terms of technicalities but in muscle and sweat. Perhaps greenbacks were the answer. At the same time the industrial transformation fired laborers with a desire to solve the problem of unemployment and to counter the growth of an unfamiliar and distasteful capitalism by the establishment of cooperative buying and producing enterprises. These required money. The workers wished to borrow it easily and cheaply. Again greenbacks were the answer. Whatever the specific reasons, the greenback drive arose from depression experience and its resultant thought. The panic of 1837 had started some of the early money theorizers on their speculations; that of 1857
was still vivid in the minds of some of the eastern advocates of the program; the post-Civil War depression let loose the most enthusiastic greenback movement.

There were many proposals for getting the greenbacks into circulation and thus influencing the course of the American economy. Only a few voices suggested that the government enlarge its expenditures to relieve unemployment, create deficits, and meet these deficits with paper money. Far more general was the idea that this "lawful money," this "people's currency," should be used to handle the immense burden of government debt lowering over the country. Taking their cue from the ambiguities and silences of the various loan and currency measures during the Civil War, these money crusaders proposed to pay the holders of government securities in greenbacks unless the face of the bond stipulated coin. Some thought only the principal could be thus discharged; others added interest to principal; there were distinctions between different loans. All this seemed eminently fair since the bondholders had purchased government securities with depreciated money and the currency good enough for the plow holder ought to be good enough for the bondholder. Such slogans hardly appealed to bondholders. In their eyes greenbacks were a rag baby of censorable parentage. The proposal also afflicted the custodians of the Treasury and the marketers of government bonds. These had promised and advertised payment in coin. To revoke the contract would destroy confidence in the credit of the government, a credit which must be kept unimpaired for future borrowing in future wars, a whole string of which McCulloch foresaw. In 1869, after the triumphal election of Grant, Congress pledged the faith of the United States to the payment in coin or its equivalent of all the obligations of the United States.

The problem of the existing greenbacks remained. In 1866 the Treasury, operating under law, undertook contraction. The Secretary could retire $10,000,000 of these notes within six months and thereafter not more than $4,000,000 a month. After the total had thus been somewhat reduced, Congress in 1868 stopped further withdrawal. In 1875, however, Congress authorized the reduction of legal tender notes to $300,000,000, declared that the remainder would be redeemable in gold after January 1, 1879, and made provision for selling government bonds to secure a fund for this purpose. This reduction to $300,000,000 was not achieved, for an act of 1878 set their amount at $346,681,016. The same act stipulated that when the greenbacks were redeemed, they were not to be cancelled but reissued by the government in the course of its operations. In spite of such vacillations, on the selected day, January 1, 1879, the Treasury had accumulated enough gold to
redeem the greenbacks if they were presented. The reserve and the promise sufficed. The premium on gold disappeared and the dual price quotations with it.

The bare recital of these legislative and administrative measures reflects only palely the contemporary uproar over resumption. A portion of the workers, those organized into the National Labor Union, and many farmers pressed for quite an opposite program. Section was pitted against section, "producers" against bankers, "userers," bondholders, and millionaires. In 1876 those who held extreme convictions on the subject and distrusted the older parties nominated a national ticket for an "Independent Party." The nominee was the aged New York philanthropist and ironmaster, Peter Cooper; the platform demanded the repeal of the specie resumption act, and the ticket secured less than 1 per cent of the total vote in the election. The chief support came from the Middle Western states. Two years later this third-party movement had its day of glory. The National, or Greenback Labor, Party united various discontents. The platform, along with labor legislation and the reservation of public lands for actual settlers, advocated inflation up to some vague limit through legal tender paper and silver coinage. The party received a million votes in the Congressional elections. Thenceforth its importance as a party declined. The finality of resumption pulled the immediate issue from under it. The idea of government loans to producers' cooperatives and to farmers, on the security of their crops and lands, persisted—in the nineties in the guise of proposed legal tender advances, in the twentieth century in more sophisticated and more complicated forms.

**Free Silver**

In the late seventies the inflation movement was given a distinctly new turn. By the coinage acts of 1834 and 1837 the national government, as we have seen, had set the mint ratio for silver and gold at approximately 16 to 1, a ratio which so undervalued silver that it was not generally presented for coinage and the silver dollar passed out of existence. In 1873 Congress in the course of monetary legislation dropped the coinage of the silver dollar almost without comment. But in the next year or two unexpected events changed the world position of silver. Foreign countries limited or abandoned their silver currency. In the American West new mines were opened and poured a flood of silver into the channels of trade. The price of silver naturally fell, and when the mine owners looked to the government as a purchaser they discovered the demonetization of silver. The act of 1873 was converted into the "crime of 1873." An agitation for the recollection of silver sprang up. At first not all the Greenbackers were pleased by the arrival of this newcomer, but by 1878 the inflation twins were living in fair harmony. In that year Con-
gress passed the Bland-Allison Act. It provided for the purchase and coinage by the government of from two million to four million dollars' worth of silver monthly. The alternative to this act in the mind of Bland was "issuing paper money enough to stuff down the bondholders until they are sick." In the administration of the measure the caution of gold bugs prevailed. The Treasury purchased the minimum amount. The silver dollars which were coined usually stayed in the vaults; silver certificates, representing these deposits, were in circulation. Certificates, silver dollars, legal tenders, all were interchangeable on demand into gold.

During the eighties the currency battle was a drawn one. The agitation still continued. In the South and West agricultural organizations, borning, dying, coalescing, finally became "alliances" and advanced varied political programs. That of the Southern Alliance in 1889 reflected well enough the hopes of the debtor farmer. Its financial planks called for the free and unlimited coinage of silver and the substitution of greenbacks for the national bank notes. Its solution for agricultural marketing difficulties was the sub-treasury system. In every county with an annual agricultural production worth $500,000 the United States was to establish warehouses and a subtreasury. To the former the farmer was to bring his grain or cotton for storage; from the latter he was to receive legal tender notes up to 80 per cent of the local current value of his deposited crops and a certificate of deposit. These certificates were to be sold within a year to millers or other consumers for the difference between the going price and the sum the farmer had received from the subtreasury. The purchasers could secure their commodity from the warehouse by paying the sum that the subtreasury had advanced to the farmer plus an annual interest charge of 1 per cent.

From the alliances the tide of agricultural unrest flowed after 1890 into the Independent or Peoples parties which were multiplying in the western states with the fecundity of grasshoppers. Kansas was the center of this social revolt, and its prophetess was Mrs. Mary E. Lease, Kansas lawyer and mother of four children. She was the author of the famous advice to the Kansas farmers "to raise less corn and more hell!" and her verbal visions often included an earthy analysis of the farmer's plight.

Wall Street owns the country. It is no longer a government of the people, by the people, and for the people but a government of Wall Street, by Wall Street, and for Wall Street. . . . We were told two years ago to go to work and raise a big crop and that was all we needed. We went to work and plowed and planted; the rains fell, the sun shone, nature smiled, and we raised the big crop that they told us to; and what came of it? Eight-cent corn, ten-cent oats, two-cent beef, and no price at all for butter and eggs—that's what came of it. . . . The people are at bay, and the blood-hounds of money who have dogged us thus far beware!
Two years later thirteen hundred delegates met at Omaha. They established the Populist party as a national organization and on July 4, 1892, drew up a second “Declaration of Independence.” It thus indicted the state of the nation:

The people are demoralized. The newspapers are largely subsidized or muzzled, public opinion silenced, business prostrated, our homes covered with mortgages, labor impoverished, and the land concentrated in the hands of the capitalists. . . . The toils of the millions are stolen to build up colossal fortunes. From the prolific womb of governmental injustice we breed the two great classes—tramps and millionaires.

The financial measures advanced by the new party were derived from previous performances of the alliances and other groups. They demanded a legal tender currency issued without the intermediation of the national banks through the subtreasury system or a better one; they sought the free and unlimited coinage of silver at the ratio of 16 to 1; they advocated that the circulating medium be increased to not less than fifty dollars per capita. They sought a graduated income tax. After political jockeying, the Populists nominated General James B. Weaver for the Presidency. In spite of his irreverent nickname, “Jumping Jim,” Weaver was a splendid figure. A Civil War veteran, a born orator, he had crusaded as a Greenbacker and as an Independent with courage and with conviction. His book A Call to Action, printed in 1891, is an excellent illustration of the philosophy of the western revolt. Although both the major parties threw sops to the inflation movement in the vague approval of some form of bimetallism, the Populists secured a million votes in the election. They carried five states—Colorado, Idaho, Kansas, Nevada, and North Dakota. They failed in the southern states, the other center of discontent, because their party labored under the charge that in splitting the Democrats it would cause Republican or Negro domination and the return of reconstruction days.

Meanwhile the silver forces had wrung from Congress a partial victory, the Sherman Silver Purchase Act of 1890. The need which explained its passage was not the hardship of debtor farmers and exploited workers but the need of the Republican leadership to secure the passage of a protective tariff by conciliating Senators from the silver producing states. The new statute, superseding the Bland-Allison Act, provided for the purchase of 4,500,000 ounces of silver per month at the market price. Since this amount was practically the total output of the silver mines of the country, the act greatly increased the currency. Other provisions of the act, weasel-worded, apparently intended that the silver Treasury notes might be redeemed in gold. The test whether the nation could remain on the gold standard came two years
later, grew sharper during the panic of 1893, and was not eased until 1896. Since government revenues were inadequate, the Treasury had to meet government bills in part with gold. Since individuals and banks, their confidence in the currency weakened, sought gold or needed it to meet international balances, a situation due in part to the same insecurity, greenbacks and Treasury notes were presented to the Treasury for redemption. In these critical years the gold reserve, which practice had set at $100,000,000, slipped again and again below that figure. To stay the calamity Cleveland in 1893 forced the repeal of the Sherman Silver Purchase Act and later sold four bond issues, with a face value of $262,000,000. Part of the gold to make the subscription to the bonds was withdrawn from the Treasury through the redemption of paper money! The paper money in turn was paid out to meet government expenses. An endless chain was in operation. The spectacle fanned the fury of the silverites and the bargains the administration had to make with the bankers, including Morgan, who took the third loan and imported gold, assumed the air of a conspiracy “to bully the people” into submission.

For the currency question had become a religion. It was preached in every schoolhouse, on street corners, in hired halls, and at farmers’ picnics. That gospel found its bible in Coin’s Financial School by W. H. Harvey. This paper-covered volume, selling for twenty-five cents, was first published in 1894. Its story started on May 7, 1894, when Coin stepped on the platform of the Art Institute of Chicago, “looking the smooth little financier that he is,” to begin his school in which journalists, merchants, bankers, and politicians, or their sons, sought instruction. It ended with a magnificent reception to Coin several days later at the Palmer House. The body of the book was given to Coin’s arguments in favor of bimetallism, his devastating answers to objections from the audience, and to crude pictures illustrating the lecturer’s points. Analogy was a favorite method of Coin’s dialectic. If the government could raise the price of horses by purchases in the open market, couldn’t it also raise the price of silver? The arguments were easily understood, and the whole book had such an air of reality that many must have believed that there really was a Coin, and that he held his famous school.

The election of 1896 presented the issue to the nation for definite settlement. The Republican party under the tutelage of Mark Hanna declared for the gold standard. The Democratic party stole the Populist financial program and won the allegiance of most of its members. The platform of the Democrats focused upon the money issue as paramount and declared for the free and unlimited coinage of silver. William Jennings Bryan swept the convention by his plea for silver coinage and became at once the leader and the nominee of the new Democracy. Rarely in national history has a campaign
been fought with such sectional and class bitterness. The conservative opinion of the East regarded Bryan as a veritable "antichrist." After a summer of intense excitement, McKinley defeated the Bryan crusaders. Vachel Lindsay, years later, sang a fitting requiem:

Boy Bryan's defeat.
Defeat of western silver.
Defeat of the wheat.
Victory of letterfiles
And plutocrats in miles
With dollar signs upon their coats,
Diamond watchchains on their vests
And spats on their feet.
Victory of custodians,
Plymouth Rock,
And all that inbred landlord stock.
Victory of the neat.¹

Although Bryan carried the South and most of the western states, he lost the old Granger center of discontent, the Middle West. This was the greatest reason for his failure. The region had become partly industrialized, and it had developed a more balanced agriculture which did not feel so sharply the depression of the nineties. Its economic interests lay with the East rather than with the frontier and the South. The year 1896 marked thus an end of an epoch. McKinley's election and the shift in the balances of foreign trade seemed to promise the Treasury would ride out the storm. An increased production of gold throughout the world, already under way through new methods of production and refining or through new discoveries, inflated the currency. A series of favorable harvests dulled the edge of western discontent. There was an interim of prosperity. In 1900 the Gold Standard Act declared the gold dollar the basic monetary unit and all other forms of money were to be maintained at a parity with it. To redeem the government's paper money a reserve of $150,000,000 in gold was set aside. It could not be used for ordinary expenses. If redemption drew the reserve below its legal total, the redeemed notes were withheld from circulation. Thus settled, the money question in its cruder aspects disappeared for thirty years.

The National Bank System

During the prolonged struggle about money, the cry was sounded again and again that governmental policy was contracting the currency and that

¹From Vachel Lindsay, "Bryan, Bryan, Bryan," by permission of The Macmillan Company, publishers.
the amount in circulation was inadequate for the nation's business. The proof for this assertion, if one were provided, was the decline in prices and the resulting hardship of certain economic groups. In terms of sheer statistics it was impossible to demonstrate any significant contraction in the currency supply, as a whole or over a long series of years. A particular variety of money, like the greenbacks, might shrink in total value and a few years, like those in the late sixties, might witness an over-all decline in the total money supply—but these were exceptions. After 1869 the money in the country and in circulation increased. Gold coinage and silver coinage alike expanded.

Even more significant was the increase in bank money. Since note circulation was now a prerogative confined to the national banks, these new issues took the place of those put out by the state banks. By 1873 the amount of state and national bank notes in circulation was $338,789,000. A decline then set in. In 1891 the figure was $123,916,000. Be it recalled that government bonds were the platform under such issues. As the Treasury funded issues and purchased bonds in the open market, it shrank the base for note circulation. Superficially, those who complained of contraction had here ammunition for their case. Actually, the constantly growing practice of loaning not notes but a deposit on the bank's books, which the borrower drew upon by check, should, if contemporaries had appreciated the change, have drawn all the fire from the charge. While note circulation declined, deposits in national banks more than doubled and deposits in all banks multiplied nearly three times. Early in the twentieth century amendments to the national bank act and the enlarging government debt made possible, as it turned out, an expansion of the note issue as well. In 1912, on the eve of the Federal Reserve Act, their total was $708,691,000. Meanwhile deposits in all banks had shot ahead. In 1866 they were roughly twice the amount of notes; in 1912 they were 28 times. In the latter year their total was $19,719,188,000.

The figures of deposits also demonstrated the defeat of the creators of the national banking system. They had expected that national banks would form the national system and the state banks would disappear. For a few years after the Civil War these hopes seemed on the point of realization. In 1868, 1,640 out of 1,887 banks were under national charter. Their strategic importance in matters of capital, deposits, and note issues was overwhelming. Then a reversal set in. The comparatively large capitalization of national banks prevented their spread to many small communities; their inability to finance agricultural operations and to loan on land made them useless for many parts of the South and West. To undertake these neglected and other functions, generally under lighter restraints than those on the national banks, the state could still charter institutions which, if they were unable to issue notes, might still collect savings, make loans, and discount paper. Deposit
currency gave them a reprieve. By the eighties the founding of state banks, particularly in the South and West, picked up speed. After 1900 these new state institutions faced a new competitor, the trust companies. State-chartered, such corporations were originally devised to act as "the recipients and trustees of funds in large and small sums, held for account of widows, minors, and others." Gradually, as they loaned the money which was deposited with them, they developed a banking business, extremely profitable since the regulation inflicted upon them was of the slightest. When the state assimilated legislation for trust companies to that of other banks, their multiplication slowed down. Meanwhile in 1900 the national government had come to the aid of its system. Capitalization requirements for national banks in towns of 3000 or less were reduced from $50,000 to $25,000. Though a temporary stay toward state incorporation ensued, the total picture was not greatly altered. In 1912, when the number of national banks was less than half that of state banks and trust companies and they still had a monopoly of note circulation, their loans and discounts were $5,973,754,000 out of $14,626,772,000 and their deposits $8,064,193,000 out of $19,719,288,000. In short, even the halfway steps taken toward a national system of banking were farther from realization at the beginning of World War I than at the end of the Civil War.

If the Independent Treasury sought to redress this situation it had to function in a stilted, indirect, and perhaps even illegal fashion. For as we have seen, this system had been established in the decade of the forties to divorce the national government from the banking business. After the Civil War, the monetary decisions of the national government and the resulting administrative response of the Treasury presented this conception with a genuine dilemma. If the Treasury persisted in aloofness the banking structure might well go under. For be it remembered in order to redeem the greenbacks and to meet the principal and interest on the public debt, the government built up large gold reserves. Importers always had to pay customs duties in gold, and since tariffs were high and expenditures usually less than income, surpluses generally piled up in the government's vaults. In some years the government seemed likely to engulf the gold of the country; at all times there was little correlation between the rhythm and amount of government receipts and expenditures and the business needs of the nation. As gold flowed into the Treasury, bank reserves diminished and bankers perforce curtailed credit and raised interest rates. The government, therefore, attempted to prevent these disadvantageous fluctuations in the money market by putting gold into circulation through the purchase of government bonds. Finally, during the administration of Theodore Roosevelt, the Secretary of the Treasury of the United States shattered the tradition of Jackson and Van Buren by announcing, "The money of the country belongs to the people, and Treas-
ury operations must be made subordinate to the business interests of the country." Defying the intent of the law, he made generous deposits in banks rather than in government vaults.

Since government policy failed to create a national banking system, banking practice introduced a measure of centralization. As we have seen, individual banks low down in the hierarchy could keep a portion of their reserves in banks in central reserve cities. Though in 1887 St. Louis and Chicago also received this designation, the reserves of the nation continued to be concentrated in New York, and, as time went on, in a few banks. By 1910 six great banks had 73 per cent of national bank balances; the National City Bank alone held more than all banks combined in 1875. As before the Civil War, these funds were loaned at call with securities as collateral. In time of crisis, it was thought these loans could be quickly liquidated through sales on the stock market. Actually, at such moments the market often fell too rapidly to meet this benign function and the reserves of national banks were being utilized to finance trading in securities.

Panic after panic demonstrated the unsoundness of these arrangements. For instance, in 1907, when financial terror came although the nation then had the largest supply of gold in the world, the country banks began calling back their reserves from the bankers in the reserve cities; these banks had either to collect their loans on the call money market or sell the collateral; the banks hesitated to elect the latter process, for it caused them terrific losses and drove the security markets even lower; instead they partially suspended specie payments by using clearing house certificates to settle balances between themselves and by rationing cash to their depositors. Although the banking structure was largely saved, the leadership and coöperation which accomplished it were improvised and worked in the face of the anarchistic selfishness of the banks, each of which, chasing liquidity, clung like a leech to its own reserves and was loath to aid other banks lest it be itself destroyed. In fact, the situation was largely saved by the decisiveness, prestige, and power of J. P. Morgan. He took command and decided which banks should be rescued and how it should be done.

The Federal Reserve System

Indeed, the panic of 1907 gave spur to the many movements for banking reform. Currency, it was said, was not flexible in amount. It should not be rigidly based upon the size of the government debt, as in the case of note issues, or upon the amount of gold and silver as were various "certificates" or "notes," but upon the business of the country. The banking system, it was charged, was disjointed; reserves should be massed and marshalled to danger points by a central command and banks should act to save the structure and
not themselves. It was easy enough to diagnose defects. To overcome state particularism, quiet the traditional dread of a banking "monster," assign direction to private or public officials or both, and apply on a large scale in novations in banking method, required statesmanship of a high order. Fortunately, a considerable period of investigation and education preceded the enactment of the Federal Reserve Act in 1913. This prelude should not detract, however, from the ingenuity of its solutions.

First of all its sponsors, partly at Bryan's insistence, rejected a single central bank, although experience in European industrial countries had made such an institution a precedent and the big bankers of the nation urged America to imitate it. But the opposition of Jefferson and Jackson and of the people toward the First and Second Bank of the United States cast a minatory shadow across the minds even of twentieth-century statesmen; the ingrained localism of a nation, continental in extent, was further argument against undue centralization. Instead the nation was divided into twelve federal reserve districts, whose boundaries were required to have "due regard to the convenience and customary course of business." In each district there was to be a Federal Reserve Bank. These were to be government banks in that the Treasury was to deposit federal funds in them, they were to act as fiscal agents of the government, and government officials shared in their management. They were bankers' banks. Their whole capital was to be subscribed by the member banks. All national banks were given the alternative of becoming member banks or surrendering their charters; other banks were invited to join. Each Federal Reserve Bank was governed by a board of nine directors, of whom the central authority at Washington, the Federal Reserve Board, appointed three and designated one to be chairman; the banks elected the remaining six. Lest the large banks dominate, the banks were divided into groups based upon capitalization and each group could elect two directors; a bank, no matter what its size, possessed only one vote. The member banks were required to place their entire reserves in the Federal Reserve Bank of their district. Thus the great New York banks were supplanted as the holders of bankers' balances. To be sure, the district Federal Reserve Banks could still invest the deposits placed with them and thus make money for their stockholders, but all profits above a 6 per cent cumulative dividend went into surplus. Referring to the structure as a whole, the American Bankers' Association declared, "For those who do not believe in socialism it is very hard to accept and ratify this proposed action on the part of the Government."

Their distress mounted when they examined the Federal Reserve Board, the central body which was to give unity, policy, and direction to the whole Federal Reserve System. The contemporary fear of the "interests" and the
"money trust" made the government insist that the final control of the system must rest with government appointees. Wilson quietly asked protesting financiers if they would place appointees of the railroads on the Interstate Commerce Commission. The government won. The board consisted of the Secretary of the Treasury and the Comptroller of the Currency, ex officio, and five others, appointed by the President with the consent of the Senate, the former having a "due regard to a fair representation of the different commercial, industrial, and geographical divisions of the county." To the American Bankers' Association it seemed that bankers' control "was a guarantee against political control and it was equally a guarantee against incompetent management—two important respects wherein the pending system is lacking." In spite of grumbling, the national banks joined the system and when President Wilson pictured membership as a patriotic duty during the World War others trickled in.

To give a centralized control to the banking structure and through it to money and credit, member banks in order to issue bank notes had to secure them from a government official through the channel of the Federal Reserve Banks. This the member banks did by borrowing from their Federal Reserve Banks a sum equal to the full amount of the Federal Reserve notes received and tending as a security for these loans gold, gold certificates, drafts upon other banks, or notes, drafts, and bills of exchange "issued and drawn for agricultural, industrial or commercial purposes, or the proceeds of which have been used, or are to be used for such purposes." Except in the case of agricultural paper, it must have not more than ninety days to run. Through various devices of the act the notes flowed back to the Federal Reserve Banks as the commercial transactions were completed.

A second tie between the member banks and their superiors was forged by the requirement that the former keep against their own deposits a member bank reserve or deposit with the Federal Reserve Bank of their district. Against demand deposits country banks had to keep a reserve of 7 per cent, reserve city banks 10 per cent, and central reserve city banks 13 per cent; against time deposits the reserve in every instance was 3 per cent. These reserves the member banks built up by depositing gold, currency including Federal Reserve notes, checks on other banks including those issued by the Federal Reserve Banks, and notes, drafts, or bills of exchange as defined above and discounted by the Federal Reserve Bank. These reserves were not static; they were constantly fluctuating as they were used in the course of business; they could not fall permanently below the minimum required by law. Since it was clear that the member banks borrowed from the Federal Reserve Banks, the statute limited the capacity of the latter to lend by requiring them to keep against all circulating Federal Reserve notes a gold reserve
of not less than 40 per cent and against all member bank deposits a reserve of 35 per cent in gold or lawful money.

Though there were many subtle fashions in which the Federal Reserve Board and the Federal Reserve Banks might exercise control over currency and credit, the chief weapons at their command were two. One was the discount rate. Under ordinary circumstances, it was thought, they could contract credit by raising the rate at which the Federal Reserve Banks rediscounted the paper presented by member banks or expand credit by lowering the discount rate. In order to reinforce discount policy the Federal Reserve Banks were authorized to buy and sell in the open market certain forms of paper and United States Government securities. The latter proved more important. If a Reserve Bank bought securities, the check would be deposited by their erstwhile owner in a member bank, the member bank would deposit it with the Federal Reserve Bank, where it would be added to the member bank's reserve. With more ample reserves the latter could follow a more liberal lending policy. A sale of government securities by the Reserve Bank would operate in reverse fashion and to the opposite end, a contraction in credit. The implications of this power were hardly appreciated at the moment of its bestowal. But the administration of law is usually more important than its enactment, as experience demonstrates possibilities of action unforeseen by legislators and execution of purposes colors purposes themselves. The Federal Reserve System was no exception.
CHAPTER XV

The Farmer in the Machine Age

PUBLISHED in 1868, Guyot's *Elementary Geography* declared: "Tilling the soil, called farming, or agriculture, is the principal business of the people in nearly all the States." For decades thereafter this observation remained sound. Not until World War I did the labor force in manufacturing finally exceed that in agriculture and not until the census of 1920 did the enumerators discover that slightly more than half the American people lived in urban communities, if those with as little as 2,500 inhabitants could be esteemed such. But this was only one side of the picture. Some time between 1870 and 1880 the number of those engaged in non-farm occupations as a whole passed those employed in agriculture; some time before 1910 the number of people on farms, always fewer than the rural population, was less than the non-farm population. In brief, the agricultural era was ending.

This profound shift in American economic life reduced agriculture, so it was said, to a position of inferiority. The repercussions upon government policy were bound to be far-reaching, for the concern of government with farming had been early, continuous, and extensive. The reasons ran a wide gamut. Food and fiber were essential to life and a healthy agriculture was thus the base of national welfare and strength. Both the isolationist and the Jingo sensed the fact. For centuries, furthermore, agriculture had been esteemed a more virtuous occupation than others. If no Jefferson now arose to rehearse with sophistication that old conception, William Jennings Bryan from the American heartland was there to celebrate with sentimentality "the pioneers who rear their children near to Nature's heart, where they can mingle their voices with the voices of the birds—out there where they have erected schoolhouses for the education of their young, churches where they praise their Creator, and cemeteries where rest the ashes of their dead."

Nor could those who guided the destinies of the Republic or those who passed the laws in its several states afford to turn an entirely deaf ear to agricultural demands. In jurisdiction after jurisdiction historic constitutions or statutory systems of apportionment and representation gave a disproportion-
ate influence to the rural regions and in the United States Senate with its equal delegations from all states agricultural blocs had at least a negative power. In those unofficial bodies which play so great a rôle in democratic government, the interest or pressure groups, the farmers in the years after the Civil War attained new skill and influence. The agricultural societies of an earlier day gave way to the Grange whose influence upon railroad legislation has already been chronicled. As the Grange waned, the Alliance movement of the eighties grew to power, formulated a political and economic program and called upon “producers” to unite at the ballot box to elect governments “that will work in the interests of the many against the exactions of the few.” Then came the Populist uprising of the nineties and Bryan’s defeat. In 1902 from the resulting disintegration there emerged in the Northwest the American Society of Equity and in the Southwest the Farmers’ Educational and Coöperative Union. The latter proved so effective that it largely absorbed Equity and, as the Farmers’ Union, survived to become the most militant of the three great farm organizations after World War I. Toward the very end of the period the Non-Partisan League set the prairies afire in the Dakotas and elsewhere. All these successive incarnations of farmers’ aspirations and needs blended with their political programs one of agricultural self-help. The state was not everything.

**The Land System and Western Settlement**

The historic government policy toward agriculture was, of course, its land system. To make that land system more effective the government had since mid-century embarked upon land grants to railroads. Now the Civil War gave opportunity for a further phase of both programs. In 1862 Congress had, as we have seen, chartered the Union Pacific and showered assistance upon it. In the same year it passed the Homestead Act. Representing the fulfillment of agitation which had sought for years to throw the lands “wide open,” it granted to “any person who is the head of a family, or who has arrived at the age of twenty-one years, and is a citizen of the United States, or who has filed his intention to become such” a quarter-section of the government domain—an area of one hundred and sixty acres. The final possession of this land was not given, however, until the grantee had “resided upon or cultivated the same for a period of five years.” This was the important reservation to government generosity; the only other, the payment of registration fees, required a sum of money which was merely nominal.

Apparently the Homestead Act sought to enforce the traditional purpose of the American land system. It was entitled “An Act to secure Homesteads to actual Settlers on the Public Domain,” and a section of the bill reinforced this title by declaring that the entry of the land must be made by the settler
“for the purpose of actual settlement and cultivation.” But in reality the Homestead Act did not adjourn existing legislation nor effect that wholesale democratization of policy which it expressed. Sales of land continued for years under the preemption and other laws, the huge grants to railroads and to states removed great areas from homesteading, and the last section of the Homestead Act arranged for the commutation of the settlement requirement by permitting the grantee to purchase his quarter-section at the minimum price, generally around $1.25 an acre, after an interval of six months. In spite of the romance of free land, sales, direct or indirect, remained for three decades the important method of disposal. And after 1862 as before, wealthy and skillful landowners dotted great estates across the map of the West. One Irish engrosser owned 250,000 acres in Illinois, Missouri, Kansas.

and Nebraska; a bonanza farm of the Dakotas contained 100,000 acres; and ranch syndicates, often provided with foreign capital, owned millions of acres west of the Mississippi.

The Homestead Act envisaged the average, workable American farm as one of one hundred and sixty acres. Such a calculation was justified by agricultural experience in the humid regions where the old land system had developed and was reasonable enough in the first tier of states west of the Mississippi and a little beyond. Here the technique of farming worked out in the forests and the prairies of the nearer West could still be applied. But when the prairie merged into the Great Plains along a line wavering between the ninety-eighth and one hundred and first meridians, the traditional agricultural technique was shattered. Superficially the new region did not vary from the old, and settlement spread over its eastern edges only to be withered
back time and again by the climate. Its average rainfall ranges from ten to eighteen inches, and these averages do not reflect seasonal variations, which may sink below the minimum. Agriculture of the eastern type could not thrive year in and year out in such a region.

West of the Great Plains the tide of pioneers found mountain ranges whose valleys and whose intermountain plateaus were semi-arid or contained the finally delimited “Great American Desert”—all regions obviously unfitted for the customary agriculture. Then came the Pacific coast states, a patchwork quilt of incredible climates depending upon the altitude and the lay of the land toward the sea. In the north the Willamette valley reproduced, to be sure, a forested land and a setting of weather akin to that which the pioneer had left farther east. But the Puget Sound basin had a forest which was almost unconquerable; the central valleys of California, the Sacramento and the San Joaquin, have an average rainfall of from five to twenty-five inches; the coastal regions of southern California have a temperature suited to exotic agriculture and a rainfall chiefly winter-seasonal. To meet these new conditions agriculture has had to make a readjustment through irrigation, through dry-farming, through new crops. The land laws which underlay agriculture faced a similar necessity. Where irrigation was possible, smaller holdings were often expedient; where irrigation was impossible, dry farming or grazing was an alternative to traditional cultivation. The old unit of one hundred and sixty acres did not conform to any of these situations.

Adaptation on the part of the government land system proceeded tardily. An intelligent policy required an adjustment between specific types of farming and size of holding; such an equilibrium in turn required a knowledge of soil and climate conditions and agricultural possibilities. Pending such omniscience, Congress in 1909 increased the Homestead allotment to three hundred and twenty acres in certain western states, and in 1916 allotted holdings of six hundred and forty acres on “stock-raising” land, a grant still too small for that purpose. Neither of these laws was designed for irrigable land. The government policy toward its desert land represented a characteristic evolution. In 1877, by the Desert Land Act, it sold for $1.25 an acre six hundred and forty acres of desert land to individuals who would irrigate it within three years; when the ambiguous phraseology of this enactment led to both fraud and failure, the Carey Act of 1894 provided for the cession of public lands to the states provided that they undertook their settlement and irrigation; finally the Federal Government by the Reclamation Act of 1902 entered the business of constructing irrigation facilities for the government domain. The government was driven to undertake this national irrigation policy by the demands of the western states, by the large capital resources
required for the projects, and by the picturesque desire to redeem the desert so that the “comfortable homes of happy and contented people [might] spring up where before had reigned the cactus, the rattlesnake, and wild desolation.” In the years that followed government engineers and agricultural scientists solved many of the technical problems of irrigation agriculture, but the settler had continual difficulty in meeting the cost of the land, which he often purchased at exorbitant prices from speculators, and also of the irrigation works, whose cost of construction he was presumed to repay over a period of years.

In spite of deficiencies, the government land policy transferred the usable land in the western regions to private ownership. The public domain shrank, population increased, and the frontiers of the East and of the West filled in and advanced to meet each other across the Great Plains and the Rockies. By 1890 the frontier lines of settlement, two inhabitants per square mile, had consolidated and observers in government service and out were declaring that the frontier was no more. The people who accomplished this miracle of settlement when “free land was receding at railroad speed” were first of all the native Americans lured westward by the prospect of better lands or greater fortunes or pried loose from the East by failure. As they always had, immigrants also joined the mighty throng: Germans, Scandinavians—“What a glorious new Scandinavia might not Minnesota become!” wrote Ferderika Bremer in 1850—and later Finns, Czechs, Japanese, and Mexicans. But in general these agricultural migrations from abroad declined after 1890; the “new immigrants” from southern and eastern Europe found industrial employment. Be that as it may, the West was settled and the era of cheap and abundant farm land came to a close. The effect of this closed frontier upon forms of ownership, methods of production, farm costs, and the price of land was profound.

**American Tenancy**

The comparative disappearance of cheap or free land joined with other factors—farm improvements, better roads and community services, and inflation through gold and later through war financing—to increase land values. Between 1860 and 1900, while the West was settling, the price of agricultural land in the United States as a whole remained practically stationary; but once the frontier was closed a nation-wide tendency toward higher values for farm land set in. Between 1900 and 1910 the average value per acre of farm land approximately doubled: between 1910 and 1920, the figure increased another 77 per cent. In certain western states the gains were phenomenal. Thus in the long run land was no longer a resource to be used lavishly nor could its cheapness serve as the basis of the cheap production of
agricultural products. The farmer's overhead, represented by land values, was a mounting cost of agriculture. As long as land was cheap, the American ideal of individual farms cultivated by their owners had usually been achieved, except in the South. But the change in land values eventually meant a change in landownership. As it turned out, the census for the first time devoted itself in 1880 to the forms of land ownership. Its disclosures were startling. One-quarter of the farms of the country were cultivated by tenants who did not own the land. By 1900 that percentage was 35.3. Then, as the rate of change slowed, the figure mounted to 38.1 in 1920.

A discussion of the causes of tenancy must avoid the national numerical averages which iron out sectional differences. The greatest relative increases in tenancy were in the regions just passing from the pioneer stage—for instance, between 1910 and 1920, in the Mountain states and the Great Plains area; the regions of smallest increases and even of decreases were New England, the Middle Atlantic states, scattered states in the Middle West, and the Pacific coast. In general, these states lay in regions of diversified or intensive agricultural production—dairying, truck gardening, fruit farms. But these regions were not the geographical center of American agriculture, nor were their crops those which gave the United States a leading position among the agricultural nations of the world. In 1920 tenants operated over 40 per cent of the farms in Illinois, Iowa, Nebraska, and Kansas; and every census after 1900 had increased the percentage of tenancy in these states and their neighbors, Minnesota and the Dakotas. This was the corn and wheat belt of the nation. In eight of the southern states, from Texas to South Carolina, tenants cultivated a majority of the farms. This was the cotton belt of the nation. In short, tenancy flourished where the great staples were produced.

Tenancy in the cotton kingdom had unique importance. For in the South were concentrated in 1920 three-fifths of the tenants of the nation. Although in the southwestern states like Oklahoma and Texas white tenants predominated and tenancy was due to the break-up of the large cattle ranches, the causes for the appearance of tenancy in the South originally derived from Negro slavery and the plantation system of production. At the close of the Civil War the planter class anticipated the continuance of the plantation as the means of production. There was economic justification for this view, for the agricultural skill of the South was monopolized by the planter, the system of marketing the cotton had been based upon the relationship of factor and planter, and finally the land was owned by the planter. The Negro was the labor force. For years the South struggled to substitute some other relationship than slavery between this labor on the one hand and the capital and managerial ability on the other. The obvious recourse was the wage sys-
tem, and to it most Southerners turned in the few years immediately following the Civil War.

The wage contract, however, speedily collapsed. In some cases the white landowner lacked the funds necessary to pay wages, and in others, where yearly contracts were made, he discovered that the price at which cotton sold had been inadequate to discharge his obligations to his help. Then there was the Negro. Endowed with freedom, he wished to demonstrate its reality to himself and to the onlooker by conspicuous leisure. This irresponsibility of the Negro was increased by the common hallucination that the government was to give each a piece of land and a mule, by the occasional meddlesomeness of northern agencies, such as the Freedman’s Bureau, and by the competition between Southerners and between southern regions for Negro labor. All the remedies advocated or adopted failed. The penal codes or “Black Laws” which were passed to discourage vagrancy and idleness aroused sufficient northern hostility to be forbidden by the Fourteenth Amendment, and coöperative efforts on the part of planter-employers to keep wages at a fixed level and to prevent competition in the employment of one another’s Negroes were not effective. The wage system had generally to be abandoned.

When the wage system failed, the landowner resorted to some form of payment of wages in kind or, reversing rôles, the tenant paid rent in the same fashion. The Negro was given a share in the crop, but he still worked in gangs and under close supervision. Since this system hampered his independence and was a reflection upon his free station, he sought to escape from it. A Georgia planter thus described the process:

The negro became less willing to work in large bodies on the large plantations, they became harder to manage and many negroes began to desire to get off by themselves and run one or two horse farms. The large landowners, finding they could no longer get the negro low or cheap enough to allow a wide margin of profit, began to place their tenant houses all over their farms and rent to their tenants.

Various forms of contract emerged. If the landlord provided land, quarters, seed, fertilizer, tools, work animals, livestock, the worker shared the crop to which he had no title, on a half and half basis. He was a “cropper,” and the Supreme Court of Georgia declared in 1882 that his case “is rather a mode of paying wages than a tenancy. . . . Under this disguise the plantation has been perpetuated.” If the worker owned mules and implements, he might be a share tenant paying for the rent of the land one-third of the corn and one-fourth of the cotton, or he might be a “standing renter” paying a fixed amount of cotton, no matter how much was produced. Standing rent approximated cash renting, which was generally of minor importance in the
South. These arrangements, however, made no provision for furnishing the supplies which the cultivator required until the crop was harvested. The landlord might purchase these from the merchant and transfer them to his tenants, or the tenant might deal directly with the merchant. In the sixties and seventies southern states passed laws authorizing the owner or tenant to give a lien on his crops to the merchant. Because of risk, the merchant would charge high rates for his advances and also exercise a rigid supervision over the workers whose liens he held. These arrangements allowed industrious Negroes, if they were lucky in their merchants and landlords, to become independent landowners. At the other extreme the Negro, continually in debt, was reduced to a stage of peonage not distinguishable from slavery. Behind the façade of tenancy, the plantation system continued in the South.

Even in a system so subtle and formalized there were constant changes. Negro farmers bought land; white farmers, particularly in the fifteen years after the Civil War, split up the great plantations through their purchases. But the merchant, lawyer, doctor and corporation also bought farms and with the aid of tenants carried on the landlord or the master tradition. The tenants, in spite of pre-war theories denying that any one but a Negro could do the work, were increasingly white. In 1920 the latter constituted 61 per cent of all southern tenants, excluding croppers; with croppers about 56 per cent. The effects of tenancy in the South, like its causes, were in part special to that region. It dictated the continuance of the one-crop régime—cotton. The merchant or landowner sought its cultivation. Since cotton always had a market, he was sure of some return from his tenant or debtor. The merchant desired the single crop because it kept the tenant more dependent upon the store for goods than general farming. The influence of tenancy upon agricultural methods varied. Cash renting, however commendable as an evidence of ambition, often led to more slovenly work and less productive use of the soil. Cropper and share contracts, involving a close supervision and the exaction of standards, were more successful in directing the agricultural activities of an untrained labor force. But this labor force, particularly when it was black, remained dependent in an extraordinary degree upon landlord, merchant, and banker. Class lines were drawn more sharply in the South than in any other agricultural region.

The growth of tenancy in the wheat and corn belt of the North was due to quite different factors. It had appeared, as we have seen, even before the Civil War. After that date the disappearance of the public domain, the engrossment of large land holdings, the increase in the price of land, the use of machinery, the commercialization of agriculture—all accounted for it. The amount of capital required to undertake farm operations increased and
tenancy was the solution for those who could not collect the necessary resources. Nor did northern resemble southern tenancy. Cash and share renting—not the cropper system—prevailed, northern farms were larger than southern ones, and many tenants had more resources than independent owner-operators. Landlords were often speculators and absentee owners; they were often neighbors and even members of the family who set their relatives or children up in farming as tenants, or, retiring to the village, turned over the old homestead for cultivation to their descendants on this basis. Tenancy might be a form of agricultural mobility. It was a way for the aggressive, able, and lucky to get a start toward independent farm ownership; it was also a way of descent from farm ownership for the incompetent and the unfortunate. For many tenancy was also a fixed status.

Though some informed contemporaries regarded tenancy with optimism, it certainly challenged ingrained American dogmas. As Theodore Roosevelt declared in 1907,

Nothing is more important to this country than the perpetuation of our system of medium-sized farms worked by their owners. We do not want to see our farmers sink to the condition of the peasants in the old world, barely able to live on their small holdings, nor do we want to see their places taken by wealthy men owning enormous estates which they work purely by tenants and hired servants.

Statistically equipped investigators were at hand to demonstrate that this American ideal was not mere sentimentality. In the South tenants were apt to move every season; in the North they rarely rented the same property for ten years. They took no root in the social institutions of their neighborhoods. On the farms tenants made few improvements, since owners rarely paid compensation, and they allowed buildings and the soil itself to deteriorate. Erosion was more prevalent on tenant farms than on owner-operated farms. Although a national resource might suffer, tenants could escape the consequences by moving on.

The agricultural wage earner completed the agricultural labor force. From available enumerations taken at different seasons of the year and defining "laborers" differently, it is impossible to say whether their number increased or decreased over the decades. The number in 1920, 2,883,000, was about what it had been ten years earlier; the former figure was 25 per cent of the total employed on farms. These agricultural wage earners fell into many categories. At one extreme was the "hired man" of fiction and poetry who lived the year around on the farm and married the farmer's daughter. Socially accepted, independent in attitude, many-skilled, he was an American type who bewildered Europeans and even Southerners. But in 1916 a Harvard
economist was writing, "probably nothing like him ever existed before and may never exist again."

Of increasing importance were the farm laborers who found employment in the big ranches and the bonanza wheat farms of the trans-Mississippi West or the migrant and casual laborers required as additional workers during the critical harvesting period for many crops. Some were old crops like wheat—"hoboes" to the number of 20,000 invaded Kansas for the harvest of 1920—or old callings like sheep shearing. Others were the new crops which refrigeration, canning, and new dietary tastes now placed upon a specialized and intensive production basis. In the East the vegetable, berry, and fruit crops recruited armies of Negroes and urban dwellers, including women and children. The foreigner also played a great part. In the Far West orchards, vineyards, hops, berries, and sugar beets required additional labor. In the nineteenth century gangs of Chinese and later of Japanese, operating under "bosses," hired out for these tasks. Even when others joined them, they were males, foot-loose or single. The family labor system waited generally until World War I. For such as these wages were lower than in industrial employment. The rootlessness and hardships of their lives and the lack of promise, for here was no prelude to ownership, gave additional disadvantages. Not by accident did the Industrial Workers of the World in the twentieth century find recruits among the agricultural workers of the West.

The Westward Movement of Cattle and Sheep

The disappearance of the frontier affected agricultural migrations, the price of land, the increase of tenancy. It also shaped the history of the American staples. The areas of their production moved west with the course of settlement and, when the free land was gone, tended to a more stable localization.

In the sequence of frontier types the livestock grazier has been the out-rider of the agricultural advance. Following the hunter and the trapper and preceding the plowman, he has sought always the open range. The area of this promised land had usually been a constricted one. But suddenly after the Civil War it expanded across the western half of the continent and included at its greatest extent in 1885 over 1,355,000 square miles, an area equal to that of western Europe and a part of European Russia. In this vast domain the great herds of buffalo were on the point of extinction, while their food supply, the grasses of the prairies and of the plains, was still unimpaired as a food resource. The disappearance of the buffalo facilitated the herding of the Indians upon reservations. Finally, the construction of the transcontinental railroads provided an outlet for the herds of cattle, which could be pastured on the wild grasses and shipped to the consuming centers of the
nation. At the same time the growth of modern packing and the use of refrigerator cars expanded the market for dressed beef. The result was the cattle country, which left a heritage to the American people, popularized in the "western" of the movies but chronicled more accurately in the literature of Owen Wister and Will James and the folk songs of the cowboy.

The source of the cattle industry was Texas. That state’s mild climate made it an admirable breeding district, the range produced luscious grasses, and the Spanish land system with its large grants made possible the keeping of great herds. Even before the Civil War cattle were driven north from Texas to Illinois to be fattened. After that conflict Texas cattlemen began driving their herds northward, avoiding the settled regions on the east, to the widespread tentacles of the oncoming railroads. This contact generated the cow towns, Marshall, Dodge City, Abilene, Ogallala, where buyers, ranchers, cowboys did business and celebrated their transactions with amusements, reminiscent of the mining camps or the railroad construction town. Meanwhile came a discovery that cattle could not only live through the winters on the northern plains, but emerge fattened and ready for the butcher’s block. The cattle could get at the forage where high winds blew the snow from the tops of the knolls; the little valleys furnished protection; early in spring, nutritious grasses burst from the south slopes. A northern area extending as far as the Canadian Northwest was added to the cattle kingdom.

These two regions were linked together by “the long drive.” It started in Texas after the round-up, when the calves were branded and the selected cattle were cut out for their journey. Cowboys now pushed the cattle north, with an eye out for marauders and stampedes, until they came to the cow towns. Here some of the cattle might be sold for immediate shipment. Most of them, however, were marched onward to the northern ranches, which in some cases were the property of the Texas ranch owners. In the late seventies and early eighties these operations assumed the guise of big business. There were great cattle corporations which adopted seductive titles—the American Pastoral, the Western Ranches, the Matador Land and Cattle Company—issued securities to the tune of nearly $22,500,000, and sold a good share of them to foreign investors. For a time such concerns made high profits; but in the late eighties they began passing dividends, and today only a few remain.

The passing of the range industry was due to as many factors as its creation. One was the cheapening price of fencing wire. Ranchers anxious to save hiring help began to enclose large areas of the public domain. These fences running for miles cut across the drives and compelled expensive detours. Of course they were illegal, for no law allowed such large-scale appropriation of government land, but they were maintained by shotgun diplo-
macy. Finally came the farmer. He was the mortal enemy of the cattle man, for his enclosures were legal; and as a homesteader he had the support of the government. Other causes of the cow country's decline were the quarantines which the northern states placed upon Texas cattle, prohibitions dictated alike by a desire to prevent the spread of cattle diseases and by a desire to prevent Texas competition with their own cattle producers. Behind all these factors was that of overproduction. In spite of a voracious demand, the price of beef cattle declined with the multiplication of the western herds. Finally, the prairie and the plains were so overstocked that their native forage was no longer adequate for the support of the animals.

After 1890 the cattle industry was built upon new bases. One of these was the remainder of the open range. The Far West had millions of acres which, if properly managed, would have been a permanent endowment for a cattle industry. The cattle bred and grown on these acres were fattened along with native-bred cattle in the corn belt which lay between the Far West and the markets. In the nineties Iowa, for instance, began the extensive fattening of cattle bought outside the state. In the country as a whole the number of cattle increased more rapidly than the population until 1900; since then there has been a relative decline. Meanwhile the center of beef cattle production moved steadily westward. In 1850 it was Lexington, Kentucky; in 1920 it was near Ellsworth, Kansas.

Although the Civil War temporarily halted the decline of eastern sheep growing, wool production definitely moved westward after 1870 and after a short passage through the prairie states reached its final habitat, the Far West. There were two sheep frontiers. Descendants of the old Spanish herds moved northward from New Mexico to California, from California to Oregon, and then from the coast eastward into the Rocky Mountain region. During this migration they were continually improved by breeding with merinos. Meanwhile sheep had been driven from the eastern portion of the United States. Continually crowded out by farmers who turned to cereals and other products as more profitable, sheep husbandry concentrated increasingly in the Rocky Mountain region from Montana to New Mexico. Yet even in this last refuge homesteading in the twentieth century led to a decline in the flocks. In 1920 Texas, once famous for longhorns, had more sheep than any other state. Whatever the dislocations, American sheep herders were apparently able to produce in competition with wools from the newer centers of the world—Australia, New Zealand, South America. In the American West were huge areas of government land and sheep were such close croppers that they could find a living on grazing land which would not support other animals. The flocks were moved about from district to district to take advantage of the different rainfalls and altitudes. Yet even
in the West there was a swing away from the production of wool. The improvement in means of transportation has made it possible for this area to market mutton, and the sheep growers of the West in the twentieth century were duplicating the experience of the eastern sheep growers after 1880; they were shifting their attention from clip to meat, or seeking a dual-purpose animal through a new breed. In the eastern part of the country, with the exception of a small area in the Ohio valley, sheep husbandry had completed this transformation.
THE FARMER IN THE MACHINE AGE

THE CEREALS MOVE WEST

After the herdsman came the American farmer. In his advance into the trans-Mississippi West he followed the pioneer tradition of at once sowing wheat. It was the American cash crop. In 1859 the chief center of production was the old Northwest, and Illinois was the leading state. Thirty years later the supremacy of the trans-Mississippi region was unquestioned, for Minnesota and California led the whole parade. By 1919, although the Middle West was still an important producer, the prairie states were the wheat empire. Kansas, wheat king, grew twice as much wheat as Illinois, second in production.

Such arithmetical generalizations, however, conceal the infinite variations of climate, soil, and history which made this wheat migration possible. Before 1860 the American wheat farmer specialized almost exclusively in the soft winter wheats. When the early settlers in Wisconsin and Minnesota attempted to utilize these varieties they found they winter-killed with discouraging frequency. The alternative was spring wheat, occasionally cultivated but generally despised. Its yield was smaller than that of winter wheat and, maturing late, it was more liable to rust and other devastating diseases. But the conquest of this region was possible after 1860, for then hard red spring wheat at last reached this country after a long journey from Galicia in Poland via Scotland and Canada. At the end of the century the introduction of durum wheat extended the wheat area into the dryer areas of the Dakotas. In the corn and winter wheat belt which sprawls from Pennsylvania to Kansas there was a similar adjustment as wheat spread westward. By the end of the seventies, however, the hard red winter wheats from southeastern Europe, whose varied names revealed their origins, demonstrated an ability to withstand winter-killing and drought at the western edge of the area. Their high gluten content made admirable flour. Eventually this “Turkey Red” and its improvements made Kansas the greatest wheat state of the nation. Here were a cool growing season, a hot harvesting one, a fertile soil, and a state where corn could be rotated to perfection with the smaller grain.

California was the first important wheat state in the Far West. For two decades, 1870–90, bonanza farming in the central valley made it a great wheat area. Then the larger profits promised by fruit and truck growing put an end to the interlude and brought the Pacific Northwest into prominence. In the interior Columbia basin after 1890 came the last wheat frontier. Here was a lava soil of incredible depth and richness, spring rainfall which made for rapid growth, and a summer so dry that the ripened wheat could stand for weeks in the stalk and be harvested by the most efficient machinery without an intervening drying in the shock or barn. The heaviest wheat yields
per acre in 1920 in the chief wheat states were made by Washington, Oregon, and Idaho. Richly endowed as these districts were, the constant growing of wheat had exhausted the soil and led to a demand for more varied farming.

Unlike wheat, corn was a peculiarly American crop. Its acreage surpassed that of any other crop. Since it is grown nearly everywhere, corn production has never exhibited the intense regionalization of wheat. Nevertheless the conditions which favor its growth have produced a specialization. It requires a long growing season with hot days and hot nights and rainfall particularly in the month of July. These conditions were not found north of the line of 66° mean summer temperature nor in an area of less than eight inches mean summer rainfall. Corn requires a fertile soil which is easily cultivated, for the plant is so dependent upon human care that the weeds must be kept down by frequent attacks. Before 1859 within this area the center of corn production had moved northward, and in that year the three leading states were Illinois, Ohio, and Missouri. Although Illinois continued to be one of the great producers until 1919, the center of corn production moved westward, and Iowa became the supreme corn state of the nation. Although corn was grown in the winter wheat area and was the exclusive cereal of the cotton kingdom, there was a definitely delimited corn belt which began in central Ohio and extended into Kansas, after engulfing the whole of Iowa. So fat was the land that the region rejoiced in the title of the most productive food-growing area in the world.

Since there were few exports, the uses of this grain were also American. Only 10 per cent of the crop fed human beings directly. Rather it was the staff of life for livestock. It was estimated in 1921 that nearly 75 per cent of the crop was fed on farms to work animals, hogs, and cattle. The centers of hog production and of cattle fattening were, therefore, intimately related to the centers of corn production. There were in 1920 as many beef cattle in the corn belt as there were on the Great Plains and three-fifths of the commercial hog crop was produced in the same region. Indiana, the leading hog producing state at the outbreak of the Civil War, had been displaced by the inevitable Iowa.

**The New and Old South**

Corn and hogs were also southern products. But they were not characteristic staples like tobacco, rice, sugar, and cotton. The first of these, tobacco, in 1860 was predominantly a Border state industry; in 1920 it still remained so. From 1870 until after World War I Kentucky was the chief producer; before that Virginia had been. One variety, Burley tobacco, discovered in 1864, was manufactured into chewing tobacco; it required rich soils and heavy
feeling. Its rival, the Bright flue-cured tobacco, was utilized in the manufac-
ture of cigarettes, which in the twentieth century were first emancipated
from the taint of effeminacy and then adopted by the new women smokers.
The growth of this yellow leaf on poorer soils created a new tobacco area in
southern Virginia and northern North Carolina. As for rice, the influence
of the Civil War was unmistakable. Actual devastation came to many planta-
tions on the Atlantic seaboard, disuse ruined others, and the aftermath of
war, with impoverished planters and chaotic labor systems, prevented any
rebuilding. When important rice production did recur in the 1880's, it was
on the Gulf coast of southwestern Louisiana and southeastern Texas. Here
were rich prairies traversed by sluggish streams which could be used for the
essential irrigation. Wheat farmers from the Northwest introduced the large-
scale mechanization to which they were accustomed. In the decade 1909-19
similar conditions in eastern Arkansas produced a rice industry, and one of
the marked successes of irrigation was the increase of rice production in the
Sacramento valley of California. Such a migration set in startling contrast
the extinction of the original rice centers, the Carolinas and Georgia.

The American cane sugar industry was necessarily confined to the rich
bottom lands of the Mississippi River in southern Louisiana. The ruin ef-
fected by the Civil War could not, therefore, compel a migration of the crop
to new regions of production within the United States. The greatest handi-
cap inflicted by the war was the abolition of slavery, for the cultivation of
sugar was a capitalistic enterprise requiring the gang labor of a large number
of workers. It was not until the nineties that the industry reached the pro-
duction levels of pre-Civil War days. After that it exhibited the most asto-
nishing variations. The Louisiana crops, grown only because of tariff
protection, satisfied but an infinitesimal portion of the domestic demand.
Meanwhile in the nineties the production of beet sugar had been undertaken
largely as the result of a propaganda campaign conducted by the Department
of Agriculture. After fifteen years of zealous effort, it surpassed cane sugar
production; thereafter its lead was unchallenged. Although there were plenty
of lands and climates suitable for its growth in this country, it was localized
beyond the northeastern edge of the corn belt, particularly in Michigan, and
in Colorado, California, and Utah, where the beets were grown under the
ideal conditions of cool days with abundant sunshine and water supplied
by irrigation at the right periods. A California authority declared, "The grow-
ing of beets is not agriculture, but horticulture." The process from growing
seed to topping the beets was strewn with fussy tasks requiring monoto-
nous and careful hand labor. The beet sugar industry was the indigo indus-
try of the twentieth century. It could be maintained only by tariff protection.

It is a relief to turn from such an exotic crop to one which flourished natu-
rally in the United States—cotton. After the Civil War the South returned inevitably to its cultivation. There was a demand for the staple, and southern development had trained both white and colored labor in its cultivation. Not until 1876 did the production equal that before the Civil War. After that date cotton production increased rather steadily until in 1914 it was three times that of 1876. This increase was accomplished in two ways. The first was the spread into new western areas, for Texas, particularly, was fitted for the crop. Her black waxy prairie was probably equaled in richness only by some of the bottom lands of the Mississippi River; she started under less of a handicap, since her area was comparatively untouched by the Civil War; her labor force was more efficient, since it was dominantly white and not composed of ex-slaves with a rudimentary preparation for self-reliant agricultural operations. The prairies and then the plains were most fitted for mechanized production. In 1920 one half the cotton crop was grown west of the Mississippi River. One unexpected blessing of this dominant area was its dryness. The boll weevil did not thrive there as in the humid regions of the East. This well-known pest invaded the United States from Mexico in 1892 and thirty years later was causing annual losses of $300,000,000. Weevil damage did a great deal to slow the revival of cotton culture in the old South, a region unexpectedly brought back into major production after the Civil War. The chief explanation for this recovery was the discovery that with fertilizers cotton could be grown on the exhausted lands of the eastern states and even in soils whose composition had been deemed unfavorable. For fertilizers the eastern states had not only the cotton seed but also available deposits of marl and phosphates. In addition, large use was made of commercial fertilizer.

The Milk Can Nucleus

A cow or two kept for milk and butter was as general in pioneer American farming as were the few hogs that accompanied the wheat or cotton grower in his westward migration. Specialized milk production and butter making appeared when the industrialization of the East created an urban market, and when improved transportation enabled the adjacent areas to ship perishable products. In 1860, therefore, the dairy industry of the country was primarily eastern; but the westward movement of dairy products had already begun. New Englanders, moving into northeastern Ohio, carried their agricultural traditions with them, found the climate unsuited for staple crops and the land adapted for grazing, and by 1860 had converted the Western Reserve into "Cheesedom." After the Civil War the dairy industry marched on to transform eventually even the agriculture of Minnesota and the eastern portion of the Dakotas. It moved into a belt where corn and winter and spring wheat encountered the hazards of weather or pests,
or where after a brief interlude of pioneer farming the settler turned to some agricultural adjustment which would enable him to compete with the areas farther west or south. The urbanization of the old Middle West provided the markets for this development. The adjustment, nevertheless, was not easy. The shift to dairying required a considerable investment of capital for the herds and greater agricultural skill. Besides it was more confining to the farmer.

That here was a more permanent form of agriculture was shown by the
THE FARMER IN THE MACHINE AGE

Census figures of 1920. New York, the leading milk-cow state in 1860, was still second, and Ohio was sixth; Wisconsin was, however, the first. The transformation in that state followed the startling decline of wheat growing; by 1890 it was practically completed. The leaders in the movement were Easterners, New Yorkers who had been bred in the dairy tradition and carried west a knowledge of its methods and worth. One was W. D. Hoard, later governor but first editor of Hoard’s Dairyman, and evangels of the new dispensation, an experimenter, and an inspirer of experiments. The Wisconsin Dairymen’s Association, founded in 1872, secured new markets for cheese; short courses at the agricultural college in the University of Wisconsin turned out trained diarymen and cheesemakers; and professors of that institution made invaluable contributions to the industry. The “tester,” invented by Professor S. M. Babcock and given by him to the industry, devised exact measurements for the butter-fat content in milk and thus simplified the factory production of butter and gave a norm for breeding. Finally, the foreign element in Wisconsin—Germans, Bohemians, Scandinavians—bred in a more careful agricultural technique, were willing to undertake the agricultural transformation of the state.

Roughly, the dairy industry was located in what the regionalists called the hay and pasture region of the United States. Where the terrain was too rough for tillage or the soil unfavorable, permanent pastures were fenced in for grazing. The other land was used to grow crops necessary to supplement the pasture or to feed the animals during the season when it was not available. Hay production continued to be improved by the introduction of new cultivated grasses, of which the most important was alfalfa. Although an unsurpassed feeding crop, it was originally confined to regions that had the necessary dry season for curing and winters that the roots could survive. Later breeding improvement created a crop more difficult to winter-kill, and artificial dryers met the problem of weather. The dairy belt raised corn, an essential in cattle feeding. The effectiveness of this cereal was greatly extended by the importation in the seventies of silage practices from France and Germany. In the silo, fermentation generates certain acids which prevent decay and make the shredded stalks and leaves tender and succulent. Finally, the dairy industry has been profoundly affected by the centrifugal separator, introduced from Sweden in 1882.

Machine Agriculture

Before the Civil War American farmers had been driven to the extensive employment of machinery in a desire to avoid the high labor costs which were characteristic of our new agriculture. The same tendency continued in the modern period and for the same reason. Indeed that reason was inten-
sified in the twentieth century, when industry became more efficient and the
rewards which it offered either in wages or salaries or in social conditions
were more enticing than the prospect of becoming an independent farmer.
Invention was spurred to meet the emergency.

In the harvesting of small grain the reaper was at last brought to perfe-
tion. McCormick and Hussey, as we have seen, had constructed successful
machines before 1860, but their earlier models did not complete the process.
The grain after it was cut lay on the table behind the cutting edge until it was
raked off by a man who walked beside the machine or rode upon it. Numer-
ous inventors, challenged by this deficiency, perfected self-raking machines
of considerable ingenuity or constructed frameworks enabling workers
mounted on the machine to bind the grain by hand. Others had turned their
attention to the possibility of a mechanical binder using straw, wire, or
twine. The first two materials proved unsatisfactory, but in 1878–79 John F.
Appleby patented the first successful twine binder—a combination, needless
to say, of his own originality and the ideas of predecessors. Soon after the
chief features of the modern harvester emerged. In the Far West, where the
ground was hard, the dryness cured the grain in the stand and the stalk grew
short, a header decapitated the wheat, and later united with the mechanical
thresher to perform every operation from cutting the grain to bagging the
kernels. In the earlier days these huge combines took on gigantic proportions.
A gasoline engine ran the threshing machine, thirty horses pulled the appa-
ratus through the fields. Moving slowly over the sun-baked, heat-quivering
prairies, devouring the grain as they went, they were the acme of agricultural
mechanization.

The invention of the mowing machine for hay was intimately associated
with that of the reaper. For a time inventors sought to devise a machine
which would perform both operations. By 1860, however, it had become a
distinct and practical machine, the first of a mechanical plant which later
included hayrakes, tedders, stackers, loaders. The great American crop, corn,
was less quickly subdued to the reign of the machine. Perhaps the necessity
was less urgent. The corn crop did not need to be harvested in a limited
period; at first the stalks were not cut down but were consumed in the fields
by the livestock, the ears could be husked at leisure, and the kernels could be
eaten off the ears without shelling. The invention of the silo and the increas-
ing sale of corn added to the high cost of labor to encourage inventions.
Most of the successful machines came in the later part of the nineteenth
century. By then corn planters had been devised which overcame the unique
difficulty of planting corn in hills rather than in drills, corn harvesters were
built which cut the corn in the field and bound it in a shock, corn huskers
and shredders performed for maize what the threshing process did for wheat.
The effects of machinery upon agricultural production varied from region to region. In 1920 machinery was most concentrated in the spring and winter wheat regions and in the corn belt. In South Dakota, for instance, the value of implements and machinery on each farm averaged $1,500. On the other hand, the mechanization of agriculture had not affected the harvesting of fruits or vegetables; its greatest failure in a staple production was cotton. In 1920 the value of farm machinery on the farms of the cotton belt averaged $215. Negro labor was unskilled in the use of machines, the small holdings retarded mechanization, low wages provided no stimulus for a substitute for hand labor, and finally there was the nature of the cotton plant. Its bolls came to maturity at different times and so a field must be picked over several times and with discretion. But, the country through, agricultural machinery explained in part the fact that the agricultural output of the nation mounted steadily while the number of people engaged in agriculture increased slowly or occasionally even declined. Between 1870 and 1920, in ten principal crops the product per unit of man power approximately doubled. In view of such calculations, the slow increase in agricultural population took on a different light. On the farm the machine has taken the place of the man.

In two ways the application of machinery to agriculture increased the funds necessary for farming. In a direct fashion it meant the purchase of an equipment more elaborate and more expensive than hoes, scythes, and sickles. In 1920 there were six agricultural states in which the value of farm implements and machinery per farm was over $1,000. In an indirect fashion it enlarged the initial expense of farming, by increasing the size of the average farm to a unit which could advantageously employ machinery. The data on this subject are most contradictorily, but in the north central states, the machine region par excellence, the size of the farm increased from 123.7 acres in 1880 to 171.4 in 1920. Nevertheless, machinery formed a very small part of the capital investment in agriculture. The high value of agricultural land was far more important in determining tenancy.

The effect of the machine upon agriculture was more than statistical, it was freighted with intangibles which could be described but not enumerated. It had immensely lightened the burden of farm labor. The cultivator succeeded the hoe, the plowman rode the sulky or tractor rather than walked the awkward furrows, aggregates of gears, belts, wheels and cogs took the place of tired muscles and sweating bodies. In an age when the machine became a god, its tender or owner assumed aspects of divinity. The American might pity or despise the "man with the hoe"—he admired the owner of a reaper. The machine contributed prestige to farming.

But the influence of machinery extended beyond the farm's edge. This is not the place to discuss the larger aspects of the influence of the industrial
state upon the farmer, but it may be pointed out that specific inventions have
directly influenced the history of crops and farm production. The refrigerator
car influenced livestock raising as much as the prairies; machinery for pro-
ducing cottonseed oil and corn syrup gave a new use for agricultural prod-
ucts; the manufacture of flour through successive grindings and the substitu-
tion of rollers for stones, processes both imported from Europe, enabled
mills to handle hard wheat; the factory production of cheese, butter, and
condensed milk and factory canning ranked with the growth of scientific
agriculture in their influence upon dairying and truck farming.

THE STRUCTURE OF AGRICULTURAL RESEARCH

Improved farming methods had been adopted before 1860, but they were
far from universal. In part this was due to the speculative and tentative char-
acter of this new agricultural science. In many instances it was little better
than granny's lore. The New York State Agricultural Society was perfectly
willing to publish in 1843 a prize easy on injurious insects which recom-
mended treating the grain fly with "all pungent odors . . . that most off-
fensive of all odors, the one proceeding from the skunk, has been tested and
highly recommended as a preventive." Even when more thoughtful agricul-
tural recommendations were made, the conditions of American agriculture,
with an abundance of free land, worked against the adoption of improved
methods. These two barriers, however, were naturally overcome as the public
domain was whittled away and as the body of exact agricultural knowledge
was coincidentally increased. In the latter process, 1862 was an annus mira-
bilis. In that year the Department of Agriculture was created and the Morrill
Act was passed; both acts were fundamental to the amassing of agricultural
knowledge and its diffusion throughout the nation.

The first appropriation by the Federal government in aid of agriculture
was in 1839 to the Commissioner of Patents "for the collection of agricultural
statistics, and for other agricultural purposes." Although the amount was
increased, the agitation for a fuller recognition of the agricultural interests
of the country continued, and finally in 1862 Congress passed the "organic
act" establishing "the people's Department." It was still a Cinderella of poli-
tics, for the head of the Department was not a member of the President's
Cabinet. It was not until 1889 that the office was ennobled with full execu-
tive dignity. The Department, however humble, was "to acquire and diffuse
among the people of the United States useful information on subjects con-
ected with agriculture in the most general and comprehensive sense of the
word, and to procure, propagate, and distribute among the people new and
valuable seeds and plants." As appropriations multiplied and the Department
graduated in the late eighties from its pioneer era of political appointments,
scientific prima donnas and empire builders, and discarded confused purposes, it became a central organizer for investigations throughout the country and an important agricultural research institution in its own right.

The second achievement of 1862, the Morrill Act, had as its background the educational ferment of the fifties, which sought to supplement the classical curriculum and aristocratic educational institutions with more practical subjects and more democratic places of learning. State legislatures petitioned for grants of public land in aid of such undertakings. Agricultural societies and progressive educators perfected and popularized plans, and it was the happy fate of Justin S. Morrill, one-time small-town Vermont merchant, later a Representative, to sponsor in Congress a bill embodying the contributions of many others and to give it his name. The Morrill Act established in each state

... at least one college, where the leading subject shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts ... in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life.

As the means to this end, the act turned to the American resource, the government domain. To each state or territory to become a state was given 30,000 acres of public land for each Senator and Representative in Congress. The land was of necessity located in the western states. The endowment varied. New York received 990,000 acres; Alabama actually obtained only 24,000 acres. These lands were to be sold by the states, and the money obtained was to be invested in securities "yielding not less than five per centum upon the par value of said stocks." This fund was not to be spent for buildings, although up to 10 per cent might be used for the purchase of a site for an experimental farm. Annual reports were to be made of experiments and improvements, and these were to be distributed to all land-grant colleges.

The total grant given by the original Morrill Act was equal to the area of Maryland. But in the conversion of acres into money the states were not always fortunate. By the Morrill Act the college had to be established within five years, and many states were thus in haste to sell their lands. Such lands, however, came into competition with the land sales of railroads and with the donations of the Homestead Act. Ohio's lands were sold for fifty cents an acre. New York was more fortunate, for here Ezra Cornell, a moneyed man, member of the legislature, interested in education, took most of the state's grant at sixty cents an acre, sold the land gradually, and turned over the surplus to the state land-grant institution—Cornell University. Some of the lands, located in the white-pine belt of Wisconsin, were sold for more
than sixteen dollars an acre; Cornell's endowment from land sales was about five and one-half million dollars. In the disposal of the endowment the states followed several practices. In some states the money was given to a separate agricultural college, in others the fund was used to establish the new agricultural and mechanical colleges which dot the land from Florida to South Dakota, and in still others it was turned over to endow departments or schools in existing or new universities.

The early history of these colleges was crammed with vicissitudes. The inadequacy of their financial support was overcome by further appropriations on the part of the national government and by an even larger measure of support given by the individual states. Another difficulty was the elaboration of a curriculum. At first the new studies tended to assume a protective coloring. The course was a four-year one leading to a bachelor's degree, and was freighted with a great many unprofessional studies—algebra, trigonometry, English and other languages, logic, and some variety of history. The agricultural instruction was originally a one-professor job. He was the "agricultural chemist" inherited from an earlier day and was expected to teach all there was to know about soil, fertilizer, feeding, and dairying. But the task of instruction soon exceeded one man's capacity, and devolution set in. One subject after another split off, and all too often levies were made upon the ancient languages for a nomenclature to describe them. A frequent criticism of the schools was that they were too theoretical, that they turned out very few "dirt farmers," that bachelors of agriculture exhibited an unwillingness for agricultural life. Gradually it was recognized that the diffusion of new knowledge to actual farmers must be accomplished by some other educational device. The agricultural colleges turned out the teachers, the demonstrators, the organizers, the research students.

The early history of the Morrill Act demonstrated the necessity of agricultural experimentation to discover new facts and to test theories. European nations, notably England, had answered the necessity by the establishment of agricultural experiment stations. Connecticut happened to be the first state to make appropriations directly for this purpose. Since the middle of the nineteenth century, Yale College had been a pioneer in instruction in agricultural chemistry, and S. W. Johnson of the Yale Scientific School successfully led the agitation which secured the establishment in 1875 of a state agricultural experiment station financed by a private gift and state appropriations. After other states had followed Connecticut's example, there was an insistent demand for the nationalization of the movement, and finally, in 1887, Congress passed the Hatch Act. Under its provisions $15,000 was appropriated annually from the money derived from the sale of public land to each state and territory for the establishment of an agricultural experiment station. For
years they, too, wrestled with the necessity of solving severely practical problems and spreading useful information. But by the twentieth century they were freed from their dependence upon the revenue from the sale of land and given appropriations for original research on long-time projects "with a view to the discovering of principles and the solution of the more difficult and fundamental problems of agriculture." To be sure, much of the new knowledge acquired here and elsewhere was trivial and misdirected, much of it but the application of scientific jargon to empirical methods followed for years by practical farmers; but as the instruments of research were developed, scientists, farmers, and other students made the United States a leader in the international process of fabricating a scientific agriculture.

The Achievements of Agricultural Science

The improvement of animal breeds, begun before 1860, continued with more exactness and efficiency after the Civil War. In the cattle industry the stockmen of Texas bred up their nondescript herds of longhorn Texas steers with importations of Herefords and other improved breeds. Improvements in dairy cattle were even more remarkable. Although the old hope of obtaining a dual purpose cow serving as a milker in life and a beef animal at demise was never abandoned, more attention was given to milking qualities. Most modern breeds—Holsteins, Jerseys, Ayrshires, Guernseys—had been imported before 1860. After the Civil War stockmen and owners, devoted to particular breeds, established cattle clubs or associations and maintained herd books where parents and progeny of pure-bred animals were registered. Much of this activity was a form of agricultural snobbishness or commercialism. Later more attention was paid to production records than to pedigree, and romantically named cows gave down yearly their startling totals of milk. Finally owners of ordinary herds equipped with milk scales and Babcock testers were able to apply similar tests to their own cows and eliminate poor producers.

Meanwhile, researchers investigated the best methods of raising and feeding livestock. In their arrogance human beings were apt to regard a proper diet as essential only for man. But studies in nutrition were just as useful for other animals, and the testing of theories was more scientific, less willful. W. O. Atwater, a pupil of Johnson's and one of the founders of the Connecticut experiment station, conducted experiments in the relation between foods and animal vigor and invented a calorimeter to measure the calories. His work received the acclaim of European investigators; nor did the later discoveries of vitamins supersede his contributions. A livestock manager became unwillingly a dietician. He had always been a veterinarian, for animal disease could sweep away the investment of money and months of labor while man
looked helplessly on. But bacteriology and a knowledge of other invisible organisms provided new vistas of explanation and hence methods of control. Success was not universal. But investigators of the Department of Agriculture were in the eighties at last able to explain the involved causation of Texas fever, which was spread by ticks that had bitten infected cattle; the young ticks hatched from the eggs of these ticks inherited the disease and then transmitted it, months later, to healthy cattle. A dip was devised to kill the ticks without killing the cattle. Where causes and cures could not be discovered, disease was fought by other methods. In the 1880's the Bureau of Animal Industry was given the power to establish animal quarantines; over the years its powers were enlarged until, after compensation to the owners, it could slaughter suspected animals. Only in this fashion was the mysterious hoof and mouth disease of hogs and cattle eradicated from the United States. The Department of Agriculture which had begun as a research agency ended as a regulatory body.

Plants were more easily improved than animals. One method, the introduction of new and improved varieties from abroad, was energetically continued, particularly when the doctrine of national self-sufficiency fired the imagination of politicians and officials in the Department of Agriculture. Ludicrous failures, like the attempts to grow tea in South Carolina, could not obscure real successes. The agriculture of whole regions like California was based upon importations. The Spanish colonial period introduced olives; but American efforts after 1850 were responsible for the raisin grape, the prune, and the Brazilian navel orange—the last an outstanding success. Staple crops benefited. Corn was indigenous, untouched by alien influences. But the introduction of Egyptian cottons into the Southwest and that of Acala cotton, comparatively immune to the boll weevil, from Mexico were landmarks in southern agriculture. The immigration of wheat has already been mentioned. Stimulated by the success of hard red wheats, Mark Carlton, a wheat fanatic, traveled about eastern Europe collecting and importing improved varieties. Entirely apart from importation, sudden mutations or natural hybridizations of all plants were continually changing both native and foreign species. Alert American farmers, noticing these variations, selected the seed of the better specimens for further cultivation. Artificial breeding came more slowly in this country than in Europe, but in the twentieth century, when genetics finally became a science, Americans made contributions of the first order.

One objective of breeders was plants relatively immune to attack by disease and insect. But in the nineteenth century other methods of defense were perfected. Europeans had discovered that many diseases were due to fungus growths, and in the eighties a French professor in an attempt to curb the
downy mildew of grapes finally perfected the bordeaux mixture, the standard fungicide. Twenty years later an American scientist in the Department of Agriculture, E. F. Smith, insisted in spite of European disdain that other plant diseases were due to bacteria and proved his discoveries. No single cure-all was, however, forthcoming. As for the insect pests, the first step in any attack was the detailed study of their life cycle and habits. Scientists had been building this knowledge for centuries, and practical farmers had been dosing plants with chemicals for years, usually with no results. In 1865 a writer in the Practical Entomologist declared: "if the work of destroying insects is to be accomplished satisfactorily, we feel confident that it will have to be the result of no chemical preparation." Yet within two decades Americans had developed arsenical insecticides for gnawing insects and devised a kerosene-soap emulsion which killed sucking insects on contact. It was less expensive and perhaps more "natural" to assign the slaughter of insects to their usual enemies, birds, other insects, parasites. Since two-thirds of America's insect enemies were probably immigrants from abroad, this new method of approach involved searching the world for natural enemies, breeding them, and freeing them in the United States. The gypsy moth, the browntail moth, and the boll weevil were fought in this manner. Entomologists like to contemplate their complete success in saving the citrus industry of California in 1888 merely by introducing and acclimatizing the Australian ladybird beetle.

Attacks of disease and insects were less injurious when the plant itself was strong. Fundamental, therefore, were the methods of cultivation. Scientific concepts on this matter were in 1860 far too simple. The gospel according to Liebig declared that the question was largely one of the chemical elements needed for plant life, and soil experts felt that if the rocks from which the soils were formed were known, a proper basis of soil and crop relationship was established. Gradually scientists realized that soils evolved; not only their origin but weather and crops determined their character. Nor was plant growth merely a matter of chemistry. The physics of the soil was important. So manure, for which Liebig expressed a rather poor opinion, was necessary because it conserved soil moisture and improved its texture. Furthermore, the biology of the soil was important. Practical farmers, for instance, had long observed that leguminous plants, such as clover, fertilized the fields; a chemist showed that they increased the nitrogenous content of the soil; and European investigators from 1877 to 1890 were able to prove that this process was accomplished by microorganisms working in the soil or in the root nodules of legumes. When all reservations were made, however, nitrogen, potash, and phosphates remained the essential plant foods. Their combination in artificial fertilizers was a landmark in modern history. The
United States drew one essential material from the nitrate beds of Chile, another from the great potash deposits of Germany, and a third from its own phosphate rocks. The annual value of artificial fertilizer—a poor measuring stick—increased over nine times between 1879 and 1919. Its use in the southern states of Georgia, North Carolina, and South Carolina, its greatest consumers, enabled them to remain cotton producers; in the Middle Atlantic states truck and fruit gardeners employed it in their intensive agriculture; it stimulated the crops on the fertile farms of the Middle West.

Agricultural Education for the Farmer

But all this knowledge was so much “book farming” unless the dirt farmer could be infected with it. Short courses at the land-grant colleges were devised for him and were placed in the winter when he could attend them. In the eighties the University of Wisconsin offered the first of such courses which has had a continuous history, and this example was followed by other institutions. It was realized at the same time that agricultural instruction of a simpler sort ought to be given in secondary schools. To meet this demand the University of Minnesota had established on its campus a sort of agricultural high school. In the early part of the twentieth century this movement was furthered by other states or by private philanthropy and hastened when popular desire compelled the high schools throughout the country to break away from the classical discipline and to establish departments whose subjects had a more immediate relationship to the typewriter, the plow, and the turning lathe. Eventually the inevitable appeal for financial help was sent to Washington, and in 1917 the Smith-Hughes Act appropriated money to aid the states in vocational education in agriculture, trade, industries, and home economics, including the preparation of teachers.

In a country where zeal for education is united with a fervor for results these devices seemed inadequate for scattering knowledge broadcast and converting people to its usefulness. Education had to be taken to the farmer by pamphlets from the Department of Agriculture, by correspondence courses from land-grant colleges, and, best of all, by the farmers’ institutes. The forerunner of these institutes was undoubtedly the agricultural society which before the Civil War had open meetings for jubilation, inspiration, and information. After the Civil War, as state boards of agriculture were established and the land-grant colleges began operations, these institutes spread throughout the country, and received financial assistance from the states and advice from the Federal government. The heyday of the movement was from 1900 until 1914. Held generally in winter, the institutes visited community after community. They varied in length from one to three days. At the meetings addresses were given by agricultural scientists and by practical farmers.
Apparently the demand for the former was so insistent that they had to be created by a sort of spontaneous generation. Selected individuals were deluged with bulletins from the agricultural experiment stations and from the Department of Agriculture and then sent forth as wise men. The statistical measurement of this extension work was impressive. Between 1902 and 1914 the institutes multiplied threefold, and the attendance at them somewhat more. Then in 1914, with the passage of the Smith-Lever Act, they began to decline. In the financial arrangements made by this act a new form of extension work was consecrated.

The county extension agent derives from several sources. The most significant contributions were made by Seaman A. Knapp, a versatile New Yorker. Driven to Iowa by poor health, he was successively farmer, stock raiser, editor, professor, and president of the Iowa State College of Agriculture. Undertaking the development of lands in Louisiana, he discovered that farmers were hostile to new methods until they had been demonstrated as successful and that demonstration was difficult to initiate since the price of experimentation might be financial loss. Early in the twentieth century he was able to secure financial assistance from localities, from the United States government, which assigned Knapp some money from boll weevil appropriations for "bringing home to the farmer on his own farm information which would enable him to grow cotton despite the presence of the weevil," and from the General Education Board, the philanthropic dispenser of the Rockefeller oil fortunes. Agents were appointed to supervise the demonstrators and to carry the gospel to others. In 1908 Knapp declared that to be a success the work "requires at least one agent in each county." Meanwhile, in the North extension work had progressed to a similar conclusion. In New York state, for instance, local efforts and contributions provided precedents and experience. Finally the legislature passed a law for a state system. The initiative was supposed to come from the farmers in the county, who were to form the county farm bureau; they were to contribute toward its expenses along with the state and the county, and a county agent was to be appointed. Projects were to be outlined by the State College of Agriculture and the State Department of Agriculture. Other states followed suit. County agents all over the country were leading lives as harassed as those of the country doctor as they jounced over their bailiwicks in Fords, conducted field demonstrations, made out programs for institutes, imported outside specialists, and tried to be the agricultural "leaders" that their superiors were always exhorting them to be.

Such enterprises were nationalized by the passage of the Smith-Lever Act, under which the Federal government stepped into the project with direct grants in aid of agricultural extension. After a rocky legislative history this bill became a law in 1914. It provided a base fund of $10,000 for each state
and additional amounts to be distributed among the states on the basis of their rural population. These additional contributions were to be matched by the states. The administrators of these funds were to be land-grant colleges in cooperation with the Department of Agriculture; the funds were “to aid in diffusing among the people of the United States useful and practical information on subjects relating to agriculture and home economics.” The administration of this act naturally determined its policy and its methods. The Secretary of Agriculture, David F. Houston, had been greatly impressed by personal observation of the county agent demonstration system, and the Department consequently announced that it would not sanction the use of the Smith-Lever funds for farmers’ institutes, for short courses, or for correspondence. They were to be used for state and county agents and traveling specialists in such subjects as dairying, poultry, engineering.

**The Farmer as Seller**

The economic development of the United States since 1860 broke down self-sufficing agriculture and substituted commercial agriculture. The railroad, opening up distant markets simultaneously with settlement, made unnecessary the self-contained pioneer community awaiting the advent of the canal or the iron horse. The industrial revolution had brought the factory and the factory town into being. The latter, cut off from the land, furnished a demand for agricultural products; the former destroyed the household as an economic unit producing its own supplies. The growth of agricultural knowledge and the spread of agriculture across the continent joined with these other factors to put a premium on specialized farming. Thus the farmer now depended upon others; he became a cog in the commercial machine whose revolutions no longer took place under the supervision of his community but were performed beyond the horizon. Naturally, the farmer did not always understand the significance of these changes and he tended, like anyone else, to regard the remote and uncontrollable with suspicion. But if the state of agriculture was prosperous, he was content to let well enough alone. On the other hand, if it was depressed, he subjected the system of which he was a part to detailed and hostile scrutiny. Alterations made in it were apt to be more rewarding than the application of scientific principles to agriculture, since bumper crops by their very abundance often further reduced the price of agricultural products. But it was not as easy for the farmer to find a quick remedy for his ills as other businessmen. Commercial agriculture was a highly competitive occupation. The thousands of wheat or cotton growers could not concert to control their output or the prices at which it was sold. But in industry and marketing the farmer detected the growth of combination, “big business,” and the resulting abatement of com-
petition. A competitor himself, he was left unprotected in a world of privileged monopoly. At least that was a frequent diagnosis.

Those who wanted an immediate solution for low prices turned in this period, as they had in earlier ones, to the simple recourse, an increase in the quantity of money. On the whole, the western regions furnished in the late nineteenth century, and after, the recruits for the greenbackers, silverites, and other apostles of inflation. Frequently they supplemented their doctrines of financial management with ingenious campaigns for reducing the costs of marketing and securing thereby for the "producer" a greater share of the final price. From the hosts of agencies responsible for these unfair conditions, the farmer selected for the heaviest opprobrium the railroad. The rates it charged and the service it gave determined the vital statistics of agriculture as surely as they determined those of manufacturing. The farmer's attitude toward the railroad, as voiced by Granger and Populist, merged into the larger national movement for extensive governmental control over the transportation system, a movement whose achievements have already been described. Other enemies were the "hordes of profit-taking middlemen." Their variety was legion, for the methods of marketing agricultural products differed in complexity and inclusiveness. But most significant for the period in question were the appearance and development of exchanges for the marketing of agricultural commodities. Such exchanges first dealt with the staple crops of the country, cotton and wheat; these had a wide market and could be easily graded and stored. As means of refrigeration, storage, and grading were perfected, the method was extended to other products ranging from lard to eggs.

Trading on these exchanges set a continuous price for the agricultural commodity in question. A grain farmer of the Northwest would take his wheat to the country elevator erected at a railroad siding by local or outside capital. The price paid by the country elevator was the price then ruling in the primary grain market minus a deduction for freight and other charges, insurance, and profit. In effect this meant the quotation for wheat on the Chicago Board of Trade. For in 1848 the Board of Trade was established as a place primarily for the purchase and sale of grain, and a decade later Chicago was boasting of being the largest primary grain market in the world. In the marketing of cotton the Civil War destroyed the factor system of the plantation era. Now cotton was usually first purchased by the local cotton merchants who had staked growers to a living while they "made" the crop; from the country merchant it was purchased by "cotton buyers and shippers," for thus wholesale firms located in the interior markets or ports of the South were denominated; the "buyer and shipper" sold to domestic mills or to their brokers or to importing merchants abroad who through "selling brokers"
sold to the "buying brokers" of the English mills. But the price was determined fundamentally by the quotations on the cotton exchanges, of which the most important, the Liverpool Cotton Association and the New York Cotton Exchange, were formed in 1870 and 1871. The price dictatorship exerted by these exchanges was made possible only by the revolution in means of communication. The telephone, the telegraph, and the trans-Atlantic cable carried the slightest tremors in these central markets to the remotest general store in Texas or grain elevator in the Dakotas.

Some of the transactions on these exchanges concerned the sale, purchase, and delivery of commodities for cash. But more important, numerically and intrinsically, were the sale and purchase of contracts for the future delivery of the products. This dealing in grain futures began in 1847 on the Chicago Board of Trade, for a Chicago paper of that year announced that "several sales of corn 'to-arrive' were made in May, and in the following September it is said that [what] corn arrives is principally on contracts." The practice of future trading developed rapidly in the course of the Civil War, and in 1865 the rules of the Board officially recognized its existence. Trading in cotton futures commenced in the confused aftermath of the Civil War when great demands, small crops, and wildly fluctuating prices led purchasers to seek stability through future contracts. The successful laying of the first Atlantic cable and the shipping of cotton by steamship facilitated the movement. The establishment of the New York Cotton Exchange was due in large part to the desire to systematize trading in futures.

Trading in futures performed an invaluable service for those who really owned commodities. Country elevators might see the profit from their storage and handling of grain wiped out if they had to sell their grain at a lower price than they paid for it. A spinner of cotton goods who had purchased his raw material early in the season would be at a profound handicap in the sale of his finished goods if competitors had bought their supplies at later and lower prices. Elevator owner or cotton manufacturer, each could insure himself against loss by selling at the time of his original purchase contracts for future delivery at the current price. If prices went down before the contract was met, he lost on his first cash transaction but gained on his future sale; if prices went up, he made his profit on the cash transaction rather than on the future contract. This process of hedging could be applied to selling as well as to purchasing and to nearly every stage in the marketing process. Trading in futures for hedging purposes, however, constituted only a fraction of the total transactions in futures. It was employed more widely by speculators who neither owned nor cared to own agricultural commodities but simply liked to match their estimates, wits, and manipulations in a gamble with fellow traders upon the probable course of prices. A professional
lingo of "selling short" and "going long" was created to describe their practices.

Professional economists and participators in the marketing process were always ready to point out the benefits accruing to society from these elaborate arrangements. They resulted in the establishment of standards; they daily brought together all the information about crop production and human needs; they assembled and stored products bearing the risk of insurance and interest; they financed crop movements, for the producer was paid at once by the first purchaser, who borrowed from the local bank or other middlemen. All these borrowings with their interest charges were passed along through the whole series of middlemen and banks without burden upon the producer; even the gambler in futures removed the burden of speculative risks from the shoulders of legitimate commercial enterprise. In spite of the overwhelming clarity of these explanations, the American farmer was not always convinced that the marketing system worked in this benign fashion. In the first place, purchasers of agricultural products on occasion combined to prevent competitive bidding. Country elevators were consolidated into "lines" and pooled the wheat to be bought; grain dealer associations fixed a common price; and at the primary grain market of Chicago the great terminal elevator companies, the chief buyers in the market, operated often in agreement. The situation was as alarming as in the Chicago stockyards, where the five great packers coöperated in setting a price. Nor was trading in futures wholly advantageous. The process of selling short depressed prices, or at least that was the hope of those who indulged in playing this side of the market. Economists might prove that the fluctuation in prices was less severe after the establishment of trading in futures than before, but this did not alter the fact that from day to day prices were changed not only by the differing judgment of brokers but by manipulation.

Farmers who generally regarded themselves as independent men of property thought one remedy was the provision of their own marketing facilities. They turned to coöperation. Marketing enterprises of this sort achieved their first success in dairy products. Indeed, coöperative creameries and cheese factories owned by farmers' capital hastened the industrialization of this branch of agriculture. Then farmers conceived the idea of building and constructing their own grain elevators, but few such survived mismanagement and the effective hostility of the existing elevators. Cotton growers in the South selected existing firms to handle their product on commission and built their own warehouses. But, all in all, by 1900 there were only 615 active coöperative marketing associations in the nation. Then the movement got under way. In 1920 there were approximately 8,000 engaged largely in the marketing of grain, livestock, fruits and vegetables, and dairy products. Their success was
due to state legislation exempting them from general incorporation laws. Such laws permitted coöperatives to give each member a vote regardless of the amount of his stockholding and to pay dividends based on patronage rather than on earnings. The movement was often aided by commission men in the larger markets who were being squeezed out by other buyers. Although there were significant exceptions, the larger number of coöperative enterprises were local. They did not affect the great primary markets. In the early twentieth century, however, the American Society of Equity and the Farmer’s Union were considering the setting of minimum prices and their attainment through coöperative warehouses or elevators; and the Non-Partisan League sought the construction of state-owned elevators, an idea as old as the Populists.

Perhaps it was easier to induce the government to regulate marketing. The Granger movement of the seventies turned to the passage of state legislation controlling warehouse practices and prices. Then and later there was a shrill demand for a legislative prohibition upon trading in futures. In the twentieth century the American Society of Equity and the Farmer’s Union both realized that governmental assistance was necessary for the success of their plans. They were content for the moment to press for the establishment within the Department of Agriculture of an Office or Bureau of Markets to investigate different systems of marketing farm products and the demand for such products in the various sections of the country. Although such a proposal aroused little enthusiasm among Department officials, still astigmatic to questions of distribution, it was embodied in legislation in 1912 and 1913. The dam was now broken. In the next few years the government passed legislation enforcing standard grades in grain and cotton contracts, establishing government supervision for warehouses, and empowering the Secretary of Agriculture to control the packing yards and manipulation and trading in grain futures. These multifold tasks were transferred to the Bureau of Markets. Thus once again what the government began by investigating it ended by regulating.

THE FARMER AS PURCHASER AND BORROWER

The farmer as businessman was purchaser as well as seller. Since land buildings, and equipment had to be bought and usually bought on credit, the farmer was concerned with the general price level and with the price of borrowing. The first to his mind was apt to be set by the trusts and monopolies. In the late nineteenth century, the McCormick monster, the “harvester trust,” aroused his anger; in the twentieth century the fertilizer trust joined the company of the damned. So the farming regions, when they were not finding escape through the direct mail-order house, furnished part of the
evangelism behind the Sherman Anti-Trust Act and stimulated the investigations of the Bureau of Corporations or its heirs into the price of things that farmers bought.

Ofttimes farmers advocated or resorted to more drastic remedies. Here, as in selling, coöperation was the magic wand. Thus in the seventies the Granger leadership, in order to answer the realistic query of farmer-members as to “what money is there in the movement,” first sought to have local agents buy directly from manufacturers and wholesalers; later they stressed the founding of coöperative stores upon the principle of the Rochdale stores in Great Britain. In spite of exceptions, this early coöperative movement collapsed, for inefficient managers were employed, credit was extended too liberally, and the individualistic American farmer was incapable of the patient and long-time loyalty required for such undertakings. The aspiration to buy coöperatively was inherited by the successors of the Grange and occasionally realized. By 1920 farmers were buying through coöperative associations fertilizer, fuel, cement, and seeds. Perhaps one million members participated in such arrangements. Sometimes these merchandising activities were supplemented by farmer ownership of productive enterprises. From the days of the Grange to those of Equity, they tried their hands at farm-machine works, twine mills, and fertilizer plants. In the twentieth century a few of these enterprises were highly successful.

As businessman the farmer was borrower. He needed short time loans to buy seeds, livestock, and frequently provisions to carry him through the interval until crops were matured and sold at market. Always more important than any other forms of agricultural borrowing, these loans were in some ways akin to those granted by banks for commercial operations. There were also differences. Agriculture was based upon a slower turnover, corresponding in the case of crops to the seed-harvesting period and in the case of livestock to the period of fattening. Before the spread of banking facilities to the farming regions such loans were usually obtained from the local retail merchants or from agents who sold farm equipment. In the South this arrangement had become a determining part of the agricultural system. In the North its hold was not so universal or tenacious. It had profound disadvantages everywhere. The cost of such credit was high, often amounting to 15 or 20 per cent, and the prices of the goods in which such credit was generally advanced were excessive. In Wilson’s administration the legislation of 1913 establishing the Federal Reserve System sought to make bank credit more available for farm operations by allowing agricultural paper to run for six months rather than three. A decade later it was given nine. Even though banking facilities with much cheaper rates were thus available, the less dependable and efficient farmers could not meet the business requirements
of these institutions and continued their parasitic and expensive dependence upon store credit.

The farmer has always required other funds. He needed money for fencing, buildings, and for machinery; these costs increased in the days of mechanized agriculture. He needed money for land purchases since, as we have seen, even in the decades of an open frontier the Homestead Act was not the main method for acquiring government land. And for privately owned acreage, private purchase was the only way. For these capital investments the farmer borrowed on mortgage. Figures of such indebtedness for the early decades are not dependable. Between 1890 and 1920, however, the mortgage debt on farms occupied by their owners multiplied nearly four times. A larger figure, the total farm mortgage debt, rose from $3,207,863,000 in 1910 to $8,448,772,000 in 1920. Loans by individuals were always the most important source of these funds. Even farmers loaned to farmers for they understood this method of investment. Banks were inadequate for the task, for they did not spread rapidly to the West and the national banks under the act of 1863, profiting by the experience of the earlier unstable institutions, forbade loans on real estate. Yet the East, dazzled along with the pioneer by the pictured development of the West and attracted by the high rates of interest, was impatient to loan its money. Western investment companies were formed to meet the situation. A common type sold to eastern investors debenture bonds based upon the security of farm mortgages; others simply acted as agents in the transfer of the mortgages between lender and borrower. Even eastern farmers loaned to western farmers. In 1889 citizens of New Hampshire had $25,000,000 invested in western mortgages. As the country settled into stability, insurance companies conducted a careful investment of their capital in such securities and state banking systems appeared which could perform a similar service.

Nevertheless, there was still a complaint against the system by which mortgages were written. It was charged that the interest rates were too high, that numerous unnecessary fees were charged, that five years, the period which mortgages were allowed to run, was too short a time for a farmer to pay off the mortgage from income, and renewals involved new expenses and commissions. Although these accusations had point, the causes of oppressive mortgage conditions were less the malevolence of financiers than gambling upon land values by farmers and money lenders and the incalculable risks of agriculture. Mindful of their oppressions, however, farmers' movements campaigned for state financed loans to farmers, an object achieved in the Dakotas in 1917-19. On the national scene the Wilson administration at the time of the Federal Reserve Act gave notice that it would sponsor a rural credits act. Such a measure was enacted in 1916.
Performance

The years between the Civil War and World War I have too often been regarded as ones of agricultural defeat rather than agricultural achievement. Neither emphasis was correct, for in farming as in other parts of the economy there was prosperity and depression. In the decades following the Civil War prolonged agricultural prostration hit wide sections of the farming community. Between 1869 and 1896, the trough year, the index of farm prices fell over 50 per cent. The only considerable interruption to this descent was in the early eighties. Though monetary and general business conditions were the chief explanations of this decline, in the case of certain staples enlarged production both in this country and abroad flooded the market with an output salable only at ruinous prices. Sometimes weather united in the conspiracy. Foreclosures, loss, dispossession, wandering: these were the characteristics of the depression of the seventies and nineties. Yet with the twentieth century prosperity flooded in and legislation of later decades harked back to this golden age as a standard for agricultural parity. Observers marveled at the horn of plenty. “One American harvest would buy the kingdom of Belgium, king and all; two would buy Italy; three would buy Austria Hungary; and four, at a spot-cash price, would take Russia from the Czar.” One explanation for such wealth was the rise in agricultural prices. In 1910 their index stood at 104 compared to 54.7 when Bryan went down to defeat. Another explanation was the rise in land values. According to the census of 1910 they had increased 118.1 per cent in the previous ten years. Though the farmers did not know it, the boom years of World War I were just ahead.

Still contemporaries raised strangely pessimistic voices. Perhaps they were contemplating the continual decline in the farm population, the failure of production per acre to increase markedly after decades of scientific agriculture and agricultural instruction, the fact that the best agricultural land had been taken up and the farmer questing westward found few new acres ready for the plow. In fact, by hundreds of thousands he was crossing the Canadian frontier to the “last West” of the Prairie Provinces. Admittedly also the lavish increase in physical production seemed to be slowing up. Whereas between 1869 and 1879 the index mounted 20 per cent, the increase from 1900 to 1910 was only 9. Population was mounting more rapidly. In 1909 J. J. Hill, the empire builder of the Pacific Northwest, gloomily announced, “In twenty-five years we shall face a nation-wide famine.”
CHAPTER XVI

The Wage Earner Under Competition and Monopoly

MIGRATION AND THE LABOR FORCE

With the Civil War behind them, "bulls on the United States" looked forward to an era of material prosperity and national progress. Late in 1865 their mouthpiece, the Commercial and Financial Chronicle, was thus diagnosing the future:

After political security, there is nothing that the Republic needs so much as bone and sinew, for the development of its vast resources. . . Having solved all problems and disposed of all doctrines and theories relative to the intention of our political system, we want flesh and blood, men, women, and children, to assist in fulfilling that intention.

This crying need for a labor force was, of course, an historic American phenomenon. To add a note of anxiety, however, proved unnecessary. Between 1860 and 1920 the number of persons gainfully employed in non-agricultural pursuits rose from 4,325,116 to 30,984,765. At the former date they constituted 41.1 per cent of all people gainfully employed; at the latter date 73. Here was another evidence of the triumph of the industrial state.

One source of these workers was immigration. The number of arrivals, which had declined to a low level after 1854, began to increase in the late sixties and early seventies; after a temporary recession it rose to an astonishing total of 789,000 in the year 1882, a figure not equaled for two decades; but in 1903 began twelve years of immigration when the tide never sank below 750,000 and mounted on occasions to figures greater than a million. Many of the immigrants, as we have seen, had been tempted to leave their old homes by the rich agricultural possibilities of this new country and many moved into the agricultural sections of the West. But increasingly it was the opportunities in transportation, mining, or manufacturing which attracted immigrants to the United States. The reasons for the shift were on the one
hand the passing of the frontier, and on the other the growth of the industrial state, where jobs were multiplying and employers were eager to discover recruits for them. In some cases the employer definitely encouraged immigration to this country. Advertisements were inserted in the foreign press, agents were sent abroad, ocean passages were paid, and contracts for work at stated wages were entered into.

As the steamship, the foreign post, the cable, and the cheap newspaper sped intercommunication, an exceptional international mobility of labor became possible. In almost automatic fashion, workers flowed into America when attractive possibilities of work were presented and retreated when they were withdrawn. A glance at the graph of immigration shows that years of prosperity led to a great increase of immigration, and that panic years were followed by a striking decline in foreign arrivals. These fluctuations are even more significant when account is taken of the number of foreigners departing from the United States. After the panic of 1873 the figures of departing aliens rose, until in 1877 for every 100 arriving male aliens 54 left; and in 1895, in the midst of a depression, the ratio was 100 to 78. Although apostles of Americanization bewailed these “birds of passage,” their mobility reflected a crude adjustment of labor force to labor needs.

Most discussions of the wider effects of immigration upon industry in the United States have been needlessly complicated by the contrast drawn between the “old” and the “new” immigration. The “old” immigration from northern and western Europe predominated until 1896; after that date the “new” immigration from southern and eastern Europe furnished the majority of our foreign arrivals. It is not clear, however, that the effects of this new immigration upon American industry were different from those of the old. For three years, from 1907 to 1910, an Immigration Commission, created by act of Congress, investigated the problem and compiled reports. Its findings were characterized by a wistful yearning for the old immigration. Yet in 1870 in the very midst of those good old days Francis A. Walker, economist, statistician, and later president of the Massachusetts Institute of Technology, was writing:

Here [in the East] we find the peasants of Ireland and Germany engaged, painfully to themselves and often wastefully to the employers, in all sorts of mechanical operations to which they have no traditional or acquired aptitude. . . . They have fallen upon our shores, the migratory impulse exhausted, their money gone, with no definite purpose, with no special preparation, to become the victims of their place and circumstances, to seek such occupation as offers itself, to underbid native labor, to adapt themselves painfully to the conditions of our industry such as they have found them, or to join the rabble that troops after a Tweed, a Morrissey, a Hayes, and an O’Brien.
Whether of the old or of the new immigration, the arriving foreigner generally undertook the more unskilled occupations of the community. He was ignorant of the American industrial scheme and compelled immediately to make a living. The increasing mechanization of American industry offered simple tasks to the hordes of common laborers and peasants, untrained in modern industry, who poured into the country. Through the job levels of American industry there has thus been a shifting procession of different races. The coal-mining industry affords one illustration. In 1869 an English investigator found that "of the 30,000 miners engaged in the Pennsylvania coal districts, but few will be found who are not English, Welsh, or Irish," and the same generalization, if enlarged to include Germans, could have been applied to the other districts of the country. But coal mining, expanding with prodigious rapidity in the era of the industrial state, clamored for laborers. In the eighties Slovaks were first employed in considerable numbers in the Pennsylvania fields, and in the following years Magyars, Poles, and Italians, with a few from other nations, inundated the region. The iron and steel industry had a similar history. In 1875 Captain Jones of the Edgar Thomson Works was writing, "My experience has shown that Germans and Irish, Swedes and what I denominate ‘Buckwheats’ (young American boys), judiciously mixed, make the most effective and tractable force you can find." But such preferences were conveniently altered as the industry began its incredible expansion and the new immigrants, employed in the less skilled positions, began to transform the racial complexion of its huge workshops. In 1907 the roll of the laboring force in the Carnegie Steel Company plants in Allegheny County showed large numbers of Slovaks, Magyars, Croatians, Russians, and Italians. The Croatians surpassed the Irish, the Italians the Germans, the Roumanians the Swedes, and the Slovaks "the Buckwheats."

Any discussion of the effects of immigration upon wages, hours, and general conditions of labor is largely surmise, for it cannot be disentangled from the other factors which have shaped America's industrial development. It has often been said that the pauper immigrant with a lower standard of living depressed American labor conditions. The historian can only point out that clothing was a sweatshop industry before the Jewish immigrants of the eighties began to furnish its labor force, that the textile factories of Lowell exploited native Americans before they repeated the process with Irish, French Canadians, and Poles, that in the nineties the immigrant labor of the northern Illinois coal fields was menaced by the native American labor in the southern fields of the same state, and that in the twentieth century the living standards of foreign laborers in the cotton industry of Massachusetts and Rhode Island were threatened by the simon-pure American operatives of the southern states. The historian may also point out that the industrial
THE WAGE EARNER UNDER COMPETITION

development of the country since 1850 has been made possible by immigrant labor.

A second less disputed result of immigration was the stratification of the American laboring class along racial levels. These racial lines coincided with differences in skill and craft. In coal mining the foreman and superintendents were Americans or descendants of the earlier immigration, the workers were foreigners; in the steel industry the skilled positions were held by natives, the lower rungs of the industrial ladder were occupied by the recent immigrants. Between the two groups there was little affinity. In the coal towns Americans would not associate with the inhabitants of “Hun Town” or “Little Italy”; in the steel industry “white men” were sharply arrayed against the inferior “Hunkies” and “Ginnies.” Differences of religion, language, living conditions aroused hostilities and antipathies which the employer often capitalized, setting race against race in the manner of the defunct Austro-Hungarian empire. Immigration has undoubtedly made difficult the labor solidarity characteristic of industrial nations with a homogeneous population.

The American wage earner has been an insistent advocate of immigration restriction and has quite rightly attributed to the employing class the opposition to such measures. The Know-Nothing movement of the fifties believed that the “capitalist” and the “money-power” were the advocates of unrestricted immigration, and in the agitation of the twentieth century E. H. Gary, chairman of the board of directors of the United States Steel Corporation, deplored the movement for restriction. With a certain poetic justice, the argument for a protective tariff was turned by the workers against its beneficiaries. If the manufacturer was entitled to protection against the products of the pauper labor of Europe and the Orient, the laborer was certainly entitled to protection against the labor itself. The first legislative response to agitation of this nature came naturally in the eighties, when figures of arrivals spurted ahead. In the eighties Congress prohibited the importation of labor under contract except for certain skilled workmen; began, by the temporary exclusion of Chinese laborers, a policy of permanent hostility to Oriental immigration, Chinese and Japanese; and tightened the provisions and enforcement of the general immigration laws. This was not enough. Finally, in 1917, Congress succeeded in passing over presidential vetoes an act requiring of every immigrant ability to read some language or dialect. Wilson in his tart analysis of the act complained: “Those who come seeking opportunity are not to be admitted unless they have already had one of the chief opportunities they seek, the opportunity of education. The object of such provisions is restriction, not selection.”

Restrictive legislation by no means dried the streams of migration replenishing the labor armies. There were Captain Jones’ “Buckwheats.” This mi-
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igration of country folk into town and city—the centers of trade and manufacturing—had long been marked in New England and the Middle Atlantic states. After 1860, as industrialization spread to new regions, the phenomenon was repeated. In the Middle West, traditional agricultural heart of America, population tended to shift to the busy industrial centers at the edge of the Great Lakes just as in the East it wedged tighter and tighter into the urban districts along the Atlantic seaboard. Meanwhile in the South the rise of industry occasioned movements and regroupings of its population. The similarities with the New England of an earlier century were startling, for the prejudice against factory work among the whites whom the manager elected to employ in the mills had to be broken down. Apprehensions were banished by the paternalistic system of the southern mill village, which gave the mill superintendent a large measure of control over the character and activities of his help. But most southern white farmers who were not well-to-do were willing to escape the burdens of tenancy, mortgages, and low cotton prices, either by working in the mill seasonally or moving into the mill village as a permanent operative class. Most of the cotton mills established in the Piedmont region had little trouble in recruiting a labor force from their immediate environment. By 1900, however, cotton mills began to have difficulty in securing further employees from this region. Then advertisements painting an attractive picture of industrial life were printed and circulated in the hill counties, and agents, sometimes accompanied by a worker as a sample, were sent to enlist workers from among the mountain whites. Resort was had, also, to the poorer farmers of the coastal plain.

WOMEN AND CHILDREN FIRST

The search for industrial laborers cannot be approached solely from the geographical aspect, for in its quest for workers the factory reached out everywhere to different classes and groups of the community. From the first it relied upon the labor of children and women. Proportionately the number of children between ten and fifteen years of age employed in non-agricultural pursuits declined. In 1880 they constituted 6 per cent of the total number of children in the country; in 1920 they were 3.3 per cent. The latter figure is not a normal one, for at the time of the 1920 census the Federal act taxing products made by child labor was in operation. More of the children employed in non-agricultural pursuits in 1920 were engaged in trade, domestic service, and clerical occupations than in the cotton factories or in the iron and steel mills. The decline of child labor in industrial pursuits was due to the invention of machinery which made unnecessary the sort of labor they could contribute and to the passage of restrictive legislation by the states. Such legislation, which in New England and the middle states came at last
to some degree of effectiveness, was responsible for the remarkable decline during the decade 1880–90 in the number of children employed in the cotton mills of the North.

These changes were not duplicated in the southern states, where a competing cotton industry was coming into existence. The cotton industry until recently employed the greatest number of children in this country. The South continued this tradition, for the number of children under sixteen employed in her mills increased from 2,300 to 27,500 between 1870 and 1905. The manufacturers sought operative families with children; the whole family was put to work, and the wages of the mother and the children were as essential as those of the father in maintaining the family's level of subsistence. The anachronism of this development was further exemplified when the southern factory owner, regarding himself as a philanthropist, asserted that he employed children only because of the necessities and importunities of their parents, and resisted the enactment of restrictive legislation with an air of insulted righteousness. Any criticism of these arrangements irritated the touchy sectionalism of the region. A North Carolina manufacturer wrote in 1905, "I consider it a sad day for North Carolina when the emissaries of northern fanaticism, prejudice, and envy are allowed to come here and 'frame bills' to be enacted into laws for the government of the people of this great and free State."

Between the census of 1870 and 1920 the number of women gainfully employed in non-agricultural pursuits increased from 1,439,285 to 7,465,383 and an examination of this increase indicates that proportionately to their total number more women were employed in 1920 than fifty years earlier.1 Such

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| Percentage of the Female Population Employed in Non-agricultural Pursuits |
|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| 1870 | 1880 | 1890 | 1900 | 1910 | 1920 |
| 11.8 | 12.8 | 15.8 | 17.3 | 20.7 | 21.3 |

| Percentage Distribution of Women Gainfully Employed Among Various Non-agricultural Pursuits |
|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|
| | Servants, | Clerks, | Mill and | All |
| | | Saleswomen, | Factory | Others |
| | | Stenographers | Workers | |
| 1870 | 60.7 | 0.8 | 6.4 | 17.6 | 14.6 |
| 1880 | 47.3 | 1.9 | 8.5 | 8.5 | 11.4 |
| 1890 | 40.0 | 5.3 | 9.5 | 9.5 | 14.6 |
| 1900 | 33.9 | 9.1 | 10.1 | 22.3 | 15.7 |
| 1910 | 25.5 | 14.8 | 11.6 | 23.1 | 15 |
| 1920 | 18.2 | 15.6 | 13.3 | 23.8 | 19.1 |
generalizations have alarmed the conservatives who felt that woman’s place was in the home, and delighted feminists who found here an evidence of their hoped-for emancipation. Certainly in the half century here under scrutiny, personal and domestic service lost its historic rôle as the chief employment for women. Employment in the professions increased. In manufacturing women have not made large over-all increases since 1900, although within this category there were extraordinary changes. While in some of the traditional occupations, like cotton textiles, they relatively lost ground, the mechanization of other industries enabled them to perform operations which did not require great physical strength or endurance. By 1920 in the food industries, bakeries, candy factories, fruit and vegetable canning, over half of the workers were women, which was natural enough since women had prepared the food in the home; cigar and tobacco factories followed cotton mills and clothing factories as the greatest employers of women; the metal-working trades, excluding the heavy iron and steel industry, were a new occupation for women. No matter how many figures were collected, it was impossible to say whether the women workers in industry as a whole displaced men. There was some evidence that women concentrated in certain industries, men in others.

Much more dramatic than their employment in industry was the pre-emption by women workers of the occupations created by the invention of new methods of communication, by the increasing attention paid to paper work in production and in commerce, by the growth of trade as distinguished from industry and transportation. Although the telegraph companies were slow to employ women, the telephone became almost at once a feminine monopoly. In 1870 only 350 women were reported employed as telephone and telegraph operators; in 1920 the 175,500 employed women constituted 93.8 per cent of the telephone operators. As long as most of the stenographic work was associated with government business—legislative debates or court cases—women made little headway in this occupation; but in the sixties women gained a foothold in the fields of bookkeeping and accounting, clerking, and stenography. The establishment of business schools and the wider use of the typewriter hastened their invasion. In 1870 there were somewhat fewer than 10,000 women employed in these occupations; in 1920 their number had increased to 1,380,000, and some of these occupations they had made distinctly feminine. Over 90 per cent of the stenographers and typists were women. The third occupation in which women wage earners became important was retail selling. In 1850 even women’s stores were clerked by men. Reformers who wished to improve the lot of the working girl in other employments advocated that she be allowed to enter this more desirable occupation. At the time of the Civil War women began to enter retail trade,
and the establishment and growth of department stores after the seventies, by making possible a greater division of labor in retailing, increased the employment of women. In 1870 saleswomen were not separately enumerated by the census; in 1920 stores employed 349,500. Unfortunately this new occupation did not furnish the relief for an oppressed womanhood which the prophets had anticipated. Instead employers paid women a lower wage than men, and the conditions of their work became a problem for the reformers of a second generation.

The inferior position of the woman worker was baldly reflected in the lower wages she received. The *Workingman's Advocate* in 1868 wrote that "women do not get, in the average, one-fourth the wages that men receive"; in manufacturing employment they were paid perhaps about 54 per cent of men's wages in the first decade of the present century and about 60 per cent in 1920. These lower wages were due primarily to the fact that women filled the less skilled positions at wages which men would not usually accept. Apologists justified the situation on the ground that men were heads of families, that women were temporary workers employed until they married, and that their earnings were "pin money." This may once have been true. But between 1890 and 1920 the proportion of married women among women gainfully employed in non-agricultural pursuits increased from 12.1 per cent to 21.2. It was observed that even the wages of unmarried daughters generally went into the family budget. By the twentieth century women sought work from economic necessity—either to preserve or to raise the standard of living in the family unit of which they were a part.

**The Status of the Wage Earner in the Machine Age**

From whatever source the wage earner may have come, he was subjected after 1850 to the terms of labor imposed by the railroad and the machine. The extension of the railroad meant that labor produced for a national market; goods manufactured under certain labor conditions in Albany competed with those manufactured under different circumstances in St. Louis. Nor was the competition of commodities the only result of universal railroad transportation. Since labor itself became more mobile, wage earners from Mississippi competed with those from Chicago. Labor agitation, labor movements, labor legislation, labor practices were no longer the concern of a locality or a section; they involved the sweep of a national arena. And in this larger setting the factory and power machinery shaped the conditions of labor. Before 1850 the cotton goods industry alone had felt the full operation of these factors; now in the industrial state their influence became almost universal.

To a large extent the mechanization of American industry destroyed the
handicraftsman or artisan, the master of the skills necessary for his trade, and brought the less skilled worker to greater importance. In some instances this change was accomplished without machinery by subdividing a process into simple operations most of which were performed by hand. To such subdivision scientific management later made extensive contributions. But in most cases the smaller reliance upon skill was hastened by the use of machinery to perform the separate tasks. To be sure, there were contradictory tendencies. Much unskilled labor was abolished by the greater use of cranes, conveyors, chargers, and other mechanical devices. The "gorilla type" of worker, as F. W. Taylor called him, became less essential to industry. The industrial revolution even heightened the importance of some skilled trades. Machine repairers, since they were the physicians of these automatic instruments, required almost professional skill. Engineers, managers, inventors, efficiency experts multiplied to take over the tasks of planning, routing, analyzing, which the handicraftsman would once have assumed. It was certain, nevertheless, that the desire of American industry was to make greater use of unskilled or semi-skilled labor, and that it succeeded. For the employer the change meant the possibility of paying relatively lower wages and a greater ease in securing workers. For the worker it meant a greater dependence upon the employer, since his unique skill, formerly acquired by a long apprenticeship, was no longer necessary and he could be taught in a few days to tend the machine. These unskilled tasks were, moreover, routinized and monotonous. The psychologists are still debating whether such automatism stifled the worker's "creative spirit" or pleasantly expressed his motor impulses.

The effect of machinery upon the hours of labor cannot be traced accurately. A measurable starting point was provided by the length of the working day. By 1860 the movement for a ten-hour day had met with general success in the building trades and some other skilled occupations but in the factory industries its conquest had not been noticeable. The average day the country over was eleven hours. In the next five decades this figure slowly diminished. After the Civil War the labor unions, with a sublime indifference to actual conditions, campaigned for an eight-hour day. At the turn of the century this had just been secured in a precarious and uneven fashion in the mining industry, where work underground was peculiarly dangerous and disagreeable, and it was general in the building and other skilled trades; but even Gompers had to admit in 1899 that "the average hours of labor of the American worker are about nine and one-half a day." But the World War worked a revolution in the length of the working day. In 1914 the standard hours a week in industry numbered 53.5; in 1920 they were 50.4. Perhaps at the latter date about half the factory workers in the country had the forty-eight hour week. But some conspicuous employments reached this goal tar-
dily if at all. For the iron and steel industry the dogmatic dictum of Charles Schwab still applied: "Anyone familiar with steel knows that a great deal of work must be carried on continuously. There is no other way to do this. It is a practice throughout the world." Reduced to statistics, this generality meant a twelve-hour day for the majority of steel workers and a seven-day week for a considerable percentage.

It was a common feeling among workingmen, however, that in general the labor of these shorter hours was more intense and more uninterrupted. In many industries there was an increase in the number of machines which a worker served. It is difficult to apportion the causes of these increases between the use of improved and automatic devices and the more intensive application of human labor. But the machine industry of the twentieth century undoubtedly represented a contrast to the artisan and to the earlier factory. In the old days the rhythm of operations was determined by the natural rhythm of the worker; in modern times it was the regular and remorseless beat of the machine that set the tempo. Although machinery undoubtedly lightened heavy labor, it substituted an emphasis upon precision, attention, nervous vitality, which was extremely wearing. In spite of the numerous attempts at statistical measurement of fatigue, no very specific generalization can be made as to whether the worker was more or less tired after the eight-hour day of 1920 than after the eleven-hour day of 1860.

Such considerations dovetailed into the effects of machine production upon the health of the worker. On this point it was possible to demonstrate that male factory workers died earlier and were more susceptible to certain diseases than all males; it was not possible to explain these facts by dissociating the effects of factory employment from those of the standard of living of factory workers. Industrial accidents were, on the other hand, definitely connected with the day's work. Such figures as have been compiled show that mining was proportionately the most dangerous occupation. In 1907 the fatalities in coal mining were 3,232; in 1920 they were 2,260. The United States had the worst record of all important coal-mining countries. Railroading was the second most dangerous occupation; in 1907, 4,534 employees were killed; in 1920, 3,578. When the total calculations of industrial accidents were made in 1913, the annual fatalities were placed at 25,000, and injuries involving more than four weeks' disability numbered 700,000. This was warfare. These deaths in industry were just over half the battle deaths of the American army in 1917 and 1918. During the war the government insured its soldiers at low rates. Yet in the late nineteenth century the common law assumed that, if an employee agreed to work for an employer, the former accepted all the ordinary dangers of the industry, all the extraordinary dangers if he was in a position to know them, and all the dangers arising from
the carelessness, ignorance, or incompetence of his fellow employees. Upon the laborer rather than upon the industry descended the burdens of industrial accidents.

Another definite measurement of the effect of the industrial revolution upon the wage earner was provided by the fluctuations in his wages. There are volumes of wage statistics for the United States, but it has been exceedingly difficult to interpret them or to draw any conclusions. The statisticians also have seized upon these figures, and the layman, after reading about medians, quartiles, weighted averages, logarithmic curves, and trends, is left with the impression of many modifying factors and damaging contradictions. From the mass of calculations, however, emerge a few generalizations which roughly approximate facts. One is that the money wages of non-agricultural workers greatly increased after 1860. One index of money wages for workers in industry, with an occasional infusion of agricultural workers, rose 53 per cent from 1860 to 1913. By far the larger share of this increase took place during the Civil War and the post-war years before the panic of 1873. The index figure attained in that year was not reached again until 1903. Money wages, however, by themselves are meaningless: it is what they can buy in commodities that gives them significance. Probably no wholly adequate measure of the cost of living can be secured for the United States before 1913; back to 1890 it is possible to procure prices of various retail products which entered into the worker’s consumption in various weighted proportions; before that date most is conjecture. From such data as we have, real wages over the period as a whole from 1860 to 1913 probably rose less rapidly than money ones, the index of the former increased only 43 per cent. If this long time span is broken down, it reveals that real wages lagged behind from 1860 to 1873; rose more rapidly than money ones during the remainder of the century as prices fell more rapidly than wages; and held a plateau in the years that intervened before the outbreak of World War I.

A factor which completely undermined most statistics of wages in the United States was the relative degree of unemployment. Hour wages mean little unless the number of hours worked, not in a week but in a year, or even several years, is known. Unfortunately the United States and the separate states did not in this period collect reasonably accurate statistics of unemployment. But although definite standards of measurement cannot be secured, it is recognized that a machine, competitive civilization caused unemployment in several fashions. Men were thrown out of work through the invention of machinery or the application of improved methods to production. Commentators have comforted discharged laborers with the assertion that the use of machines would lower prices, if the demand for the product were elastic, production would enlarge, and eventually larger forces would
be employed; or else new occupations would be created through industrial advance. A temporary displacement was admitted. Nor has the expansion of industry been effective in preventing intermittent employment in industry occasioned by seasonal influences or market conditions. Even the basic iron and steel industry was associated with the fickle industries. Its blast furnaces, because of the desirability of continuous operation, constituted one of the most stable processes in the industry. Yet the number of men employed on them ranged in 1908 to 1910 from 18,545 to 46,810. It is little wonder that an investigator into the conditions of labor in iron and steel in 1910 found that among the workers “there has been no complaint so frequently made or so strongly expressed as that regarding irregularity of employment.”

At periodic intervals came the trough of a “business cycle.” A palsy seized industry, production was curtailed, and workers had to shift as they might until a slow cure was effected. In the nineteenth century there was no accurate means of measuring this unemployment. Even for a depression as recent as that of the mid-nineties, figures of unemployment ranged from a well-meaning estimate of 4,500,000 to the informed calculation of Paul Douglas that in 1894 the number of unemployed in manufacturing and transportation was 904,000, a figure that was 16.7 per cent of the labor supply in those occupations. Although many observers interpreted such distressing events as the punishment of a righteous God upon the degraded classes of the community and in the nineties regarded the pathetic “industrial armies” marching to Washington for relief as recruited from congenital tramps and criminals, the community usually assumed responsibility for easing the hardships of those who were unemployed through no fault of their own. Measures taken were usually neither efficient nor well directed but they were certainly various—soup kitchens and bread lines, shelters for the homeless, subsistence gardens, emergency committees collecting old clothes, private charities spending public money, policemen acting as relief agents and social workers, payments to the unemployed in wages, truck, and store orders, differing treatments for unemployed and unemployables. By the panic of 1914 a pattern had developed from this confused experimentation. Existing private charity organizations—associated charities—gave relief from their own funds, and governments sheltered the homeless, distributed appropriations to the poor, and sponsored public works. Relief methods were fairly objective. Impetuous impromptu organizations were discouraged, investigation preceded assistance, and efforts were made to determine the number of unemployed. The city was still the recognized unit in formulating unemployment relief measures although three states had state-wide systems and national organizations were advocating a national policy.

Finally the trend of industrial development shattered the close relation-
ship and neighborly contact between the employer and the employee. The
growth of corporations diffused ownership among many stockholders,
whose chief interest was generally profits, and big business together with
bankers' control created absentee ownership and responsibility. There was
an impersonality about the new order which was heightened by the fact that
under capitalistic competition industry was a way of making money and not
of living a life. To be sure, there were exceptions to this tendency. In southern
villages the cotton mill built operatives' houses, aided in the establish-
ment of schools, and financed churches, and the mill owner or agent either
was superintendent in the Sunday school or taught classes. The fact that the
workers and the employers were of a common race and that the southern
manager inherited a conception of noblesse oblige from the slave régime
created a community of feeling. When this sentiment began to dissolve in
the twentieth century, the alarmed owners stopped at nothing to scotch
the snake of industrial unrest which was destroying their Eden. In the
North there were small localities or plants where employer and employee
knew and respected each other but these were mere enclaves overwhelmed
in the larger development. Some big businessmen attempted to maintain the
old neighborliness. Andrew Carnegie asserted that he liked to be called
"Andy" by his men, and Mark Hanna felt a genuine joy in talking man to
man with his workers. But it was idle to pretend that such relations ap-
proximated the intimacy of a simpler economic system.

**Labor Organization: Seed Time, 1850–77**

If the individual sought to change the conditions brought into being by
the industrial revolution, he found himself whirled about in the maelstrom
of competition. He competed with other wage earners whose necessity for
a job was as great as his own. He competed also with the employers for
a division of the product. In the latter rivalry the wage earner was at a
great disadvantage. "While corporations are the richest and strongest bodies,
as a rule, in the state," wrote Judge Rogers of the Rhode Island Supreme
Court in 1892, "their employees are often the weakest and least able to
protect themselves, frequently being dependent upon their current wage
for their daily bread." But the individual wage earner was not yet done with
competition. Employers competed with each other. If one were willing to
raise wages and shorten hours, he might be confronted with the lower pro-
duction costs of his competitor. The most generous employer with the wel-
fare of his men at heart could not escape this pressure. Under the circum-
stances it was inevitable that the worker should seek to escape the evils
of the competitive system through combination. The trade union was his
solution. But to form one from hundreds and thousands of individuals, loyal and selfish, American and Italian and Polish, was a task much more heart-breaking than the organization of a merger.

For twenty-five years after 1850 leaders and workers sought to cope with the changing character of industry. They did succeed in establishing a number of genuine labor movements organized on a national scale, for both the market for goods and the market for labor were extending to national limits. At the height of the movement perhaps thirty trades had national trade unions. But in the depression between 1873 and 1877 most of them dwindled away or disappeared. A few, particularly in the skilled trades, survived. But it was noticeable that in the dynamic new industries of the industrial state the labor unions exerted little control. Before 1875 on the railroads only three of the later four brotherhoods had been established; of these the Brotherhood of Locomotive Engineers was the only one of any importance and it hearkened willingly when railroad officials recommended that the members seek to improve the “moral, social and intellectual condition of the Locomotive Engineers” rather than encourage “antagonism to your employers.” In bituminous coal mining organization was shattered by undisciplined strikes and the arrest of leaders. In anthracite the failure of a strike to prevent wage cuts broke the ephemeral but powerful Working-men’s Benevolent Association, and then in 1875-77 Franklin B. Gowen, lawyer and railroad executive, protagonist of the forthcoming anthracite coal monopoly, determined to identify unionism with the endemic terrorism of the anthracite region commonly ascribed to a gang known as the “Molly Maguires.” By the testimony of a Pinkerton detective he was able to impress the newspapers and courts of the day if not all later investigators. A series of executions purged the mining regions of violence and union activity. In the fundamental iron and steel industry only the skilled workers were organized. In 1876 three organizations coalesced into the Amalgamated Association of Iron and Steel Workers. But the union was a sign of weakness rather than strength, as only the Sons of Vulcan, the puddlers’ union, had a noticeable membership.

The harsh realities of the workingman’s life stimulated most of this labor union activity—as it always had. Unions struggled to prevent wage cuts and secure increases or campaigned for a shorter working day. To be sure, what was feasible did not always concern them. For at a moment when very few industries had secured a day of ten hours, labor’s mouthpieces were demanding one of eight and advancing the argument of one of their number, Ira Steward, the “eight-hour monomaniac” of Boston, as justification. Steward asserted the shorter day would aid even the manufacturer.
In the mechanical fact that the cost of making an article depends almost entirely upon the number manufactured is a practical increase in wages, by tempting the workers through their new leisure to unite in buying luxuries now confined to the wealthy, and which are costly because bought only by the wealthy.

This shorter work day was to be obtained by an educational campaign and legislation. By 1868 the national government had submitted and passed an eight-hour law for government employees. Such legislation as was secured in the states was worthless.

Other labor leaders and reformers were meanwhile moving against the larger hardships of the incoming machine age. As escape they advocated coöperation—coöperative stores in which they could purchase goods and coöperative factories in which the workers furnished the capital, managed the enterprise, and took all the profits. "The coöperative principle . . . will build all our cities, dig our ores, fill the land with the noise of the loom and spindle. The workingman . . . will become contractor, builder, manufacturer, reaping the rewards of his own industry and the profits of his own labor." All this was natural enough for men only a stage removed from the handicraftsmen who had helped themselves and given themselves employment. But practice contradicted anticipation. The coöperative factories, many of them established by the molders' union, instead of destroying the "Wages System" became the personal possessions of a few laborers whose actions and outlook were indistinguishable from those of capitalist employers. They worked holidays and thought there was little use for the union. Since coöperative enterprises required capital, the union movement became involved in the financial panaceas of the era; and this concern led them to an emphasis upon political action rather than upon strikes. All this sounded like an earlier day. Indeed, Robert Dale Owen and George Evans would have felt at home at the annual conventions of the National Labor Union, a reflection of the National Trades' Union of the thirties.

Meanwhile, in December, 1869, nine Philadelphia tailors met in the hall of the American Hose Company and established the first local assembly of the Noble and Holy Order of the Knights of Labor. Its first Master Workman, Uriah S. Stephens, a tailor, was the real sire. Trained for the Baptist ministry, his thinking was deeply influenced by his religious heritage. As an all-round "joiner" he believed in brotherhood and had a knowledge of secret fraternal organizations and ritualistic nomenclature. He criticized existing unions as "too narrow in their ideas and too circumscribed in their fields of operations. . . . I can see ahead of me an organization that will cover the globe. It will include men and women of every craft, creed, and color; it will cover every race worth saving." Apparently he felt that a religious ritual
would create his visioned solidarity of labor by shattering the barriers of prejudice and self-interest dividing laborers from one another and impress them with a common brotherhood. To effect these objects he drew up a secret ceremonial, the Adelphon Kruptos. Thus conceived, the Knights were fitted to meet the needs of the seventies. While the old trade unions based upon craft lines were wilting away, this new organization arrived with the gospel that all workers were one. While the members of the open unions were being persecuted, their organizers discouraged, and union employees blacklisted, the Knights flung a protecting veil of secrecy over union membership. In fact, the disintegration of the previous labor movement cleared the way for the new one. In 1873 the local assemblies around Philadelphia were so numerous that they were formed into the first district assembly of the Order, and the membership five years later was so large and divided that the first national meeting was required for the sake of harmony and compromise. Before it met, the American labor movement entered a new phase.

The Uprising of Labor, 1877–86

In 1877 at least one observer felt that the labor disturbances of that year deserved a book. The Hon. J. A. Dacus, Ph.D., thus described them in his Annals of the Great Strikes in the United States:

This Republic suddenly startles the world; drowns the noise of strife on the Bulgarian plains, and among the Balkans, and draws exclusive attention to the social émeute on this side of the Atlantic unparalleled in the annals of time. Sudden as a thunder-burst from a clear sky, the crisis came upon the country. Hundreds and thousands of men belonging to the laboring classes, alleging that they were wronged and oppressed, ceased to work, seized railroads, closed factories, foundries, shops and mills, laid a complete embargo on all internal commerce, interrupted travel, and bid defiance to the ordinary instruments of legal authority. . . . It seemed as if the whole social and political structure was on the very brink of ruin. . . . But the spontaneity of the movement shows the existence of a widespread discontent, a disposition to subvert the existing social order, to modify or overturn the political institutions, under which such unfavorable conditions were developed.

Although allowance must be made for a certain journalistic breathlessness, the great railroad strikes of 1877, caused by repeated wage cuts and “doubling up,” sometimes flared into open violence with troops called out, property destroyed in gigantic bonfires, and the loss of life. On these occasions and on others in the next twenty years, an untamed, undirected, spontaneous mass movement of the wage earners convinced an unprepared nation that European history was being violently repeated on this side of the Atlantic, and that the labor problem had become American.
The beneficiary of this discontent was the Noble and Holy Order of the Knights of Labor. Purely by chance that organization in 1878 assumed a national form when the first general assembly, convened at Reading, adopted a preamble, a platform, and a constitution. The first two documents were inheritances from the past, continuing the tradition of earlier American labor and reform movements. The general statements of the preamble indicted "the recent alarming development and aggression of aggregated wealth" and justified the organization of the workers to prevent the "pauperization and hopeless degradation of the toiling masses." Some planks in the platform were more specific. They called for equal pay for equal work for both sexes, the prohibition of labor by children under fourteen years in shops, mines, and factories, the reduction of the hours of labor to eight a day for cultural reasons, the payment of wages once a week in money rather than in orders or truck, the substitution of arbitration for strikes, "the reserving of the public lands, the heritage of the people, for the actual settler—not another acre for railroads or speculators," "the establishment of cooperative institutions, productive and distributive," and the bestowal of economic and social rights upon the toilers so that they might be "capable of enjoying, appreciating, defending, and perpetuating the blessings of good government." In one of the many changes or additions made in later years to this document the Knights were told, "It is the duty of all to assist in nominating and supporting with their votes only such candidates as will pledge their support to those measures regardless of party." The relative attention given to these policies depended upon the personality of the Order's leaders and the demands of the situation.

Finally there was the constitution. It embraced the local assemblies, the district assemblies, and the general assembly, and established as national officers a General Executive Board and the General Master Workman, all dignified for secrecy rather than convenience by abbreviations of the initial letters. Theoretically, the organization was an extremely centralized one. Actually, it was decentralized, for the district assemblies and local assemblies assumed an independent and often impudent air toward the General Master Workman and his fellow officers. No uniformity, moreover, characterized these subordinate organizations. A single craft generally composed a local assembly, but there were locals built around industrial plants and "mixed locals," particularly in the smaller places, of all varieties of workers. On paper district assemblies should have included all workers within a certain geographical unit. Actually, some district assemblies like those in the coal regions were organized where one trade so much predominated as to make them in effect trade districts; in some municipalities the workers of a given craft were organized into a district assembly; and finally there was in
the eighties a movement to include all the workers in a single craft throughout the nation in district assemblies of their own.

But in spite of its diverse organization, the Order aspired to universality. Doctors, lawyers, bankers and liquor dealers could not join it. But everyone who worked or had worked for wages was welcomed. Capitalists, merchants, farmers belonged. It organized the skilled, the semi-skilled, the unskilled; it included women in its membership; and it did not scorn the foreigner or the Negro. The Adolphon Kruptos was translated into French, German, and Scandinavian, and requests were made for Polish, Italian, and Bohemian versions. The Knights preached the solidarity of labor.

The next step in organization was to discard the semi-religious chrysalis of the Order. In 1879 Stephens, who had been General Master Workman, resigned, and Terence V. Powderly was elected as his successor. An Irish machinist, Powderly was a humanitarian, a gifted propagandist, a middle-class reformer whose very appearance impressed contemporaries as unlike that of the conventional labor leader. "English novelists take men of Powderly's look for their poets, gondola scullers, philosophers and heroes crossed in love." Although he frequently failed to guide the movement of which he was the head, he often influenced it. For one thing, his opposition to the secret features of the Order was certainly wise. These had aroused public suspicion. Allan Pinkerton, with a reckless carelessness of fact, wrote in 1878 that the Knights of Labor "is probably an amalgamation of the Molly Maguires and the Commune." The Catholic Church, which opposed secret religious orders whose vows interfered with the freedom of the confessional, was hostile to the Order. But it had to organize the Irish Catholic worker. Powderly was a Roman Catholic and appreciated the difficulty. In 1881 all restrictions on the disclosure of the name of the Order, previously concealed by stars, were removed, an affirmation was substituted for the oath, and the scriptural passages and language were expurgated from the Adolphon Kruptos. Although Stephens was disconsolate and a few Protestant preachers felt the Knights had become an instrument of the Pope, the secularization of the Order undoubtedly increased its usefulness to the labor movement in the decade of the eighties.

By 1881 the army of Knights had enlisted somewhat fewer than 20,000 members. Yet in 1886 the number in the Order had multiplied to the incredible total of 702,924, the largest labor organization which the United States had ever seen. These five years of success were not due to the achievements of the Knights of Labor in coöperation or in politics. In these areas, programs of action were primarily local in character and the central organization confined itself to homilies or campaigns of education. Nor was participation in successful strikes the entire explanation. In fact, in the days of
its primitive purity the Knights had been opposed to strikes; the platform of the Order in 1878 chose arbitration as a preferable means of settling disputes, and Powderly was temperamentally and intellectually convinced of the danger of striking, an attitude quite understandable in the light of labor experience during the seventies. Even though the Order later made efforts to systematize the calling of strikes and provide funds for such activity, the independence of local units, the failure to collect strike funds or their appropriation, if collected, to other purposes, and the persistent reluctance of Powderly and most other officials to modify their suspicion of this method—all contributed to make preparation for strikes inadequate and to furnish a vacillating direction.

In the mid-eighties, nevertheless, the Order won some prestige and some membership as a result of successful railroad strikes. Like as not the workers were organized into Knights after they had won their victories rather than before. As the outstanding labor organization in the country, it was the beneficiary also of an eight-hour movement which it did not wholeheartedly support. Years later, Powderly reflecting upon a growth so phenomenal that the membership multiplied nine times in a twelvemonth, declared, “At least four hundred thousand came in from curiosity and caused more damage than good.” American agriculture and politics had both provided similar organizational crazes. Behind all such phenomena there was usually a deep-felt need. In the case of labor the transformation of American industry had by the eighties become so far-reaching that some novel labor response was to be expected. As the movement toward organization gained, the sensationalism of the press gave momentum by exaggerating the power of the Knights. Thus the New York Sun declared:

The ability of the president and cabinet to turn out all the men in the civil service, and to shift from one post to another the duties of the men in the army and navy, is a petty authority compared with that of these five Knights [the General Executive Board]. . . . They can stay the nimble touch of almost every telegraph operator; can shut up most of the mills and factories, and can disable the railroads.

Liquidation of the Labor Movement, 1887–93

The peak of this uprising was reached in 1886. In May of that year a dramatic decline set in. The eight-hour movement collapsed and in the ruin ironically injured the Order. Though Powderly expressed a disapproval of a strike for that purpose, the rank and file of his organization and of other unions and of unorganized workers nevertheless set the first of May as a deadline for the attainment of fewer hours. Actually, this movement for a
general strike was confined to the great industrial centers, and in Chicago, where eighty thousand wage earners ceased work, it reached its greatest intensity. In that city other factors incited aggressive action. For three months McCormick, unwilling to be “dictated to” by the unionization of his plant, had locked out workers and conducted operations with “scabs” and Pinkertons. Finally there were the anarchists. Although some of their leaders were European immigrants, one, Albert R. Parsons, was an Alabaman, a Confederate veteran, and a Knight of Labor. The anarchists felt that politics were a delusion, that the ideal society of which they dreamed could be brought into existence only through violence, and they expressed their conclusions in the vague, exciting rhetoric characteristic of much revolutionary writing. On May 3 a battle between strikers and scabs at the McCormick reaper works was broken up by the police and four strikers were killed. One of the anarchist leaders, summoning a meeting of protest in Haymarket Square for the evening of May 4, included the appeal, “Workingmen, arm yourselves and appear in full force.” In Haymarket Square the dull speeches had worn on into the night and rain had set in when a squad of police advanced to break up the meeting. Someone threw a bomb. One policeman was killed instantly, others were fatally wounded.

A wave of hysteria swept Chicago. Under conditions of popular excitement which made a fair outcome of the proceedings unlikely, the leaders of the anarchists were arrested and brought to trial as accomplices to the murder. Although the actual bomb thrower was never discovered and a connection between him and the anarchists was never established, eight men were convicted of murder by a jury; four were actually executed. This injustice to individual men had wider repercussions. The radical elements in the Knights of Labor seceded in anger because Powderly did not vigorously protest the injustice of the Haymarket trials. Conservatives outside the labor movement blamed the “outrage” on the Knights of Labor. Everywhere radicals were harassed, anti-labor legislation enacted, and middle-class American opinion carefully instructed to identify the labor movement with violence.

Six years later disaster overtook the Amalgamated Association of Iron and Steel Workers. During the eighties this union, aloof from the Knights of Labor, had become the most powerful craft union in the nation. But it failed to include unskilled workers and because of inertia and employer opposition it had failed to organize the steel mills. An exception was the Carnegie Homestead Works at Pittsburgh. But here the union men gained the ill will of their employers by whining over minor grievances and attempting to restrict output. Carnegie, however, bland his public utterances, and Henry Clay Frick, his lieutenant, resolved to eliminate the union from their domain. The battle came in 1892. Frick candidly informed a Congressional
investigating committee: “We did not care whether they were union or anti-
union, but we wanted men with whom we could deal individually. We did
not propose to deal with the Amalgamated Association . . . as we had
plainly told them.” But of course the ostensible quarrel was over wages and
scales. Frick meanwhile made arrangements with Pinkerton for an army
of three hundred detectives, and when the strike broke these were placed on
barges, towed up the Ohio and Monongahela, and brought abreast of Home-
stead early in the morning of July 6. An army of strikers mobilized on the
bank. Who fired the first shot was a matter of dispute but an engagement
broke out between the strikers behind breastworks and the Pinkertons on the
boats. By evening the latter surrendered. Although prisoners of war, they
were treated outrageously by the mob, composed chiefly of women and boys.
“The character of the injuries inflicted upon the Pinkertons in some cases
were too indecent and brutal to describe in this report,” later declared the
Congressional Committee of Investigation. This committee quite wisely
blamed the outbreak upon both parties. But the employers won. The militia
was called out, martial law was declared, and the union was broken.

The great railroad strikes of 1877 had begun the period of labor uprising;
the railroad strikes of 1893-94 fittingly ended it. Eugene V. Debs, a homely
middlewesterner who combined the occupations of groceryman and labor
leader in the Brotherhood of Locomotive Firemen, was discontented with
the exclusiveness of his organization and established the American Railway
Union on industrial lines. In 1894, still flushed with a stirring victory over
the Great Northern Railway, it adopted the cause of workers in the Pullman
Company. The latter, on strike against a reduction in wages, the discharge of
workers, and the paternalism of the company, joined the Debs organization;
in June the American Railway Union forbade its members to handle all
trains which included Pullman cars. As the strike spread, the public was ir-
ritated by the consequent interruption to train service in the West and
horrified at the destruction of Chicago railroad property by mobs of railroad
workers or hoodlums. On their side the railroad workers saw the General
Managers’ Association, representing the employers, maneuver so as to make
government intervention necessary to protect the mails; they saw the gov-
ernment’s case against the strikers entrusted to a special attorney in the pay
of one of the railroads; they saw an army of special deputies sworn in by the
government and paid by the General Managers’ Association; they saw Presi-
dent Cleveland send national troops to Chicago over a protest of the Illinois
governor to prevent violence and ensure the carriage of the United States
mail; they saw an injunction obtained from a Federal court forbid the offi-
cers of the union and “all other persons whomsoever from doing any act
whatever in furtherance of any conspiracy or combination to restrain either
of said railway companies or receivers in the free and unhindered control and handling of interstate commerce over the lines of said railroads"; and they saw their leaders ultimately imprisoned for contempt of court because they violated the injunction. The strike was broken, the union smashed.

In the mid-nineties, after fifteen years of exciting development, the estate of the American labor movement seemed as low as in the seventies. In 1897 the total number of organized workers, 447,000, was only slightly larger than during the best days of the National Labor Union some thirty years earlier. Less than one-tenth of the mine workers in the country were organized; the Homestead strike had destroyed unionism in the plants of the largest steel concern of the nation—a ruinous portent since that concern was later to form the nucleus of the United States Steel Corporation and shape its policies; on the railroads the favored brotherhoods were stronger while the majority of workers were still unorganized; and the attempt of the Knights to achieve a labor solidarity had failed. In 1890 they had only 100,000 members, and a few years later they were absorbed by the farmers' movements of the West.

Partisans of differing methods of labor organization and strategy have naturally advanced different explanations for this outcome. Undoubtedly the stresses and strains of industrial unionism were one cause for the decline of the Knights. Powderly himself searchingly appraised the Order in this fashion:

Advocating arbitration and conciliation as first steps in labor disputes she has been forced to take upon her shoulders the responsibilities of the aggressor first and, when hope of arbitration and conciliation failed, to beg of the opposing side to do what we should have applied for in the first place. Advising against strikes we have been in the midst of them. Urging important reforms we have been forced to yield our time and attention to petty disputes. . . . While not a political party we have been forced into the attitude of taking political action.

But on occasion craft unions fared no better. After all, it was the Amalgamated Association of Iron and Steel Workers, the strongest craft union in America, that collapsed after Homestead. Mere organizational defects were not, therefore, the whole explanation for the failure of labor's revolt.

More important was the fact that in the later eighties and early nineties big business enterprises were perfecting the methods of dealing with labor unions. After all, the great corporations were powerful in their own right, and, conscious of common interests, many industries were forming associations for the battle against unionism. Singly or together they possessed the means to protect their property during strikes and to keep it in operation. This warfare required armies. Men of vision, like Allan Pinkerton, the
founder of the great detective agency, answered the call. In 1866 the Pinkertons first hired out guards to employers to protect their property during industrial disturbances. The business grew with such rapidity that within twenty-five years the Pinkertons had multiplied their offices, increased their forces, furnished men for more than seventy strikes, and gone into preventive work. One advertisement announced, "Corporations or individuals desirous of ascertaining the feelings of their employees, and whether they are likely to engage in strikes or are joining any secret labor organizations with a view of compelling terms from corporations or employers... can obtain a detective suitable to associate with their employees and obtain this information." The profits in selling protection were so great that competitors multiplied. Each had its arsenals of weapons and ammunition and recruited its forces in large part from the vicious and criminal classes of the population. By 1900 the pattern was set for the new century.

Supplementing this effective pressure was the anti-union activity of the theoretically "neutral" state. In microcosm the Chicago affair of 1894 demonstrated the variety and effectiveness of that assistance. Although troops had been employed to curb industrial disturbance before, never had they been used on so impressive or unjustified a scale. Nor had the courts been so sweeping in their proscriptions. To be sure, through the late seventies and eighties they had been beating a retreat from the generous interpretation of the common law of Commonwealth v. Hunt and emphasizing anew the doctrine of criminal conspiracy which condemned unions if they sought illegal ends by innocent means or innocent ends by unlawful means and held all union members responsible for the unlawfulness of either purposes or methods. Now in the Chicago affair the government supplemented these theories with the assertion that the Sherman Anti-Trust Act applied to labor union activities. The first section of the statute declared, "Every contract, combination in the form of trust or otherwise, or conspiracy in restraint of trade or commerce among the several States, or with foreign nations, is hereby declared to be illegal." Although Congress had probably not intended to proscribe labor union activity by an act designed to curb trusts and monopolies, the Attorney-General of the United States and several inferior courts, though not the Supreme Court, utilized the Sherman Anti-Trust Act for this purpose.

Generally the means of preventing the criminal acts attendant upon labor quarrels had been to seek indictments for criminal prosecution; but this method was slow and injury might be inflicted by irresponsible people before the case was decided. In the eighties employers were increasingly turning to the courts for injunctions to prevent in anticipation any damage to their property. The Chicago strike in 1894 for the first time witnessed the
use of the injunction on a large scale, and the Supreme Court, although it omitted to discuss the applicability of the Sherman Anti-Trust Act, placed the injunction upon a firm legal foundation. By defining property as the right of a business to continue in operation with new or old employees or to sell goods to old and new customers, the courts were able to issue injunctions not only against possible destruction of physical property but against strikes and boycotts damaging the owner's property in these intangible consumer or worker relationships. The person who violated an injunction was not punished for the crime prohibited but for contempt of court, and this procedure did not involve trial by jury but simply a hearing before the judge who had drawn up the injunction. The injunction nipped strikes at the beginning, when they were apt to be most effective; and before a final decision was made the outbreak was likely to have collapsed.

**The American Federation of Labor, 1886–1920**

Jay Gould remarked, "I can hire one half of the working class to kill the other half." In view of this cynical, candid utterance, no explanation of the collapse of the Knights of Labor was complete without a knowledge of the fatal fissures within the labor movement of the eighties and nineties. As the Knights of Labor sank, the American Federation of Labor increased its membership. This was an organization primarily of skilled workers. Its constituents, the national trade unions, craft in character, had occasionally cooperated with the Noble and Holy Order, sometimes had joined it, but more usually had regarded it with distrust. In 1881 some of them formed a rival organization, the Federation of Organized Trades and Labor Unions. Although the Federation was extremely feeble, the leaders of its most aggressive unions, P. J. McGuire of the carpenters and Adolph Strasser and Samuel Gompers of the cigar makers, continued to feel their way toward a form of organization adapted to American conditions. They discarded the idea of cooperation, opposed political methods, and sought the attainment of immediate objectives by economic pressure. Strasser's testimony before a Senatorial committee in 1883 was the classic statement of this aspiration.

**Chairman:** I was only asking you in regard to your ultimate ends.

**The Witness [Strasser]:** We have no ultimate ends. We are going on from day to day. We are fighting only for immediate objects—objects that can be realized in a few years.

**Mr. Call:** You want something better to eat and to wear, and better houses to live in?

**The Witness:** Yes, we want to dress better and to live better, and become better citizens generally.
The Chairman: I see you are a little sensitive lest it be thought that you are a mere theorizer. I do not look upon you in that light at all.

The Witness: Well, we say in our constitution that we are opposed to theorists, and I have to represent the organization here. We are all practical men.

This emphasis upon limited objectives reassured a middle-class nation easily alarmed by the prospect of revolutionary change and the destruction of private property.

It was fortunate for the national trade unions that these principles excited the ardent allegiance of Samuel Gompers, destined to give leadership to the American labor movement until his death in 1924. For in the labor movement, as Stephens and Powderly had demonstrated, leadership was half the battle. Life and character fitted Gompers for the rôle. Born in England of Dutch Jewish parents, emigrant as a boy to this country, self-educated cigar maker, he did not descend into the labor movement but grew up within it. He was admirably fitted for the democratic leadership of a wage-earner movement. He liked men, meeting, talking, and drinking with them, and he was in his own mind a practical man.

At no time in my life have I worked out a definitely articulated economic theory. As there has been need for practical action in various fields, I have always squared proposals upon the few fundamental principles that determine all my judgments. I am very frankly a partisan—a union man—not a half-hearted advocate who may be swayed either to the one side or the other. . . . I am unalterably with them [trade union laborers], yea, even to the extent of their errors, their mistakes.

"The world of selfish antagonism to the defenders and protectors of the workmen's rights and interests" felt the impact of this conviction; heretics in the labor movement were obliterated or expelled because they questioned Gompers' union gospel.

The Knights of Labor were among his first enemies. Their heresy was disclosed by a quarrel within the Cigar Makers' International Union in New York City which arrayed Gompers and Strasser against opponents who secured the backing of the local Knights of Labor. As a counter-offensive the Gompers-Strasser group secured the calling of a convention of the national unions in May, 1886, "to protect our respective organizations from the malicious work of an element who openly boast that 'trade unions' must be destroyed." When the Knights rejected an ultimatum from this group, the national unions met again at the end of the year, established the American Federation of Labor, and elected Samuel Gompers as their first president. Four years later membership of the American Federation going up met the membership of the Knights of Labor going down.
THE WAGE EARNER UNDER COMPETITION

After this victory membership kept an even plateau through the mid-nineties. In 1898 it began an era of spectacular increase. The years of business prosperity at the turn of the century had weakened employers' hostility. As new national unions were formed and existing ones joined the central organization, members mounted to 1,676,200 in 1904. The Knights had never succeeded like this. But this bright morning was soon gone. The membership curve leveled or declined. In 1912 it had reached only 1,779,000. In the same year the total number of organized workers was 2,483,500.

Then came a golden age for organized labor. One cause was a favorable political climate. The Progressive movement came to a head in the first years of the Wilson administration; the resulting grist of labor laws and even of favorable court decisions will be described later. A second explanation dovetailing with the first was World War I. A flood of orders from the Allies soon after the conflict broke out and from the United States after she became an "associated power" brought a wave of industrial prosperity. As prices rose, employers were able to meet the demands of their workers by transferring heightened labor costs to purchasers. When immigration fell away, the employer bid frantically for domestic workers and compromised his principles about union recognition. Finally organized labor with remarkable canniiness cast aside a natural pacifist philosophy and determined to support the war. It announced that "the government must recognize the organized labor movement as the agency through which it must cooperate with the wage earners." And the sympathetic attitude of the administration ensured compliance with this ultimatum. In 1920 the total number of organized workers had reached the astounding total of 5,110,000, of whom over 4,000,000 were affiliated with the American Federation of Labor.

Such totals concealed an uneven achievement. In manufacturing only 23.2 per cent of the total wage earners were organized. The basic industries were untouched. In as old an industry as textiles unions had never been important; in as new a one as automobiles employers were bent upon maintaining their workers' and their own freedom. The employers' association of Detroit chanted, "Detroit is Detroit because of the Open Shop," and Henry Ford based his policy upon "purely individual" relationships and the settlement of grievances "man to man." In the great barony of steel, unions had less influence than thirty years earlier. When the United States Steel Corporation was formed, the Board of Directors, although they tolerated already organized unions, voted, "We are unalterably opposed to any extension of union labor," and in 1910, after the workers lost a disastrous strike, this "soulless corporation," in Gompers' words, eradicated the union from its domain. Its example spread to other fields—transport on the Great
Lakes, bituminous coal mining, structural steel and iron construction—related to this central industry of the industrial state.

In coal mining, however, the unions achieved great success. In 1890 rival organizations had coalesced into the United Mine Workers and before the decade was over had won in the bituminous mines of the central competitive field—western Pennsylvania, Ohio, Indiana, and Illinois—a recognition that conditions of labor were to be determined by interstate joint conference between the employers and the employees. Then they moved on to anthracite, where unionization was difficult. Racial differences destroyed labor solidarity and the employers of the “anthracite trust,” when confronted with the question of unionism, replied that “anthracite mining is a business, and not a religious, sentimental or academic proposition.” One of their number referred to his associates and himself as “those Christian men to whom God has given control of the property rights of the country.” The union had the advantage of the leadership of John Mitchell, the conservative and devoted president of the United Mine Workers, and of popular support engendered by hatred of the anthracite monopoly. The anthracite strike of 1902 was a classic of labor history. Eventually the national government forced mediation upon the owners and the unions secured virtual though not nominal recognition. A decade later the United Mine Workers sought to organize the Colorado and West Virginia bituminous fields. The battle in the former area was notable for its fury and the abysmal ignorance of working conditions in his own companies demonstrated by John D. Rockefeller, Jr. In West Virginia judges issued injunctions on any provocation, militia occupied embattled areas, and military men administered martial law. The failure to organize West Virginia was fatal, since its non-union mines contributed a rapidly increasing proportion of the nation’s output. But in 1920 the United Mine Workers had organized over half of the workers in the coal industry.

In transportation the four brotherhoods still stood astride the railroad world. Even though their militant threat to strike for the eight-hour day in 1916 gained popular disfavor, they won their demands. On the other hand, the shop workers, yardsmen, telegraphers, clerks, and maintenance-of-way men were either grouped in minute unions or entirely unorganized. For them the Federation in 1908 established a Railway Employees’ Department, but only the period of the World War and government operation of the railroads filled it with membership.

Finally, there were the wage earners of the building trades. These workers had always been extraordinarily successful in attaining organization, and the local character of the market and the handicraft nature of their work enabled them to continue their progress. In the American Federation of Labor they were the core of the craft union group. In many of the large
cities—Chicago, San Francisco, New York—the building trades were effectively organized in labor monopolies. Unpleasant disclosures sporadically revealed their labor leaders constructing personal machines through the grant of jobs, collecting personal graft from employers as “insurance” against strikes, and serving as tools in the competitive warfare between one employer and another. These “labor racketeers” and “labor czars” terrorized both worker and boss.

All in all, by 1920 labor had organized one fifth of the non-agricultural workers of the nation. This figure was far less impressive than that of Great Britain, but in view of employer hostility it was a considerable achievement. For big business shrank neither in influence nor in power during the twentieth century. Its technique for dealing with labor had become almost automatic. In time of peace the industrial giants either established their own detective forces or employed outsiders to guard their property and to keep tabs on union-minded workers and the stirrings of discontent. In time of war they hired strikebreakers and employed private armies, either deputy sheriffs or operatives from Pinkerton and his imitators, to protect them in the “right to work.” The courts were induced to issue injunctions, and a favorable public opinion was cultivated. The “scab,” announced President Eliot of Harvard, was “a very good type of modern hero.”

As labor grew powerful, employers outside the pale of big business drew together and spoke in more belligerent tones. Organized on a local scale, as at Dayton or Indianapolis or elsewhere, they became experts in “union-smashing” and in maintaining their cities as “open-shop” towns. Organized on trade lines, often in the beginning to bargain collectively with their workers, they became disgusted as workers occasionally broke agreements, and they grew implacable in their hostility to unions. Thus the National Metal Trades Association, established in 1899 among the manufacturers of metal products, disavowed “any intention to interfere with the proper functions of labor organizations” but declared, “we will not admit of any interference with the management of our business” nor “deal with striking employees as a body.” The Association worked out a complicated and skillful system of strikebreaking and of dealing with labor organizers. “Special contract operators” or spies were placed in the works to detect the presence of agitators; if a strike broke out, payments from a previously accumulated defense fund afforded compensation; guards were provided, lawyers hired, injunctions sworn out. The Association boasted, “No strikes of any moment have been won by the machinists’ union since the organization of the National Metal Trades Association.”

Unlike the Metal Trades Association, the National Association of Manufacturers embraced all manufacturers who would join. For the first few years
after 1895, when the Association was organized, the tariff and foreign trade absorbed its attention, but in 1902, reflecting a tendency of the twentieth century, it became violently anti-union. According to its directors, its purposes were not so much to break strikes as to carry into effect certain principles and to resist attacks upon these principles by unenlightened workers. The “Principles” were drawn up by conventions and amended frequently. The National Association of Manufacturers was opposed to boycotts and strikes, and to interference which would prevent the employer from determining wages, the number of apprentices, and the help he should hire and fire. The open shop was its insistent war cry. From time to time these principles were interpreted by the presidents of the organization in an appealing rhetoric. One declared: “We are not opposed to good unionism, if such exists anywhere. The American brand of unionism, however, is un-American, illegal and indecent.” Another president somewhat mystically asserted, “The real and ideal union is the one between employer and employee.” The Association maintained lobbies, sought and obtained political influence, instructed professional men and community leaders in its vision of the proper economic system, and tried to convince the workers “that their employers are their best friends,” and that “hysteria and half-baked theories cannot bring us industrial supremacy.”

“Pure and Simple Unionism”

Such success as the American Federation of Labor achieved Gompers and his followers ascribed to the organization’s continued devotion to its first principles. Indeed, these labor leaders frequently referred to precedent and tradition with the zeal and awe usually exhibited by members of the legal fraternity. The first article of the official creed prescribed organization of labor on craft lines. McGuire had put the case: “Being organized on special trade lines they can act on trade matters all the more intelligently and practically as well as speedily than in mixed bodies.” These crafts were generally skilled white workers, although the Federation did issue charters for a few national unions of unskilled workers and authorized the formation of separate unions for Negroes. Federation officials encouraged all national unions to adopt the policies which had made British unions and a few pioneer American ones successful. In order to retain the loyalty of the worker to his organization in periods of industrial deflation and labor defeat, they urged the establishment of benefits and insurance for sickness. High dues and assessments built up strike funds controlled by the central officers. These officers, moreover, were given centralized authority over their locals and over the calling and conduct of strikes.

The strike and its companion weapon, the boycott, were but means to
compel obstinate employers to recognize the union or its agents as the representatives of their workers in the settlement of grievances and the negotiation of trade agreements determining the conditions of labor. The trade agreement was the great contribution of the Federation's "new unionism." Before 1896 it had been used only occasionally; now it was to be erected into a system. Such a contractual arrangement between the employer and his employees entailed considerable limitation of the employer's right "to do as he willed with his own." He wished to hire and fire on his own terms; the union counterattacked with the "closed shop" or the "preferential union shop" in which union men were to be exclusively employed or given priority.

The national or international trade unions enjoyed so great an independence in policy and action that the Federation at first seemed rather powerless. Its chief functions were to preserve order in the labor world by preventing "dual" unions and by settling some inter-union disputes; it was to spread the union movement by organizing workers and by making local unions into national organizations, a purpose for which it had its own corps of paid organizers; although its strike authority was limited and it had no central strike fund, it possessed the power to levy assessments upon all its members for the support of strikes of which it approved; it represented the workers in matters of national legislation; through its press, officers, and conventions it was the sounding board for the principles and policies of its members. As it acquired a larger income and staff, as it gained in public tolerance and even esteem, the influence of the central organization grew stronger. Here, too, the leadership of Gompers was an important factor.

In general the Federation accepted the machine, the factory, and private capitalism. But within that framework the organization had ideas about desirable conditions of labor. It demanded healthful and sanitary surroundings; it sought in Gompers' words in 1899 a "living wage," a wage "sufficient to maintain him [the laborer] and those dependent upon him in comparative comfort commensurate with his economic and social surroundings," a convenient and dynamic abstraction. But above all the union sought security for the worker. A job must be "made" for him to banish the nightmare of unemployment. Machines, some had thought, occasioned such involuntary idleness, but the leaders of the Federation realized it was fruitless to protest against the introduction of machinery. Toward the efficiency movement of the early twentieth century, however, they cherished a distrust lest it mean "the wiping out of our trade and organization," and labor protests prevented its employment in government work. The "making of a job" likewise involved union restrictions upon the number of apprentices, opposition to piecework wages, union limitations upon the amount of a day's work, and a whole series of unproven and intangible restraints upon output. It inspired
in large part the agitation for a shorter day's work. The dominant motive of the Federation in its passionate attachment to the eight-hour day was the desire to divide the available amount of employment among a greater number of workers. Economically the idea might be fallacious, but it was persistent.

From the first the Federation had sought its objectives through economic pressure and negotiation. It opposed political methods. Organized labor should have no party of its own and no alliance with existing political organizations. It was said that the Knights of Labor had demonstrated the futility of such measures and that, entirely aside from this particular experience, organized labor was a minority group in the total population. Furthermore, American workers, not class-conscious, were both Republicans and Democrats. Political agitation would disrupt the union. A strict adherence to this outlook, however, proved difficult. When a depression like that of the nineties blunted the economic weapon or when an attractive presidential candidate like Bryan was nominated, it was hard to stay on the reservation. Finally state favoritism for the "bosses," apparent in the dearth of labor legislation and "government by injunction," drove the Federation to action. In 1906 the annual convention found a way out. After describing a platform of desired legislation it announced, "We will stand by our friends and administer a stinging rebuke to men or parties who are either indifferent, negligent, or hostile." Since this policy of "reward your friends, punish your enemies" stopped short of forming a separate labor party, the leaders of the Federation could declare their opportunist attitude toward political measures was consistency. Although in 1908 Gompers and other leaders of the Federation derided Taft and the Republican party so bitterly as to become allies of the Democrats, such activity was all "non-partisan." In 1912 Gompers took a less conspicuous rôle, but he apparently regarded the election as placing in office an administration sympathetic to his program. This judgment was reënforced by experience, for in 1916 the American Federation endorsed the Wilson administration and its officers and worked for his election.

Criticism and challenge of the accepted canon came from within the Federation. Socialists expressed dissent, for although some of the more radical preferred to remain outside the Federation, in their estimation "a cross between a wind bag and a rope of sand," the moderates remained within its fold seeking to unhorse Gompers and to educate the Federation's membership to demand the "overthrowal of the wage system and the establishment of an industrial coöperative commonwealth." For the immediate present they championed a greater centralization of power within the Federation, participation in politics through a labor party, and the formation of wage earners into industrial unions. Through the advocacy of industrial unionism they gained support from those national unions which deviated from the Federa-
tion party line of restricted craft organizations. The most influential of these heretics were the International Ladies’ Garment Workers Union, which, after a dramatic strike in 1909-10 unionized a “sweated industry,” the United Brewery Workmen, and the United Mine Workers. The Federation long cautioned the last two to leave untouched the craft workers in their industries; both persisted in a successful obstinacy. By 1910 the Federation seemed on the point of discarding the doctrine of craft unionism in its purest forms. A tolerance of the industrial unionism of the mine and brewery workers was accompanied either by the amalgamation of other national unions or by the formation of departments to bring them into harmonious action.

THE I.W.W.

Nor did the Federation include all organized labor. At one extreme the Railroad Brotherhoods, at another the advanced Amalgamated Clothing Workers’ Union, the efficient organization in the men’s clothing industry, remained outside its boundaries. But the greatest enemy was the Industrial Workers of the World. This organization was established in 1905 by radical socialists to whom Gompers and his tribe were “labor fakers” and by the Western Federation of Miners, an ably led organization whose philosophy had been forged by a series of strikes akin to revolution in the copper and metal mines of the West. Somewhat as the Knights had done, they sought a new society through the destruction of the wage system. One of their hymns, “Paint Er Red,” expressed their rough-hewn, rowdy outlook:

“Slaves” they call us, “working plugs,” inferior by birth,
But when we hit their pocketbooks we’ll spoil their smiles of mirth—
We’ll stop their dirty dividends and drive them from the earth
With ONE BIG INDUSTRIAL UNION.

We hate their rotten system more than any mortals do,
Our aim is not to patch it up, but build it all anew,
And what we’ll have for government, when finally we’re through,
Is ONE BIG INDUSTRIAL UNION!

The I.W.W. had a stormy career of sects and secessions. The Western Federation of Miners, for instance, soon withdrew. But its methods of sudden and aggressive strikes and its resort to sabotage—the “strike on the job”—enabled workers who had little money to coalesce quickly into unions and wage an industrial conflict. The exciting and unpolished utterances of its press and leaders and its emphasis upon industrial unionism were useful in breaking down barriers between races and crafts. It appealed, therefore, to the unskilled worker, the migratory and seasonal laborer, the exploited
foreigner. In the West the I.W.W. enlisted the workers in mines, oil fields, agriculture, canning, and lumbering. When local authorities, shivering at its revolutionary doctrines, attempted to prevent organization and street speaking, “wobblies” would descend upon the community from every direction, exercise their “rights,” and crowd the jails until officials and people grew tired of the burden of support.

Then the organization invaded the East, appealing to workers whom the Federation had neglected. Its greatest achievement was the strike at Lawrence, Massachusetts, in 1912, when the textile mills, forced to reduce hours by legislation, also reduced wages. Here the revolutionary rhetoric of the I.W.W. was more than matched by the unscrupulous methods used by employers and city officials to combat them. They planted dynamite in the hope that its arranged discovery might cast discredit upon the workers; police fought to prevent parents on strike from sending their children outside the city in order that they might be properly cared for; and an official of an American Federation union actually condoled the clubbing and bayoneting of women and children. Although the strikers won, the mills tricked them by a subsequent speeding up of machinery, and the I.W.W. moved on to pastures new. The World War brought a debacle. Pacifist and socialist, the organization was easily stigmatized as unpatriotic. Popular hostility, court persecutions, and local vigilantism drove leaders and members into exile, put them into jail, or summarily dispatched them by lynch law. Meanwhile the workers to whom they had appealed might meditate with renewed irony upon the chorus of their ditty, “The Preacher and the Slave”:

You will eat, by and by,
In that glorious land above the sky;
Work and pray, live on hay,
You’ll get pie in the sky when you die.

**Protective Legislation**

Even before the Civil War certain states had taken steps toward protective labor legislation. After the conflict the movement continued. Children were one object of legislative solicitude. Massachusetts, for instance, passed a law in 1866 prohibiting the employment in any factory of children under ten years of age and requiring an eight-hour day and six months of schooling for those between ten and fourteen years of age. Not until 1879, however, was an enforceable statute enacted. Other states followed suit. By the mid-nineties only twelve states regulated child labor in all gainful occupations. The typical statute applied to manufacturing only, set a minimum age of twelve years, fixed maximum hours at ten a day for those above the minimum age,
and accepted a private affidavit that the child had reached the legal working age. One half of the states had such enactments.

Legislation protecting other wage earners was tardy. By 1874 agitation for a shorter workday for women had obtained enough momentum to secure in Massachusetts the passage of a bill providing that "no female over the age [18] shall be employed in laboring by any person, firm, or corporation in this commonwealth in the manufacture of cotton, woolen, jute or silk fabrics more than ten hours in any one day, or sixty hours in any one week." Because of the large number of women employed in these industries the act really limited the hours of all workers. By the mid-nineties a third of the states apparently had hours legislation for women but verbal loopholes and uncertainties over constitutionality generally destroyed their effectiveness. In fact, only three states had workable statutes. Meanwhile Massachusetts, to protect the health of all workers and prevent accidents, had modified in 1877 a mass of British legislation into the first factory act in America. Here imitation was rapid. Many states even established an inspection system for enforcement. But the safety movement of the nineteenth century, like legislation for the protection of children and women, was dwarfed by the massive development of the twentieth century.

For after 1900 the slow stream of labor legislation quickened to a torrent. The American Federation was only in part responsible for this acceleration; with its ingrained aversion to politics, it was often indifferent or hostile to the statutes enacted. But although the central organization might remain aloof, its subordinate units, individual unions or state federations, were taking positions on the battlefront. Nor could the passage of labor legislation be ascribed to the employers. Some were indifferent; more were insistent that the conditions of competition be equalized: if South Carolina would raise her standards, Massachusetts employers could tolerate the raising of theirs; most expressed an innate hostility—such legislation was desirable in a utopia but not in practice. Rather the progressive movement, essentially middle-class, was responsible for the flood tide of labor legislation. As Theodore Roosevelt blistered the "malefactors of great wealth" and Woodrow Wilson more chastely pleaded for a social conscience, business was placed upon the defensive. Consumers saw in the laborer a fellow victim of business enterprise. He too was "exploited," he too must be protected from the "cruelty," "greed," and "self-interest" of the industrial system. Studies provided figures of wages and hours for this passion to feed upon. Although they made sober contributions of value, their data on child labor, on night work for women, on the death and maiming of workers by industrial accident, had also an inherent "human-interest" appeal occasionally verging on sentimentality. Armed with facts and feeling, ministers, social and settlement house workers,
economists, journalists, socialists and reformers, the National Child Labor Committee, the National Consumers League, the American Association for Labor Legislation, the General Federation of Women's Clubs, marched upon the state legislatures and won results.

Perforce American labor legislation was of the most diverse sorts. Since action by the national government was severely limited by current understandings of the Federal Constitution, the individual states had the chief power of legislation. The earliest laws were passed in the states first touched by the industrial revolution. This was one reason, along with the puritan paternalism of New England thinking, for the leadership of Massachusetts. Many western states, whose industrial population was small, passed legislation because of their freedom from tradition and their tendency to look toward the state for action. The most backward states were in the agricultural South. The fact that forty-eight states were involved in the process both helped and delayed the process of legislation. In some states it was possible to secure more advanced measures than the whole nation would undertake; on the other hand, the adoption or retention of such statutes was hindered by the fear of competition from states with backward standards. Also the extraordinary difficulty of enacting laws state by state discouraged both reformers and labor leaders. It was one reason for the labor unions’ dislike of government action.

In the traditional field of child labor regulation the progressive era made legislation universal. Labor unions realized that such workers could not be unionized and that their competition with adults could be prevented only through legislation. In the South, before 1900 the most conspicuous region without such legislation, local opinion, marshaled by labor unions, journalists, and clergymen, began to press for the restriction of child labor. The textile industry, in which children did most of the spinning, was alarmed; a measure excluding children below twelve years of age from factory work was characterized by a South Carolinian as “a bill to discourage manufacturing in South Carolina.” Shrinking from extreme measures, the state permitted children below the minimum age to work if their earnings were required to support themselves, their widowed mothers, or disabled fathers. Everywhere exceptions drove holes through seemingly rigorous legislation. But by 1920 the typical child labor enactment forbade employment under fourteen years of age and set an eight-hour day for workers under sixteen years of age.

Far more novel was the rapid enactment of measures for the protection of women workers. Between 1909 and 1917 nineteen states adopted such measures for the first time; twenty states made improvements and extensions of existing legislation. Hours were the chief issue. Whereas in 1900 a ten-hour
day was regarded as standard, by 1919 Massachusetts was establishing a forty-eight hour week for women workers in factories, stores, and communication and transportation enterprises. Only a few years before the treasurer of a Lowell mill had announced that he believed in a nine-hour day "when the millennium arrived, not before." In eight-hour legislation Massachusetts was not the pioneer. California had anticipated her by nearly a decade. The former regained her primacy, however, by the enactment in 1912 of the first minimum wage law for women in the United States. But the Massachusetts law was a feeble instrument. The commission for setting minimum wages was to consider not only the cost of living but also the financial situation of the industry in question and was to rely upon publicity rather than compulsion for an acceptance of its findings. Within a year eight other states passed minimum wage legislation and then the movement petered out. Protective legislation for women faced greater barriers than that for children. For one thing, the courts, as we shall see, dangled above it the Damoclean sword of "unconstitutionality." For another, the labor unions were not uniformly enthusiastic. The American Federation looked askance upon minimum wage laws as a dangerous interference by the state in wage matters better left to union agitation. Some women's groups resented the "inferiority" implied by protective legislation and, of course, the spokesmen of reactionary business were sure to regard such measures as "subversive" and identical with sin.

The progressive movement also busied itself with measures to ease the hardships caused by industrial accidents. No matter how thoroughly machinery was protected or workers trained, these accidents would happen and the common law, usually placing the complete responsibility upon the worker or his fellows, hampered the injured man in recovering damages. In 1910 every American state had modified these doctrines, but without a genuine solution of the problem. Damage suits against employers, however expedited, were slow, wasteful, and uncertain. European nations after the same experience had adopted systems of workmen's compensation which provided an indemnity to the worker or his family. After 1910 states raced to enact such measures. Wisconsin's was the first to go into operation. In order to escape the hostility of the courts, many of these measures gave the employer the option of contributing to a workmen's compensation scheme or meeting a suit for damages shorn of the protections afforded by common law doctrines of "fellow-servants" and "contributory negligence." By 1920 forty-three states had legislation. All of the states which did not have such laws were in the South.

With workmen's compensation laws, general legislation protecting all workers came to an end. Protection to male wage earners was not extensive.
There were exceptions. For years states had passed legislation limiting hours in designated employments, such as mining, brickyards, bakeries, or public works; and two, Oregon and Massachusetts, limited to ten a day the hours of all men employed in manufacturing establishments. In the national field, Congress in 1907 had prescribed for railroad trainmen ten hours of rest after sixteen consecutive hours of work and in 1916 passed the Adamson Act assuring the same pay for an eight-hour day as had been given earlier for "days" of greater length. The paucity or limitations of such laws were explained by the indifference of the progressives and the hostility of the unions. The progressive movement was interested primarily in the handicapped labor groups. Time and time again it was said that "the men could look after themselves." Gompers and the Federation would have paraphrased the statement to read: the unions could look after the workers. For if union members could obtain shorter hours, better wages, and compensation for injuries through state action, what motive was left for remaining within the unions and for paying dues?

The Unions and the Law

Committed to union measures, the Federation was concerned primarily with preventing restriction upon the union's existence or upon the methods which it could employ. It might frown upon the Oregon law, as it did, but it boiled with passion at injunctions and court decisions affecting boycotts and strikes. After the nineties the legal position of the unions was uncomfortable at best. An injunction and the doctrine of conspiracy lurked around every corner. The courts permitted strikes on hour and wage questions and primary boycotts, but strikes for the closed shop and sympathetic strikes met with judicial disfavor. As for picketing, there was disagreement, although one Federal judge declared: "There is and can be no such thing as peaceful picketing, any more than there can be chaste vulgarity or peaceful mobbing or lawful lynching. When men want to persuade, they do not organize a picket line." Labor leaders looked wistfully over the water to Great Britain, where courts rarely hampered labor activities with injunctions and where Parliamentary legislation specifically rejected the doctrine of criminal conspiracy as applied to combinations of employees and authorized peaceful picketing and exempted the agents and members of unions from suits for unlawful acts claimed to have been committed in behalf of the union.

Without similar protection American labor was vulnerable. Early in the century two cases brought American labor leaders to the verge of panic. The first was the Danbury hatters case. A hat manufacturer of Danbury, Connecticut, brought suit against 197 members of the United Hatters of North America. Alleging that the nation-wide boycott waged by the unions against
his hats was a conspiracy restraining interstate commerce, the hatter sought triple damages—$240,000—under the Sherman Anti-Trust Act. The defendants, many of whom never heard of the boycott and rarely attended union meetings, had their homes and savings accounts attached solely because they were union members. In 1908 the Supreme Court sustained the damage suits and for the first time definitely asserted the Sherman Anti-Trust Act applied to labor. The hatters' union and the Federation raised the money and restored the houses but not the bank accounts to the unfortunate union members. Meanwhile the Bucks Stove and Range Company secured an injunction against the Federation because the *American Federationist*, the organization's newspaper, published the former's name on its “unfair list” and thus furthered a boycott against the company's products. When Gompers and other officials ignored the injunction, they were sentenced to imprisonment or fines, from which they escaped only on technicalities. Nor was the consternation aroused by these cases allayed by the fact that in both instances the National Association of Manufacturers was involved.

Labor's appeal for relief from the Sherman Act and the injunction fell on dull ears until the Wilson administration. Then the Clayton Anti-Trust Act of 1914 dealt not only with business but with the status of unionism. One article asserted, “the labor of a human being is not a commodity or article of commerce,” and hence declared that nothing in the anti-trust laws should be construed to “forbid or restrain individual members from lawfully carrying out the legitimate objects” of labor organization. Another section forbade the issuance of injunctions in disputes between employers and employees “unless necessary to prevent irreparable injury to property or to a property right” and then forbade their issue under any circumstances to prohibit the quitting of work, a refusal to patronize, paying strike benefits, peaceable assembly, and peacefully persuading others to quit work or cease patronizing. Gompers hailed this enactment as “labor's Magna Carta.” Cooler voices pointed out that several “weasel words”—for instance “lawfully,” “peacefully,” and “legitimate objects”—had been inserted into its provisions and that the statute might be interpreted as simply declaratory of existing law.

**The Constitutionality of Labor Laws**

Sooner or later most labor legislation came before the Courts for review, for the judiciary had to determine whether the legislature had acted within the limits imposed upon it by constitutions. The Fifth and Fourteenth amendments, for instance, of the Federal Constitution might place through interpretation severe restrictions upon the variety and extent of labor legislation. The Fifth Amendment declared in part, “No person shall . . . be de-
prived of life, liberty, or property without due process of law.” This provision applied solely to the Federal government. Toward the close of Section 1 of the Fourteenth Amendment this prohibition was applied to the states, for “No State shall make or enforce any law which shall abridge the privileges and immunities of citizens of the United States; nor shall any State deprive any person of life, liberty, or property, without due process of law; nor deny to any person within its jurisdiction the equal protection of the laws.” But some restriction upon personal rights for the protection of society was obviously desirable even in a highly individualistic society; it has been imposed under the “police power.” Like other legal conceptions, police power had vague attributes, but considerations of public health, public safety, and public welfare—equally vague ideas—were deemed to justify its exercise.

As different philosophies in state and Federal courts gave content and definition to these concepts, confusion resulted. Still out of the ruck certain general tendencies emerged. There was little hesitation in declaring state regulation of child labor constitutional. Children were obviously not capable of making a valid contract, and they were entitled to protection as wards of the state. In the case of women the constitutionality of regulation was recognized more slowly. Early laws fixing their hours of labor were declared unconstitutional—a violation of their freedom of contract; but in 1908 the Supreme Court declared constitutional the Oregon law limiting hours to ten a day for woman in industry on the ground that “her physical structure and a proper discharge of her maternal functions justify legislation to protect her from the greed . . . of man.”

Protective legislation for all workers had a more uncertain history. In 1898 the Supreme Court in an epochal decision, Holden v. Hardy, held that the Utah statute limiting hours in mines was constitutional. The court declared it was a valid exercise of the police power; it implied that such legislation was necessary to place the parties on terms of equality in making a contract, and asserted that an action to protect the freedom of contract of employees would come with better grace from them than from their employers. In 1905 the court declared in the famous Lochner v. New York case that a limitation of the hours of workers in bakeries passed beyond the legitimate exercise of the police power. Finally in 1917 the same court declared that the Oregon act establishing ten hours as a maximum day for all employees in factories was constitutional: “It is now demonstrable that the considerations which were patent as to miners in 1898 are today operative, to a greater or less degree, throughout the industrial system.” Workmen’s compensation acts, at first rejected by the state courts, were ultimately pronounced constitutional. In 1917 the Federal Supreme Court declared the New York law “a reasonable exercise of the police power of that state.”
In 1917 labor seemed about to enter the promised land. In that year a remarkable series of Supreme Court decisions validated a number of labor laws. An evenly divided court upheld the minimum wage legislation for women; a majority approved of the Oregon Ten Hour Act, the Adamson Act, and nearly every statutory variation of workmen’s compensation. Furthermore, the political support of the Administration by organized labor as well as the loyal attachment of American labor to the United States yielded further dividends when the war broke out. Though labor surrendered the right to strike, the government applied trade union standards to all industries under its control and recommended as a patriotic duty the payment of “a living wage,” the observance of a basic eight-hour day where it was legally required, and the recognition of the workers’ right to organize and bargain collectively.
CHAPTER XVII

An International Economic Order

In the period between the mid-fifties of the last century and the outbreak of World War I in the second decade of this, foreign trade and investment operated and developed within a framework the details of which had been foreshadowed at the end of the previous era. The new period was one of peace. Although conflicts, of which the American Civil War was easily the most severe, broke out from time to time on every continent except Australia, they did not involve a clash between great naval powers; and the sea, the avenue of international trade, was comparatively unvexed by blockades, embargoes, and depredations. Generally speaking, it was an era in which private enterprise undertook and operated the processes of international economics. Government corporations and monopolies in this area were almost unknown; government regulation, control, and promotion were common enough, but compared to the mercantilist systems of earlier centuries and to the restrictions of the era of war, normalcy and depression in the twentieth, government “interference”—for such it was significantly and commonly called—was at a minimum. Comparatively speaking, it was a period of free trade and of free investment. Individuals and groups of individuals sold and bought where they chose and could; lent and borrowed in the same manner.

As the enumeration of these characteristics suggests, the overlords of this international system was Great Britain; its capital was London; its international police force, the British navy. Though energetic newcomers, like Germany, Japan, and the United States, had toward the end of the period whittled down her preeminence, the United Kingdom, entirely aside from the Colonies and the Dominions, remained before World War I the greatest trading nation. Her imports were 17.4 per cent and her exports were 15.4 per cent of the world’s total in each category. She was indubitably the world’s largest banker. Her long-term investments overseas were in 1913 roughly $18,656,372,000. Borrowers from all over the world turned first to her great private banks and development companies for their funds. She was the financier, furthermore, of the world’s commerce. In this period the gold standard
became truly international. In 1821 Great Britain adopted gold monometal-
ism. In the seventies Germany and France had followed suit. The United
States, as we have seen, ceased in 1873 the free coinage of silver at the mint
and, after experiments with a modified silver coinage and legal tender paper,
had by the nineties abandoned this course and taken adequate measures for
the redeemability in gold of its varied issues. In the same decade even the
East had partially adopted gold. Internationally speaking, the gold standard
was a sterling standard. Though the banks in the great financial capitals—
Paris, Berlin, and New York—might finance through their credits a part
of their national commerce, even they turned to London for supplementary
assistance. London had the markets for commodities, the purchasers and
speculators to deal in them, the warehouses to store them, and the banking
system with branches all over the world to provide short-time credit. The
sterling bill had universal acceptability. American exporters took it in pay-
ment; American importers sought it to discharge their indebtedness. To com-
plete the circle Great Britain had the largest merchant marine in the world.
In 1914 its net tonnage of 12,415,000 was approximately 40 per cent of the
world's total and it carried just over half the world's commerce.

In view of this extraordinary achievement, British policy was bound to
govern the conditions under which a considerable share of international eco-
nomic transactions took place. As far as investment was concerned, Sir
Edward Grey, Secretary of State for Foreign Affairs, remarked in 1914:
"British financiers run their business quite independent of politics, and, if
we attempt to interfere, they naturally consider that we come under some
obligation." Though this might be the cabinet's intent and a cogent state-
ment of the reasons therefore, the government in actuality frequently inter-
vened by diplomacy to assure that its citizens had a chance to invest else-
where and to win concessions esteemed profitable. In addition to this burden
of promotion, the government undertook to protect the investments of its
citizens from discrimination, defaults, and shabby treatment—but only on
occasion. There was no rigid formula of action, unless the calculation of
what seemed feasible or unfeasible in individual instances can be so denomi-
nated. As for trade, Great Britain had by 1860 completed the structure of
policy which was to endure essentially unaltered until World War I. The
repeal of the Navigation Acts had opened every trade, even the coasting one,
to the vessels of every nation. As for tariff, Great Britain was a free trade
country with duties for revenue on about a dozen articles. By a series of com-
mercial treaties she had systematized a most liberal interpretation of the
most-favored-nation clause. Concessions granted by the signers to each other
were extended to third parties.

In spite of the immense prestige and importance of this example, it failed
of universal imitation. Though the German government might be said like Great Britain's to have let economic considerations take their course in the matter of foreign investments, France mingled inextricably political with private considerations, public with private agencies. Nor did either France or Germany follow Great Britain, as for a time seemed likely, into free trade. After 1875 their industrialists received moderate protection, and agrarian interests, landlords and peasants, menaced by importations and falling prices, wrung from ministries almost prohibitive duties. In contrast with the more complicated devices of a later and earlier mercantilism, these tariffs were crude devices for directing or decreasing trade and the general level of duties in 1900, in spite of the drift to protection, still was lower than in 1850.

In the later nineteenth century a renewed interest in colonies, protectorates, and spheres of one sort or another seemed at first glance likely to cloud the purity of the international order here set down. The great powers of Europe, Japan, and the United States, all or severally, fell upon the dark continent of Africa, upon the storied wealth and actual poverty of Asia, and upon islands in the Pacific and Caribbean. They sought to acquire new areas and influence, or to enlarge their established positions by war, negotiations, partitions and exchanges. The motives for this empire-building were not simple. Unless the endocrinologists isolate a gland whose secretions are responsible, it is possible to give only a confused and irrational explanation for imperialistic phenomena. Statesmen and peoples rejoiced at the increased territory and population subject to their flag and embraced the opportunity to carry their way of life to backward or misguided peoples, in spite of the painful obligations involved. Amateurs in the Malthusian menace demanded colonies as an outlet for surplus population. More mundane economic factors were involved. Colonies were sought as markets for manufactured goods, as sources of raw materials, and as areas destined to be served and developed by investment capital. Some thought these prosaic objectives were difficult of realization unless the mother country and its dependencies were bound together by various preferences. These might exclude foreign shipping, give favors to investors and concessionaries showing the right flag, and encourage a reciprocal trade by assimilating the dependent area into the tariff laws of the mother country or by partially removing or lowering duties in the colony on the goods of the mother country or on the goods of the colony in the mother country or both. That this was not the inevitable result of imperialism, Great Britain demonstrated. Within her empire, the greatest in the world, there was no prohibition on the shipping of other countries. Between 1898 and 1907 the dominions gave some British products a preference; she reciprocated with none. Her colonies, with the exception of ten in the West Indies, had no preferential rates for British goods.
The core of American international economic policy was the tariff. There the parallelism with Europe ceased, for in the timing of its protective measures and the extent of its protection the United States was unique. The movement got underway during the Civil War. When the exigencies of Federal finance required heavy taxation, it was natural that imports bear their burden. Since internal revenue taxes on manufacturing, often on successive processes, were greatly increased, it seemed unfair to handicap American producers vis-à-vis foreign ones unless duties on competing imports were raised as recompense. In spite of considerable statutory jockeying in the decades following the war, the new arrangements persisted essentially unaltered. The nineties, however, proved a significant ten years for the protective movement. They began with the McKinley tariff of 1890, one which again raised duties, continued in the Wilson-Gorman Act of 1894 by which the Democrats failed signally to alter the program of their rivals, and closed with the Dingley Act of 1897, jackin.g rates to new levels. For a tariff this measure proved to be exceptionally long lived. Finally, in 1909 and 1913, there was first a modification and then a partial withdrawal from the protective régime. In the latter year the Underwood-Simmons Act at last enacted arrangements that acceded in some logical fashion with the fact that the United States was the most powerful industrial nation in the world. By this time raw materials—wool, sugar, iron ore, hides, coal, and lumber—were on the free list and the duties on manufactured articles were lowered and simplified.

The arguments by which the general protection policy was advocated or made palatable to the groups, including consumers, outside the benefited area stressed the wisdom of protecting the tender experiments by Americans with new enterprises, like silk and tin-plate, the infant industry argument which was as old as Hamilton, and moved on to the assertion that protection kept American factories running and gave the laborer a full dinner pail, a crude forecast of the full employment program of a later period. If the counter-argument that protection interfered with the international specialization of production along lines of natural advantage carried little weight, the aphorism that it conferred unnecessary advantages upon big business—"the tariff is the mother of the trusts"—helped explain the retreat from protection during the progressive era. Beneath these verbal formulations matter-of-fact needs and pressures operated. As we have seen, the tariff was more than an expression of commercial policy, it was a means of raising revenue, indeed until the passage of the income tax amendment in 1913 it was on the whole the chief source of federal income. Thus financial consid-
erations were frequently overriding. Nor was the position of the American farmer as simple as in European countries. Imposts on wheat, corn and cotton were meaningless since America exported these products and the domestic price was the world one. Levies on dairy products and potatoes afforded protection to only a limited fringe of producers in the border regions. On the other hand, shepherds of American sheep and planters of American sugar feared business obliteration without protection; the duties consequently were high, complicated, and persistent. Moreover, the equal representation of the states in the Senate gave the agricultural regions an influence disproportionate to their population. Finally, American manufacturers, whether they needed duties to survive or not, naturally preferred to limit the number of competitors for the market. The American tariff was not, therefore, a response to abstract reasoning. Logrolling, compromises, bargains defiled the process of enactment. Though a defeated presidential candidate was greeted with derision when he asserted, "The tariff question is a local question," the observation had practical insight.

From time to time reciprocity tampered with this scheme of things. The United States gave concessions to the trade of a particular country and avoided generalizing them by an interpretation of the most-favored-nation clause differing from the one currently in vogue in Europe. In the latter area the extension was "unconditional." The United States meant by the idea that concessions granted to one nation might be extended to others when they too made concessions; the most-favored-nation clause was thus "conditional." Protected by this gloss the United States and Canada in 1854 entered into a reciprocity treaty which admitted free to each area the raw materials of the other. Ten years later, at the insistence of the United States, the treaty was denounced. In 1875 a reciprocity treaty with Hawaii admitted free to this country a list of commodities of which the sugar grown by the expanding plantation economy of the islands was the most important; the reciprocal free list on American products in the islands embraced many manufactured articles, grain and breadstuffs. The treaty lasted until annexation. In 1903 the United States agreed to reduce its duties on Cuban products, again notably sugar, by 20 per cent and Cuba reduced hers on imports from the United States by 20 to 40 per cent. There were occasional endeavors, and they were little more than that, to transmute these specific occasions into a general policy. The McKinley Act of 1890 placed coffee, tea, hides, sugar and molasses on the free list but permitted the President to impose duties upon them unless the countries from which they came gave concessions on American imports. Actually, this weapon was aimed at reciprocity with Latin America; seven agreements resulted. Their abrogation on the passage of the Wilson-Gorman Act in 1894 created resentment.
On the whole, the reciprocity program flowed from no carefully considered or consistent commercial policy. Political considerations, the desire to bring Hawaii within the American orbit, largely explained the treaty of 1875. The Cuban treaty of 1903 was ratified amidst a Rooseveltian clamor over America’s “moral obligations” to the island, the “Pearl of the Antilles” in the vernacular of the Spanish American War. In view of the multiplicity of the factors involved, it was difficult to appraise with precision the effects of reciprocity policy. For one thing, it admittedly gave the Hawaiian and Cuban sugar producers a preferred position in the American market and consequently stimulated their sugar production. On the other hand, the general increase in trade which everywhere followed a reciprocity treaty was only in part ascribable to the policy.

American Colonialism

As the enumeration of the reciprocity treaties suggests, the device was often a precursor or postlude to colonialism. In this field European countries had taken the lead and the United States was a latecomer. Nonetheless, the United States had motives enough to join the imperialist procession. Its first century of independence had been characterized by the conquest of the continent, American nationalism was as self-conscious and as feverish as that of any western European nation, and its industrial transformation ought to have given new point to the economic arguments for neo-mercantilism. There had been a brief flurry in the fifties and sixties when the Ostend Manifesto expressed the desire “to buy Cuba from Spain as soon as possible.” Commodore Perry was dispatched to Japan with a fleet to negotiate a treaty providing for assistance to American sailors, for the opening of ports to trade, and for coaling stations as an aid to the development of steam navigation between the United States and the Orient. The Isthmian canal was a subject of emphatic concern. During the Civil War and after, Seward, an expansionist, was the Secretary of State; but he achieved only the purchase of Alaska. Then a lull intervened. Cuban annexation was forgotten; the Senate refused to purchase the Virgin Islands or to annex Santo Domingo; the Isthmian canal was not constructed; and Cleveland prevented the annexation of Hawaii. The country was still preoccupied with domestic expansion.

This aloofness from imperialistic expansion was destroyed by the Spanish American War. Most Americans had not anticipated such an outcome from a war fought ostensibly to make Cuba free, but a combination of quixotism, national pride, and a desire for commercial advantages led the people and their President, almost to their own surprise, to acquire an overseas empire. The Hawaiian Islands were annexed during the conflict, later we secured a favored position in Cuba, the peace treaty gave us Puerto Rico and Guam
outright, and ceded the Philippines to us for a nominal payment. The last were the chief booty. Undoubtedly there were altruistic motives for their annexation, but the debates in the Senate and the record of President McKinley’s conversion to the policy of annexation show that the Philippines were desired as a base for commercial expansion in the Orient. These islands were to be the equivalent for us of the ports and concessions obtained by other nations in China. Manila was a coaling station on the way to the Orient and, like the British Hongkong, was to be an entrepôt for commerce with China. All in all, the Spanish American War decisively enlarged the American definition of “manifest destiny.” For a century it had meant “the right . . . to overspread and to possess the whole of the continent.” Now it included islands in the Caribbean and in the Pacific, an ocean which fifty years earlier Seward had seen as “the chief theatre of events in the World’s Great Hereafter.” A new period in American history had begun.

Although the unlimited possibilities of the Pacific inspired the imagination of American statesmen for thirty years, the course of American empire was in reality southward into the Caribbean area. Across the Isthmus of Panama the United States began the construction of the interoceanic canal. Although Cuba was allowed to go free, the Platt Amendment, added to her constitution at American request, tethered her closely. She could not alienate territory or coaling stations to foreign powers or contract too large a public debt, and she permitted the United States to intervene “for the preservation of Cuban independence” and “the maintenance of a government adequate for the protection of life, property, and individual liberty.”

In 1904-05 Roosevelt took a hand in the affairs of the Dominican Republic when that nation found it impossible to pay the interest on its securities held by Americans and by Europeans. Ostensibly, he desired to prevent the intervention of European nations; their diplomatic pressure might have unforeseen results, and perhaps the Monroe Doctrine, interpreted in a large way, compelled the United States to forbid punitive measures by European nations against Latin American lands and to take such measures itself as an “exercise of an international police power.” By 1907 a treaty was made with Santo Domingo under which Americans administered the customhouses and set aside a certain portion of the receipts to pay off the nation’s creditors. The Taft-Knox administration found this “preventive action” to its liking. It gave advice to Cuba, intervened in Nicaragua to protect the alternate route to the Panama Canal, drew up treaties with Nicaragua and Honduras authorizing an interference in their affairs which met neither with their approval nor with that of the United States Senate, urged similar arrangements upon Guatemala, and insisted that American bankers have a share in the reorganization of the National Bank of Haiti. The Wilson administration
extended the practice of intervention. An American military group governed the Dominican Republic from 1916 to 1922; in the former year a treaty was ratified with Haiti introducing a similar régime; in Cuba an American general helped run the government by memoranda; and the Virgin Islands were purchased from Denmark.

The motives for the creation of an American empire in the Caribbean ran the gamut of imperialism—if the utterances of the statesmen responsible for it can be believed. Here, as elsewhere, Roosevelt exhibited his ignorance of economic considerations and decried the huckstering aspect of imperialism Taft, on the other hand, announced that the diplomacy of his administration in this area, "substituting dollars for bullets," would be "an effort frankly directed to the increase of American trade." Wilson was swayed by the evangelical desire to teach the revolutionary nations in the American Mediterranean to govern themselves decently, as Anglo Saxons did. All in all, strategic considerations, particularly the protection of the Panama Canal which had not been neutralized by the United States, and the desire to introduce law and order into distracted nations, were just as likely to explain the American concern with the Caribbean as were trade and finance.

Whether American territorial acquisitions dated from the turn of the century or earlier, the United States as far as possible placed them on a favored footing through tariff regulation. In general, the colonies were to give preference to American goods, and colonial goods were to be given preference in the market of the mother country. The simplest way was to include the former within the tariff walls of the latter. This was done at once with Alaska and Hawaii, and with Puerto Rico in 1902 after a delay occasioned by the American beet and cane sugar industries. In the Philippines, however, the treaty with Spain required the United States for ten years to give Spanish vessels and trade the same treatment accorded to similar American enterprises. When this restriction lapsed in 1909, various American interests—tobacco planters, cigar manufacturers, and the growers of cane and beet sugar—prevented the immediate realization of a complete freedom of trade. Almost at once most American products were admitted free to the islands while importations from other countries were burdened with duties, but it was not until 1913 that the Underwood-Simmons Tariff Act finally removed the earlier quotas on the importation into this country of Philippine tobacco and sugar.

Undoubtedly the American colonial system bound the colonies closer to the United States. In 1915 the United States virtually monopolized the commerce of Hawaii and Alaska, possessed 80 per cent of the external trade of Puerto Rico, and in the Philippines had increased the small fractions of the early century to 50 per cent of the archipelago's imports and 45 per cent of its
exports. In every case absolute totals had greatly increased. The American empire as a whole purchased American textiles, machinery, flour, and gadgets; it supplied a flood of raw materials—salmon, sugar, tobacco, vegetable oils, pineapples and hemp. But this interchange of goods often inflicted competitive losses upon American producers and shaped the economic life of the colonies in directions not always favorable to the real welfare of their inhabitants. Undoubtedly the colonial system cost the American government money; even without it, the United States would have had much of their trade. Compared with the total foreign commerce of the country, the trade with our territories was tiny. In 1915 they took 7 per cent of our exports and provided 9 per cent of our imports.

These figures certainly demonstrated the comparative unimportance of the American empire. The colonial possessions of our commercial rivals were larger in area, population, and potentialities. Yet in view of the commercial policy of the United States in its own possessions, it could hardly demand an equality of economic opportunity in English, French, German Russian, or Japanese dependencies. Nor was the attempt made. There were, however, vast areas like that of China where European influences had not yet hardened into commercial preferences, though they threatened to do so, and where the United States was unwilling to copy the schemes of its contemporaries because it either held back on the ground of high principle or entered the race too late to be effective. To cope with a situation of this delicacy, European nations in the African Congo had already subscribed to an international agreement giving the trade of all comers similar treatment and in China the United States had been insisting for decades that the privileges granted to any nation by China, usually under duress, should be extended to all. At the close of the century when the decrepit Chinese empire seemed at last about to dissolve into separate and perhaps exclusive spheres of influence, the United States government, with the sympathy of Great Britain if not at her suggestion, dispatched the open door notes to the countries involved. In them the American Secretary of State, John Hay, asked the recipients to undertake that in their spheres, treaty port rights would not be curtailed, that the Chinese tariff would apply to all merchandise "no matter to what nationality it may belong," that it should be collected by Chinese officials, and that within the spheres of influence no discriminations should be made in the port dues between vessels of different nationalities or in the charges on the railroads, no matter from what nation the merchandise came. When most nations had accepted this declaration, John Hay declared a universal affirmation. But the open door, aside from its usefulness as an emotional cliché, proved a feeble formula. There were constant complaints, well substantiated, of its violation. In its original and narrow definition, it neither
abolished the spheres of influence nor mentioned the matter of equality of investment opportunities. But of that, more later.

**SHIPS AND POLICY**

Though Great Britain’s merchant marine was the unquestioned mistress of the seas, the United States just before World War I had the third largest tonnage in the world. No figures could be more delusive when foreign commerce was in question. The greater part of the American marine was employed in the Great Lakes or in the coasting trade. Great Britain and Germany both surpassed our marine in foreign commerce; we were in the ruck with Norway, Italy, Japan, and France. In the circumstances, the portion of American overseas trade carried by American flag ships declined. Whereas in the late fifties the percentage, on the basis of value of cargo, was 74, in 1914 the percentage of our imports and exports, again by value, transported by American vessels was only 9.7. The explanations for this regression were predominantly technical and economic changes in shipbuilding and ship operating, changes in which the United States did not effectively participate. National policy was a minor but contributory factor.

In spite of the successive triumphs of steam in the first half of the nineteenth century, the sailing vessel after the Civil War still had its usefulness. On the North Atlantic route between the United States and western Europe, the most traveled ocean highway in the world, the fuel for the new means of propulsion was both available and cheap. But vessels with long voyages to distant ports in the Pacific and the Indian Oceans were unsure either of coal or of reasonable prices. Eventually an improved economy in the use of coal or the shortening of sea routes—the opening of the Suez in 1869 was in this respect epoch-making—eased a dilemma which the discovery of new coal supplies and the substitution of oil later almost removed from recollection. These achievements came slowly, and meanwhile bulk cargoes requiring no scheduled delivery and traveling at low rates aided the perpetuation of sail.

The grain trade from the Pacific coast to European ports fulfilled these requirements. As the American wheat empire moved into California and the Pacific Northwest, a fleet of sailing vessels annually repaired thither in search of charters to carry the golden cargoes around the Horn. The voyage to market was 14,000 miles. For this grain trade American builders in the two decades following the Civil War created a special ship. It had some of the features of the clippers—the flat floors or bottoms, the great length, the easy lines. On the other hand it avoided the extreme concave bow and, although still heavily rigged, discarded the higher sails, divided the larger ones, and occasionally added a fourth mast with a fore and aft rig. All this contributed
to ease in handling. These creations were larger than the largest clippers—the Roanoke could carry 5,400 deadweight tons—and had sailing records that were fairly comparable; in operation their labor costs were lower than their predecessors of the fifties. In spite of their superiority, they were still wooden vessels. Almost all were built in a few large yards along the Maine coast, for in this state the old craft of wooden shipbuilding took a last stand. Wages were low, attractive alternate occupations few, and the required skills and habits the possession of a considerable seacoast population. The builders, however, had to go far afield to Virginia, Maryland, Ohio, and even to the Pacific Northwest for their timber supplies, or else substitute inferior woods. Survival, even on these conditions, was impossible once wooden ships confronted first the competition of iron and then of steel sailing vessels. In the use of these superior materials British shipbuilding and the technological processes which clustered about it were superior to the American and by the end of the seventies their yards were launching flotillas while disaster swept all but a few builders on the Maine coast. Upon this disadvantage of higher costs for inferior vessels was piled the higher expense of manning and supplying American ships. On these accounts an English ship of 1,000 gross tons cost $650 to $800 a month; an American $1,100 to $1,250. Toward the end of the century, therefore, our participation in the Pacific grain trade and other long trades had slid down to a small fraction of what it once had been.

This decline was a grim portent. For many of the factors accounting for it operated with even greater force in the case of steam vessels. In the mid-century these were ships of the future; by the outbreak of World War I those of the present. In 1914 sailing vessels constituted less than 2 per cent of the British merchant tonnage, while their percentage of the American was just under 20. This discrepancy existed in large measure because the steamship was an exceedingly complicated product and many highly scattered operations were involved in its creation. At the end of the experimental period, say by the late eighteen-sixties, iron had demonstrated its superiority to wood for the hull, and the propeller and the compound engine theirs to paddle wheels and more simple power plants. Low-cost building depended upon a matured iron industry, fortunately located, and upon a highly developed engineering industry. All these England had. The United States did not. To be sure, advances and adaptations were made on this side of the Atlantic. The construction of ocean-going steamers moved to the Delaware and closer proximity to raw materials, and integrated concerns with capital secured the necessary technical equipment for large-scale operations. Nonetheless, the location of coal and iron was probably more advantageous on the Clyde; wages of skilled workers were lower in Great Britain; and the cost of iron and later of steel generally higher in this country, in part because of the price
policy of the "steel trust," the shipbuilder's bête noir. At the turn of the century vessels were 25 to 50 per cent cheaper in Great Britain than here. Americans, therefore, built no *Titanic*, gross tonnage 46,489, or *Vaterland* with one of 52,282.

Meanwhile accompanying changes revolutionized the shipping business. Ownership by shares or fractional shares in the vessel gave way to great corporations issuing stock and operating on schedule their huge specialized fleets over the network of sea routes radiating from Western Europe to North and South America, Africa and the Orient. These greyhounds competed so fiercely for passengers, mail, express and high class freight that at the turn of the century, like other big business, they united in conferences and pools to fix rates, apportion ports, divide traffic, abate the nuisance of differential rates and kill off intruders by rate wars and fighting ships. At a lower level, the drab workhorse of the sea, the steam tramp, took over the bulk trades once carried by the sail freighters. In all this the United States had little part. Here as in the case of the sailing ship, American vessels cost more to build and, when built, more to man. In the category of small freighters wages in 1901 were $860 a month for nineteen men on an American ship, $491 for eighteen on a British, and $341 for fourteen on a Norwegian vessel.

Throughout the era policy toward the merchant marine never exhibited the intelligence displayed by European rivals—neither the comparative freedom of British policy nor the rigorousness of German or French. Instead it hesitated, unable even to repeal or rationalize the somewhat contradictory inheritance of its past. Thus the American coasting trade was closed to foreign flags. With the acquisition of colonies this prohibition was extended to Puerto Rico and Hawaii, but not to the Philippines. No unwillingness on the part of statute makers to assimilate a distant geography into the American coastline explained this exception; instead the justified expectation that the American merchant marine could not expand sufficiently to carry on the business deterred them. Nor did Congress, though such proposals were often urged upon it, revive the differential tariff on goods imported in American vessels, a device first adopted in 1789, or long exempt American ships from the payment of tolls on the Panama Canal. Another protective measure, one damaging to the merchant marine, was to deny American registry to foreign-built vessels. American operators could not buy, therefore, in the cheapest market. Even if this handicap were repealed and owners given the chance to purchase "free ships," the differential in operating costs remained. Such might be overcome through government subsidies or "contracts" for scheduled lines and by sailing and steaming "bounties" to vessels picking up business where they could find it.

Time after time proposals for all or some of these measures entered the
arena of debate. The arguments varied from the sentimental to the realistic. A merchant marine ministered to national pride, promoted American trade, and with a shipbuilding industry was essential for American defense. The last assertion was given new cogency as the United States acquired its colonial empire. But little was accomplished. Before 1900 contracts had brought into being a short-lived line to Brazil, the Pacific Mail to the Orient and between California and Panama, and the American Line in the North Atlantic. Congress never enacted bounties. Admission of foreign-built vessels into American registry was not vouchsafed until 1912 and 1914, too late to be effective in the period under discussion. For so little result from so much talk and movement, the conflict in interest between shipbuilders and ship owners over free ships was in part responsible. The indifference of agrarian interests to the merchant marine and the incompatibility of direct and open grants to private enterprise with current conceptions of the proper relation between government and business explained more. Perhaps also most Americans were content to let others carry their goods as long as they did so cheaply and fairly. A Congressional Committee in 1914 after searching investigations disproved the assertion that European merchant marines discriminated against the United States. This finding ignored the argument for defense. America's experience in World War I was to show it a sound one.

A Shifting Foreign Trade

The payments which Americans made to others for shipping services were one of those invisible items, along with remittances by immigrants, tourist expenditures, and interest on foreign loans, which enabled the United States throughout this period to retain its so-called favorable balance in the foreign merchandise trade. Between 1860 and 1914, in only sixteen years did the value of imports exceed that of exports; most of such instances were in the sixties and early seventies. Meanwhile, of course, the absolute values of both exports and imports greatly increased. In the quinquennium 1856–60, to avoid the disturbance of the Civil War, the annual average for the two combined was $616,132,000; in 1910–14, again chosen to avoid the exaggeration of war, the average was $3,854,692,000. Although, of course, values were distorted by changing price levels, no inflation comparable to these figures was contemporaneously taking place. This astonishing achievement in international commerce represented a real and not a nominal increase. In spite of such totals the foreign trade of Great Britain and Germany before World War I surpassed that of the United States. To both these leaders, as well as to many other European nations, foreign trade, judged by the ratio that it bore to domestic activity, was more vital than to the United States.

Inevitably, the nature of the commodities whose value amassed these enor-
mous dollar totals reflected the changing economic character of the nation. Take the matter of exports. As long as America had cheap land and an open frontier and could find a market abroad, agricultural products were the mainstay of this traffic. During the decade of the sixties, despite the interruption of cotton shipments, they constituted three-quarters of all American exports, and through the rest of the nineteenth century they remained near this proportion. Originally the chief constituent of this agricultural roster had been cotton, and in spite of the Civil War, which reduced its export to a mere trickle and encouraged British factories to seek supplies elsewhere, the superiority of the American staple was so great that Lancashire returned to its use and the developing textile industries in other European countries and in Japan relied also upon the American staple. But meanwhile the supremacy of cotton had been challenged by wheat and flour. British imports of these products had grown steadily since the repeal of the Corn Laws in 1846, their extent was remarked at the time of the Civil War, and once in a rare while thereafter their value surpassed that of any other item in the export list.

Although the opening of the American West helped to explain this development, the industrialization and urbanization of western Europe required food imports to supplement inadequate domestic production. In turn this influx of grain so injured European agriculture that an Austrian commentator compared it with the importation of the precious metals in the sixteenth century which ruined the mining industries of Europe and wrought a social transformation. When the distressed agriculture of Europe turned to livestock, it was soon confronted with new American competition, for the packing-house products—bacon, pork, and lard—which America had always exported were now joined by the trade in beef, first of animals on the hoof and then of dressed carcasses kept fresh by the new methods of refrigeration. European governments, at the bidding of their agricultural factions, constantly interrupted this trade by embargoes and prohibitions based upon the alleged presence of animal diseases or the employment of unsanitary methods of packing. The reaction of European tariffs has already been mentioned. Their impact, coupled with competition from new areas, upon American agriculture was selective. In the decade 1900–09 exports of wheat and flour were quantitatively 17 per cent less than in the previous ten years. On the other hand, exports of cotton, a commodity sought by industrialized nations, reached new levels. Nonetheless, as a percentage of our total exports the value of agricultural products dropped in 1912 for the first time since 1860 below 50 per cent.

Such figures, direct evidence of the withering of the agricultural era, were in reverse a witness to the emergence of the industrial state. In the first five
years before the Civil War, semi-manufactured and finished manufactured articles, including manufactured foodstuffs, constituted approximately 30 per cent of American exports; in the quinquennium 1910-14 the proportion had risen to nearly 60 per cent. There had been, as well, a change in the relative importance of different manufactured articles. In 1850 cotton goods and manufactures from wood had been the chief items. But as the years went by, the new products of the industrial revolution pushed to the fore. American kerosene, none of which had been exported in the fifties, became the illuminant of the world; by 1890 the American iron and steel industry had so matured that exports of pipe, structural steel, and rails were scattered from China to South America; and twenty-five years later, although these products had somewhat declined, more highly specialized ones—sheets and tinplate—took their place; in the all-embracing category of machinery the United States added to her earlier exports of agricultural machinery, locomotives, and sewing machines, the novel ones of typewriters, electrical and industrial machinery, and even automobiles. On the eve of World War I, the chief manufactured exports of the nation were by value iron and steel products, meats, copper other than ore, refined oils, and wood and wooden articles.

With equal directness, the import trade of the United States reflected the changed economic character of the nation. As a new country America had traditionally depended upon the importation of manufactured articles. In the quinquennium 1856-60, finished manufactures averaged 48 per cent of the nation's imports, and manufactures of cotton and wool led in our import trade. By 1910-14 the situation was reversed. As a result of American industrial development and the imposition of sky-scraping tariffs, finished manufactures constituted only 22 per cent of American imports. Although the proportion of imports represented by food products had altered hardly at all in the same span of years, the increases in the absolute totals—notably of coffee and sugar—reflected the growth in population, changes in taste, and a rising standard of living. Most significant of all, however, was the astonishing increase in the proportion of our import trade formed by crude materials—from 12 per cent in 1856-60 to 35 per cent in 1910-14. Of the five most important imports by value just before World War I, only chemicals were non-agricultural; the others were hides, coffee, sugar, and raw silk.

Only a war which swept American commerce from the high seas could demonstrate decisively the extent to which American economic life depended upon foreign trade. The American way of life depended upon imports of coffee and sugar. Imports of raw material underlay great American industries—silk and boots and shoes, to mention no others, were cases in point. Nevertheless American industry was extraordinarily self-sufficient. As for
exports, the foreign market was more vital to the American farmer than to the manufacturer. This was true as late as World War I when the tobacco grower was still marketing 47 per cent of his crops abroad, the wheat farmer 20 per cent of his total output, and the cotton cultivator nearly two-thirds of his staple. On the other hand, in spite of the growth of the industrial state, manufacturing as a whole was astonishingly independent of foreign outlets. Makers of agricultural machinery, sewing machines and office appliances and refiners of copper, petroleum and sulphur could ill have afforded an interruption to their exports. But the great domestic textile industries were not dependent upon foreign markets and the American iron and steel industry exported only 7 per cent of its production. Whether in the delicate equilibrium of the industrial state such low percentages as the last meant the difference between depression and prosperity was a matter of inconclusive debate.

Averages, however, concealed the fact that the industrial giants of the United States became great international organizations. They established sales departments for foreign markets, dispatched armies of American "drummers" around the world, and, like as not, followed these advances with the establishment or purchase of branch plants outside the boundaries of the United States. The appearance of the "American trust" in the foreign field followed very much the same chronological sequence as at home. The Standard Oil group was pioneering overseas as early as the sixties, and whether jousting later with the Royal Dutch Shell for the markets of the Far East or challenging British-controlled oil companies for concessions in Latin America, it proved a ruthless and redoubtable foe. James B. Duke, the professed imitator of Rockefeller, discovered he could sell small packages of cigarettes to the Chinese and invaded Great Britain with such success as to compel her great tobacco companies to form an alliance for the division of the American and British markets. When the United States Steel Corporation was established, it formed almost at once an export agency and within a decade, 1904-13, increased its exports from 1,001,716 to 1,813,072 tons.

In the United States the outcome of competition had been consolidation. The field of international commerce soon demonstrated the same phenomenon. The earliest response was the cartel, which, like the American pool, sought to apportion markets, fix prices, arrange for joint marketing agencies, and pool patents. Although there were perhaps 114 of these organizations alive in 1914, American concerns participated in probably fewer than ten of them; the most important instances were in aluminum, sulphur, and electrical apparatus. These understandings and others were usually tangential, indirect, partial, and temporary.

Since the domestic economy in the sixty years after the Civil War was un-
mistakably shifting from an agricultural to an industrial basis and the components of our foreign commerce reflected the development, there was an accompanying alteration in the relative importance to American commerce of the regions and nations of the world. These changes did not destroy the old hierarchy. On the eve of World War I as on the eve of the Civil War, Europe topped the heap. Nonetheless, her percentage declined. In 1860 75 per cent of our exports went thither, in 1914, 63; at the former date 61 per cent of our imports came from Europe, at the latter 44. She continued to import our foodstuffs and raw materials, and her industrial civilization and her high standard of living made her also the largest market for the American manufactured products flooding for the first time the channels of world trade. Within Europe the United Kingdom remained the prime market for American goods; the largest source of American purchases. She supplied products of her own manufacture. Many of the raw materials from the less developed portions of the globe also came to America by way of this traditional “metropolis.”

While European leadership gave a certain stability to the figures of American foreign commerce, this period of transition witnessed a steady mounting in the importance of North America in both the export and import trade. Geographical propinquity was one explanation. So closely articulated, for instance, were the economies of Canada and the United States that by 1914 the former was the second most important nation for American foreign commerce, in spite of the fact that Canada was a Dominion of Great Britain and that the adjustment of tariff policy between her and her southern neighbor had been one long bicker of frustration. Meanwhile Asia displaced South America from third position. The mounting imports of raw materials already cited explained the importance of both continents; as markets they were of minor concern. Or put in another way—certainly too rational—if American statesmen had been directed solely by the criteria of international commerce, the country should have remained at peace with the United Kingdom, Canada, Germany, France, and Cuba, for these nations in that order were the five most important to the United States, tested in each instance by the combined value of imports and exports.

The Dollar Goes Abroad

There is a sound objection to the use of the appellation “debtor” or “creditor” nation. Theoretically and in practice, it is impossible to apply the terms to any nation in any long-run or embracing sense. The inflow of payments must balance the outflow of payments. Though on the surface there may be a surplus of merchandise exports over merchandise imports, the difference is accounted for by the invisible items which have earlier been mentioned.
However, in terms of the investment of capital it is customary to speak of
developer and creditor countries; the former are the borrowers and the latter
are the lenders. When both processes are in operation in any nation at the
same time, it is the majority one which determines the designation.

By this test the United States was until World War I a debtor nation. In
considerable measure the funds for national expansion and development
had been obtained from abroad. In 1869 long term investments by foreigners
toted $1,390,000,000; in mid-1914 they were estimated at $6,700,000,000. Of
this total British investors furnished nearly three-fifths; the capital exporting
nations of western Europe—Germany, the Netherlands, and France—some-
what over a quarter. Although a portion of these huge sums had gone into
enterprises that were controlled by the investors which made them, so-called
"direct" investments, by far the larger share was in securities issued by na-
tional, state, or local governments or by American concerns managed in
America, so-called "portfolio" investments. As far as government securities
were concerned, Europeans had repeated their unhappy experiences of an
earlier period. The repudiation by southern states of the debt piled up by
reconstruction governments exceeded in its classic hypocrisy a similar re-
action after 1837 when states failed to meet the obligations incurred for banks
and internal improvements. On the whole, foreign investors preferred to risk
their funds in private enterprises. Great industrial consolidations, like United
States Steel, appealed to them. The favored field, however, was railroads.
In 1914, $3,933,000,000 of the $6,700,000,000 total was in this category.

As a makeweight to this import of funds from Europe, American invest-
ments abroad were slow in maturing. In 1869 they were probably about
$80,000,000; by 1897, on the verge of the Spanish-American War and the
debut of the United States as a "first-class power" they had increased to
$684,500,000. Then with dramatic unexpectedness American investors pur-
chased at least a portion of the government loans floated by creditor nations
as experienced as Great Britain and Germany, and with somewhat less
huzzah placed their funds in agricultural, transportation, and industrial en-
terprises overseas. In the brief span between the Spanish American conflict
and World War I American investments overseas multiplied five times; their
total in mid-1914 was $3,513,800,000.

Such achievements were bound to elate American observers. John Hay re-
marked even in 1902, "The 'debtor nation' has become the chief creditor
nation. The financial center of the world, which required thousands of years
to journey from the Euphrates to the Thames and Seine, seems passing to
the Hudson between daylight and dark." Nonetheless, twelve years later the
United States still remained a debtor nation. Nearly half its investments
were near home in Mexico and Canada. It was far from assuming the func-
tion of world's banker as that task was understood in the exchanges and bourses of London, Paris, Amsterdam, and Berlin. To be sure at the time of Hay's ecstatic outburst Great Britain was marketing war loans in New York; Germany, German cities, and Sweden were borrowing there; and American bankers were lending to Russia's railways. A year or so more and Japan was to finance her war with Russia and her subsequent reconstruction with millions of American dollars. But the significant feature of American foreign investment was not these undertakings for others, portfolio investments, but the direct investments in American-controlled enterprises beyond the national borders. In 1914 the sums so placed were roughly three-quarters of all American foreign investments. To plot these direct outtrusts as successive, specialized frontiers in the advance of the American dollar would be largely whimsical. Usually American enterprises abroad reflected the experience and the interests of the American domestic economy and grew out of it.

Thus long before the United States had completed its own railroad network, American engineers, promoters, and investors were aiding others—for a consideration—to build the new means of transportation. Before 1860 William Wheelwright, a Massachusetts Yankee, had built railroads in Chile and Argentina, though he had to use British capital to do it; and Henry Meiggs, a fugitive from Californian creditors and American justice, descended upon South America and as the "Messiah of the Railways" proceeded with an engineering daring which took the breath away to build lines through the Andean elevations of Peru. Meanwhile, as American railroads groped to the Great Lakes and the farther West, American builders and investors became interested in Canadian connections. After the Civil War Commodore Vanderbilt and others poured across the Border. At the same time the railroads of the American Southwest saw no reason to stop at the Rio Grande or any arbitrary line on the map, particularly since Porfirio Diaz, president of Mexico from 1876 to 1911, was a "strong man" who preserved law and order, rehabilitated the credit of his country, and welcomed foreign investors. For many Mexican lines Americans furnished technical assistance, and provided capital and management—all to such effect that the Diaz administration in 1906-8 nationalized some of these enterprises to forestall an uncomfortable American economic hegemony. Meanwhile railroad capitalists had directed their attention to China, seeking a share in the concessions located in the heart of the empire or meditating, as Edward Harriman did, the articulation of the main railroad artery through Manchuria with a trans-Pacific steamship line and his own railroad network in the United States. Most of these ambitions were still born, though the government
stepped in as a solicitous midwife. By 1914 Americans had direct investments of $225,100,000 in railways outside the United States.

Americans, too, had been prospectors and miners. Gold and silver had tempted them to California and the Rocky Mountain states; now the search for precious metals carried them to Mexico, where American large-scale operations rejuvenated abandoned or undeveloped mines, to Canada where one gold strike after another culminated in the Ontario discoveries of 1910, to Peru and Chile. Baser metals had their allure. For the last three decades of the nineteenth century, the supplies of domestic copper were so ample that there was little incentive to overseas enterprises. But then the emigration of copper developers and dollars began—to Mexico, to Chile, and to Peru, where American innovators were able to exploit immense areas of low-grade ores by the profitable innovations of mass production. Indeed until the later discovery of copper in Africa, Americans—the Guggenheims, Hearsts, Anacondas—controlled the most important copper deposits of the world though they were outside American boundaries. Nickel in Canada, iron in Cuba and Brazil also came within the American orbit. In short, in 1914 American foreign investments in the precious metals were $232,700,000; in industrial minerals $487,000,000.

Nor were the American oil companies laggard in overseas expansion though their domestic deposits were still esteemed “inexhaustible.” Even in the nineteenth century Standard units or allies were producing in Peru, Canada, and Mexico, and soon they were to be at work in Rumania. In 1900 E. L. Doheny, already enriched by California discoveries, was contemplating near Tampico a little hill “where bubbled a spring of oil, the sight of which caused us to forget all about the dreaded climate. . . .” By 1914 gushers were shooting their black gold into the air, American companies were vying with English and Dutch rivals for oil lands and official favors, the United States was importing Mexican oil, and of the total world investment by America in oil production, $143,000,000, the largest share was in Mexico.

Americans had been lumbermen and farmers. Why should they halt at the evergreen forests of the Northwest or the irrigated lands of California? With the twentieth century the lumbermen and the paper companies purchased and leased timber reserves from New Brunswick to British Columbia. By 1916 Canada was supplying 16 per cent of the newsprint used in the United States. For decades land speculators and farmers had also crossed the boundary into Canada. Meanwhile land-hungry Americans moved into Mexico. Many took up small holdings. Others, like the Hearsts, built up immense cattle ranches, operated plantations for the growing of tropical products, or undertook to irrigate tracts of hundreds of thousands
of acres. Americans had at one time owned perhaps one-tenth of the privately held rural land in the Republic. Elsewhere in the Caribbean, Americans also extended the plantation system. Toward the end of the last century a consolidation movement brought together in the United Fruit Company the interests of Andrew Preston, a Boston merchant who owned plantations in Jamaica, Cuba, and Santo Domingo, and those of Minor C. Keith, who united railroad construction with banana cultivation in Costa Rica and Colombia. The concern extended the areas devoted to sugar and bananas and owned and operated a merchant marine and a railroad system. Meanwhile in Cuba, perhaps in satisfaction of bad debts, Americans as early as the eighties began to acquire sugar plantations. In the next two decades they effected a reorganization of the industry. They built large crushing plants, *centrales*, serviced them with light railways, and collected the cane from small planters or large estates. The latter, often owned by Americans, ran into the tens of thousands of acres. By 1914 American investments in Cuban sugar were nearly five times what they had been before the Spanish American War. Over the world American investments in agricultural enterprises aggregated in that year $355,800,000.

Of course the distributing and manufacturing enterprises, the newer features of the industrial state, reached out to overseas regions. Merchandising, indeed, frequently developed into production. The oil concerns, like the Standard, in order to market their kerosene had as early as the seventies to provide storage facilities and marketing centers abroad. Duke, once selling his cigarettes in the Orient, soon erected factories in Shanghai to make them. Harvesters, glass, electrical products, even the early Ford were produced in branch plants outside America under American auspices. By 1914 the sum invested abroad in manufacturing, $478,000,000, was the largest single item with the exception of industrial minerals in our direct investments. It was the largest, if investments in sales organizations and oil distribution, $369,500,000, were added.

Compared to a later period this over-all achievement was but a beginning. A comparison with Great Britain’s figures induces the same reflection. Americans had invested more money in Canada than in any other country; Great Britain’s total was four times ours. Though we surpassed her in Mexico and Cuba, we were still far to the rear in Latin America as a whole. Needless to say, the Western Hemisphere was the area in which we would have a natural leadership.

**Dollar Policy**

Generally speaking, the investments made by foreigners in the United States occasioned no national policy. Though states sometimes gave such
debts rude treatment and minority groups protested the alien ownership of agricultural land, this was the era when both borrowers and lenders regarded international investment as beneficent and, in any era, the United States was too powerful and stable a nation to be "exploited." As for American investments abroad, they were too inconsiderable throughout the late nineteenth century to inspire general governmental concern. In the interval between the Spanish American War and World War I, however, administrations from McKinley to Taft embarked upon a program of promotion and protection, often naïve and crude but nevertheless so avowed as to be christened toward the end of the period "dollar diplomacy." Nor did the Wilson administration, of different verbal temper, reverse this momentum. In any case it was not of universal geographical application. American investors in Europe and Canada, for instance, neither needed nor won governmental assistance. Rather it was designed for backward and undeveloped regions, characteristically thirsting for capital. In short, it was a policy for China and for the Central American countries and the Caribbean islands enclosing the American Mediterranean.

In the former era, the open door policy of John Hay almost at once revealed its limitations. Concerned only with commodities and their treatment, it neither abolished spheres of influence nor mentioned mining and railway concessions. The intervention of American diplomats on behalf of Americans, particularly those seeking railroad concessions, did something to redress this omission. Their representations stressed the expertness and the wealth of the Americans as well as their political disinterestedness, since the United States could have no ulterior designs on the independence or territory of the Chinese. When the Chinese sometimes discriminated against the Americans or, much more likely, some great power wrung from the Chinese exclusive concessions for its nationals within a sphere of influence, the State Department and its representatives filed protests and began to define the open door, unilaterally, in a more embracing fashion. In 1909 the Taft-Knox administration—Philander C. Knox was Secretary of State—knit the various threads together. The President announced, "The State Department will, therefore, foster the use and investment of American capital which operates for the establishment of legitimate business interests in China and for the welfare of that great empire and which gives us a legitimate standing in maintaining the integrity of China and conserving her just rights." Only confirmed skeptics, uninstructed in the high motives of American policy, will dismiss the last objective as pure hokum. Pursuant to these purposes the administration insisted that American banking houses participate with those from other countries in a consortium advancing funds for
railroad construction, currency reform, and industrial development. Then President Wilson looked with disfavor upon the arrangement, since the guarantees protecting the loan touched "very nearly the administrative independence of China itself." The American bankers withdrew.

In the American Mediterranean the devices by which the United States built a sphere of influence have already been mentioned: the Platt Amendment in the Cuban constitution, the Rooseveltian preventive action in San Domingo, frequently repeated elsewhere with appropriate variations, interventions by warships and marines, sometimes legalized by treaty or executive understandings, sometimes justified by emergency or stern necessity. Also mentioned earlier was the mixture of motives—political, strategic, idealistic, and economic—inspiring the over-all program. Though there is plenty of debate over the proper emphasis to be assigned to these various causes as well as over the question whether in any specific instance the government prodded the investors into action or the investors solicited government intervention, the economic upshot of preaching and practice was unmistakable: a preference zone for American investments.

In an area where American commerce was continually expanding, where customs receivers were appointed directly or indirectly by the United States government, and where financial advisers from the colossus of the north appeared soon after the marines had landed and had the situation in hand, the intangible but overwhelming influence of the environment explained the orientation toward American lenders. But the government interfered on many a specific occasion. At the insistence of Secretary Knox, when Haiti undertook the reorganization of its bank based upon French and German capital, American participation was granted to such effect that eventually the National City Bank of New York owned it all. Again, at the same insistence, old loans owed in Central America to British investors were to be refunded with American capital. Everywhere Republics as a matter of course now turned to American banking houses for additional financial assistance. The evidence on concessions is less clear. Certainly when oil fields commanded diplomatic interest, high associates of William Jennings Bryan, Wilson's Secretary of State, felt his Mexican policy was tangled with the rivalry of British and American oil concerns, and in Colombia a Wilson-Bryan interference prevented the bestowal of a huge concession upon an English oilman, apparently with the innocent expectation that such self-denial by some one else would mark the end of the concession era. In the course of these tumultuous doings, Bryan declared to a British representative that the latter's "Foreign office had simply handed its Mexican policy over to the oil barons for predatory purposes." To which the British diplomat unper-
turbed replied, "Mr. Secretary, you are talking just like a Standard Oil man." Perhaps this interchange was as good a commentary as any on the foreign investment policy of Sir Edward Grey and of dollar diplomacy. Between both there was much resemblance.
CHAPTER XVIII

The New Power of National Finance

"Change and Decay"

By nearly every standard which men have chosen to value their activities and achievements, the one hundred years between Waterloo and Sarajevo, between the end of the Napoleonic era and the outbreak of World War I, was the wonderful century. It was the century of science, of religious freedom, of aesthetic experiment, and of humanitarianism. In politics an ever widening political democracy transformed the governments of the western world. In international affairs it was an era of comparative peace. Though there were localized wars in Europe, Asia, Africa, and the Americas, the potentially dangerous expansion of European nations and later of Japan and of the United States into distant regions of the world unloosed only minor conflicts; the Great Powers successfully avoided titanic struggles over empire. As great a continent as Africa was divided almost without a battle. Some ascribed this outcome to the naval power, the economic might, and the political shrewdness of Great Britain. The wonderful century was the century of the Pax Britannica. It was also the era when the countries bordering the North Atlantic Basin were industrializing their economies. In the process they discarded, relatively speaking, the motives and methods of a previous mercantilism. In thought and practice they relied instead upon a political and economic system emphasizing the individual, alone or associated, as the planner of economic activity and achieving a comparative separation of government and business enterprise.

The quarter century and more after 1914 shattered this picture. In 1914 the nations of Europe and Japan went to war and three years later the United States joined one group of allies as an "associated power." Once the conflict was concluded there was a desperate struggle to rebuild the earlier structure, to recapture the general plan of the past. In the United States this return to normalcy met with unusual success. From Harding through Coolidge to Hoover a golden tide of prosperity poured across the years. The national income—the net "value of commodities and services produced by the coun-
try's economic system"—rose nearly 40 per cent from 1921 to 1929. Presidents exalted the achievements of the country and their administrations. Those who derided a business civilization said Coolidge "cannot realize that the rattle of the reaper, the buzz of the saw, the clang of the anvil, the roar of traffic are all part of a mighty symphony not only of material but of spiritual progress" and Hoover thought the nation was in measurable distance, given the proper policies, of the abolition of poverty. The expansion which inspired these visions was financed by borrowings from savings and by the creation of credit. Individuals and private enterprises went into debt, and though the national government was reducing its burdens, state and local governments were increasing theirs. They issued their securities to finance the roads, schools, and institutions which the rising level of living seemed to require.

To the skeptic and the sensitive, the spectacular crash of security values in the Wall Street panic of 1929 was the sign that the expansion of the decade was no longer immediately profitable. More houses had been built than could be bought, more automobiles poured from assembly lines than could be sold, more securities purchased than could be paid for—at current levels of income and prices. The prosperity of the twenties was neither eternal nor invulnerable. Four years of depression ensued. As national income nearly halved between 1929 and 1933 and the index of wholesale prices calculated by the Bureau of Labor Statistics declined from 95.3 to 64.8, few economic groups were able to escape the impact. Farmers, workers, stockholders suffered. Only those in receipt of fixed incomes from bonds and mortgages enjoyed a relative immunity. Even they were not impregnable. In 1933, as popular distrust and terror threatened to close the banks of the country, disaster threatened every one. From a stand before the capitol Franklin D. Roosevelt announced in his inaugural address: "Only the foolish optimist can deny the dark realities of the moment."

Roosevelt was not content with a mere analysis of the dismal moment. Then and later, throughout an administration longer than any previously permitted by the American people, he launched the nation upon a program of recovery, relief, and reform. In spite of a supreme confidence that some of the measures thus adopted would solve problems and difficulties for all time, the result was admittedly inconclusive. Though the national income increased from $39,584,000,000 in 1933 to $81,347,000,000 in 1940, it did not attain the level of 1929; the recession of 1937, frightening the administration and consoling its opponents, was a discouraging commentary upon previous policy, and the United States, with the exception of France among western nations, effected the most tardy and most partial recovery from the collapse of the twenties. Then in 1939 war broke out in western Europe. In
mid-1941 Germany's attack on Russia brought the latter into the conflict, and before the year ran out Japan and the United States made this second conflict world wide. In 1945 victory at last stilled Armageddon.

Even in an age as convulsive as that since 1914, there was some discernible relationship between its significant features, war and depression. For a time after great wars there came a period of economic prosperity. Nations sought to rebuild their destroyed property, to satisfy deferred popular wants, and to build new industries upon the technical innovations introduced by the war. The United States, even though it escaped the direct devastation of World War I, participated in the post-war revival. Once this unfinished business was out of the way, the economic maladjustments and dislocations following a war bit home, either setting in train a depression or deepening one caused by other factors. Such, it was said, was the course of events in the twenties. Whether depression in turn resulted in war was less certain. No doubt the economic crisis of the thirties stirred grave discontent and presented problems apparently insoluble. In order to allay the first and outwit the second, governments might conceivably start defense programs and later choose war with a resulting business boom. But such assertions were essentially unprovable. The factors making for war could not be shaped into an easy formula.

Nor was it any easier to answer another question that haunted the era: Were war and depression inherent in the stage of development reached by capitalism in western Europe, Japan, and the United States? On the first count some concluded from theoretical considerations or a partial examination of the evidence that world wars were the end product of the capitalist system. Manufacturers, particularly those in munitions, sought war, for it enlarged their markets; international bankers sought war in order to float securities or give new attractiveness to previous issues; capitalists, driven to overseas expansion, called in the government for assistance and provoked retaliation by the exploited or by other exploiters: these were variants of the argument. Partisans of this temper ignored the fact that exponents of high capitalism provoked neither World War and that the United States, the most capitalist of nations, entered both conflicts tardily and in each instance under the leadership of presidents who made a fetish of hostility to big business and were supposedly insulated from its sinister influence. In truth, in America as elsewhere the capitalists and their supporters were inclined to peace. War endangered the materialism for which they strove and which they celebrated. Though some business leaders lived by the rule, "always fish in troubled waters," most sought to reduce business operations to certainty and calculation; war was the enemy of this objective. No one had better insight into this business spirit or described it with more
derogatory verbiage than Theodore Roosevelt. In his view businessmen were "ticker tape patriots. Let not this country place too much faith in its bankers and industrialists, its brokers and its merchants. A thousand rich bankers cannot leave such a heritage as Farragut left."

On the other hand, depressions were undoubtedly a feature of the historic capitalist order. It should be added that so was prosperity. With the nineteenth century this characteristic ebb and flow of business activity increasingly challenged description and explanation. By the twentieth century, armed with the new tools of statistics, scholars reduced the phenomena to some sort of system. While a few asserted it was folly to discover in these changes any regularity, more accepted the concept of the business cycle and proceeded to measure it. There were short cycles—in the United States since 1855—consisting of twenty months of contraction and twenty-five of expansion, and these shorter cycles were grouped into longer ones of fifteen to twenty years' duration. With varying degrees of dogmatism and diffidence the explanations for these wave-like motions, culminating at the peak with a crisis and at the trough with a revival, were found in sun spots and alterations in climate and crops; the cumulative optimism or pessimism of producers; the operation of the banking system; the appearance of innovations entailing an alteration of business institutions and methods; a lack of balance between savings and investment; and in the overinvestment of funds in plant and the underconsumption of goods due to inequalities in income, be it wages or profits. Though most of this erudition was confined to books, the shepherds of public policy turned to it in the golden twenties and even more in the depressed thirties. Perhaps it was too late. For many identified the collapse following 1929 with judgment day. An agency of the League of Nations christened it "unexampled in severity and extent" and many learned men were convinced that the economy had hit bottom and was there to stay. The prosperity of the forties gave to such predictions an ironic insubstantiality. But perhaps they were not really false prophets. World War II and its aftermath might be a "random perturbation," the quaint phrase applied by theorists to factors that did not fit into their orderly scheme of things.

War, Depression, and National Power

Whatever their causal connection with the American economy, the wars and depression of the twentieth century exalted the power of the national government in economic matters. In the case of war the outcome was a truism; for the State and not businessmen conducted the business of modern war. Thus the nation in arms became the great customer. It was the largest single purchaser of agricultural products and the engrossing market for industrial output. Furthermore, the government employed directly more work-
ers than any other single business agency. The nation became the great spender. For military affairs in World War I, the United States assumed expenditures greater than all civilian and military appropriations from 1791 to 1917. In 1944, the last full year in a second global struggle, government expenditures for war were $86,300,000,000, while those of millions of American consumers for goods and services were $97,600,000,000.

The Great Depression and its aftermath also drove the national government into every crack and corner of the nation's economic structure. The resulting conception and practice exceeded the mere regulation of parts of the economy and the mere remedy of inequities, aims increasingly commonplace since the passage of the Interstate Commerce Act in 1887. They were something deeper than the claims of politicians that their party was responsible for prosperity and that canny voters should therefore continue them and their policies in office. Such traditional and superficial utterances were as easily uttered by the antagonists of governmental action as by its supporters. Now it was asserted that the national government must be responsible for the functioning of the economy as a whole. The Employment Act of 1946 was accordingly headed by a declaration of policy:

Congress hereby declares that it is the continuing policy and responsibility of the Federal Government to use all practicable means . . . to coordinate and utilize all its plans, functions, and resources for the purpose of creating and maintaining, in a manner calculated to foster and promote free competitive enterprise and the general welfare, conditions under which there will be afforded useful employment opportunities, . . . for those able, willing, and seeking to work, and to promote maximum employment, production, and purchasing power.

Though the measure vouchsafed frail means to accomplish these somewhat contradictory and ambiguous aims, their mere profession would have repelled Woodrow Wilson, who announced at the end of World War I he had "seen no scheme of reconstruction which we could force our spirited business men and self-reliant laborers to accept with due pliancy and obedience." Instead he looked forward "to the ordinary and normal process of private initiative." Indeed American history would probably have to return to Alexander Hamilton to find a responsible statesman likely to appreciate the governmental direction and control of our economic life envisaged in the Employment Act of 1946.

The Republican dynasty of the nineteen-twenties certainly voiced principles more Wilsonian than Hamiltonian. The decade began with Warren Gamaliel Harding. Although his campaign speeches were so ambiguous as to make difficult reading, he occasionally distilled his creed and that of his followers into a quotable aphorism. "We want a period in America with less
government in business and more business in government.” In practice this aspiration meant the weakening or reversal of previous regulation of business enterprise and the encouragement of business by subsidy, protection, or other favors. The decade ended with economic disaster and with Herbert Hoover. At first the President apparently hoped to soften and to stay the tragedy by a reliance upon natural forces and upon the voluntary activity of American citizens. Not statutes but conferences and resolutions were to bring prosperity around the corner. In 1929, before the reverberations of the stock market were stilled, railroad, manufacturing, public utility, and labor leaders were summoned to the White House and invited to continue their plans of expansion and construction, preserve existing wage levels at least until the cost of living declined, and avoid industrial strife and aggressive demands. As these and later commitments and exhortations failed to sweep back the tide of unemployment and destitution, Hoover increasingly resorted to direct governmental action.

The President attempted to stay the international aspects of the decline, marked by a world-wide crumbling of financial structures, by inducing European nations to postpone for a year all payments of interest and principal from German reparations; for America’s part we would adjourn the payments on the war debts owed us by the Allies. In 1932 to check the continued disintegration of the business structure at home, he secured a charter for the Reconstruction Finance Corporation. Modeled upon a device of World War I, the Corporation was to sell its capital stock and notes to the United States Treasury. The Treasury in turn would have to borrow from individuals, corporations, or banks, or raise in taxes the funds to purchase the securities of the Reconstruction Finance Corporation. In any case, the latter assembled several billion dollars to loan to farmers, to states and municipalities for relief of the needy and for public-works, and to railroads, banks, and other financial institutions in financial distress. In actuality banks received over 52 per cent of these loans; farmers 9. In response to the criticism that these governmental measures relieved only the large and powerful, Hoover asserted that the governmental largess thus distributed saved not only stockholders in the institutions but also “25,000,000 American families, every one of whose very savings and employment might have been wiped out and whose whole future would have been blighted had those institutions gone down.” This institutional approach, whatever its theoretical logic, was impersonal and contributed to the impression that the administration was callous to human suffering.

The Roosevelt era made no such political error. It reduced its program to the human level. “Economic laws” were made by men and men could control and direct “blind economic forces.” Not money but human budgets were to
be balanced. Even errors in policy must be forgiven if made by the warm-hearted. In brief, the government should and could shape and direct the economy. In what fashion and to what purpose, the Rooseveltian diagnosis of the present peril was essential prelude. He did not wish to supplant capitalism. His "I believe in the sacredness of private property" echoed Calvin Coolidge. But the capitalism he confronted required reform, in part because the capitalists who ran it were "blindly selfish men" and partly because it had left a stage of expansion for one of relative maturity. "Our task... is the soberer, less dramatic business of administering resources and plants already in hand... of meeting the problem of underconsumption, of adjusting production to consumption, of distributing wealth and products more equitably, of adapting existing economic organization to the people." This rather hopeless emphasis upon dividing stagnation he partially abandoned in his later administrations.

To attain his objectives, whatever their mood, Roosevelt relied upon "planning," upon the development of "an economic constitutional order." Industry, agriculture, labor, banking, all required plans. The planner was to be Washington and not Wall Street. The beneficiary of the planning was to be the "forgotten man" of the 1932 campaign, "the one-third of the population which was ill-housed, ill-fed, and ill-clothed" of the later thirties. Upon examination the details of this program were less revolutionary than they sounded. They were built in part upon the American past. For Roosevelt journeyed through American history picking up intellectual luggage as he went. Jefferson and Jackson provided aims; the Populists, an earlier pattern of discontent, contributed a currency program; the progressive era of the first Roosevelt provided the structure of regulation and conservation; and, such is the seamlessness of history, even the Hoover administration transferred objectives and agencies to its Democratic successor. Probably the single most formative influence was the Wilson administration, with its sympathy for laborers, farmers, and small businessmen and with its universal planning to win the war, a precedent to which Roosevelt constantly alluded in his years of peace and which he adopted and broadened during the Second World War. The American past, however, was only one contributor. Ideas came from overseas. Though there were some who regarded Roosevelt as the copyist of Russian communism, he actually imitated legislation passed in Germany, Scandinavia, and Great Britain decades before. The tracing of origins, however, must not dim the novelty of the Roosevelt New Deal. For America it meant a more embracing governmental intervention in economic affairs than the old program of regulation. It meant an intervention, furthermore, not designed to redress the damages of the past but
to plan the course of the future. Its purpose was not retrospective justice but
prospective welfare.

Sometimes the apostles of this new dispensation implied that once the
economy had been rescued from prostration, cleansed from the money-changers, and reformed so as to be less vulnerable to human selfishness and blind
economic forces, the government's powers would wither away. There were
others who in moments of ecstasy thought the legislation of the era was
"for all time" and anticipated that even when the crisis was past the govern-
ment would control the economy. Whichever policy might be fulfilled, it
was certain in view of national experience after 1932 that the old adage
"War is the health of the State" needed amendment: after war should be
inserted the two words "and depression."

Fundamental was the impact of war and depression upon the banking
structure, the monetary system, and the fiscal policy of the national govern-
ment. All three of these items were related; all three, in turn, profoundly
influenced the nature of the American economy and its direction. He who
finances controls.

Bank Policy and Structure

The banking structure at the beginning of World War I generally mir-
rored the peculiar American circumstances that had brought it into being.
Ever since the failure to recharter the Second Bank of the United States in
1836, the nation had lacked a central bank and for three quarters of a cen-
tury, while European nations were establishing or developing such institu-
tions, the United States had relied upon the Treasury or masters of finance
like J. P. Morgan or the New York banks to assume, in various degrees of
informality, central banking functions. This condition had just been altered
by the statutory establishment of the Federal Reserve system at the very end
of 1913.

But this was not the only instrument of centralization. The individual
banks of the nation had come into being either through national or state
charters. Though some were large, the national government generally for-
bade national banks to participate in chain banking or branch banking, and
most state governments frowned upon devices by which great banking units
under centralized control were assembled. Branch-banking, for instance, had
given Canada, Great Britain, and the countries of western Europe a few
great banks. In part our peculiar system of dual chartering explained the
American contrast. The public opinion, which felt a bank should be a local
institution in tune with local needs and the banker should be independent
of some remote money power was also responsible. All this was changed
by the era of war, normalcy, and depression. Throughout the period the
trend toward consolidation, characteristic of business enterprise as a whole,
operated in the banking world. There were consolidations and mergers
particularly among the big banks of the big cities. Indeed in New York three
banks almost consciously competed for the title of the largest bank in the
world. Furthermore in states where legislation was favorable, group banking,
by which several banks were controlled by a holding company, and the more
important branch-banking, fathered the same tendency.

Depression hastened the consolidation movement. Even in the golden
twenties bank suspensions were numbered in the hundreds a year; after the
collapse of 1929 they marched into four figures. In 1933, before and after the
bank holiday, 4,004 banks with deposits of over $3,596,000,000 closed. The
failures were concentrated among the small banks in the small cities and
towns. The inevitable reconstruction of the banking system in the thirties
loosened the legal prohibitions against consolidation. National banks were
permitted to establish branches in states where state banks possessed the
privilege; and the number of states which denied to their banking creations
the right to branches halved in the fifteen years after 1924. In California,
where the banking laws had permitted branches as early as 1909, and where
bankers were under the spell of English precedents or under pioneering and
aggressive leadership, the Bank of America, the Giannini Bank, became
not only the largest in the state but in the nation as well. Meanwhile be-
tween 1920 and 1948 the number of banks in the country declined from
30,139 to 14,759.

More significant in banking history was the evolution of the nation’s new
central banking system, the Federal Reserve. In American history war has
sired such institutions. The First and Second Banks of the United States
were post-war responses to the financial chaos of two wars with Great
Britain; the exigencies of war finance compelled the creation of the National
Banking System in 1862. The Federal Reserve System had a different patern-
ity. The panic of 1907 led eventually to the legislation of 1913, the crisis of
1929–1933 led with about an equal time lag to the reconstruction of the sys-
tem in the mid-thirties. But if war was not the father of this latest of central
banks, it was at least the guardian of its younger years. For the system had
hardly assumed an organized form before World War I descended upon it.
The government needed a market for its bonds. This the Federal Reserve
System helped to supply. Member banks were in their own right great pur-
chasers. Furthermore, an amendment to the Reserve Act permitted govern-
ment bonds as well as commercial paper to serve as collateral for discount
at the Federal Reserve Banks. A shattering expansion of credit resulted.

When the war was over the authorities of the Reserve System were able
to abate their thralldom to the necessities of government finance and, even more startlingly, their reliance upon gold. Banking fundamentalists had always postulated an almost automatic relationship between the amount of gold reserves and the amount of credit. Now other vistas opened with the great inflow of gold into the United States. It began during the war when European nations had to discharge their indebtedness in America by gold balances; it continued after the war because of the disorganization of public finances and of exchange, the absence of a fixed gold standard in many nations, the imposition of tariffs and other nationalistic barriers upon the exchange of goods, the refusal of Americans to lend abroad systematically and regularly, and because gold fled from unstable political conditions overseas. Between 1914 and 1929 the value of gold coin and bullion in the money supply of the nation increased nearly two and a half times. With ample supplies of gold the Federal Reserve System was enabled to manage its credit operations to attain objectives deemed desirable.

The Federal Reserve Report of 1923 announced the new embracing intentions of the banking authorities. With a brief nostalgic adieu to the old reserve ratio "so simple, so definite, so easily understood, and so practicable," they turned their attention to new standards for credit policy. They had little doubt of their right to do so, for the Federal Reserve Act empowered them to "accommodate credit and business." It was thus their duty to maintain "sound conditions." The first step was the compilation of information on the volume of production, transportation, trade, and employment, on the rise and fall of prices, on the extent of inventories. Equipped with this knowledge, the authorities would set the volume of credit in such a fashion that "the volume of trade, production, and employment" and "the volume of consumption are in equilibrium." When business was undergoing a too rapid expansion and was in danger of developing an unhealthy or speculative boom the Federal Reserve Banks were to adopt a restrictive credit policy; when business was depressed or struggling to emerge from a business recession, the system would ladle out credit on easy terms to stimulate recovery. The stability sought by the Federal Reserve System was a business stability and not merely one of price levels. Indeed, the Reserve Board fought against every attempt by Congress or enthusiasts for monetary management to assign them the latter objective. Since the reserve banks were assuming a greater responsibility for credit conditions, open market operations became a more important instrument. The process of borrowing and rediscounting originated with individual customers outside the banking circle; the sale and purchase of paper and securities originated with the bankers. Such was the program of the twenties. The depression brought no fundamental alteration in it. The banking authorities resolved by making credit easily available
to stimulate production, trade and recovery. So the rediscount rate was slashed again and again until member banks were paying only 1½ per cent interest on their loans from the Federal Reserve Bank of New York. The Federal Reserve Banks, furthermore, now used on an even more lavish scale than in the twenties the open-market purchase of government securities and other paper in order to build up an ample credit base for borrowing by the member banks. But customers didn’t borrow from the banks and the banks didn’t borrow from the Federal Reserve.

Indeed, the speculative upsurge in securities in the late twenties, the crash of 1929, and the nearly four years of depression had shown how limited were the triumphs of monetary management as then applied. Stability and equilibrium were far from attainment. The experience convinced some that banking policy was but a single and perhaps minor influence upon economic development. Others ascribed the failure to the dilemmas confronted by Federal Reserve officials. They were a national banking system; they were also a part of an international order. The low discount rate in 1927, for instance, aided other nations in re-establishing the gold standard, a presumable aid to our foreign commerce, but it also stimulated at home the speculative fever the Board worked to discourage. The cheap money policy of the early thirties might be a prerequisite to national recovery; it had to be temporarily discarded when gold suddenly fled the country after England’s abandonment of the gold standard in 1931. Or perhaps the Federal Reserve did not have proper and sufficient powers or follow the correct doctrine of central banking. To all these questions the Roosevelt administration, after 1933, sought answers. Though some were purportedly novel, the central fact of credit management and credit management by an agency of the national government long antedated the accession of Roosevelt to power.

THE NEW DEAL IN BANKING

In 1933 the Roosevelt administration did not face an abstract economic problem or the formulation of a long range economic program. It confronted a nation without an open bank. For the panic had grown so great that the new President two days after his inauguration had closed every bank in the country under a national bank holiday. The first necessity, to get the banks functioning, was primarily a task of re-creating the public faith in these institutions. Temporary legislation, a certification of the soundness of reopened banks by the government, and an artful fireside chat over the radio by the “chief” all played their part in this accomplishment. This done, attention was directed to the defects in the banking structure revealed by the great collapse of 1929 and after. Banking legislation, like military science, always prepares for the last war. Still fresh in mind was the security specula-
tion of the twenties and the inability of the banking authorities to restrict credit for speculative purposes. Banking reform must, therefore, restrain the speculator. It must go farther. It must help to lift the burden of the depression. Easy credit must stimulate production, a revived production would diminish the current burden of unemployment; ample credit might help to raise prices, higher prices would make more tolerable the burden of debt incurred in a period of previous high prices. As the crowded years passed these transient objectives were pressed into the shape of permanent policy. The banking system must help "prevent wide fluctuations in the price level" and must stimulate "the maximum sustainable utilization of the nation's resources." It must seek "economic stability." All this was to be attained through the "conscious control and management" of the "monetary mechanism" of which the banking system was of course a part.

While some of these New Deal statements were so repetitious as to represent little advance over the decade of the twenties, the resulting legislation in 1933 and 1935 recast the form of the nation's central bank. The Federal Reserve Board now became a Board of Governors. Its seven members, given terms of fourteen years and salaries of $15,000, were all appointed by the President with the advice and consent of the Senate. The President designated the chairman of the Governors and could demote him to ordinary rank at will. The Board of Governors had to approve the appointments of the president and vice president of each Federal Reserve Bank. Though these structural alterations gave the incumbent administration the power to reconstruct the Board of Governors, it was doubtful if they permanently enlarged the governmental influence in the system. The longer terms, coupled with the exclusion of the Secretary of the Treasury and the Comptroller from ex officio membership on the Board, pointed toward greater independence. On the other hand there was no doubt that the changes enhanced the power of the central authorities and curtailed the policy-making activities of the Federal Reserve Banks. The Federal Reserve Bank of New York, which had over the years sought and attained the leadership of the system, now confronted the transfer of some of its authority to Washington. This concentration of control was even more marked in the assignment of new powers to the Board of Governors.

These powers in themselves were designed to give the central bank more effective control over credit and monetary conditions. The Board of Governors, rather than the separate Federal Reserve Banks, received virtual power to set the rediscount rate. The importance of open-market operations was signalized by the statutory creation of an open-market committee. The Board of Governors constituted a majority of its membership. The Board also received the power to alter the amount of the member bank reserves the mem-
ber banks must maintain against their demand and time deposits with the Reserve Banks. Though it could not lower such reserves below the percentage figures worked out in 1914–17, 3 per cent on time deposits and 7, 10, or 13 per cent on demand deposits, depending on the character of the member banks, it might double their amount. With this powerful mechanism the central authorities could curtail the expansion of credit and diminish the freedom in credit policy which individual banks often enjoyed through their possession of excess reserves above their requirements. The Board of Governors received new power to determine the purposes for which credit could be employed. Be it recalled that the original Federal Reserve Act of 1913 had declared only short-term paper for agricultural and commercial uses was eligible for discount and had forbidden the Federal Reserve Banks to discount paper used for trading in stocks. Nonetheless, experience had demonstrated that on this count the Reserve authorities did not, in fact, possess the instrumentalities to prohibit the purpose for which credit, once created, was used. In the recasting of the central banking system during the mid-thirties the Board was consequently given the power to establish the margin requirements on loans extended to security buyers by all banks, whether in the Reserve System or not, and by other lenders than banks. At one time the margin requirements were set at 100 per cent. Over a somewhat shorter period during World War II and after, the Board experimented with the control of credit used by individual consumers in their purchases. Under a presidential order it specified the details of charge accounts and the down payments and length of contracts involved in the installment purchase of certain articles. It issued these commands not only to banks but to sellers and lenders.

The extension and refinement of powers was a familiar phenomenon in the history of government regulation. In the case of the Federal Reserve System, however, it had not gone far enough to assure an effective over-all management of credit. From time to time hard circumstance blunted its instruments. The continued accumulation of gold weakened the mastery of the reserve ratio; though the banks might create a generous reservoir of credit cheaply tapped, they could not make borrowers actively employ it; the determination of the Federal government in the thirties and after to issue its debt at a low rate of interest and support its securities on the market deprived the Reserve System of the flexible manipulation of the rediscount rate. For the Federal Reserve even in the field of central banking and monetary management found itself faced with competition from the Treasury of the United States. In various degrees the Treasury, as we have seen, had exercised these functions for decades. Although the Federal Reserve Act had been designed to reduce its influence, depression and war, particularly during
the Roosevelt era, gave to this agency of the national government perquisites and power of the widest latitude. One evidence of the trend was the fact that after the mid-thirties the reserve held by the Federal Reserve Banks against deposits with them was not gold but gold certificates. In 1945, incidental to war financing, this reserve of gold certificates had been reduced to 25 per cent of the obligations of the Federal Reserve Banks. In any case for years the Treasury had held the gold.

**Money Magic**

For clearly, if it was desirable to manage credit to lift the nation out of an economic morass, the management of the ultimate base of credit, gold, would have a more direct influence upon the economy. Thus it was thought that the abandonment or the modification of the gold standard would raise prices and lighten the burden of debt. There was little new about such proposals. Over the centuries sovereigns had eased their financial necessities by sweating and clipping coins. Over the decades of American history debtor classes and their spokesmen had advocated various inflationary devices, the wider use of paper money or the free and unlimited coinage of silver, to break the so-called tyranny of gold. Only forty years earlier the Democratic party under Bryan had championed such a crusade. In the age of the New Deal strident voices and effective political pressures advocated a similar course. The country swarmed with currency cranks and with the apostles of monetary salvation. Apparently to head them off the administration in May, 1933, accepted the Thomas amendment to an agricultural statute giving the President the power to issue $3,000,000,000 worth of greenbacks, to provide for the free and unlimited coinage of silver at a ratio to be determined by him, and to reduce the weight of gold in the gold dollar—in other words to devalue the dollar—up to 50 per cent. Though this enactment revealed the purpose of powerful interests, it did not occasion or explain the anti-gold policy of the administration. For Roosevelt and his advisers had already edged away from the gold standard by a series of presidential proclamations prohibiting except under license the export of gold and the payment of gold by banking institutions. All owners of gold had also been required to surrender it to the government. Over these measures there hung so temporary, so diffident an air that there was dispute among observers as to when the United States left the gold standard.

Soon, however, a scientific precision and an evangelistic fervor gave new drive to the mission of monetary management. The idea that the dollar might be given a stable value in terms of commodities and that by changing the content of the gold dollar statesmen could secure a given price level captured the President’s imagination. Most economists had for years denounced
such a project as impractical. Unlike Roosevelt, however, they did not have to confront the insistent needs of the moment, the crushing burden of debt. With words that might have been an echo of debtor agitation through all American history, the President announced the purpose of his new policy was "to make possible the payment of public and private debts more nearly at the price level at which they were incurred." The price level of 1926 was frequently mentioned as the blessed one. It was certainly an ironic commentary upon the exactitude of the instruments chosen to seek this destination, that the President and his Secretary of the Treasury had so little certainty as to what the government should pay for gold in terms of dollars that from morning to morning they fixed the rising gold price by the playful resort to "lucky numbers." The whole experiment with money tinkering was more than a domestic matter. The gold standard was an international standard. Perforce national policy in the matter had repercussions outside our boundaries. Here was a variant of the dilemma that had confronted the Federal Reserve Board in its manipulation of interest rates in the twenties. While the Roosevelt administration briefly gave allegiance to the cause of international monetary stabilization in 1933, it brusquely abandoned any such possibility after a few months. According to the official canon, the objective was to raise American prices and then secure the "kind of dollar which a generation hence will have the same purchasing and debt-paying power as the dollar we hope to attain in the near future."

Early in 1934 the Gold Reserve Act systematized previous procedure. Gold, except that used for industrial purposes, was to be the property of the Treasury. Among those stripped of it were the Federal Reserve Banks who now kept gold certificates as a reserve against their notes and member bank deposits. The President was authorized to fix the weight of the dollar at between 50 and 60 per cent of its old weight. The resulting devaluation of existing gold supplies yielded, of course, a surplus to the government. This sum, $2,000,000,000, was placed in a Stabilization Fund which was to be used to maintain the desired depreciation of the currency. The authorized operations, resembling the open-market ones of the Federal Reserve, further trenched upon the latter's powers. Soon after Congress passed the bill the President reduced the gold content in a dollar from 25 8/10 to 15 5/21 grains, 59.06 per cent of the former weight, a percentage of devaluation very close to the minimum mentioned by the act. The Treasury announced it would buy gold at $35 an ounce, the old price had been $20.67. Until World War II reversed the trend, an immense increase in the gold supply of the United States took place. The new price for gold stimulated gold production all over the world, for the costs of production did not go up to a proportionate extent. This gold flowed to the United States because the disturbed political and economic con-
ditions in Europe and elsewhere set in train a flight of capital to the United States and because the preparations for war and its conduct, at least before lend-lease, required foreign purchasers to ship gold to this country. If the Treasury paid for the gold with gold certificates, the latter formed a part of the excess reserves of the Federal Reserve System and thus exerted an inflationary effect. If the Treasury paid for the gold by the sale of government securities the government debt would increase, again with the possibility of inflation. Such were the features of a “streamlined” gold currency or of a currency “related” to gold, to use the Rooseveltian term.

The Cinderella sister of the metallic currency was silver. By the depression years she was a drudge indeed. Continually excluded from the currency, except as subsidiary coins, by the Gold Standard Act of 1900, the price per ounce had fallen catastrophically, largely because silver was an abundant by-product of the mining and refining of lead and copper. In 1932 silver was below 25 cents an ounce. As always the silver interests and the silver districts were in favor of doing something for the metal. Luckily for them the experimental inflationary mood of the thirties made it possible to identify their particular interests with the general good. Higher silver prices would mean higher prices in general. In a gesture of internationalism, the advocates of silver also pictured their program as aiding the silver-using countries of the Orient. With higher prices for their silver the latter could buy more from the United States. It was no accident, therefore, that the Thomas Amendment of 1933 put in the President’s hands a magic wand for increased silver purchases by the government. This would take Cinderella out of the kitchen.

Since discretionary powers had no efficacy unless employed, silverites and their allies enacted over the years a series of sterner directives. Their general aim was to compel the government to purchase a certain amount of silver. Though this silver might be purchased at home or abroad, it was always essential to purchase all the domestic production, preferably at a higher price than that set in the markets by world conditions. It is unnecessary to chronicle every ingenious item in this strategy. In 1934 the Silver Purchase Act declared it to be an ultimate objective of national policy to carry one-quarter of the national metallic stocks in silver. Five years later, when purchases had failed to fulfill this objective at prices acceptable to the silver bloc, a second silver purchase act instructed the government to buy all domestic silver mined thereafter at 71.11 cents an ounce. The world price at the moment was below forty cents. Undoubtedly domestic silver producers had secured a welcome subsidy. The promised international blessings proved to be disastrous. As the United States drew silver to it, depression and deflation hit the silver-using countries and some abandoned it as a standard. The impact upon the United States resembled in a small way the devaluation of the gold dollar.
The silver certificates issued in payment of silver were legal tender and thus contributed, though to a less extent than the gold situation, to the excess of reserves in the Federal Reserve System.

**Debt Management**

Monetary management either through the banking system or currency tinkering was interlocked and supplemented with fiscal policy, or as others christened it, budget management or debt management. The reference, of course, was to the finances of the national government, their over-all magnitude and detailed policies in matters of expenditure and income. Sheer figures revealed a novel situation in the decades of war, normalcy, and depression. In 1916 the national debt was $1,225,000,000; in February, 1946, the high point, it was $279,764,000,000. The per capita figures for the two years were $12.02 and $1,907.62. Not only had the national debt multiplied, the total compared to the total of private debt had undergone a complete reversal. In 1916 the net private debt was nearly sixty-four times that of the Federal government; in 1946 the net national debt was approximately one and a half times the total net private debt. Few single comparisons so succinctly stated the new rôle of government in the economy. For a correct appraisal it should be noted that though the national debt increased, so did the national income; though the national debt increased, interest payments, due to the lower rates on government securities, did not increase at the same rate. The critical figure, interest payments on the national debt as a percentage of national income, rose only from 0.07 in 1915 to 3.00 early in 1946. Even with these reservations, the figures represented a major departure from historic American policy as described in earlier chapters.

Since even traditional thought tolerated a departure from conventional debt policy in wartime, World War I shot the national total from somewhat over a billion dollars in 1915 to $26,597,000,000 in August, 1919. The latter sum did not represent the total cost of the war to the United States, since a portion of that cost, albeit a smaller one, was met by taxes. Fortunately, in the last respect the government had new instruments at its disposal. Though some of the old sources of revenue, like land sales, were no longer fruitful, an amendment to the Constitution had just authorized a national tax upon incomes. Such taxes upon individuals and upon corporations were levied on a new scale, existing rates were raised, and an excess profits tax was passed to absorb profits unreasonably larger than those made in a base peacetime period. As for the rest, the government borrowed the money. A feverish promotional excitement sold patriotically designated loans, aggregating billions, to individuals and corporations. No loan ever failed to “go over the top.” The explanation was simple. Though the exhortation “save and buy” filled
the air, the government actually relied upon the process of "borrow and buy" to raise its funds. Whether individuals and corporations borrowed from the banks the funds they subscribed or the banks bought at first hand, the latter turned to the Federal Reserve Banks for assistance. The way of borrowing was eased, for the government, generally through the Treasury, intervened to assure for its obligations a favorable market. It adopted policies to maintain a large gold reserve and thus adjourn that limit upon borrowing from the Reserve Banks, facilitated the use of government paper for rediscount with the Federal Reserve Banks, and sought to restrain the flotation of securities by private corporations lest they compete with its own for available investment funds. It did not, except in a rather indirect and spasmodic way, attempt to support the price of government securities. Interest rates on successive issues rose from 3½ to 4¼ per cent, and the market place was permitted to put its own value on these securities even if it were well below par. Still, in the eyes of those allergic to government interference with private enterprise, World War I hastened the encroachment of the national government upon the function of banking and heralded the use of the Reserve Banks for the political control of credit.

To such alarmists the twenties gave a limited reassurance. The traditional repayment of the public debt proceeded with such despatch that by the end of 1930 over $10,500,000,000 had been lopped from its high point. Comparatively speaking, the Treasury withdrew from the money market and in its place the Federal Reserve System, in quest of economic stability, tried out the techniques of central banking. At first the Great Depression gave no foretaste of anything different. In spite of the fact that the last years of the Hoover administration raised the national debt by five billion dollars, the phenomenon was conventional. Primarily, the deficit was due not to new expenditures but to an abrupt decline in government income and no proportionate decrease in outgo. In previous depressions the government had likewise run into debt. Even when Roosevelt assumed the presidency he at first proposed nothing more novel than the balancing of the government budget by vigorous economy.

Then came the Roosevelt Revolution. Rejecting traditional policy, the President gave to government spending in peacetime an aggressive air and a new justification. From mid-1933 to mid-1940 the national debt rose from $22,539,000,000 to $48,496,000,000. No war required such an increase. Depression was the explanation. Here, as elsewhere, the administration had to cope with the millions of unemployed. They were an insistent political and economic fact. Here, as elsewhere, the administration was convinced that America's problem was not production but distribution and consumption, that the American economy had reached maturity or stagnation and that
depression was due to the failure of individuals, singly or organized, to invest their funds rapidly and generously enough to keep prosperity alive. Some of the contradictions in this diagnosis were concealed by the fact that its elements were given differing emphasis at different times. In any case the concepts of under-consumption, over-saving, and under-investment were abroad in the land. The deliberate incurring of national deficits in peacetime was related to these phenomena.

Though to a minor degree the mounting national deficits were simply a supplement to other financial measures already noted, deficit financing represented on the whole a disenchantment with the central bank policy as an effective remedy for the depression and with the money tinkering for which Roosevelt had once been so enthusiastic. Either through relief or public works projects the government was now to place money in the hands of those who would spend it. This enlarged flow of income through the expenditures of individual recipients or through contracts for materials would vitalize private industry. It would prime the pump. The largess was to be temporary. Once prosperity was restored, the deficits were to stop and the larger taxes of prosperous years were to wipe them away. The budget was to be balanced not year by year but over the business cycle. An unexpected business recession in 1937 marred the purity of these plans. Deeply disturbed, the administration upset the budget, briefly balanced, and advocated government expenditures on a more lavish scale. Whether impressed by the continuance of unemployment and the inadequacy of measures already taken or instructed by more abstract reasoning, it now took a more dismal view of the economy. The extent of private investment would always be insufficient for the full use of labor and resources; governmental expenditures must always come to the rescue. The vista of continued deficits was made tolerable by the cheerful surmise that an enlarging national income would enable the country to meet the burden. Pump-priming gave way to compensatory spending.

On the whole, tax policy played a minor rôle in debt management. The sudden imposition of heavy taxes would be a disturbance to business recovery; taxes, at least some varieties, diminished the purchasing power Roosevelt was trying to stimulate. Nevertheless, the revival of the liquor industry and the inauguration of the social security system, described later, provided a larger revenue and a series of measures heavily taxed the income of the wealthy and the undistributed profits of corporations. The latter enactments, it was said, transferred money to those who would spend it. They also ministered to the equalitarian temper of the era and partially quieted the clamor of money cranks and demagogues. Still borrowing financed the costs of the Roosevelt reformation. It was primarily borrowing from the banks. In
1940 the amount of government securities in the assets of all banks was $19,700,000,000. Those who felt misgivings over the policy and practice thus evolved often sought to disgrace it by ascribing it to alien origins. This whole deficit heresy, said critics, derived from John Maynard Keynes, an English social thinker, economist, and public administrator. Keynes, it must be admitted, frequently prescribed for the American malaise and as frequently disapproved of the performances of his American disciples. In a moment of discouragement he once confessed that war alone would unloose the government expenditures requisite for prosperity. World War II provided a test for the theory. Its first two years, though the United States was not an admitted participant, required enlarged government outlays for preparation and defense. After 1941 the flood came. Expenditures for war activities rose from $26,000,000,000 in 1942 to $90,000,000,000 in 1945. The over-all increase in the public debt was from $55,332,000,000 in 1941 to $279,764,000,000 in February 1946.

The situation of the war forties completely reversed that of the depression thirties. Official thought in the earlier decade had preached the virtue of deliberate deficits as a means to full employment of men and materials; during the war years the deficits were merely incidental to winning the conflict. As in World War I the policy of the Treasury and of the banks was chained to the cause of war finance. Again there were excise taxes on luxuries and other consumer expenditures, higher rates on personal and corporate income, an excess profits levy to take the profit out of war. But taxes accounted for but 40 per cent of the funds raised by the national government. Borrowing, as it had earlier, provided the sinews of war. Though more subtlety and refinement was given to the variety of securities issued and somewhat more emphasis placed upon tapping the savings of individual investors, the chief market for government paper remained the institutional one of business corporations, insurance companies, and banks. The banking system alone absorbed about 40 per cent of the governmental borrowings. The chief novelty in government finance was the decision to keep the same rate of interest—throughout the war, long-term money bore only 2½ per cent—and to maintain government issues at par value. Such a policy would keep down the interest rate for the government and give investors a stable security. These innovations, easing the interchangeability of securities and money, also furthered the general tendency of the decades toward "the monetization of the public debt." For in effect, the national government in depression and war had chosen not to print paper money but to print bonds, bearing interest, which through the mechanism of the banking system formed the basis for an expansion of credit and thus of the "money" which a modern community used in its transactions.
Price Control

Over the checkered years of normalcy and depression it was impossible to trace with precision the exact results of monetary and fiscal management upon the economy. The response in war, however, was clear and crude. As production was diverted to war uses, supplies available for the civilian economy stood still or declined. At the same time with every one who wished employment earning wages and with the banks creating credit by loaning to the government, the funds available for consumer expenditures mounted. This disturbance of a previous relationship between money and goods led to a spectacular inflation. By 1917 the index of wholesale prices of “all commodities,” according to the Bureau of Labor Statistics, had risen from 69.8 in 1913 to 117.5; the momentum continued after the war until in 1920 the figure was 154.4. In seven years the index had more than doubled. The same index for World War II showed an increase between 1939 and 1945 from only 77.1 to 105.8. In the post-war years the momentum again continued until by September, 1948, the figure was 168.7, the post-war peak. In nine years the index had more than doubled.

Such rapid increases wrought profound distortion within the American economy. The government on its part found the cost of war purchases larger; the required adjustment in borrowing and taxing came more slowly if at all. On their part, citizens confronted a rising price level. Those in a position to secure larger money incomes might meet the changes without loss; classes not so blessed confronted a decline in their standard of living. In any case, the mass of consumers tended to regard a rapid rise in prices as a departure from the customary or just price. Discontent was inevitable. The government responded by regulating prices. It was naturally hesitant. In a free economy the price-making process was generally left to producers, distributors, providers of services, and consumers, to the market place; and these interests resented any interference not to their advantage. Furthermore the price mechanism was a complex one. There were thousands of prices for thousands of articles and retail prices were but the last in a series of price transactions. Prices were more than figures. They were a stimulus or a discouragement to production; they were the ballots by which consumers expressed their preference for certain articles; they were the influences directing capital into different forms of economic activity; they were in one way or another a reflection of costs; they were the standard which individuals or companies had to meet if they were to continue in business. As we have seen, monetary and debt management or tax policy might manipulate them. As an alternative governmental agencies might set them by exhortation, negotiation, or command.
In World War I the War Industries Board, largely by persuasion or threat, negotiated a series of price treaties with producers of raw commodities, like metals, and certain basic products, like steel. There was little direct check on retail prices to consumers. Rents were practically untouched. The Fuel Administration set the price of coal and coke. The Food Administration, directed by Herbert Hoover, who did not believe in direct price control in the retail markets, ironically exercised the greatest power. By ingenious arrangements governing certain basic food products, it fixed a guaranteed minimum price for wheat and hogs, purchasing the products through government agencies, and held processors to a stated mark-up for their services. All in all, the limited controls of the First World War apparently abated the abrupt ascent of prices and no more.

Though this experience was available for administrators in the second and greater world conflict, though Bernard Baruch, the chief apostle of price control in World War I, recommended that the government establish this time a general ceiling "on prices, rents, wages, commission fees, interest rates"—in short, on the "price of every item of commerce or service,"—the application of price controls was again diffident and piecemeal. When the Office of Price Administration was first set up in 1941 it possessed no mandatory power over prices; it sought to restrain them by talking. This period of "jawbone" control terminated the following year. In January the agency was given powers, with significant reservations, to set maximum prices and rents; the base dates were set in 1941 or early in 1942. A few months later a second act, by its very passage testifying to the inadequacy of the first, created an over-all agency for "economic stabilization" and set later dates as the base for the new price orders. In 1943 the President, to halt the continuing inflation, was compelled to issue a hold-the-line order.

This desperate note must not conceal the achievements of price control. Orders set maximum prices on thousands of items and secured a moderate observance of them. Directives rationed tires, automobiles, gasoline, shoes, sugar, fats, meat, coffee, and canned goods, in order to assure a more equitable or efficient distribution of scarce materials. But they did not prevent a creeping inflation. With the breach or abrogation of controls in 1945-46, prices shot forward. While administrative inaction and inadequacy was a minor explanation for these limited victories, a deeper cause was the antagonism of powerful economic groups to any thorough or rational program of economic stabilization. In the First World War the foe of price control was the industrialist. In the Second, though manufacturers, wholesalers, and retailers frequently raised loud cries of complaint and woe, the real opposition came from the economic interests encouraged by New Deal policy. The farmers or their professional spokesmen sought, on the whole successfully,
to give a veto power over prices for agricultural products to the Secretary of Agriculture, an individual more sympathetic to the agricultural interest than OPA, and wrote into law standards for the setting of farm prices which made their control, except at high levels, virtually impossible. Laborers or labor union leaders, though they gave allegiance to price control, looked leerily upon an agency which insisted that wage stabilization, as an element in costs, must be interlocked with price stabilization and recommended no wage increases "except to eliminate inequalities and substandards of living." The inability to halt the rise in farm prices angered workers and led to demands for wage increases; the lagging elaboration of means for freezing wages antagonized farmers. Furthermore, as the succession of price control acts demonstrated, the control of prices in effect meant the control of all features of the economy. For the control of prices led to the control of wages, the control of wages led to strikes, the control of strikes led to government operation of the enterprise. Thus the seizure and operation of coal mines by the government was the end product of price stabilization. For these larger reasons, if for no others, the Office of Price Administration became a storm center once the war was over. The battle against its extension into the re-conversion period revolved openly about the arguments of effectiveness and need; actually over the issue of a planned economy.

Debt and Its Influence

Though opponents of price-fixing finally had their way as the war agencies and controls were liquidated, believers in the traditional doctrine of the public debt secured no comparable triumphs. After some reduction had taken place, deficit financing was resumed in 1949–50. The problem was less dramatic and less personal than price control. It was just as fateful. These billion dollar totals, in themselves as well as in their relative proportion to private debt, had immediately pervasive effects upon the whole economy. The low rate of interest upon this vast aggregate of securities and the methods by which the rate was maintained set the return upon investments in private enterprises; the taxes levied to meet charges of interest and retirement affected the economic incentive of stenographer and tycoon; the government, distinguishable from other debtors by the size of its indebtedness, its power to make its promises to pay legal tender, and the ability to collect taxes, was like other debtors interested in maintaining a price level which would ease the handling of its obligations. A decline in the national income or the possibility of a deflationary readjustment, aside from its political repercussions, sent a tremor through government offices.

In the narrower field of financial institutions, the national debt complemented and hastened the trends toward the nationalization of the banking
system. The immense holdings of government securities by banks made the latters' earnings and the worth and soundness of their assets dependent upon government policy. The decision of the government to maintain a low rate of interest upon the national debt determined the rate of interest paid by the savings banks on the accounts of the thrifty and blunted the ability of the Federal Reserve System to control the amount of credit through a manipulation of the rediscount rate. In short, the power and independence of the Federal Reserve System, with at least the aura of quasi-private enterprise, was progressively diminished by the competition of Federal agencies, notably the Treasury. Through its power over the currency, through its Stabilization Fund, through its debt and taxation policies, the latter really possessed the instruments of credit policy. As a political agency, furthermore, it was more likely than the banks, in an era when governments were encroaching upon economics, to be entrusted with the formulation of objectives of monetary and fiscal policy. Whether or not the banks were still predominantly private business organizations or appanages of the state, it was clear at the end of the era that "the financial institutions and monetary system are going to have to live with government in an association that makes their past intimacies appear Platonic."
CHAPTER XIX

Agriculture: Science and Prices

Through the management of credit, money, and budgets it was asserted the government could direct the course of the economy as a whole. Such possibilities made these policies basic; it also denied them, with certain exceptions, a refinement in the attainment of purposes sought as economically or socially desirable. Currency manipulation, for instance, might raise all prices rather than merely those which were “too low”; higher prices, in turn, might redound only to large producers, akin to “monopoly,” rather than to the little man, the backbone of the nation. For this, if for no other reason, the government rarely waited for financial proposals to work out their results. It had to control as well specific economic areas, processes, and interests. One of these areas was agriculture.

The Horn of Plenty

Superficially, the condition of agriculture in the convulsive decades of war, normalcy, and depression should have been favorable. For generations men, fearful of famine, had celebrated large harvests as the bounty of nature and pictured Ceres as a fruitful figure. More specifically, American agricultural policy, historically speaking, had always hastened to put new acres under cultivation and to spur, through agricultural research and guidance, the growing of two blades of grass where one grew before. All this bore results. Except for a few years in the mid-thirties when drought and depression joined to lower them, indices of agricultural production since World War I consistently surpassed the figures of 1909–14. Of the big three in American agriculture, cotton made its largest crop on record in 1937, wheat in 1947, and corn in 1948. Indeed, in the forties an annual yield of over three billion bushels of corn, a figure equaled only once before, occurred five times; an annual yield of over one billion bushels of wheat, again equaled only once before, occurred six times. Though observers frequently isolated fractional portions of the community which were ill fed, and the nutritionists, masters of a new science that often ignored palatability, detected deficient
diets on every hand, American agriculture poured forth a production ade-
quate in a crude way for American needs. Of this, the exports of agricultural
products in World War II as in World War I and the persistent position
of the United States as a surplus agricultural region were evidence enough.
Furthermore, these achievements were attained without an appreciable in-
crease in the human effort applied to agriculture. Though annual food pro-
duction in World War II was 50 per cent greater than in World War I,
the number of farm workers was 10 per cent less.

**RURAL AND URBAN POPULATION**

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Each man represents 10% of total population

Historic factors accounted for thismounting abundance. One was the luck
or the miracle of the weather. Thus in World War I though the need for
food was sharp and the efforts to supply it energetic and embracing, the
response was inadequate. Weather was the explanation. On the whole,
World War II coincided with such remarkable crop years that perhaps
25 per cent of the increased productivity over the low years of the thirties
could be ascribed to the benevolence of sun, rain, and snow. So far at least
neither the technician, the public servant, nor farmer has done much about
the weather. While desire or policy could take it into account, planner-
could not control it. Luckily human beings, as individuals or through their institutions, had a greater part than meteorology in fashioning American agricultural abundance.

The historic American means was, of course, an expansion of the farm area. For centuries American agriculture had flowed into new areas; always the westward movement had put additional acres under the plow. With the official closing of the frontier at the end of the nineteenth century, the process slowed though it did not stop. Between 1910 and 1945 the land in farms increased 263,000,000 acres. The expanded agricultural production during the Second World War, however, was accompanied by the addition of only 81,000,000 acres between 1940 and 1945. This enlargement of the farming area continued to be a western phenomenon, as cultivation and settlement pressed into new lands in the trans-Mississippi West. Largely held back from the semiarid portion of the Great Plains by a series of poor crop years during World War I, a changed rhythm of climate, as it had before, gave the region in the twenties a rainfall which would support a conventional agriculture. Population moved in with a rush. Railroads were extended; villages, schools, and roads were built; and land, once used for ranching, shot upward in value as it was turned to wheat and cotton production. New drought-resistant crops aided the process. A whole army of machines, tractors, disc plows and smaller combines for harvesting and threshing, expedited the cereal conquest of these level and fertile areas. In the southern portion of the plains the “cotton sled,” a crude mechanical picker, joined with other power machinery and a comparative absence of the boll weevil to extend the cotton empire.

As the agricultural conquest of the Great Plains proceeded apace, government bulletins announced that the only handicaps of the region were the shortage of rainfall and the tendency of the soil to blow! The unconscious irony of this notation was not intended to discourage this westward movement. In the thirties the commentary became grim actuality as the meteorological vicissitudes of the area brought drought back. This old enemy in 1933 and 1934 scourged the length and breath of this newest agricultural area. In winter and spring high winds lifted the soil, now excessively pulverized by cultivation, into the atmosphere and blew the clouds of earth eastward; their passage darkened eastern cities and, crossing the Atlantic, informed Europeans of the spectacular wastes of American agriculture. From the dust-bowl farmers took flight as from a plague. A solicitous government planned, largely on paper, the return of the Great Plains to ranching and undertook on a small scale to save and restore its threatened soils. The demands of the Second World War and the more favorable weather of the forties muted these good intentions.
Ranching or ingenious agricultural routines, like dry farming or drought-resistant crops, were an adaptation to the drought; irrigation sought permanently to prevent its operation. There were many methods. In certain favored districts artesian wells flowed the ground water to the surface; in others pumping apparatus was essential. Elsewhere water was diverted from streams, and if the streams were too variable, reservoirs behind earth or concrete dams stored and then released the water for regular use. Though irrigation was feasible in places on the Great Plains, the general absence of rivers with sufficient flow—the Missouri was exception—and the remoteness of mountains where the water might be stored hampered development. In the great Interior Basin, between the Rockies on the one hand and the Sierra Nevadas and the Cascades on the other, the mountains, those “humid islands” which trapped the snow and rain, were near at hand and the water traveled comparatively short distances from the storage reservoirs. This had been, therefore, the earliest center of irrigation. Along the Pacific coast, as in southwestern California and in the Central valleys, there was an absence of summer rainfall. Here too the mountains were near at hand to provide reservoirs for supplementary irrigation. Late in the nineteenth century Hamlin Garland’s father, struggling with the drought on his Dakota farm, exclaimed, “I want to go where I can regulate the water for my crops.” This remark epitomized the great advantage of irrigation culture. Though the irrigated acreage planted to wheat, corn, and cotton was considerable, sugar beets, alfalfa, rice, fruit orchards, vineyards, and nut trees used more irrigated than non-irrigated acres. In truth though it solved some problems, watering the soil created others: alkalinizing, leaching, waterlogging, silted channels, and above all expense. For the amortization of the costs of dams and canals and the expense of operation placed a high fixed charge upon every acre. In the late thirties a farmer with 500 acres had to pay about $1,650 for his water. The inexorable result was the cultivation of more specialized and intensive crops and, where corporation farming did not intrude, smaller farms than in humid areas.

Between 1910 and 1940 the land in irrigated farms increased by 50 per cent. More striking, however, was the changing contribution made to the expenses of these works by the Federal government. The construction and operation of irrigation works had once been undertaken by individuals, partnerships, coöperatives, and private corporations. The individual states had assisted the process. Participation of the Federal government on a direct scale, begun by the first Roosevelt, was lavishly extended by his namesake. By this time, however, irrigation projects were interlocked with many purposes—flood control, river navigation, government production of electric power, and the stimulus of public works as a cure for unemployment. Great projects,
eighth wonders of the world, dotted the West—Grand Coulee on the Columbia, the Central Valleys project in California, and even on the Great Plains the disciplining of the Missouri River and its affluents. The policy was not wholly Rooseveltian. His Republican predecessor had pointed the way with the Hoover Dam on the Colorado. In spite of such spectacular enterprises, private enterprise in the mid-forties irrigated about four-fifths of the irrigated lands west of the ninety-seventh meridian.

In the era of war, normalcy, and depression, there were many signs, however, that the historic expansion of American agriculture to new land was losing its appeal and importance. Though the Federal government undertook irrigation projects costing fortunes, other phases of agricultural policy were, as we shall see, vigorously directed to the reduction of the area under cultivation. Furthermore such enlargement of the farm acreage as took place between 1915 and 1945 occasioned no such shift in the centers of agricultural production as did a single decade, the eighteen-fifties for example, in the nineteenth century. In 1945 as in 1915 Kansas was the chief wheat state and Iowa or Illinois the chief commonwealths of corn. In short, the increase in agricultural production was not due solely to new additions to crop land and pasture. World War II drove the point home. Though cultivated acreage increased slightly and farm population declined and workers were less efficient, farm production for human use increased 20 per cent over the peaceful years between 1935-39. To be sure the weather in the former period was unusually benign. But the achievement was in essence the triumph of agricultural science and mechanization.

**Good Breeding and Good Care**

In the realm of agricultural science the novel and significant achievements during the era under discussion were in plant breeding. To be sure, agricultural explorers still ransacked the world for improved varieties and some of the introductions, like that of the soy bean, added new products to American agriculture. But discovery and selection were no longer the only recourse, for in the early years of the twentieth century genetics became no longer a mere collection of experiments with breeding procedures but was given a scientific basis. In 1900 a long neglected paper by Gregor Johann Mendel, describing the results of crossing peas and deducing mathematical laws of inheritance, was reprinted and what is more, appreciated. Although a European thus gave an impulse to new developments, Americans took the leadership in classifying traits, following their mathematical incidence, and explaining the results. The prolific and tiny fruit fly, with its crowding generations, was an admirable tool for these investigations and work with them led Thomas H. Morgan, professor at Columbia University and the California
Institute of Technology, to postulate the presence of genes, carriers of inheritance, inside the chromosomes of the germ plasm. Though fundamental knowledge of this sort was essential for advance, the selection of varieties and their mating, often on a purely intuitive empirical basis, also led to improvements and furnished evidence for the laws of inheritance, continually in course of formulation or modification. Plant breeders gradually acquired the power to custom make varieties for specific conditions: resistance to plant diseases and insects, the ability to stand heat, cold or drought, an adaptability to machine cultivation and harvesting. These objectives were more complicated than the earlier and simpler one of a larger yield.

Without question the outstanding triumph of the new learning and methods was hybrid corn. The corn plant was a geneticist’s delight, for it was comparatively easy to control its breeding habits since the pollen of the tassel and the silk of the ear were spaced apart. Though as with all scientific achievements many experimenters contributed to the final result, Edward M. East through his findings, his scientific papers, and the students he trained was the chief. Coming from the Middle West where he was born and trained to the Connecticut Experiment Station near New Haven, he and his associates inbred corn by preventing open pollenization until they had a series of true types. These types, often stunted and ugly in appearance, they crossed with each other and then in 1917–18 crossed them again in a double cross. The result was spectacular. The new corn yielded 20 per cent more than its nearest competitor. The plants were uniform, sturdy, and vigorous. It took nearly twelve years before the many varieties of hybrid corn finally conquered the Corn Belt. By 1946, however, the newcomer occupied 90 per cent of the acreage sown to corn in this rich region. In the critical food years of World War II, the nation’s farms produced more corn on a smaller acreage than in World War I, fought before corn hybridization.

Though no other project attained similar success, breeders were ingenious and alert enough to rescue the great American crops from hazard after hazard. When wheat had stem rot experimenters created an immune variety; when it had head rot or was attacked by insects they repeated the process. Perhaps their prize was Tenmarq, a winter wheat, introduced to the Kansas farmers in the thirties, and by 1944 planted more extensively than that enduring migrant, Turkey Red, once the mainstay of the state’s agriculture. Tenmarq matured a few days earlier. As for sugar, experimenters stayed the ravages of the virus-caused mosaic disease through selecting and crossing resistant strains and fashioned canes more easily harvested by machine. At the same moment curly-top menaced the beet sugar industry of the West. Once again by selection, inbreeding, and crosses the defense provided resist-
ant varieties which were more productive and incidentally freed the Americans from their dependence upon European seed growers. Sugar had once been southern. Cotton remained so. But breeders' achievements here were less certain. A little army of private seedsmen, enlightened planters, and government experts sought in this country and elsewhere to discover and develop varieties immune to cotton wilt and boll weevil. In large measure the first aim was achieved. In the struggle against the boll weevil new methods of cultivation and new insecticides were of more importance than the new varieties.

For agriculture was growth as well as seed time. And to protect the plant during its lifetime, scientists continually improved their weapons against plant disease and plant insects. They discovered and imported parasites of the boll weevil and the Japanese beetle, they filled columns of reports and the pages of catalogues with lists of new fungicides. New insecticides, like pyrethrum and rotenone, paralyzed and slew insects but did no harm to animals or humans. In this field, however, the counterpart to hybrid corn was DDT, a product known as early as 1875 in Europe, developed commercially in Switzerland in this century, and brought to the attention of the American government in 1942 at the precise moment when war was exposing men all over the world to insect-transmitted diseases. DDT seemed the answer. It could be used as a spray or as a powder; it killed both sucking and chewing insects; its protection might last for months. Its use in agriculture was obvious. A series of experiments sought to determine upon what crops it could safely be used and against what insect enemies it was effective. Along with other sprays, airplanes showered it over large plantings, such as cotton fields.

At the roots of agriculture was the earth. The maintenance of its fertility required, as Liebig had demonstrated, nitrogen, phosphorus, and potash, and, as more recent agricultural chemists now proved, minute traces of rarer elements. Though there was general agreement that these properties could be maintained or restored to the soil by certain rotations and by manuring, there was often fanatical disagreement as to the wisdom of using artificial fertilizers. However doctrinaire and vigorous the dissent, sales of these chemical mixtures multiplied over two and a half times between 1915 and 1945. Since Chile supplied the nitrates and Germany the potash, World War I raised the specter of a fertilizer famine. A hectic search for potash deposits met reward in the brine lakes of California and of the Southwest, and new industrial methods, such as fixation from the air or extraction from the byproducts of coke ovens, promised nitrogen. After the war it was some time before these products could compete with cheaper imports.

A series of disastrous floods in the Mississippi Basin and the dust storms or
the thirties demonstrated even to the amateur that erosion, the insidious deple- tion of the vital topsoil or humus, might be a national danger. Perhaps the alarmist assertion that American farms were following those of ancient China and Mesopotamia into desert was not entirely silly. Fortunately, agricul- tural scientists and dirt farmers had long experimented with methods of checking these losses and had arrived at certain conclusions. Terraces should catch the run-off on hills and guide it safely away; contour, rather than vertical, plowing would prevent the scouring of slopes; cover crops, like grass and small grains, should protect whole areas or as strips between tilled crops, like corn and cotton, slow the washing of the soil; grassed waterways would not grow into gulleys and dammed gulleys would not turn into canyons. Planned and scientific arrangements of pasture, crop land and forest could save the land. This knowledge was convincing. Ignorance joined with the high cost of improvements in relation to agricultural prices to retard its use. Furthermore, to be of the highest effect, soil conservation had to be applied to an area much larger than the individual farm.

To this novel variety of conservation, the New Deal now directed its attention. The task was assigned to many agencies, plans were often identified with accomplishments, conservation was frequently sought for other motives, for instance raising prices, than saving the soil, and the demand for food and agricultural commodities during World War II diverted policy to new directions. Still the partial vision of the "planned use of the land," to use the Rooseveltian phrase, inspired agencies to purchase land unsuited for farming, transfer it to other uses, and resettle its owners on more promising plots; to curtail the planting of inter-tilled crops, corn and cotton, often for other inter-tilled crops and sometimes for grass and soil-building legumes; and distributed such immense quantities of fertilizers and soil amendments that during some years of World War II between a fifth and a fourth of the phosphate and 90 per cent of all liming materials used on farms was paid for, in whole or in part, by the government. Meanwhile in 1935 the Department of Agriculture formed a Soil Conservation Service. At first it established demonstration projects; later it coöperated with soil conservation districts established under enabling acts in the several states. The Soil Conservation Service or its allies conducted farm surveys, drew up plans for land and water use, and provided free technical service, labor, machinery, and materials to spur the desired transformation. Though by mid-century the figures of farms and farm acreage in soil conservation districts were stunning in their immensity, a general adoption of improved practices waited upon sterner imperatives or more generous inducements, both disliked by many farmers, than the Soil Conservation Service had at its disposal.
Animals, of course, had always been bred for various characteristics: size of litter, rapidity of growth, ratio of fat to lean meat, resistance to disease, food intake, and of course yields. The length of a sheep’s fleece, the number of eggs a hen laid, or the pounds of milk a cow gave were tangible measures of achievement. From time immemorial, husbandmen had selected sires and dams with the desired traits and hoped they would be inherited. Others had tried inbreeding between closely related animals and their crossing with other families or breeds. Naturally the spectacular achievement of hybrid corn aroused new interest in animal inbreeding and cross-breeding. But improvement was difficult. Animals were more expensive than plants and generations followed each other more slowly than with seeds. Since these handicaps were more easily outwitted with pigs and poultry, experiments with them began the accumulation of data, with results highly tentative. Meanwhile the old methods of breeding, persevered in with more audacity, system, and extensiveness, continued to yield results. A shrinking market for lard, which had to compete with vegetable oils and fats, led to leaner pigs; smaller ovens dictated smaller turkeys; and the average hen increased its annual egg production in the quarter century after 1920 from 83 to 113. Even more promising was the realization that the production of milk and butterfat could be greatly increased if only those bulls, whose daughters consistently produced more milk than their mothers, were employed to give the cows their calves. The keeping of elaborate records ultimately designated these proven sires. Associations acquired these animals, collected their semen, and diluted and distributed it. A single bull of magnificent heredity might artificially inseminate as many as a thousand cows.

With animals as with plants disease meant losses. Many of the insecticides useful for green things, such as rotenone, were now employed against the insects which lived on livestock. The gaudy claim of the medicine man, “good for man and beast,” was now soberly fulfilled as many of the drugs revolutionizing human medicine, like penicillin and the sulfa compounds, were turned against the internal parasites and mysterious infections of livestock. The discovery of reactors made it possible to detect diseased animals and of vaccines to hold these afflictions partially in check. A serum or vaccine for hog cholera, perfected by Marion Dorset of the Department of Agriculture, saved hog growers from ten to twenty-five million dollars a year; and a tuberculin test made it possible practically to eliminate this disease from the dairy herds of America. Behind improved methods of diagnosis, treatment, or cure stood the possibility of wholesale slaughter of diseased animals, executed by government edict, and compensated for from government funds.

For in the realm of agricultural science the national government had long
exercised and constantly enlarged its powers. In the decades of war, normalcy, and depression generous appropriations multiplied its agencies for research, teaching, and "action programs." Functions once confined to land-grant colleges and state experiment stations were now shared by regional laboratories, sometimes with specialized aims, and with a central scientific center near the city of Washington. In 1946 the most important of the many acts endowing these activities summarized the purpose of them all as "to assure agriculture a position in research equal to that of industry." Still government activity was not the only channel of agricultural advance. Edward M. East was educated at both a private and a land-grant college and did his significant work with corn at both the Connecticut Experiment Station and at Harvard University. His discoveries and students stimulated public institutions; they also inspired the private seed growers to the production of new varieties and their popularization through the sale of seeds.

THE DISPLACEMENT OF HORSES AND MEN

On the face of it, war and depression were unlikely occasions for the rapid mechanization of agriculture. When industrial plants were specializing in war materials, manufacturers of farm equipment faced a curtailment of regular production and a diversion to other activities. With the poverty of depression years, there were fewer funds for the purchase of agricultural machinery. Nevertheless, the profitable farm prices of war years and of a protected agriculture hastened an irregular mechanization of agriculture and, even in depression, farmers saw in machines a means of escaping the hardship of lower returns through cutting costs. In the end the mechanization of the farm in the years after 1915 was as revolutionary as its counterpart in the first part of the previous century when horse-powered machines assumed the tasks previously performed by hand.

The most significant characteristic of the later era was the arrival of power at the farm. One newcomer was electricity. In 1920 only 7 per cent of the nation's farms had electric light; the further extension of rural electrification seemed thwarted by the comparatively heavy expense of constructing lines through regions of separated farms; in the circumstances it was thought the cost of service would be prohibitive. Nevertheless, the privately owned utilities whittled at the problem. In the electrical industry, Roosevelt, as we shall see, shattered conventional patterns right and left. The rural field did not escape his attention. In 1936 a Rural Electrification bill authorized the national government to grant long-term loans at low rates of interest for the construction of rural transmission lines and for wiring houses. By 1949 their amount was $1,690,000,000. At the same time this example or threat spurred private enterprise to similar activity. By 1948 practically three-quarters of all
farms were electrified. Among the unbefriended were many farmers too indifferent or too poor to seek the aid of this convenience. For that was its largest contribution. For irrigation enterprises dependent on pumping or for dairy regions with coolers, churns, and milking machines, electricity was a necessity. If the power went off during thunder or ice storm, many a farm faced paralysis.

Flexible though it might be, electricity could not undertake the age-old mobile tasks of the farm, the connection with town and market and the work in forest and field. For decades horses, mules and oxen had met these needs. Then with World War I the internal combustion engine engulfed the farm. By 1945 the passenger automobile had so completely retired old Dobbin to the pasture that a carriage or sleigh was a curiosity except at auctions. The motor truck—in 1920 only 2 per cent of the farms had them—was on nearly a fifth of the nation's farms. It drove the hayrack from the meadow and the cart from the cornfield. As for tractors, over a third of the farms had them in 1945 as contrasted with only 3.6 per cent in 1920. A remarkable technical evolution facilitated the latter change. The heavy machines with wide metal treads, useful for limited purposes, changed in the twenties to the lighter, all purpose, high-wheeled tractor. As well as performing the heavy task of soil preparation these could cultivate row crops. In the thirties the application of pneumatic tires to the machine increased its speed, ease of operation, and life expectancy. The engine, through a belt pulley, ran tools like saws or ensilage cutters and through a take off furnished to the ma-
chines which it pulled, like reapers, the power previously picked up by the rotation of the wheels over the ground. Stronger and swifter than work animals, the tractor spurred the redesign and enlargement of the instruments, plows, harrows, planters, cultivators, attached to it.

Farming consists of a sequence or rhythm of processes. The inability to mechanize one vital step in planting or harvesting may, for instance, retard the mechanization of the whole. Sometimes the tractor was the key to the lock; sometimes a change in planting methods suddenly fitted a crop for mechanical manipulation; sometimes the perfection of a single critical machine unloosed a thorough transformation. These considerations operate unevenly in the different agricultural regions of the country. In the specialized dairy regions the innovations were improved machines for harvesting and curing the essential feed crops, corn and hay. The hay loader, the cutter that shredded grass for ensilage, and the baler gulping down the long windrows and extruding the compacted product in chunks, were displacing the hay fork and the haying crew. In the wheat regions of Kansas and the Northwest, the combine that harvested and threshed in one operation handled 90 per cent of the standing grain. In the corn belt the last and most laborious process of hand work, picking, was transferred to the mechanical corn picker. This equivalent to the combine stripped the ears from the stalk, the husk from the ears, but stopped short of stripping the kernels from the ears. Perhaps corn-picking contests were as archaic as archery. The cotton belt, the largest specialized one in the country, presented variations. With the exception of Oklahoma and Texas, tractors were few; one-horse or one-mule plows many. In the western areas, however, where fields were level and the bolls ripened at about the same time, the gasoline motor invaded the fields and often pulled the experimental cotton pickers or their crude predecessors along the rows. As this summary has already hinted, the largest investment of machinery per farm was in the wheat belt; the least in the cotton kingdom.

Power and machines hastened the commercialization of agriculture. On the one hand they turned the farmer to cash crops with which he could purchase these mechanical helpers; at the same time their use released millions of acres from the food crops consumed by work animals. Bought gasoline and fuel oil took the place of oats grown on the southeast quarter section. Machinery saved labor. Farmers in the corn belt spent only a month a year in the fields, and sidewalk or suitcase farmers in the wheat areas lived in town and tended their acreages for a brief season. The agricultural working day, once longer than from sun-up to sun-down, shrank toward an approximation of that in urban communities and industry. For the nation as a whole, machinery meant a greater production per laborer. Though the
number of workers on farms might stand still or decline, as it did in these decades, agricultural productivity was sufficient to supply the consumers of the nation and a large share of the world with food, fibers, and vegetable oils. Such an accomplishment did not always arouse applause. In the depressed thirties machines were monsters as farms were thrown together, mechanized, and workers displaced. Families, "tractored out," swelled the mounting relief rolls or joined the great treks of unemployed to California and other Pacific states, the last American West. But when the war came, hosannas saluted the combine, the corn-picker, and the tractor that released man power for manufacturing and for military service. Whatever the shifting moods, it was difficult to believe rioting Americans would ever smash machines, for these mechanical aids conquered the allegiance of American men. They prided themselves on their ability to run them, repair them, and own them. Farmers who did not were incompetent and backward. For all these subtle changes, the government was not primarily responsible. Though its bureaus and agencies did some studying and inventing, the manufacturers of farm machinery, whether marketing a complete or "long line" or a speciality, were the real innovators. Their engineering and research staffs tried to respond to the demands, needs, and suggestions directed to them by actual farmers. On the other hand government credit increasingly aided farmers to purchase improved equipment. But that is a later story.

Ownership and Labor

The transformation of manufacturing by machinery had been accompanied by the widespread prevalence of the factory; machine and factory required capital; the workers, since they lacked funds, ceased to own the tools; the capitalist-employer controlled the new method of production. Did the application of machinery, coupled with the increasing professionalism of agricultural knowledge, bring similar results? In short, did farming face a revolution in its business organization? No certain answer could be given. Machinery, since it was expensive and could perform a month's work in a day, undoubtedly hastened a trend to larger farms. Between 1920 and 1945 the average size of farms, admittedly a crude measure, increased from 148.2 to 194.8 acres. Farms in the South, where machinery had made few inroads, remained small; in the great staple belts of the North, farmers added acreage by purchase or rent to utilize effectively the new implements. Other factors retarded the trend. In the wheat belt, for instance, neighboring farmers owned machinery jointly; a specialist, organizing his own labor gang and purchasing his own machines, moved his parade of combines from one area to another for custom harvesting; and the small tractor and the baby combine enabled the individual to challenge the bonanza farms.
AGRICULTURE: SCIENCE AND PRICES

Taken in isolation, the larger investment in machines and land should have heightened the capital barriers in the path of those wishing to undertake and continue agricultural operations. A financial shoestring was no longer enough. Both tenancy and borrowed capital, mirrored in mortgage statistics, would increase. The First World War and the decade which followed confirmed these calculations. Tenancy reached its peak in 1930. Averages for a phenomenon ranging all the way from a wage system in the South to a cash renting system in the Midwest were deceiving. Still the over-all tenancy rate, the proportion of the nation’s farms operated by those who did not own the land they worked, was 42.4 per cent in that year. Then to the surprise of nearly every observer and to the confusion of Cassandras, the trend was first slowly and then rapidly reversed. In 1945 the figure was 31.7. In this achievement both the depression of the thirties and the agricultural prosperity of the war years played their part. During the earlier period, particularly in the South, small farms were thrown together, machinery utilized, and tenants shifted to the farm wage group. Between 1930 and 1945 the number of southern croppers was nearly halved. In the war years youngsters, who ordinarily might be starting as tenants, entered the armed services or responded to the attraction of industrial employment; and high agricultural income was enabling other tenants and renters to purchase land of their own. In the same period the proportion of mortgaged farms also declined. After a rise during the twenties, 40 per cent of the farms of the country in 1930 were mortgaged. Fifteen years later only 29.2 per cent of the farms were in that status. The reasons for the change were much the same as for tenancy. Even on mortgaged farms the farmer’s equity increased in large measure due to the rising value of land and equipment.

However far short it fell of accomplishment, national farm policy had always prized the vision of farms owned free and clear, operated by their owners, and, as a homestead, occupied by a family for decades, if not for generations. Government land policy had done obeisance to this ideal. Ubiquitous tenancy and indebtedness and the mobility of the agricultural population destroyed it. Now in the twentieth century, Presidents and Congresses devised credit instruments to preserve the dream. The Wilson administration, ranking with that of Lincoln and the second Roosevelt in legislative solicitude for agriculture, established in 1916 under a central board a system of twelve Federal land banks with proper territorial preserves whose capital stock, as it turned out, was largely provided by the national government. These banks sold farm loan bonds to investors and then advanced the proceeds to farmers in loans, secured by mortgages. These loans, it was hoped, would be made to national farm loan associations, groups of ten or more farmers, and in turn these associations would have to subscribe pro-
portionately to the stock of the federal land banks. Thus eventually the banks were to be owned by member-borrowers. Apparently to conciliate existing lending agencies which might otherwise be driven out of business by government competition, private joint-stock land banks could be brought into the system and operate under its terms. The loans, at an interest not to exceed 6 per cent, were to be made for land purchases; for equipment, livestock and fertilizers; and for farm buildings. Actually these statutory provisions were more in accord with European farm practices than American actualities. The principal and interest of the loans might be repaid over a period as long as forty years, hardly in accord with the mobility of the American farmer, and they were to be made to cooperative borrowing associations, hardly in accord with American individualism.

The storm of the great depression wrenched this institution into new shapes. As agricultural prices collapsed, farmers could not meet their payments, the sheriff turned in at the gate, and foreclosures blanketed the land. Agricultural credit shaded into agricultural relief and no politician from the farm areas was likely to be punctilious about distinctions. As law succeeded law, the land banks were grouped into a new agency, the Farm Credit Administration; the private joint-stock banks were told to get out of business; the Federal land banks refinanced a large share of their new loans under easier conditions and took over, on similar terms, the loans made by nongovernmental agencies; payments of principal were adjourned by a moratorium; farms were revalued to permit larger loan advances; and if these did not suffice, a land bank commissioner could make loans above the maximum limits for a shorter period and on the security of a second mortgage. After a few hectic years in the mid-thirties, emergency tasks gave way to more orderly development, which the war prosperity of the forties further facilitated. Between 1933 and 1947 the total loans of these land banks and the Commissioner amounted to $3,229,000,000; at the latter date the loans outstanding were only $1,033,000,000. Farmers had actually anticipated their installments. Nor was this the only achievement. In the same year all the stock of the Federal land banks was owned by member-borrowers. In spite of all this government activity, individuals, commercial banks, and insurance companies together remained at the end of the forties the majority lenders on farm mortgages.

While farmers and tenants, many for the first time in their lives, bought farms under these arrangements, they were after all individuals who had sufficient savings or other means to make a portion of the required original payments. The acts offered little to "scratch-starters," poverty-burdened tenants, and young men, particularly veterans without resources. Such individuals, it was realized, might also be bad risks because of poor farming
practices or initial ignorance. To such as these a series of agencies under the prolonged New Deal granted 4 per cent loans, running the conventional forty years, for the purchase of land and short-term loans at 5 per cent for the purchase of equipment. The annual repayments were to be high in prosperous and low in poor years. The recipients were put through a selective process. Furthermore, a county supervisor was to draw up a farm program for each beneficiary and oversee its execution. This system of national apprenticeship was another variant of the planned use of the land. It was also a determined though undesigned return to the principles of the Homestead Act. The number of individuals affected was comparatively small.

On the family-sized farms, the family was to provide the labor force. To an astonishing degree as late as the mid-forties practice coincided with the ideal. Owners and members of their families still constituted nearly four-fifths of the workers on farms. When additional labor was required at periods of cultivation and harvest, the structure of rural life shaped itself flexibly to the emergency. Farmers worked harder and longer, women and children performed field tasks; from the smaller or poorer farms of the neighborhood and from the towns and cities near at hand came additional recruits. All this was important and largely unchronicled. Those alert to clouds no bigger than a man's hand were more impressed with the appearance of large-scale production, usually not corporate, in specialized areas or crops. Some of these enterprises, like sugar and cotton production, were historic and southern; others, beet sugar, fruits, berries, and vegetables, were of more recent appearance, often since World War I, and of wider dispersion. In southern states like Florida and Texas, truck gardening perpetuated the plantation; in the Pacific states, especially California, crops from cotton to prunes had factories in the fields; and in the Northwest and Northeast enterprises of a similar scale and sort appeared in tobacco, cranberries, potatoes, onions, and sugar beets. Sometimes these agricultural businesses employed a considerable labor force throughout the year and depended upon migrant labor only at peak seasons. In general, however, their chief reliance was upon large numbers of casual workers. The migrations of these agricultural armies, once a simple seasonal one from north to south, now became more involved and overlaid. Their numbers varied with circumstance. The dust storms and the drought of the thirties added thousands of farmers from the Southwest to the migratory workers of California, and the depression everywhere reduced owners to wage laborers. On the other hand the combine wiped out the army of "hoboes" once engaged in harvesting wheat, and industrial employment and military service in World War II shrunk the number of agricultural migratory workers to 600,000. Beneath all variations lay the solid fact that such workers came from the dispossessed.
As legislation after 1920 curtailed European immigration, Mexicans, often under contractual arrangements between governments, crossed the border to join the Filipinos in filling the ranks of migratory workers; and Negroes, once share-croppers in the South, or the whites from the southern Appalachians moved in their dilapidated autos as far north as Michigan and Maine.

Whether migratory or not, the fraction of farmers working for hire did not enjoy parity with industrial workers. Though their annual wages, even allowing for the perquisites of board, room and other favors, increased from an average of $394 in 1915-19 to $1,247 in 1947, they were at the later date about half those of industrial workers. In general the mass of legislation—unemployment insurance, workmen’s compensation, hour and wage regulation, old-age protection—which was transforming the lot of the industrial worker, did not apply to agricultural pursuits. In spite of sporadic labor outbursts and strikes, dispersed and mobile workers with difficulty organized unions of sufficient permanence and strength to compel improvements. Perhaps such would be the outcome if the trend to large-scale production continued. The latter development was clear. While for the immense majority of the rural population farming continued to be a means of subsistence and a way of life, large-scale farms increasingly dominated the commercial production of agricultural products. In 1920 while farms of a thousand acres or more constituted 1 per cent of the total number of farms, they included 23.1 per cent of the farm acreage; in 1945 the respective figures were 1.9 and 40.3. Put in another way, in 1945 ten per cent of the farms in the country produced nearly half the value of all agricultural products.

“Experiments with Price-Fixing”

In so far as his acreage produced not a mere subsistence but a surplus for the market, the farmer’s chief concern has been agricultural prices. “Natural” or “free” forces, it was said, set their level. If farm crops were small, the price would rise; if crops were ample, they would glut the market and prices would fall. In these matters weather, plantings, and luck all played their part. So much for supply. Even if the human stomach could not be enlarged “over the long run,” demand also played a price rôle. An abundance of prosperous consumers meant better prices; depressions meant the opposite. Since the “free” market also expressed its preferences and formulas in terms of money, the monetary mechanism governed agricultural prices. Inflation meant high prices, deflation low ones.

Like most producers the farmer has rarely been willing to let his prices be the plaything of natural forces. Ever since the colonial era, he has recurrently called upon the secular arm of government to raise and protect them.
Sometimes, as we have seen, he was content with generalized or indirect measures—an inflation of the currency, homestead acts, or the promotion of scientific agriculture. Sometimes he has campaigned for proposals likely to cut agricultural costs and leave a margin for profit rather than loss. Consequently he has agitated for the regulation of railroad rates, taxes drawn from other sources than real estate, cheaper methods of production, supplies of credit from government agencies on easy terms and at low interest, and the regulation of marketing practices. Such measures had the merit of not antagonizing consumers by threatened increases in prices. If they hurt any one, they hurt bankers, lenders, and middlemen, who, in spite of their disproportionate political influence, did not in the last analysis cast as many votes as the common man. To an extraordinary degree, this campaign had attained success. Early in the twentieth century the national government undertook to regulate railroad rates and gained by a constitutional amendment the power to levy an income tax. The Wilson administration, with some assistance from its successors, provided a battery of credit instruments. Supplementing the Federal land banks, already described, the Federal Reserve System permitted loans for agricultural purposes to run for nine months instead of three. The longer time stretched from seed to harvest. After 1923 another agency, intermediate credit banks, granted the longer loans, from six months to three years, required for fruit growing, livestock fattening, and the purchase of equipment.

At the same time the agricultural agencies of the government suddenly discarded their comparative myopia to the business aspects of agriculture. Within a decade after 1913 they were collecting information upon the flow of goods to market and upon current prices and communicating this to farmers; making recommendations about planting and breeding programs in relation to probable demands; and securing piecemeal from Congress the right to regulate the practices of livestock and grain exchanges. Whatever effect upon prices this evolution of policy had, was obscured by World War I. As armies fought over Europe and post-war relief claimed vast appropriations, the world faced hunger and the United States was called upon to feed the nations of western Europe as well as itself. To stimulate agricultural production the Wilson administration intervened directly in the marketing process and guaranteed wheat producers and hog growers minimum prices, primarily attained by purchases and trading through government agencies. In addition to these favors, government administrators sought to iron out vacillations in prices. As it turned out, these novel undertakings, discontinued soon after the war's end, cost the government nothing.

As it always had, war propelled skyward the level of agricultural prices. Compared to pre-war averages of 100, their index number by 1920 was 232.
Then within a twelve-month a catastrophic decline wiped away all but a tiny fraction of this gain. Agricultural prices led the fall into the depression of the early twenties. American agriculture had overexpanded to satisfy a war market. With peace, suppliers from rival areas like Australia and Argentina could once more secure the shipping to send their commodities to a Europe where agricultural production was itself reviving. Values of land, the farmer’s capital, followed agricultural prices down. As the golden twenties passed, a curious readjustment took place. Since the farm population was declining and gross agricultural income increased, the hypothetical average farmer received a larger gross return. On the other hand, agricultural prices fell more rapidly than had other prices after the war; agricultural income, measured by its capacity to purchase other commodities, was not as favorable as it had been during the conflict or before, and the proportion of the national income going to agriculture in the post-war decade declined, as it had in every ten-year period since the Civil War. These hard facts, joined to the less measurable belief, long cherished, that agriculture was a superior way of life, sharpened the conviction that government policy should remedy the inferior position of agriculture. It should place farming upon a parity with industry. If this involved an imitation of the methods of business, virtue sometimes paid a tribute to vice, if it were profitable.

New agricultural organizations bestirred themselves to use politics to accomplish this reformation. One, the American Farm Bureau Federation, federated the various state farm bureaus immediately after World War I. It was an offshoot of the county agent movement, itself a government enterprise. The strength of the Farm Bureau was localized in the Midwest. Under energetic leadership it insisted upon favorable legislation; it relied upon politics. A rival, representing in its own mind the dirt farmer, the National Farmers’ Union, had greater vicissitudes. With over a million members in 1913, its later effectiveness was weakened by schisms and a division of aims between programs of self-help for the farmers and governmental assistance. The National Grange, the old-timer of this trilogy, was strong in the East and the Far West. Though fraternity and social life was still the cement holding it together, the Grange formulated programs, generally conservative, for legislation. In varying degree all three focused upon marketing and prices. The best tribute to their power was paid by Franklin D. Roosevelt during the campaign of 1932 when he announced he would sponsor no farm program which was not approved by agricultural leaders.

When elected Roosevelt could count on more than their blessing. His administration had behind it the experience with farm programs, both proposed and realized, during the twenties. Then farmers and policy alike confronted large crops. To cope with this “surplus” or “overproduction,” many
farm leaders in the earlier part of the decade proposed to establish through legislation a two-price system for such staple American crops, cotton and wheat for instance, as entered largely into international trade. Be it bushels or bales, these planners hoped to set the price for the whole output at an American level, that is, the world price plus the American tariff. The proportion of the crop sold in the domestic market would be sold at the American price; the portion sold abroad would be sold at the world price; the loss on the latter operation was to be collected either from the farmers or the government; in any case the total return to the farmers would be larger since the portion of the crop sold in the domestic market was larger than the exported one. When a version of this plan was wedged through Congress, President Coolidge tartly vetoed it on ground of principle—it was a delusive experiment in price-fixing; and on grounds of practicality—the higher prices would stimulate further overproduction.

The Hoover administration approached the agricultural surplus from a different angle. Instead of the two price system, a governmental agency, the Federal Farm Board, armed with generous appropriations was to stabilize agricultural prices over the years. Gluts and overproduction in good years were not permitted to crush the price level; instead stabilizing corporations, operating with government money, were to take the crops off the market and store them. When poor crop years came, as they always had, these stored products might be sold without depressing prices. Though this mechanism may not have been the foremost objective of the sponsors of the act, the depression of 1929 made this function the central one of government policy. As prices gave way, the Federal Farm Board rushed props to their support, particularly cotton and wheat. Within two years the operation had patently failed. The government owned immense stores of cotton and wheat; though it probably slowed their decline, government intervention had not succeeded in keeping prices stable; and its own losses were approximately $340,000,000. As best it might, the Federal Farm Board ceased purchases and liquidated its holdings. Meanwhile the depression bit deeper. Between 1929 and 1932 the index of agricultural prices fell from 149 to 68. In the face of this disaster the purpose of placing the “industry of agriculture . . . on a basis of economic equality with other industries,” as announced in the Farm Board Act, was irony, unless the farmers could take consolation from the misery of the entire economic order. Even this was thin comfort. The index of prices paid by farmers for commodities declined only from 167 to 124.

When the agricultural shortages of the mid-thirties developed, those given to retrospection felt that if the Farm Board had only possessed billions and had purchased with resulting ruthlessness, its stabilization gamble would
have proved a triumph. But this was hindsight. Contemporaries were more inclined to believe the Board failed because, though it could urge farmers to curtail, it could not command. In brief a successful method of agricultural price control required stronger sanctions and perhaps a more precise definition of "economic equality" or parity. For parity still remained the central objective of farm policy, however much doubters might croak that it, too, had been discredited by Farm Board experience. "Farming has not had an even break in our economic system," announced Franklin D. Roosevelt in 1932. His cure for a situation, thus humanly and simply stated, was anything but systematic.

The Permutations of Triple A

The first step was to fix the farmer’s just return. In view of the thinking of the day this goal was naturally a “parity price.” Originally such prices were to be sought for seven “basic commodities,” wheat, corn, cotton, and the other staples whose actual prices were greatly depressed. The parity price sought for each of these crops was the price of each during the period of 1909-1914, raised or lowered to the same extent that the price of goods purchased by the farmers had altered since then. The selection of this base date was no accident. Only since 1909 had the Department of Agriculture been collecting the figures and formulating the indices essential for calculating the new prices. For another thing, the relationship between agricultural prices and those the farmer paid during this base period was exceedingly favorable to the farmer. With many a wearisome technicality the statute books, therefore, sought to return American agriculture to a golden age. When practice soon revealed disadvantageous details, later legislation set new and more favorable base periods, constantly christened additional commodities “basic,” and occasionally stated that parity income, taking into account the quantity of production per farmer as well as the price he received, should be the guide to policy. In spite of these refinements, parity prices remained the core of policy.

In its quest for parity the Roosevelt administration at once established the Agricultural Adjustment Administration, the Triple A, and under its aegis proceeded to formulate both emergency and long-term programs. In 1933, stunned and bewildered by the unsellable “surpluses,” actual and threatened, the administration resolved upon their destruction. By a campaign of exhortation and promised payments, cotton producers, if they could teach their mules to do it, were to plow under a portion of the growing plants. The “dilemma of the surplus” in hogs was to be eased by government purchase of sows and millions of little pigs. These were slaughtered and the carcasses turned into inedible products, grease and fertilizers, or buried in vast pits.
When millions of Americans were ill clothed and hungry, this deliberate creation of scarcity had a nightmare air. The same program, hinted a year earlier by the Hoover Farm Board, Roosevelt called during the campaign of 1932 a "cruel joke. . . . Surely they knew that this advice would not—indeed, could not be taken." Now it was the "emergency" policy of his Agricultural Adjustment Administration. Less spectacular, but none the less temporary, were the other devices of the act for curtailing production. By 1938 these had stiffened into a long-term policy.

When carry-overs in any basic commodity were large and further surpluses threatened and when a majority of the producers assented to the program, the agricultural high command was to enter into contracts with farmers for a reduction in the acreage devoted to that crop. In turn the producers received benefit payments from the government. Until 1936, when the Supreme Court upset these arrangements, the funds for these payments were derived from taxes upon the processors of the commodities. After that date the United States government paid the money from its own Treasury and the payments were made for acreage taken out of soil-depleting crops, that is, crops for which higher prices were sought, and devoted to soil conservation. Since these inducements did not restrain producers outside the agreements, beneficiaries nonetheless of the rise in prices, nor prevent overproduction by such recalcitrants, nor curtail on permitted acreage the greater yields flowing from intensive cultivation, good weather, and the very enhanced fertility resulting from the "conservation" the act sought, the AAA was authorized to establish a national marketing quota for five crops, the conventionally vulnerable ones of cotton, corn, wheat, rice, tobacco. If two-thirds of the producers assented, a quota was worked out for each individual farmer and those who marketed more than their quota were heavily penalized. No matter what the form of the program, farmers who did not participate in it were ineligible for loans from the Commodity Credit Corporation. In view of the penalties a negative vote was almost as unlikely as in a referendum conducted by a dictatorship.

In addition to contracts, marketing quotas, and benefits, the agricultural planners and Congress elaborated during the formative period of agricultural policy, 1933–38, another device for attaining parity and stabilizing prices. The Commodity Credit Corporation, somewhat reminiscent of the Hoover Farm Board, was to advance loans on crops and take them off the market. The Corporation, beginning as a minor instrument, gradually increased the funds at its command and grew in influence. In effect it furnished a guaranteed government market to the farmer at a guaranteed minimum price. When the crop was harvested, the producer could "put it into the loan." In other words he received an advance from the Commodity Credit Corporation;
the amount of that advance was a percentage of the parity price. These were "non-recourse" loans. If the price went up, the farmer could take his crop out of the loan and sell it; if the price fell below his advance, he kept the money and the government kept the commodities. During the early thirties the administrators of the policy determined, as they saw fit, the percentage of parity advanced by the loans and could dispose freely of the commodities in their possession. In 1938 Congress, apparently more appreciative of the directness and simplicity of this instrument, either prescribed minimum or maximum percentages, 52 to 75 per cent, or laid down rigid formulae for their fluctuations. At the same time it began to curtail the Corporation in selling its holdings.

Since these procedures were inapplicable to many commodities, the Agricultural Adjustment Act of 1938 authorized marketing agreements among their producers and the participation of the national government in their operation. Once again the aim was a stabilized and a parity price. The representatives of the producers in these negotiations were producers' coöperatives. When two thirds of the producers assented, an agreement was mandatory upon all of them; the officers of the producers' association cast the votes of their members as a unit. Then with the aid of a market administrator from the Department of Agriculture, the partners formulated prices for their product. In the circumstances these were, of course, set by a monopoly and were generous. The outstanding application of this device was milk prices for the different urban milk sheds of the country. For urban centers not covered by federal policy there were similar instrumentalities under state law.

Throughout the thirties the administration also concerned itself with the demand or market for agricultural products or surpluses. The Roosevelt choir was chanting the necessity of putting purchasing power in the hands of the masses and sought, as we have seen, by various inflationary devices to increase all prices. But agricultural planners, if they were to manipulate demand for agricultural supplies, needed more refined instruments than such broad or tardy measures. So they turned to the two-price system of the twenties or better, since things were now on a higher order of complexity, to a multiple-price one. Since the procedure was likely to provoke retaliation, Henry Wallace, Secretary of Agriculture, hung back for years from dumping agricultural supplies into foreign markets. By the late thirties, however, the accumulation of wheat and of cotton, which foreign consumers now bought elsewhere because of lower prices or political preferences, left no room for scruples. Handsome subsidies were given for exports of both products. In view of its nationalistic and humanitarian concerns, the administration turned with more enthusiasm to disposing of agricultural surpluses in
the domestic market at other than market prices. Relief was one answer. The
government purchased food and then through various agencies distributed it
to the needy; it purchased cotton and cotton cloth and gave it away to relief
clients to make into mattresses and comforters. However helpful for the
distressed these measures were, they helped the farmers little. Much more
effective was the exceedingly ingenious food stamp plan initiated in 1938.
For each dollar’s worth of orange stamps an individual on relief purchased
with relief funds, he was given fifty cents worth of blue stamps. The former
financed his customary food needs; the latter were turned in for foods design-
nated as surplus. These arrangements utilized the customary channels of
trade, really increased food consumption, and improved the nutritional hab-
its of low-income consumers.

Before the outbreak of the war adjourned or abrogated the majority of
these measures, there was no doubt that the financial position of farmers had
improved. Gross farm income in 1932 had been $6,406,000,000; in 1941 it
was $13,299,000,000. In the former year government payments played no
part in this return, in the latter year they were $586,000,000. Apparently also
agriculture improved its relative status, judged by income, in the nation.
Policy helped. But these achievements were due as well to a slight inflation-
ary upswing in the thirties, to the increasing demand for agricultural prod-
ucts, and to drought. Once again the cruelty of weather proved a greater
boon to farm prices than statutes. For though the laws and their adminis-
tration reduced the acreage of staple crops, they did not on the whole reduce
the total output. The growing of crops on better lands and by better meth-
ods and the enlarged planting of other crops, all practices stimulated by
legislation, defeated curtailment. Nor did policy, though it raised prices,
succeed in general in raising them to parity levels. Nor was all well with the
Commodity Credit Corporation. For a while its modest loan policy, coupled
with other factors, prevented losses. After an interval, its accumulations so
grew that by the fall of 1941 it was storing the equivalent of a full crop of
cotton, half a crop of wheat, and a quarter of a crop of corn. Its total losses
were approximately $172,000,000. Those who remembered the crop-choked
experiments of the Hoover administration began to fear that the Roosevelt
policy might “commit a Farm Board.” Then war came to the rescue.

Agriculture in World War II

In agriculture, as in other economic fields, a sense of haste and emer-
gency, of absorption with problems of national survival, resulted in sweep-
ing legislation lacking in the refinements of peacetime statutes. No longer
was the difficulty one of shrunken markets and too ample crops. The times
demanded an expanded production to supply an embattled world. One by
one devices, acreage limitations, market quotas, and the stamp system, were tossed into the discard. To stimulate production Congress jubilantly turned to setting floors under crop prices through the Commodity Credit Corporation or the Department of Agriculture. Distinctions between basic and non-basic crops were swept away: loans were to be made at 85 per cent of parity, then 90 per cent of parity and even higher at administrative discretion. In 1942 Congress declared that loans at 90 per cent of parity should continue for two complete crop years after the end of the war. This foresight, it was said, would facilitate adaptation to peacetime production without the price drop that followed World War I.

These price supports, as it turned out, were of little importance during the war. Prices were usually above the loan levels, frequently they exceeded parity, and after the war their level, at least to the consumers, seemed stratospheric. In 1946 cotton prices were 128 per cent of parity; beef cattle's were 137. Indeed, so loud was popular clamor that instead of holding prices up, the administration had to hold them down; instead of stimulating consumption, the government had to ration it. But farmers remained alert to protect their price position and to compare, as they had been taught for nearly a decade, their status with that of other interests, particularly labor. Only by pressures and promises, therefore, was the administration able to hold off a drive to set loans at 110 per cent of parity or higher. Vexing clashes took a new turn as the price of food, particularly meat and butter, continued to mount. Then the administration, instead of setting lower agricultural prices to placate the consumers, determined to roll back prices by granting subsidies to producers. At the end of the war these were costing over a billion and a half a year and were going primarily to producers of milk and meat. This device was far from arousing enthusiasm among farmers, of whom a majority preferred prices to be set in the free market, at least so long as the latter was operating to their advantage. This consideration played its part in the administrative abandonment or legislative repeal of price control in 1946.

Through all the vicissitudes of the war era, agriculture prospered. Perhaps never before in American history had it enjoyed so long a period of well-being. In 1941, as we have seen, its gross income was $13,894,000,000; in 1947 it was $34,705,000,000. Of the latter sum, government payments constituted about 1 per cent. Nonetheless, even in this extraordinary year, some products began to move into the government loan. The huge crops of the next two years jammed and exceeded storage facilities, brought agricultural prices down to parity, and raised once again the problem of surfeit confronted by the Farm Board and the Commodity Credit Corporation. In a series of recurrent laws, Congress reduced percentage minima of parity for
loans and then postponed their application for a year; and the Commodity Credit Corporation by January 1950 had invested over $3,500,000,000 in advances on stored commodities. Not all was loss, it was said; there would be some recovery from "eventual" sale. Drought and war had been the earlier salvation.

Whether or not the country was in for cycles of farm policy, as it had been for cycles of production and weather, there was no doubt that the legislation of two decades had given an entirely new shape to the business of agriculture. The most ruggedly individualistic of economic activities had become a government-directed cartel. In spite of an ostensible emphasis upon democratic procedures and decentralization, planning necessarily took place at the center, for there alone were gathered all the data and there alone was the possibility of seeing what was called "the whole picture." Once the rules had been set by referenda, the individual farmer could not grow certain crops or quantities, even for his own use. Competition was no longer free to determine agricultural prices; with varying degrees of flexibility they were administered just as surely as the prices set by monopolies, big business enterprises, or public utilities. All this was done for the benefit of the farmers. As a group they gained most unevenly. Commercial rather than subsistence farming, large rather than small farms, landlords rather than tenants were in general the chief beneficiaries. The policy, too, was justified as serving the general welfare. The argument, if not always candid about details, had to be advanced, for someone had to pay for the program. It took no refined economic analysis to realize that citizens as consumers paid higher prices for food, fibers, and oil; and as taxpayers contributed to the subsidies, benefit payments, and loans the program entailed.
CHAPTER XX

Labor: The Path to Power

Changes in the Labor Force

In the first part of the nineteenth century employers pioneering in manufacturing enterprises and statesmen interested in America's industrial future were alike bothered by the nagging question: where were the workers to come from? Over a century later the Employment Act of 1946 implied that this was no longer a national difficulty and the problem was now to provide through private industry and governmental policy work for those who wanted it. Yet curiously enough within the thirty years between 1915 and 1945, the era of war, normalcy and depression, both of these historic difficulties challenged national attention and in their most extreme form. After the interlude of prosperity in the twenties, the great depression beat down the numbers in the labor force. In 1929 the estimated total for those in non-agricultural employment was 37,180,000; in 1932 the figure was 28,770,000. In view of the vagueness of definitions the difference between these figures did not represent the whole measure of unemployment; at several times during the thirties that figure was estimated at anywhere from 12,000,000 to 15,000,000. At times such as these the cry was for the "right to work." By the thirties the distress was so obvious, so acute and so imperative politically that the national government, as distinguished from its local units, entered the field of relief.

The years of war created quite a contrary condition. In a dual fashion they soaked up surplus labor. In World War I, for instance, the occupational classification of military service through enlistments and the draft withdrew 4,355,000 from the conventional labor market, and in World War II the armed forces in 1945 enrolled approximately 11,430,000 persons. In both instances the expansion of the governmental bureaucracy employed for waging war was enlarged and millions of civilian workers were required to keep industry and distribution going at the hot pace forced by conflict. During World War I the index of unemployment in 1918 sank to the lowest level up to that time in the century; during World War II a nation which had been repeatedly
informed that even in prosperous times two million unemployed was normal
discovered in 1944 that there were only 644,000 in this category. In wartime
the need was not to relieve but to recruit labor. To do so private industry
had relied historically upon the temptation of wages. To apportion workers
among essential occupations wage differentials had been the customary de-
vice. On the whole these traditional methods sufficed for the First World
War. In the second they could not be utilized, for the administration in order
to control prices had been driven to "freezing" or holding wages at various
"lines." Governmental agencies, therefore, resorted to recruiting campaigns
and appeals to patriotism and minor wage adjustments. Or else through vol-
untary arrangements they made certain that workers in essential industries
could not change jobs without certificates of availability and through the
agency of the United States Employment Service. By various devices a por-
tion of the labor force in unessential industries was thus forced into the
stream of those seeking employment. More thorough plans, like the "work
or fight" proposals of the armed services, aroused the successful opposition
of both labor unions and management.

Historically, the extraordinary flexibility of the American labor force had
been due in part to immigration. In prosperous times workers thronged to
America's shores; in straitened years they returned to their native lands.
These birds of passage, so much deplored by apostles of Americanization,
were a cardinal example of international labor mobility. But after 1920 immi-
gration no longer played unimpeded its historic rôle. In that year Congress
enacted the first of a series of restrictive measures which by the end of the
decade permitted an annual total of arrivals, largely from Europe, of only
150,000 rationed among the nations according to "the number of inhabitants
in continental United States in 1920 having that national origin." Such quotas
did not apply to Orientals, for their entrance into the United States was in one
fashion or another, often brusque, prohibited; nor to people born in North
and South America or in the independent countries of the Caribbean who
could enter without numerical restrictions. The reversal of American policy,
thus placed on the statute books, was desired by patriots fearful lest immi-
grants dilute a true Americanism, by workers dreading competition from
those fleeing a devastated and prostrate Europe, and by employers who felt
that European agitators were responsible for labor discontent. "They brought
with them nothing but seeds of socialism and anarchy with which to thistle
our fertile land." The opposition to restriction from employers who relied
upon immigrant labor and from idealists who wished to keep America a
haven for oppressed peoples did not suffice to defeat this legislation.

In spite of its seeming rigor, loopholes still permitted a considerable immi-
 grated. Eventually with the help of bargain rates by airplane, Puerto Ricans
made New York the largest Puerto Rican city in the world. Filipinos settled in California and provoked a race riot by their mere presence. Mexicans thronged across the border in hundreds of thousands. While to American workers these arrivals from south of the border were "greasers," they were an essential labor force in the eyes of the railroads, large farmers, and chambers of commerce in the Southwest. Within the narrowed limits of the law,

immigration still exhibited a quick response to industrial conditions. The considerable influx of foreigners in the prosperous twenties fell away in the depression thirties to numbers not seen since the early decades of the nineteenth century. Indeed in some years, as emigrants departed for permanent homes abroad, there was actually an immigration deficit. The wartime shortage of labor in the United States then effected a minor reversal. Characteristically one response to this necessity was governmental action. Agreements between the United States and Mexico arranged for recruiting workers in Mexico, transporting them to the United States, setting their conditions of
labor, and finally returning them to their homelands. Originally confined to agricultural workers, such arrangements were later extended to the importation of other unskilled workers.

Meanwhile the decline of immigration combined with other factors to heighten and hasten the internal migration of workers. In spite of occasional deviations from historic patterns—the depression only momentarily reversed the movement from farms to cities—people in general moved from regions where agriculture predominated into places devoted to trade, transportation, service industries, and manufacturing. While the motor car and the surfaced highway cleared away the transportation barriers, rural disaster, as in the dust bowl, the clamor for workers during two World Wars, and the eternal quest for economic improvement provided the reasons for movement. The two great seedplots of population were the north-central states and the South. Though they interchanged with each other, the northern region sent the majority of its migrants westward. For them the war boom industries of the Pacific industrial areas were the magnet. The South dispersed its population. Some went to the Northeast; more sought the industrial centers of the Old Northwest; others, particularly in the thirties and after, moved into the West. There were white farmers aplenty in this march. More conspicuous were the Negroes. In their case explosive causes were continuous: tenancy, low wages, political and social discrimination, and the scourge of the boll weevil. The attractive causes were the opportunities of employment in the North. During World War I Negroes got their foothold in the service trades or as unskilled workers in heavy industry. The twenties saw no slackening of the tide. In the Second World War the pattern of an earlier one was repeated on a more ample scale, after government agencies and some labor unions did something to breach the social and trade taboos on Negro employment. The range of industries and of jobs open to Negroes were both broadened.

The necessities of war also hastened the trend toward the greater employment of women. Whereas in 1920 only 21 per cent of the women in the country were in the labor force, a figure not radically increased for a decade, the percentage by 1940, when the war boom had already begun, was 25.7 and five years later 34.1. The interrelationship of women’s labor and war must not, however, divert attention from more enduring causes working toward their wider employment for wages. Technical changes, lightening labor and placing a premium upon easily acquired skills, enabled manufacturers to employ more women workers; the larger importance of service, semi-professional and white collar occupations extended opportunities in fields women had taken over before 1920; and the shorter working day, secured by labor or governmental action, was less fatiguing and gave greater opportunities for combining outside work and the management of a home. For women
workers were still home makers. Though gadgets eased housekeeping and the smaller size of the average family shortened the period when mothers had to care for small children, the old imperatives of hearth and babies determined the age distribution of women workers. By the figures of 1940, when they reached twenty years of age women tended to leave the labor force to marry and have children. In contrast with the earlier century, it was now the custom for the majority of single women to have jobs and for an increasing number of married women to do so. In the half century after 1890, the number of the latter group multiplied nine times. In 1940 they constituted about 35 per cent of the women in the labor force.

As for the employment of young people, the thirty years of war, normalcy, and depression effected a revolution. Though World War II with its job opportunities and military inductions increased the number of adolescents at work, the trend was only momentary. In spite of its vicissitudes, the economic order was so productive that it could afford to dispense with their work contributions. Furthermore, the devotion of the nation to education was so deep that the school rather than the factory or the farm was esteemed the proper place for young Americans. If private means were inadequate to attain this ideal, government funds as during the depression and the post-war years were used for its realization. Regulatory legislation crystallized these attitudes. As for state enactments, the South, the last fortress of child labor, joined the procession of the other states in the twenties. Regulation by the national government, denied by Supreme Court decisions in 1918 and 1922, and by the failure to ratify a child labor amendment, was achieved in the Fair Labor Standards Act of 1938. Children under fourteen could not be employed in interstate commerce or in the production of goods for such commerce, and youths between fourteen and sixteen only under conditions determined by national regulations. So sweeping were the effects of practice and law that the census of 1940 made no effort to count children under fourteen years of age in the labor force and it calculated the average age at which young men entered that labor force was then approximately eighteen.

**Protection and Security**

In the field of labor legislation progressivism, that core of principles and political action in the early twentieth century, had, as we have seen, reached a climax by 1917. Legislatures and courts had arrived at the general conclusion that state governments might, when compelling reasons of health, safety and general welfare dictated, regulate hours of labor for men, women, and children. The wisdom and power of wage regulation was less definitely recognized. Still in 1912 Massachusetts had pointed the way by creating
a commission to set minimum wages for women and children; the findings were to be enforced by moral pressure. Eleven years later twelve states had such legislation, some of it with compulsory features. The Supreme Court had refused to call such legislation unconstitutional. Almost without question states could enact safety measures and workmen's compensation acts. For the deeper hazards of industrial life when the worker could not support himself because of unemployment or old age the states made no provision for relief outside the century-old arrangements for the care of the poor.

In spite of diversity in details, the sequence of assumptions underlying the relief system was simple. The care of the needy, whether able bodied or infirm, was the obligation of relatives. If they failed, private charity must bear the load. Once largely dispensed by churches or religious orders, the administration of private giving had become toward the end of the nineteenth century increasingly secular and systematic. In the eyes of its practitioners, the social workers, it was efficient and scientific. These qualities set it apart from the "political" and "amateurish" relief methods of public agencies. Here as elsewhere government intervened. Indeed, for centuries states or local governments or combinations of them had been compelled to meet the emergencies, needs and defeats of their less fortunate and gifted citizens by administering "indoor relief" in almshouses or poorhouses and "outdoor relief" in their homes. By the end of the twenties the latter concept had broadened in well over half the states into some form of old-age pension or assistance and the public relief systems of the larger cities were so extensive as to dwarf the operations of private agencies. However organized and administered, the relief system usually proceeded upon certain traditional assumptions: people preferred idleness or imprudence, the relief system must discourage these defects; people were prone to dishonesty, relief must follow investigation; the relief system must be inexpensive.

Since progressive doctrine exalted national power, there were starts toward the Congressional or executive regulation of labor conditions. Though no constitutional provision conferred explicit authority, the Federal government clearly possessed the right to determine labor conditions for its own employees and for others constructing Federal public works. As far back as Martin Van Buren, a President had set for the former a ten-hour day and for the latter a Federal enactment of 1868 prescribed eight hours. The power to regulate commerce might well include the right to determine wages, hours, and other conditions of labor for those employed by transportation enterprises. By the La Follette Seamen's Act of 1915 Congress climaxed decades of legislation governing the punishments, quarters, hours, and wage payments of maritime workers and in the following year by the Adamson
Act set eight hours as a standard day of work and wages for train operatives. For the latter Act the Supreme Court immediately found ample constitutional justification. On the railroads hour regulation was of long tradition; an interruption to interstate commerce with its threat of social and economic disaster authorized wage regulation, at least on a temporary basis. In general, however, the states and not the Federal government were the agencies of protective labor legislation.

In the years of golden normalcy the trend to such legislation, whether state or national, slowed down. Indeed, decisions of the Supreme Court compelled a reversal on certain particulars. In two decisions the judges found the national government could utilize neither its power to control interstate commerce nor to lay taxes to prohibit or burden the commercial movement of products made by child labor. Soon thereafter, a decision in 1923 threw minimum wage legislation for women into the discard with sweeping generalities. The act violated the Fifth Amendment which gave to the individual freedom to contract about his own affairs, including the price at which he would sell his labor; it harmed the employer, also a party to this contract, by compelling him to pay a minimum wage irrespective of the earning power of the worker or of the ability of his business to sustain the burden; and the right to regulate hours did not involve the same principles as the right to regulate wages, "the heart of the contract."

In the decision of the majority a sentence or two, reflecting a satisfaction with the existing level of wages, hinted unconsciously at a wider explanation than judicial disapproval for the statutory sterility of the twenties. During that decade labor, for one reason or another, gained such advantages that both it and the wider public were satisfied. Of the conventional twin measures of labor welfare, hours and wages, the majority of workers held the gains of the eight hour day won during the war. Some impregnable industrial citadels, following other standards, capitulated. Public disapproval, a threatened organizing campaign, and the pressure of influential minority stockholders compelled the United States Steel Corporation, which asserted during the Great Steel Strike of 1919 and on other occasions that the twelve-hour shift in certain basic processes was essential technologically for the production of cheap steel and was desired by the workers, to adopt the eight-hour shift. By 1929 in industry as a whole only 30 per cent of the labor force worked over fifty-four hours a week; workers in manufacturing averaged 44.2 hours a week. Meanwhile wages were higher than ever before in American history. After a stern chase during the war years, they overhauled between 1918 and 1920 that statistical abstraction, the cost of living. Then the deflation of the early twenties swept the nation with unemployment and wage cuts. When the flurry was over it was discovered that since prices had
declined more sharply than wage rates a genuine increase in real wages had resulted. This benign discrepancy persisted through the twenties.

A period of shortened hours, high wages and stable or falling prices usually dulls the edge of a labor movement and the drive for labor legislation. During the twenties employers reënforced these factors by a dual policy. On the one hand they sought to crush the labor movement. A series of labor upheavals in steel and railroads immediately after World War I gave them a chance to demonstrate their power successfully. That other great barony of modern industry, coal, became increasingly non-union as owners enlarged operations in Kentucky and West Virginia, regions largely ununionized. In the latter the operators often so completely owned the land, houses, and community facilities of the coal town and exerted so pervasive a political influence that in places “without the consent of the operators, a union organizer can do little more than ride on a train and look out of the window.” In all industries and areas the American Plan gave unity to this anti-union campaign. Its sponsors exalted the right of the individual employer and employee to agree with each other upon the terms of employment, and the necessity of the open shop as a means to obtain this objective. Though allegedly the American Plan did not object to American unions and only prohibited the “un-American” closed shop, actually it was a movement to smash all unions. Under its aegis, with the blessing of trade associations and chambers of commerce, open-shop plants, industries, and towns dotted the nation.

Although employers wielded the sword with one hand, they proffered the olive branch with the other. In their minds the industrial conflict was needless, since the interests of employer and employee were identical. At least this was the conviction of John D. Rockefeller, Jr., shocked into formulating the new gospel by a brutal labor conflict in one of his mining properties. He sought “the introduction of a new spirit in the relationship between the parties in industry—the spirit of justice and brotherhood.” This aspiration shaded easily into the shrewd purpose of killing the labor movement with kindness. Great corporations embarked upon welfare work with hospitals, clubhouses, athletic fields and activity organizations, established pension funds for superannuated employees, or sold company stock to their employees on easy or favored terms. To encourage “industrial democracy” they transformed the shop committee, which during the war years had eased relations between employees and employers, into the “company union.” Such captive organizations, for they had little independence, gave the worker a chance to air grievances and promoted cooperation between management and men as representatives of each sat down to the same table. However much they might adopt the protective coloration of its forms, they were a travesty of collective bargaining.
THE FEDERALIZATION OF RELIEF AND INSURANCE

The great blizzard of 1929 changed all this. The resulting unemployment with its anxieties, hardships, losses and potential dangers to the American social and economic order required action. For a while Herbert Hoover insisted that individual giving, organized charity, and the relief agencies of the states and their subdivisions should and could meet this emergency. By 1932 these expectations were flat. Private generosity was inadequate. The states and their subdivisions had neither the money to finance relief nor the means to raise it by taxes or borrowing, for the former could not immediately modify their whole financial structure to meet the emergency and in many cases their constitutions stood in the way. Only the national government with its superior and more flexible tax system, resources, and credit could cope with the disaster. In 1932 Hoover gave his assent to a measure permitting his Reconstruction Finance Corporation to make loans to the states for relief purposes and to finance the construction of public works, usually those earning a revenue, by the national government, states and their subdivisions, or by private corporations regulated by some government agency.

Though in terms of concepts the Roosevelt New Deal made little advance over this measure, it at once abandoned the reluctant air which characterized it, substituted outright gifts of money for haggling loans, and eventually introduced a measure of administrative boldness into the relief field. Aside from relief projects for special groups, for example unemployed young men and women, the administration materialized from two years of confused and desperate experimentation and personal rivalries two major devices. The first to crystallize, the PWA—the Public Works Administration—under the direction of Harold Ickes, also Secretary of the Interior, was primarily an arrangement by which the national government granted some funds but loaned the larger share for the construction of public works by states and other governmental bodies. Whether building dams, schoolhouses or model tenements, the work was done by private contractors and workers were not necessarily recruited from the unemployed. In brief the agency sought to get the existing industrial machine running by the partial use of government funds; these original expenditures, passed along for materials and equipment, would stimulate the whole economy at an accelerating rate—at least in the calculations of the more optimistic. Needless to say, this philosophy and practice foreshadowed the full Employment Act of 1946.

Since projects under the PWA required prolonged preliminaries of planning and preparation, their impact upon the unemployment of the thirties was not immediate enough. By 1935 the administration chastened and instructed by its experience with other devices, established the WPA, the Works
Progress Administration, later the Work Projects Administration. Its director was Harry Hopkins, sometime social worker and now on his way to become a handy man, confidential agent, and alter ego for the President. The WPA was to provide work for the needy and the unemployed. Among its many emphases, not the least was that upon work. The American relief system had always insisted upon work to scare away those with a preference for leisure and more recently the Republicans, often taking contemporary British experience as a theme, had dilated upon the degenerative effect of the “dole.” Work, it was said, preserved the morale and skill of the workers. The WPA did not operate through private contractors, it created its own organization. Its employees were predominantly the unemployed, certified as such by local relief agencies. It furnished all but 10 to 25 per cent of the cost of the project and insisted upon projects in which the money should go for wages rather than for material and equipment. Though it enabled actors to give plays, artists to paint murals, students to go to college, and researchers and writers to compile guide books for cities and states, over three-fifths of its expenditures went for highways, public buildings, utilities, and airports.

To these various relief experiments the war need for labor, if nothing else, put an end. By 1943 PWA, WPA, and other agencies were either abandoned or in course of liquidation. Meanwhile the expenditures for relief had been, as we have seen, the chief explanation for the unbalanced Federal budget. The number of people benefited varied with fluctuating conditions; at the end of 1938, a peak year, just over 4,000,000 were employed on works programs. With their dependents, they constituted a sizable fraction of the American people. Of all the administrative headaches these novel arrangements presented, the most persistent was the relation between public and private employment. Wages and hours raised the issue. Labor, particularly organized labor, insisted that the rates on relief projects should not undercut those paid by private employers lest the whole wage structure be imperiled; many employers feared a high level of wages would convince recipients it was more profitable to stay on WPA than to accept seasonal, temporary or marginal private employment. Neither the decision of WPA administrators to pay a monthly salary varying with the skill of the worker and with the geographical region and community in which he lived nor the constant stream of Congressional directives eased the problem. Furthermore, since relief labor generally speaking had to be employed on public enterprises, there was a stimulus in debatable areas, for instance housing and electric power, toward designating many activities as a governmental rather than a private-enterprise responsibility. In any case, for a while the Federal government was the largest single employer in the country.

Since the federalization of relief was generally regarded as an emergency
measure, the Roosevelt administration had meanwhile turned to the con-
struction of more permanent devices for dealing with old age and unem-
ployment. Social insurance, or as it was called in this country, social security, was
the answer. While Germany and Great Britain had had such systems for
years, their adoption in the United States had been hindered by the opposi-
tion of organized labor and capital. After individual states during the twen-
ties and later had gingerly approached the problem, the national government
led the attack upon it. In view of our Federal system, the assumed hostility
of the Supreme Court, the dislike of taxes, and the evangelistic panaceas
currently promoted to care for the old folks, the Social Security Act of 1935
was not so much the embodiment of European experience as a reflection
of American political pressures. Needless to say, the features of the original
enactment were greatly altered by later legislation, particularly in 1939.

To cope with old age as well as with certain other hardships, the national
government spurred the states to establish a system of old age assistance for
needy persons sixty-five years or older. The device employed was one the
Federal government had often used, a grant-in-aid to the states. Such assist-
ance as the states now gave to the aged was matched by the Federal govern-
ment dollar for dollar to the over-all sum of $40 a person a month. If the
state wanted to be more generous it could do so at its own expense. General
taxes or borrowing met these charges. The device was pure and simple relief.
Concurrently social security legislation established old-age and survivors in-
surance. Not confined to the needy, this system applied to most employees
except in casual labor, agriculture and domestic service, apparently fields too
uncertain to be covered by insurance; in government, maritime and railroad
employments, fields generally insured under other arrangements; and in
charitable and educational organizations. Benefits began at sixty-five for the
insured worker, his wife and minor children received additional sums, and
life insurance protected his survivors. The primary benefit ranged from $10
to $85 a month. To finance the system, employer and employee were each
to pay the Federal government 1 per cent of the latter's wages. In 1950 Con-
gress, raising the rate to 1½ per cent, postponed until 1965 the originally
projected tax of 3 per cent. Nominal these taxes went into a trust fund to
pay the benefits. Actually since the receipts were spent for government pur-
poses, the fund consists of promises to pay. Current old-age taxes, taxes
collected upon incomes and inheritances, excises and imports, or deficit fi-
nancing really underwrote this insurance.

In unemployment insurance social security relied again upon state meas-
ures and agencies. To induce action by them, the Federal government levied
upon all employers of eight or more workers (certain occupations as in old-
age insurance were excluded) a 3 per cent tax upon their annual pay rolls. If a state had passed an unemployment insurance act, the employer might count the payments made to the state for such purposes as an offset to all but 10 per cent of the Federal tax. To this lure every state responded. The inevitable diversity of systems was somewhat checked by the conditions which all had to meet and by the fact that all had to transfer their tax receipts to an unemployment fund in the Federal Treasury, whose solvency depended upon the resources already described as underlying the old-age and survivors insurance. As for taxes, by the late forties only one state levied the same rate upon all employers; various complicated formulas, “experience ratings,” brought lower rates to individual or type enterprises which had through chance or design little unemployment. As for benefits, practice among the majority of states began them after a brief waiting period and authorized, in the case of fully insured persons, payments of half salary over a period of weeks that might reach a maximum of twenty-six.

The newness of these arrangements and the abnormal employment situation during and immediately after the war postponed severe tests of their functioning. The first device to attain even relative maturity was that of old-age assistance; swinging into operation soon after enactment, it was in 1947 making payments to about 24 per cent of those 65 years of age or over in the country. The average monthly payment was $36. Since old-age and survivors insurance required time to insure its beneficiaries and did not operate on a large scale in agricultural states, it steadily lagged behind the other system. In 1947 beneficiaries constituted 18 per cent of the aged; its primary payments to families with a retired male worker averaged $24.10 a month. Unemployment insurance, designed for short term fluctuations, vacillated extraordinarily. Dispensed in the late三十年s and early forties to over a million workers, it practically ceased to operate during the war. In 1947 the number of beneficiaries again reached a million; the average period of unemployment was over eleven weeks; the average weekly payment just over $18.

**Floors and Ceilings**

More revolutionary, at least in the light of Federal powers as they had been described and interpreted by judges, was the regulation of hours and wages by the national government. As late as 1932 a careful student of the shorter-hours movement could write “a general federal hours' statute is a Utopian hope.” Hardly a year later the Roosevelt administration began the first of its many attempts to put a floor under wages and a ceiling over hours, a minimum wage and maximum workday. There was a lavish use of an old device, the determination of labor conditions in government construction projects.
or in the production of goods sold to the government. There was the resort to exhortation and voluntary action of the employers. The industrial codes authorized in 1933, described in more detail later, exhibited a preference for the forty-hour week and the forty-cent minimum wage. Finally in 1938 a Federal Fair Labor Standards Act was enacted. With the by now customary exemptions for those employed in transportation, retail and service industries, agriculture and the processing of agricultural products, the measure after differing periods of transition set a minimum wage of forty cents an hour and a maximum work week of forty hours. For overtime work, permitted by the act, the pay was at the rate of time and a half. An Administrator was to enforce the act. Goods produced under conditions other than those prescribed by the act were excluded from interstate commerce.

While Congress was moving toward this legislative policy, the Supreme Court was progressively discovering constitutional justification for it. In 1941 the majority of the Court, speaking vigorously of "substandard" labor conditions, finally consecrated the Fair Labor Standards Act of 1938 as a legitimate exercise of the power of the national government over interstate commerce. Brusquely they discarded previous decisions to the contrary. Even more illuminating were the arguments advanced for this novel measure by the Executive Department and by Congress. While there were occasional references to the traditional concepts of "living wages" or "the wages of decent living" and to the possibilities of maintaining a high level of production under shorter rather than "excessive" hours, advocates spoke more frequently of the need of spreading employment among more workers by limiting the day's work and of increasing their purchasing power by higher wages. In short the act was simply another response to the persistent presence of large-scale unemployment.

Some of the results of this legislation were as transitory as the arguments for it, particularly in the case of wages. Exempted industries often maintained minima far below the statutory figures; the inspection staff was inadequate to detect violations in the covered occupations; the high price level of the early forties made a mockery of forty cents an hour; and, until 1950 when seventy-five cents became the minimum, Congress persistently defeated proposed increases to new levels. Nonetheless, the Act, by establishing national standards, did something to diminish the competitive advantages of regions with low labor costs. Northern textile manufacturers had their moments of complacency. The raising of minimum wages also raised all wages, since higher-paid workers insisted upon the maintenance of old differentials. Furthermore, average weekly hours in manufacturing industries since the end of World War II stabilized at forty a week in a period of full employment. Clearly this was the new norm.
LABOR: THE PATH TO POWER

UNIONISM, THE COURTS, AND CONGRESS

Though the government determined more and more the conditions of employment, the traditional American attitude had been that such matters were more properly handled by employers and employees. They were the parties immediately interested and expertly informed. Many owners and managers, even as late as the twenties, felt understandings about wages, hours, and other conditions should be made with individual workers. Such was the program of the American Plan. Organized workers, on the other hand, felt that these bargains should be a collective agreement drawn up by representatives of the union and of management and ratified by each party. In short, the union demanded "recognition." The state found it impossible to remain indifferent to this clash of interest. In moments of need employer and employee both solicited its favor. Furthermore, the government represented in a diffused fashion the many interests in the community outside the controversy but nevertheless affected by labor contracts or the struggles that led to them. Inevitably the government regulated labor-management relations. Once the concern largely of the courts, these matters became during the era of war, normalcy, and depression the business of executive and legislature as well.

Within the fifteen years after 1917 governmental policy on this point traveled full circle. At the outset of the period the labor sympathies of the Wilson administration and the loyal support of the war by organized labor led those who were shaping labor policy during the war to agree "that the right of workers to organize in trade-unions and to bargain collectively through chosen representatives is recognized and affirmed." Employers could not discharge workers for membership in trade unions nor for participation in trade union activities. In operation this declaration consecrated the collective agreement in industries or enterprises already unionized; where such conditions did not prevail, representation of the workers was provided by shop committees brought into being through government fiat.

 Favoritism of this sort ceased with the war and the cataclysmic collapse of the Wilson administration in 1920. For a decade governments instead attempted to abate the industrial conflict by providing devices for arbitration, conciliation, and settlement. The Federal government in its measures for railroad labor delayed strikes, authorized investigations, and hoped good sense and public opinion would compel the acceptance of findings. One state at least, Kansas, provided fines and imprisonment to enforce the orders of its Court of Industrial Relations; this much advertised experiment, running afoot of the Federal Constitution, sank into oblivion. As in earlier days the chief and ultimate responsibility in formulating labor policy returned largely
to the Supreme Court. It soon gave notice that the labor provisions of the Clayton Anti-Trust Act imposed no novel restraints upon judicial discretion, for labor’s "magna carta" simply stated the common law as it had usually been interpreted! Naturally enough, the court’s decisions did not deal directly with whether or not the organization of labor and collective bargaining were desirable; these questions were not openly at issue. Rather the judges were called upon to decide whether the methods used by labor to enhance and extend its power were legitimate.

Though strikes have been held legal for decades, the Supreme Court on occasion seemed willing to hold some as violating the Sherman Anti-Trust Act when the intent was to "restrain," read interfere with, interstate commerce; and they discountenanced "mass picketing," for such was intimidation or coercion; and picketing by those who were not employees of the plant, for such were strangers with no immediate economic interest involved. These decisions gravely hampered the organization of non-union plants. The judges also condemned secondary boycotts in which union workers refused to handle material made elsewhere by non-union workers or sought to induce consumers to withhold their patronage from those who made or distributed non-union products or were engaged in a dispute with their workers. As for the closed or union shop, state legislatures on occasion declared them illegal and some state courts, even in the absence of legislation, stigmatized them as an unlawful union activity. On the other hand the "yellow dog" contracts between the employer and employee by which the latter agreed not to belong to a union the Supreme Court found were constitutional, and a union which attempted to organize the signers could be sued for inducing a breach of contract. As in earlier days, employers, their counsel, and government officials automatically resorted to the injunction to cope with the injuries, losses, and "illegalities," real or anticipated, resulting from labor controversies and methods. During the twenties the use of this writ in industrial disputes doubled, and specimen writs in their restrictions attained new inclusiveness. Unions or their leaders were forbidden to feed strikers, provide them shelter when evicted from company houses, or even mention the existence of a strike. As always, through the postponements it occasioned, the injunction was an effective anti-union weapon.

In 1932 after three years of depression Congress swept away a good share of this structure by an Anti-Injunction Act. The title somewhat distorts the purpose of the act by emphasizing a device which the courts were now forbidden to issue in certain categories of labor disputes and which, even in permissible cases, had to conform to procedures less damaging to labor’s case. By declaring yellow dog contracts contrary to public policy, the act made them unenforceable through the courts. By curtailing the issuance of injunc-
tions and by defining a labor dispute in a broad fashion, the act authorized
a whole range of labor activity hitherto wholly or partially forbidden by
judges, picketing by other than employees for instance. In short the way was
opened for workers to organize and to designate representatives of their own
choosing. In the words of the act they had a right to “full freedom” on these
matters. Under prevailing economic conditions that freedom was jeopard-
ized by their helplessness as unorganized individuals. In reversing current
practices the act was radical. In other senses it was conservative. The govern-
ment did not undertake to win for workers the method of collective bargain-
ing. It simply gave them a chance to win it—if they could.

Because of this changing legislative climate, but only in part, the number
of organized workers vacillated enormously. In the five years between 1915
and 1920 the totals doubled to reach a peak in the latter year of just over
5,000,000, the immense majority of whom were in the American Federation
of Labor. Then a decline set in. In 1933 the number of organized workers
was 2,857,000, a figure still larger than before the First World War. No
figures of membership, however, could measure the accompanying loss in
union vigor, morale and influence. Increasingly the labor movement either
imitated or coöperated with the capitalist order. Some unions strived to offer
their conventional foes greater efficiency, labor discipline, and business stabil-
ization. Others, like the well-organized craft unions in the Federation, were
indifferent to organizing the unorganized and to the usefulness of industrial
unionism in the mass industries, steel, rubber, automobiles, electricity, domi-
nating the industrial order of the time. If they could save themselves and
their followers, they were content.

The New Deal and Labor Organizations

Then came the New Deal. Though depression, unemployment, and hu-
manitarian impulses drove the Roosevelt administration to positive measures
for labor’s benefit, it apparently believed that, given governmental assistance,
more substantial reforms could be won for labor by labor itself. Through
three years of confused experiments it gradually learned what weapons to
use. The National Labor Relations Act of 1935, often christened the Wagner
Act after its persistent sponsor, the Senator from New York, took the con-
cept, old as the Wilson administration, that workers had the right to organize
into unions of their own and to bargain with employers through representa-
tives of their own choosing. But the Act added something new; it declared
it was the policy of the United States to encourage both practices. To further
this positive program, sections of the Act drew up a list of unfair labor prac-
tices on the part of the employer: attempts to interfere, direct, or influence
labor organizations, a shot at the company unions which multiplied in the
mid-thirties; discrimination against union members in hiring, firing, and conditions of employment; and the refusal "to bargain collectively with the representatives of his employees." Furthermore the Act established a National Labor Relations Board of three members. It was to determine the appropriate bargaining unit, hold elections among the workers, and hear grievances under the Act. The argument for these innovations referred, as had the Anti-Injunction Act, to labor's inequality of bargaining power in the face of corporate wealth; asserted, in accord with the ideology of the moment, that collective bargaining through stabilizing wages would increase purchasing power and help prevent depressions; and anticipated that the new arrangements would abate industrial warfare and thus promote the flow of interstate commerce over which, it was hoped the Supreme Court would recognize, the national government had constitutional powers. Two years later, to the consternation of owners and their counsel, the learned justices authenticated this reasoning.

Though Congress passed minor amendments to the Act, the Labor Board by its procedures and findings and the courts by their decisions proceeded to give form to the labor program of the New Deal, at least during peace. Effective measures made sure that unions were independent of employers and that the latter would bargain in good faith with the former. While the Act could not compel an agreement, the Board insisted upon meetings face to face, upon negotiations prolonged drearily day after day, and upon condemning certain employer proposals as designed to prevent rather than attain a settlement. In such instances the Board came closer to arbitrating than to refereeing the quarrel. If an agreement were not forthcoming, unions could resort to the pressure alternatives with considerable hope of success. In case of a strike, workers did not lose their jobs by participation in it, the employer could not move strike-breakers across state lines and was at a disadvantage in employing strike-breakers under other circumstances. If he urged his striking employees to return, he was interfering with the right to organize, one of the many "unfair labor practices" likely to result in the penalty of rehiring all the strikers with back pay.

As for picketing, the Supreme Court not only tolerated a wider latitude of participation than heretofore but placed the right to picket on apparently unassailable ground, "the freedom of discussion that is guaranteed by the Constitution." Under this doctrine it was easy to strike down limitations imposed by the states. As for secondary boycotts, judicial interpretation of the new legislation removed previous restraints upon their utilization. These were new weapons of war placed in the hands of the unions. Only in the matter of the closed shop and its variants did legislators and justices exhibit misgivings, for under the new dispensation, a union chosen by the majority
and bargaining for all employees, might well exert effective oppression and discrimination against a minority. Be that as it may, the powers granted labor unions moved one dissenter, appointed by Roosevelt to the Supreme Court, to remark: “The Court permits to employees the same arbitrary dominance over the economic sphere which they control that labor so long, so bitterly, and so rightly asserted should belong to no man.”

Such an outcome was, of course, impossible unless the new legislation, as passed and interpreted, had spurred the organization of labor. Figures demonstrated that unions had increased their membership in a measure unprecedented in American history. From the low of just under 3,000,000 in 1933, the total mounted to 10,489,000 in 1941, the last year of peace. Part of this increase was attributable to the partial lifting of the depression, which, like all business declines, had hammered down union effectiveness and numbers. Still government policy and a favorable popular climate were more potent explanations. On the placards carried in organizational campaigns and strikes for recognition blossomed the slogan, “President Roosevelt wants you to join the union.” But the unionism which resulted was as different from that of previous days as was government policy.

**Dualism**

Driven by memories of past hardships and inspired by the hope of promised opportunities, the mass of workers in the mid-thirties was ripe for organization. In these respects the era resembled the early eighties when the Knights of Labor had mounted to power. To this later challenge, however, the American Federation of Labor was not able to make an immediate or successful response. Though its leaders had abated somewhat their doctrinal opposition to industrial unionism and the Federation included some industrial unions and more deviating from the pure craft type, the organization had, as a matter of fact, failed to organize the mass industries of the era, automobiles, steel, rubber, electrical equipment; and often gave the impression that it was uninterested in doing so unless the workers could be divided among the existing unions. Powerful new organizations with thousands of dues-paying members would upset the balance of rule within the Federation. This reluctance was not to the taste of many New Dealers, impatient over jurisdictional hair-splitting when a brave new world might be brought into being, nor did it appeal to the brilliant strategists and organizers of the industrial unions within the Federation: Sidney Hillman of the Amalgamated Clothing Workers, David Dubinsky of the International Ladies Garment Workers, and John L. Lewis of the United Mine Workers. These unions had tasted success during the first years of Roosevelt and sensed further possibilities. The United Mine Workers in particular were interested in organizing
the steel industry whose great corporations controlled the critical captive mines.

In the mid-thirties the American Federation of Labor first cracked and then split over the issue of organizational methods and advances. Though charters on an industrial basis were issued to workers in certain of the mass industries, the older unions raided the new ones for members, defined their jurisdiction narrowly, and delayed their organization. Forthwith eight unions in 1935 formed the Committee for Industrial Organization to encourage and promote the unionization of the workers in the mass production and unorganized industries of the nation; though harassed and angered, they still professed a desire to remain within the American Federation. This was not to be. A crescendo of vituperation over principles and personalities ensued. In the words of John L. Lewis, William Green, who had climbed the ladder of union politics to become on Gompers' death the permanent president of the Federation, sat "with the women under an awning on the hilltop while the steelworkers in the valley struggle in the dust and agony of industrial warfare." In the words of one of Green's associates, the C.I.O. was "a gang of sluggers, communists, radicals and soap box artists, professional bums, expelled members of labor unions, outright scabs."

In 1938 separation between the two organizations was definite. The C.I.O. took organized form as the Congress of Industrial Organizations. Here was the dualism that organized labor had dreaded and shunned for decades. Many were the attempts at healing. Instead, ironically, there was even more disintegration. Of the many examples the most spectacular was the pilgrimage of John L. Lewis and his United Mine Workers. First he abdicated the presidency of the C.I.O., then withdrew his union in 1942; four years later he aligned with the American Federation, only to "disaffiliate" in 1947. All the while through a subsidiary organization Lewis attempted to make the United Mine Workers the core of a larger grouping. In spite of dualism, triplism, or multiplicity, both major organizations grew remarkably. In 1948 the Federation had 7,221,000 dues paying members; the C.I.O. estimated its membership at 6,000,000. Furthermore, the major industries of the nation were at last organized.

This expansion was accompanied by a return to a pattern of labor turbulence, so unusual during the prosperous twenties and the depression, that many had forgotten how really normal it was. Still there was another irony. Collective bargaining, according to the stated theory, would quiet labor disputes. However useful this assertion as reasoning to convert the Supreme Court, it was not at once true in fact. The Wagner Act, be it remembered, did not come until 1935; until it was validated by the Supreme Court two
years later it was continually disobeyed by employers; and in any case the legislation could not compel an agreement over conditions of work or recognition. As a consequence there was strike after strike of which a large share was organizational in purpose. This traditional method of economic pressure often took novel forms. Probably influenced by European examples, some of these outbreaks in the heart of the thirties were sit-down and stay-in strikes.

**TRADE UNION MEMBERSHIP**

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Each man represents 400,000 members

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during which the strikers, in possession of the employer's property, hampered its seizure by police or deputies and its operation by strikebreakers. The Supreme Court in 1939 voiced a sharp disapproval of such procedures. Of more enduring importance was the new meaning given to jurisdictional strikes, once mere quarrels between unions over who should do the work. Now governmental encouragement to "unions of their own choosing" and to collective bargaining, coupled with the presence of dual unionism, led to hostility and strikes not by employees against employers but by employees
against employees. Managers often were helpless to still the struggles eddy-
ing around their plants and government officials were beset with accusations
of favoritism as they sought to determine the appropriate bargaining unit,
for the size and nature of that unit often determined the victory for the
A.F. of L. or C.I.O.

Meanwhile the attitude of labor organizations toward politics underwent
rapid evolution. Even before the thirties the non-partisan policy of the
A.F. of L. with all its opportunisms and contradictions had broken down.
The constituent unions had on occasion endorsed specific parties and in 1924
Samuel Gompers, driven to exasperation by the conservative character of
both presidential nominees, persuaded the A.F. of L. Council to endorse
a newcomer, the Progressives and their candidate, Robert M. La Follette.
The dismal outcome of this adventure cooled the ardor for a third party.
Then came the Roosevelt Era. Without doubt, government was benefactor.
Furthermore, the C.I.O., with fewer traditional inhibitions than its rival,
proposed a more aggressive policy on behalf of labor’s political friends. In
successive elections, labor unions contributed to the Democratic campaign
chest, their leaders helped manage political conventions and determine their
choices, and their political agencies instructed the workers what platforms
and candidates to favor and got out the vote on election day. Still even the
C.I.O. firmly characterized these measures as “non-partisan” and “independent”
and discouraged a third party. Though there were exceptions in a few
metropolitan areas, the policies of labor consisted of reinforcing its lobby
with a block of votes. This method it carried to new effectiveness in the
thirties and forties.

In short, the period of dual unionism brought great advances, though it
was not to the taste of perfectionists crying for the unity of all workers
against their exploiters nor administrators who tried to build an island of
order and equity in the midst of troubled seas. On the whole employers were
able to divide and rule only so far as to sign up in their estimation with the
lesser of the two evils, the more conservative union. The company union
practically disappeared. On the other hand the rivalry of labor organizations
for the loyalty of the workers scotched inertia, destroyed complacency, and
led leaders and followers to a progressive series of militant demands for the
improvement of hours, wages, and other conditions. In the nature of the
case, these were often met. For after 1941 war created at the same time a
labor shortage and the necessity for continuous production. Employers oper-
ating on cost-plus contracts were willing to make concessions to their work-
ers, if they could only get them; the government, a purchaser whose existence
was at stake, had to have labor support whether by conciliation or comp-
pulsion.
War and Peace

On occasion President Roosevelt sketched the general form of labor policy. The war was to bring no retreat from the social gains of the New Deal. On the other hand the continuance of labor-management strife was intolerable. To take the place of strikes and effect the peaceful settlement of disputes, the President in 1942 established a National War Labor Board of twelve members, equally apportioned between representatives of labor, management and the public. Though the President and Congress increasingly gave the Board recognition and directives, its area of administrative discretion and the desperateness of the emergency really accounted for its growth in power. Its chairman, W. H. Davis, in response to a series of questions once stated its central objective. “What is the basis upon which a decision is made? ... Is it primarily to get the work done, irrespective of whether there is a just or unjust claim? Is the primary purpose to get them back into war production?” Mr. Davis: “I think that is a fair statement.” By conciliation, arbitration and regulation, the Board set the conditions of labor. If the parties did not accept the decisions, the President could seize the plant and the government operate it. Among the many myths by which the war was run, the notion that workers would not strike against the government was one of the most fruitful. On the whole the taboo worked. Out of the thousands of cases handled with considerable delay during the Board’s life, there were only twenty-five instances of seizure. Unhappily, the frequent defiance of the Board or other conciliation agencies by the railroad workers and miners, both big industries, and the resulting presidential settlements on terms more favorable to the workers than the original ones obscured this general picture.

In practice the Board’s significant decisions dealt with two phases of the labor contract, union security and wages. The former issue involved the closed shop, the union shop, or such compromises as ingenuity might invent. Employers had insisted that the Board must have no jurisdiction on this question; labor leaders were fearful lest the determination of labor conditions by the government weaken the organized labor movement. It was simple for the Board to freeze existing arrangements. To cope with new situations, it resorted to the maintenance of membership device. During the life of an agreement, workers who were members of the union had to maintain their membership in it; a prelude of fifteen days gave them opportunity for withdrawal. Such arrangements, in the Board’s eyes, created a responsible unionism. Just before the end of the war about 9,500,000 workers were under closed, union, or maintenance of membership clauses. Absolutely and relatively, this number was much higher than in 1939.

More involved was the question of wages. If the Board were to block the
demand for increased wages, usually generated by a labor shortage and by the increased prices of the customary war inflation, they had to check powerful economic and emotional pressures. Hitherto the government had set only minimum wages, and that diffidently; now it undertook to determine maximum ones. It need hardly be added that the control of wages, the price mechanism of labor, involved an intrusion into the most sensitive and crucial area of a free economy. Little wonder that the Board, and President and Congress for that matter, moved to the responsibility experimentally. But by 1942 the varied makers of policy had come to the conclusion that wages did affect prices and that both must be stabilized. For a brief interval a formula permitted wages to increase as much as the cost of living had. After that they were to remain fixed, if the numerous leaks permitted by legislation and executive order did not undermine the whole structure. For the Board could remove inequities and inequalities in wages, it could raise substandard wages inadequate for the maintenance of health and decency—appealing but insubstantial criteria—and it could permit increases in order to recruit or redistribute workers in vital war industries. Amidst a storm of recriminations and a shower of statistics about the cost of living, hourly wage rates, and take-home pay, the Board worked on, blocking more raises offered by employers than it granted to labor disputants and increasing the pay of low-paid workers proportionately more than that of the labor élite. After it received genuine stabilization powers in late 1942, it held the increase of hourly wage rates during the war to approximately 13 per cent; average weekly earnings, because of overtime payments, increased twice as much. These achievements were but means to an end, production uninterrupted by labor disputes. On this count the evidence was indeed inconclusive. In general from 1942 on, both the number of labor disputes and of workers involved mounted. The average length of the work stoppage markedly decreased.

With the piecemeal arrival of peace in 1945 the passionate debate over the perpetuation of wartime controls reached crescendo. Whatever the professed philosophy and need, it was soon clear that the various economic interests favored controls for the other fellow and freedom for themselves. The outcome of these disagreements was an unplanned and uneven return to normalcy, though no Harding was in power to christen such an objective. In many ways the outcome was not to labor’s liking. As high-wage war industries curtailed, as overtime and premium payments disappeared, and as “supplementary” wage earners, particularly women and children, left the labor force, take-home pay fell. Average weekly earnings in manufacturing in January, 1945, were $47.50; just over a year later they were $41.15. Mean-
while prices increased. This divergence was the fundamental explanation for the labor upheaval of 1945-46. As demands and threats gave way to strike action, the number of work stoppages and idle workers surpassed the record year of 1919, following the First World War. Though the tumult and violence of the earlier period was, comparatively speaking, absent, two of the strikes presented disastrous threats to the American economy: a two-day strike by two railroad brotherhoods in May, 1946, and practically a full year of bickering and intermittent stoppages by the United Mine Workers. The Truman administration broke the former by threatening to draft the strikers and making wage concessions, the latter by a resort to the courts for an injunction, for the violation of which Lewis and the mine workers eventually paid fines. In both instances the properties had already been "seized" by the government. In sum, this experience reinforced the arguments of those who believed the labor policy of the New Deal had given organized labor an unequal a power as ownership had once possessed. Perhaps only the interposition of the war had prevented the earlier enactment of legislation altering the Wagner Act.

In any case, after the election of 1946 when the Republicans carried Congress, a coalition of the victorious party with dissident Democrats enacted the Taft-Hartley Act of 1947. The statute, a long one, covered a multiplicity of practices. It accepted the desirability of determining the conditions of work by collective agreements between management and unions representing the majority of the workers. Since the unions thus owed a greater responsibility to the workers, organized or not, and to the industry, the Act somewhat loosened the control of unions over the individual wage-earner; provided that unions, taking advantage of the Act's procedures, must file financial and operational statements with the government; forbade the closed shop and permitted the union shop only when a majority of all workers voted for it; and enjoined unions as well as employers to bargain in good faith. Upon certain of labor's weapons, secondary boycotts and sympathetic strikes, it placed a prohibition. Since the strike crisis was in the foreground of Congressional attention, parties to a collective agreement could terminate it only on sixty-days' notice. Here was a cooling-off period. In strikes causing a national emergency by imperiling the national health or safety the President might during a cooling-off period of eighty days enjoin the calling or continuance of the strike. Meanwhile the disputants must utilize the conciliation agencies of the government and a board of inquiry was to be busy investigating the circumstances of the dispute. Before the expiration of the injunction, the employees must vote by secret ballot whether to accept the final offer of the employers. If all this failed, the President was to report to Congress. Or-
organized labor denounced the bill as a "slave-labor" act; its supporters claimed it readjusted the balance of power of the contestants. In any case it did not seriously hamper the unions.

Achievements

By quantitative tests there could be little doubt of the increasing influence of organized labor. Its membership spurted rapidly during the war, mounted more slowly thereafter; but it grew. By 1948 the number of organized workers was 15,694,000. There were half a dozen unions with over 500,000 members apiece. Over 40 per cent of the labor force likely to be organized was organized. Clearly past was the day when the union movement was confined to the skilled and semi-skilled, if indeed those terms had any meaning in modern industry. Figures based upon somewhat different bases illustrated the prevalence of the collective agreement. Apparently there were about 50,000 of them in operation. The most common type was that between the employer and the workers in a single plant. But multiple-plant agreements, industry-wide, metropolitan and regional bargaining and the determination of union strategy by central officers were increasingly important. All in all after the war probably half the workers in private industry were working under the terms of union agreements. In key industries, automobiles, steel, clothing, rubber, cement, coal, construction, and rail transportation, the percentage so covered was 80 or over. The labor union was as much a part of American economic life as the corporation. Its power, size, and aggressiveness after World War II was startling in comparison with its status at the beginning of the earlier conflict.

At the same time the era of war, normalcy, and depression saw an improvement, albeit with interruptions, in the measures of labor's welfare. Average weekly hours in manufacturing industries in 1914 were 49.4; in 1948, 40.1. In some important industries, such as coal, they were lower. In the same period average weekly earnings in terms of money rose from $11.01 in 1914 to $53.15 in 1948. Meanwhile the Bureau of Labor Statistics "consumers' price index for moderate-income families in large cities" had risen from 71.8 to 171.2. The many factors responsible for these changes have been discussed earlier in this chapter or in others. The averages conceal the tendency, though the evidence is somewhat controversial, for earnings to be higher and to rise more rapidly in the heavily unionized industries, at least from 1933 to 1945.

The old test, "conditions of labor," had attained a rich variety of benefits undreamed of or at least unsought by most labor leaders as late as the twenties. In that decade if there were health schemes, retirement allowances, or vacations with pay, employers gave them as a matter of privilege under the new capitalism. In the thirties and the forties such arrangements were em-
bodied in collective agreements as a matter of right. In the mid-forties all but a small fraction of workers covered by collective bargaining agreements had won at least a week's vacation with pay, many had more. In 1948 approximately 3,000,000 workers, predominantly in clothing and coal mining, were under health, welfare, and retirement schemes financed by employers' contributions or royalties upon the product. While some of these gains were in lieu of wage increases, hard to gain because of the war or employers' resistance, labor leaders welcomed them as a device tying the workers to the union which won or administered them. Here was a partial redress to government intervention which many labor leaders still suspected.

Every advance of the labor unions had involved encroachments upon the prerogatives or the "proper" sphere of management, as the managers interpreted them. In the nineteenth century, for instance, employers thought it right they should set hours and wages within the framework of general and specific conditions; they did not share this process with their organized workers. The collective agreement applied to these fundamentals at once. Through union security and seniority provisions it often designated whom the manager could hire, promote, discharge and reemploy or at least the order of his doing so. It specified, through work rules and other means, practices toward piece rates and premium pay, classification of jobs, the rate of work, and the number employed for certain operations. Through the unionization of foremen, it might orientate the interests of this crucial group toward the workers and away from management.

In all this the union primarily pursued its own advantage. For unions were political bodies. Wealthy as some had become and buttressed as they were with bureaucracies of lawyers, economists and research assistants, the officers, as a measure of their competence and as a prerequisite to their continuance in office, had to deliver gains to the membership. Though social welfare and large idealized considerations might govern their action, such lay at the periphery of their thinking. The welfare of the union, or at least of the worker, was identified with the welfare of the community. For American unions were "business unions," proceeding on the whole from the particular to the general and working for more and more within the capitalist system. If this focus of procedure and practice seemed narrow, short-sighted and irresponsible, the same charge could be advanced against the corporation which the labor union had come so much to resemble.
THE foresighted provisions of the Constitution which gave to the Federal government the right to regulate interstate commerce and denied to the state the general power to levy taxes upon imports and exports, and the policy of the nineteenth century which eventually admitted territorial acquisitions into the Union as states on terms of equality with those already there, made it certain that the continental mass of the country should be a single trading area. Though the complications of international boundaries and of distinctions between mother country and colonies were thus avoided, the economic differences between city and country and between sections raised in the field of domestic commerce problems very like those in the foreign one. They were often of similar magnitude. Fortunately, they could be handled with less danger.

From the first the national government had provided a common standard of currency and, after a century and more of recurrent laments about bondage to eastern bankers and to Wall Street, provided in the Federal Reserve System a banking system which ingeniously wedded centralization and decentralization and provided flexible credit mechanisms for commercial operations, including those involving agricultural products. These advances have been described more fully in an earlier chapter. As grievances on this score quieted, those who felt their locality or region occupied a disadvantageous or "colonial" status complained that the transportation system of the nation discriminated against them. This charge was at least as old as the railroad. Before the Civil War, legislators in the eastern states had voiced it; the Granger movement in the Middle West of the seventies had given it pungency and power; the Interstate Commerce Act of 1887 had in large measure responded to the agitation for non-discriminatory and reasonable rates; and the failure to achieve immediate and thorough regulation incited in the nineties the Populist plank for government ownership. On the whole, rates were the central issue in this agitation and the policy which resulted from it. Such rates, it was asserted, must be regulated by the
government. Since railroads were a "natural monopoly," it was folly to rely upon competition to make them equal or just. If these original assumptions were sound, the need for national action early in the twentieth century was certainly acute. Great consolidations and a community of interest between railroads had spread with such rapidity that many feared one man might control the nation's network.

A NEW ERA OF COMPETITION

In the era of war, normalcy, and depression such expectations were suddenly reversed by the appearance of powerful and deadly competitors to the railroad. The resulting competition was so pervasive that it approached chaos.

One of the rivals was the waterway. Once the railroad was thought to have triumphed over water transportation permanently and universally unless exceptional circumstances, as on the Great Lakes or in the coasting trade, made possible its continuance. Now there was a waterway revival and government funds in the millions were poured into the improvement of old routes or the construction of new ones. Behind these expenditures lay the original antipathy of the progressive era for railroads; the occasional demonstration, as during World War I, that the railroads were inadequate for their task; the desire of landlocked communities to secure low rates over routes financed by general appropriations; and the log-rolling habits in Congress where "good fellows" united to aid each other's projects. In the thirties all these explanations were overshadowed, as millions of relief funds were poured into the construction of multi-purpose projects for flood control, reclamation, electric power, as well as better navigation. Since it was difficult to apportion the resulting joint costs among the various factors, the real cost of waterway improvements was somewhat of a puzzle. Whatever the varying explanations for their interest, the devotion to water transportation was as great with Theodore Roosevelt and Herbert Hoover as with the chief architect of the New Deal.

Within the United States the national government, by enlargements and construction, sought to build and improve an inland waterway along the Atlantic and the Gulf coasts. It lavished engineering skill and millions of dollars upon the great arterial waterway of the nation, the Mississippi and its affluents. By the end of the twenties, dams and locks gave the Ohio, a comparatively busy waterway even in the days of railroad dominance, a nine-foot waterway as far as Pittsburgh; within the next decade a channel of similar depth from the Mississippi to Chicago completed a Lakes-to-the-Gulf waterway; and in the forties the upper Mississippi was furnished with a slack-water navigation as far as Minneapolis, the Missouri was canalized as far as
Kansas City, and the T.V.A. opened a nine-foot channel from the mouth of the Tennessee to Knoxville. These miles of navigable water were not intended to revive the glories of the packets but to open a way for huge formations of steel barges moved by steam or Diesel tugboats. In the course of these operations the national government had taken over some state projects. It refused, however, to assume the New York State Barge Canal, also a result of the new ardor for inland transportation. Opened in 1918, this waterway, though it followed the historic route, was more direct than the old Erie Canal and was large enough to handle power barges or tugs. Like other waterways, it was equipped to operate the day and night around.

Outside the boundaries of the nation, the most spectacular fruit of the waterways enthusiasm was the Panama Canal. Although a connection between the Atlantic and Pacific was an age-old dream, the United States became seriously interested only at the mid-nineteenth century. Then the acquisition of California and of Oregon and the discovery of gold in the former turned attention to every possible means of reaching the Pacific coast. Of the numerous proposals for crossing Central America, only the railroad in Panama was then realized. At the end of the century the strategic responsibilities attendant upon the acquisition of islands in the Caribbean and Pacific, the desire to stimulate foreign trade to the west coast of South America and the Orient, and the hope of reviving the sea trade between our Pacific and Atlantic coasts turned new attention to an Isthmian route. After a turbulent interlude of legislative indecision, presidential high-handedness, and engineering incompetence, the United States acquired a canal zone across Panama by procedures careless of international niceties and chose to construct a canal with locks rather than a sea-level "straits of Panama." In all this Theodore Roosevelt, the DeWitt Clinton of the twentieth century, played a decisive rôle. He was also largely responsible for overcoming the initial inertia slowing the project. Opened for routine traffic in 1915, the canal at once confronted the transcontinentals with a hardy rival. This competition Congress cannily insured by the Panama Canal Act of 1912 which forbade the railroads to own or control "any common carrier by water operated through the Panama Canal."

On the whole, the nation's waterways had little effect on passenger travel. They were freight carriers. Though comparable figures unhappily are not available for the whole period, they carried in 1924, 353,139,000 tons, and in 1941, their peak year, 532,948,000. Such totals submerged individual achievements. Increases in the coastal and Great Lakes traffic were not startling and, though in the late thirties the New York Barge Canal came momentarily in sight of the figures compiled on the old Erie, the totals fell back in the next decade. Meanwhile the over-all tonnage carried on rivers and canals
multiplied about three and a half times between 1924 and 1941. Whatever their route, waterway cargoes were highly specialized; they were bulk commodities carried a considerable distance: the coal, ore, and limestone of the Great Lakes, the petroleum and sulphur of the Gulf coast, the coal, coke, iron, steel, and petroleum of the Mississippi and Ohio, the coal and petroleum of the Atlantic coastal traffic, and the lumber and petroleum bound east through the Panama Canal. With a few exceptions like the Panama Canal, they traveled without paying tolls. They chose the waterways, though slow and circuitous, because of lower rates.

As this enumeration of commodities revealed, the carriage of petroleum and its refined products over considerable distances was cheaper by water than by any other agency. But oil fields did not always run down to the sea

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\text{PETROLEUM PIPE LINES 1930}
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nor were all markets accessible to tanker or barge. For these less favored traffics, the pipe line had appeared as an alternate to the railroad as early as the seventies and eighties. Its importance as a rival grew with the expansion of the oil industry, in spite of its limitation to a single product, crude oil. After the late twenties the occasional instances of its use for carrying refined products became a more generalized practice. In 1939 pipe lines carried four and a half times as many barrels of refined products as they had eight years earlier. In the next decade the mileage of pipe lines carrying natural gas was extended to the metropolitan fringe in the Northeast. While the railroads conceivably might have provided bulk transport for oil, they could not do so for gas. The contemporary encroachment of these fuels upon coal deprived the railroads of a tonnage, traditionally the largest single mainstay of their traffic.
The Motor Revolution

The waterways were hoary with history, but the automobile in the era of war, normalcy, and depression had mostly a present and a future. For it was not until 1913 that the number of motor vehicles registered in the United States crossed the million mark and 1916 that the national government began the planning and financing of a national highway system. These twin events signalized the end of a period of experimentation. It had begun in the late decades of the nineteenth century when Europeans had invented the internal-combustion engine driven by gas exploded by an electric spark, and had harnessed this power plant to the carriage. In the nineties American pioneers, among them Henry Ford, had tried their hand at the problem. Ford built an automobile whose carriage ran on bicycle wheels, whose motor was a piece of gas pipe, and whose flywheel was of wood. A decade or so of disordered change ensued. By the time of World War I a standard car had evolved. The bewildering variety of cylinders, mounted under the hood, under the car, or over the rear axle, had been reduced to four easily accessible under the hood; gear and chain drives had given way to a single shaft; magnetos produced the spark, water cooled the engine, and a three-speed sliding gear transmission shifted gears. To these specifications the Ford was the most important exception, for he dominated the field. On Model T's the driver engaged the two forward speeds through the manipulation of a foot pedal and could attain, though not prudently, maximum speeds of forty miles an hour.

After World War I, a series of technological refinements and accessories popularized even further the new mode of transportation. The car was given a miniature electric plant which powered the ignition, lighting, and the self-starter. The last was of supreme importance, for hand cranking involved so much strength, skill, and danger that women were infrequent drivers and the winter use of the car involved a fatiguing and perilous spinning of the engine. Another handicap, the fabric tire which wore out quickly and was expensive, was superseded by casings which lasted longer because of their chemical compounds and lower pressures, the latter contributing in turn to increased riding comfort. The open vehicle, which in spite of its "one-man top" and sides gave little protection, was replaced by the closed car. This model, once an expensive custom-made rarity, became the mainstay of the industry. The enclosed room on wheels facilitated all-weather and all-season use. Speed increased as engines grew more powerful and fuels graduated into the category of "high-test." Furthermore, the application of mass production to the automobile for years progressively lowered prices. In 1904 the Ford car sold for $1,200; in 1924 the Model T touring car without self-
starter was priced at $290. Though automobile prices after the early thirties greatly increased, installment purchasing and the second-hand car business set an army of purchasers rolling. The right to a car became as inalienable as that to life, liberty, and the pursuit of happiness. Indeed, it was synonymous with them.

Although the bicycle preceded the automobile as a stimulus to improved roads, the history of the modern highway system is closely interlocked with motor vehicles. For the wider use of the automobile depended upon engineering innovations, the most elementary of which was a hard-surfaced road, upon the construction of through routes, and upon the coördinated planning of a national road network. A start had been made by some states, particularly in the East, which had placed state agencies above the town and county authorities once solely responsible for the construction and maintenance of roads and had made state appropriations for a state highway system. Then in 1916—an important supplementary act came five years later—the Federal government reentered the field of highway construction abandoned nearly a century before, by matching state appropriations in various proportions with Federal grants-in-aid. In return the national government insisted that the states should establish highway departments and maintain the aided highways. The Secretary of Agriculture, in coöperation with these highway departments, was to select a main system of interrelated highways.

This division of authority obscured a significant contemporary development: a change in the fashion by which the states raised their highway funds. Originally they had relied upon general taxation and the sale of securities. As the automobile age matured, they turned increasingly to the conception of the turnpike era that users should pay for the highways. The first step was fees and licenses for motor vehicles; the next was the gasoline tax, introduced by Oregon in 1919 and by 1930 adopted by every state in the Union; the next was the charging of tolls on turnpikes financed by the state rather than private corporations. Wherever the money came from, the mileage of the national network of primary roads in 1945 was 339,000, a figure considerably greater than the railroad mileage, if yards and sidings be ignored.

Though they sagged briefly during the depression thirties and World War II, the figures of motor vehicle registration increased spectacularly from 1,258,000 in 1913 to 40,622,000 thirty-five years later. Within this over-all expansion, the passenger automobile at first predominated. This flexible means of individual mobility went on to supersede the horse, increase the sheer bulk of travel in the nation, and diminish railroad passenger travel. In the twenties it was joined by motor busses whose accelerating importance was so marked that in 1948 there were 50 per cent more in operation than
before World War II. Coupled with the private automobile, they wrecked
the interurban electric railway, largely superseded the trolley in metropolitan
areas, and challenged the railroad for short- and medium-length passenger
hauls. In its business organization, the bus followed the conventional path
toward consolidation. Within a decade, 1929–39, the number of operatives
in intercity bus operations nearly halved; in the latter year a single con-
cern, the Greyhound Corporation, owned 13.5 per cent of all busses in the
business.

Meanwhile the motor truck, in the early twenties the Cinderella of the
industry, became so vital a part of the transportation system of the nation
that during World War II government regulations permitted its manufac-
ture in far larger numbers than that of passenger cars. In short, in 1948 there
were 53 per cent more registered trucks than seven years earlier. Of all its
advantages, the most important was flexibility. It reached numberless com-
munities never on a railroad; it moved goods directly from the shipper’s plat-
form to the business place of the purchaser or distributor; in construction
and agriculture it brought power and despatch to the site of the job. Though
there were large-scale owners and fleets of multiple-wheeled trucks and trail-
ers, veritable behemoths spinning on transcontinental missions, such was not
the real scale of the trucking business. Motor transportation of freight was
conducted primarily by small carriers with relatively small vehicles over
comparatively short distances. In the mid-forties the nation’s four-and-a-
half million trucks were in the hands of more than three million individual
owners.

Wings over Transportation

The airplane, a contemporary of the automobile, developed more slowly
and in a quite different fashion. For tardiness the explanation was simple:
the immense inventive and engineering problems of flight. Though men had
dreamed for centuries of conquering air, it was not until 1903 that two
Middle Western bicycle repairers, Orville and Wilbur Wright, flew in any
practical fashion in machines heavier than air. Their interest in this prob-
lem had been aroused in the nineties and for several years their own advance
epitomized the previous long years of experimentation. They read the works
of Otto Lilienthal, a German, and Octave Chanute, an immigrant American.
Both of these pioneers had constructed small gliders and, launching them-
selves into the wind from little heights, had learned something of air pres-
sures, the proper shape and area of wings, and the methods of maintain-
ing balance in flight. The Wrights also read the works of Samuel P.
Langley, an American scientist and experimenter. He had flown model
planes with tiny engines for considerable distances, but his larger machine,
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built after years of preparation, tumbled into the Potomac from its launching platform "like a handful of mortar." The Wrights built gliders and learned to fly them on the deserted sands near Kittyhawk, North Carolina. Perhaps the most important contribution of their motorless planes was the improved devices for warping the wings mechanically in order to achieve a lateral stability. In their crate of wood, wire, and cloth the brothers then installed a light internal combustion engine of their own construction and in December, 1903, were able to telegraph their father that the strange contraption had left the ground under its own power, covered a distance of 284 yards, and alighted without accident. Five years later, when they demonstrated by a series of short flights in this country and in France their mastery of the air, other Americans and Europeans were also flying. No other invention has done so much to erase from the mind of man the word "impossible."

Only gradually was it clear that the outstanding contribution of this new means of transportation was speed. The early airplanes were not fast. A man running along the ground kept pace with the Wright's first flights and not until 1919 did the speed of the airplane officially surpass the record of a racing automobile, 131.7 miles an hour, fashioned several years earlier. Progress continued, however, until in the forties flight on occasion was faster than sound and commercial planes were regularly achieving 250 miles an hour. Such accomplishments were made possible by the advances in engine design, for power after all kept the plane in the air and sent it forward. New metals and alloys lightened the engines without loss of strength; the radial air-cooled motor, much lighter than one cooled by water, became standard equipment; and high-octane gasoline in the thirties increased the flow of power. Meanwhile the conformation of the plane was so altered as to reduce drag. The wires and struts and finally the extra wing of the biplane gave way to a huge single wing, internally braced and clothed with a tight metal skin. The engines, with the invention of a perfected cowl, were embodied in the wing itself. The landing gear retracted into the belly of the plane. All the while the carrying capacity, a vital business factor, increased.

The use of the airplane involved, furthermore, the mastery of a new art, aerial navigation, somewhat akin to maritime navigation, though it was three- rather than two-dimensional. The first pilots either looked overboard for familiar landmarks or in obscure weather ran by dead reckoning, homed to earth by the glow of city lights through the clouds, or jumped overboard with parachutes when the gas ran out. The certainty and safety, which had to be joined with speed if flying were to be anything else but sport and fair-weather daytime movement, depended upon landing fields, upon the lighted airways provided in the twenties, and upon the development of instruments whose panels sheathed the operating rooms of commercial liners. Such
flying aids provided automatic pilots which, in response to the invisible beams of a radio beacon shot out from a ground station, kept the plane on its course and made the illuminated airway partially obsolete; and later utilized other beams to guide the planes down the long glide to the runways of shrouded airports. But instruments were no substitute for the training and carefulness of personnel. Though experts bickered over the proper standards for measuring safety, the passenger death rate per 100,000,000 miles on scheduled planes was by 1940 less than in automobiles and busses and higher than on the railroads. The big insurance companies withdrew their discriminations against air travel.

The history of every new industry is turbulent; that of airplane transportation was peculiarly so. For one thing two World Wars diverted or hampered the course of civilian flying. At the same time the building of planes boomed, government funds financed wasteful but promising experiments, and thousands of men were trained to fly, service, and manage aircraft. Even in peace the indispensability of men and machines for military operations shaped government policy. For, as it had in other transportation fields, the government took a hand in the new one. In the mid-twenties it spurred the development of commercial aviation by contracting with private companies for the carriage of the mails. In the Hoover administration Postmaster-General Brown, operating under new legislation, utilized payments for the mail and his vision of what the airplane structure of the nation ought to be to compel the private companies to carry passengers and to coalesce independent and often reluctant operators into great and partially competitive consolidations. The domestic air-route pattern of three or four transcontinental operators and additional north and south lines took shape. In general, air transport connected the great urban centers which provided the mail and passengers, and in the forties the express and the freight. While air-mail payments shrank in relative importance, passenger rates per mile declined from 12 cents in 1929 to just under 5 cents in 1945 and the revenue passenger miles flown multiplied about forty times. Yet compared to its contemporary the motor vehicle, the airplane seemed in its infancy. Its future was before it.

The Railroad

The competitors of the railroad had certain characteristics more or less in common. The railroad as a common carrier owned and maintained terminals, roadbed, power, and rolling stock. On the other hand waterways, highways, and airways were not the property of those who used them; their improvement and maintenance was a government function. Nor were those who used them necessarily common carriers. Though some producers and
shippers owned their own freight cars, this arrangement was relatively unimportant. On the other hand, oil-men and refiners built and operated the pipe lines over which they despatched their own products; steel companies owned ore carriers and petroleum corporations barges and tankers; the private automobile was more important than the bus, the private truck more numerous than the public carrier, and the private plane had a rôle, though definitely subordinate to that of the passenger carrier.

The impact of these competitors upon the railroad was impossible to evaluate with complete precision, for trends, apparently enduring, were suddenly upset by special factors such as war. Thus the second world conflict, with its rationing of gasoline, rescued the railroads. In spite of these random disturbances, figures of total passenger miles compiled by various means of transportation showed that after 1920 the passenger business on the railroads, even in absolute terms, began to fall away. On the other hand their freight business measured by ton miles reached a high plateau during the twenties. Then it fell precipitately in the depression thirties. The traffic moving by pipe lines, inland waterways with the exception of the Great Lakes, and trucks suffered no comparable decline. These changing positions did not mean the railroad was obsolete—far from it. In 1939 freight trains accounted for very close to half the ton mileage of the country and passenger trains for approximately two-thirds of the mileage of public carriers in intercity business. On the last score the private automobile, not a public carrier, was of course far ahead. These figures measured more than diversion, they measured development. Though those traveling by commercial plane might have gone by rail in the lack of the former, the passengers in private automobiles were diverted from trolley cars, the horse and buggy, and from the front porch, the front room, and the back yard. The motor quickened localities and functions never touched by the railroad. Furthermore, the economic development of the nation as a whole, for which the railroads and their competitors were only in part responsible, shaped the national traffic pattern. Power shot along transmission lines from hydro-electric installations threatened the coal trade; engines and furnaces, consuming the various distillates of petroleum furnished by tanker and pipe line, menaced coal-carrying roads; and the migration of manufacturing, particularly to the South and West, and its dispersal in branch plants, contributed to the economic autonomy of American sections and the decline of the long haul.

To all this the response of the railroad corporations, according to the classic conceptions of American enterprise, should have been the absorption of competitors, an outcome in many instances forbidden by legislation, or a reduction in rates to a level where they would “get the business.” To effect the last, a reduction in costs was desirable. Certainly the effort was made. As
railroads abandoned trackage, the mileage owned shrank from a high of 254,037 in 1916 to 225,806 in 1947. There were curtailments of service. Technology was summoned for economies. Freight cars increased in capacity; larger locomotives with greater tractive power pulled longer trains; the lost time of turn-arounds and of partial or tardy loading was diminished by the automatism of freight yards and the loss of short-haul traffic to trucks; engines powered by electricity from third rails or overhead wires, or Diesel engines harnessed new torrents of power to long trains and achieved savings in maintenance and fuel consumption. In 1945, a war year, the roads were doing a business markedly greater than that three decades earlier with a third fewer locomotives, 30 per cent fewer passenger cars, and a quarter fewer freight cars.

Or the roads might reduce their payments to security holders. Unfortunately, over half their capital was in bonds bearing fixed interest. On occasion such charges were brutally liquidated by receivership and bankruptcy; in 1938 the mileage of roads in this unhappy condition surpassed that in the dismal railroad panics of the mid-seventies and nineties. Or the roads might reduce their payments to workers. A cut in wage rates, however, was difficult. In the twenties and thirties railroad labor was more highly organized than before and, through the necessity for the uninterrupted operation of the railroads, possessed a strategic bargaining weapon which on occasion it used in spite of the elaborate institutions for mediation and delay built by legislation. The only recourse was an increase in labor productivity. In 1945 the railroads performed their greater tasks with 1,439,000 employees rather than the 2,076,000 of 1920. Even this attainment failed in the thirties to provide dividends on half the common stock in railroad enterprises.

The Helping Hand

From time to time spokesmen of management, and labor for that matter, complained that the railroads were faced with competitors subsidized by the government or those free to operate without government regulation. Even if there were justice in the former charge—government had lavished favors upon railroads in the nineteenth century—there was little evidence that regulation by the Interstate Commerce Commission was a current handicap. Indeed, the legislation under which the latter operated in the era of war, normalcy, and depression sounded a quite different tone from earlier, and perhaps hostile statutes.

From 1920, when one Transportation Act put an end to the wartime operation of railroads by the government and returned them to owner-management, until 1940 when an Omnibus Transportation Act hoped to weld the variety of transportation agencies into a coördinated and efficient sys-
tem, there was a marked reluctance to rely upon competition to benefit either the railroads or the general welfare. For decades observers had derided the feasibility and wisdom of inter-railroad competition, and government management between 1917 and 1920 had shown, in spite of the deficits incurred, the efficiencies in the joint use of terminals, cars and locomotives, in the consolidation and simplification of tariffs, and in the elimination of duplicate services. Though there were some who wished to continue this experiment into the years of peace, public opinion was in no mood to tolerate so radical a departure from accepted ways of doing things. Nonetheless, Congress was willing to adopt in the Transportation Act of 1920 a modification of the prohibition against pooling, as old as the original Interstate Commerce Act of 1887; to grant to the Commission the power of determining minimum rates, a meaningless provision unless “cutthroat” competition might thereby be abated; and to impose upon the Commission the responsibility of devising a plan by which the railroads of the country might consolidate into “competitive” through systems. That the suspicion of inter-railroad competition persisted was evident as late as 1948, when Congress exempted from the Sherman Anti-Trust Act rate agreements between carriers provided the Interstate Commerce Commission found they accorded with national transportation policy.

The encouragement of railroad consolidation in 1920 was also motivated by an old dilemma of rate-fixing: how to set rates which would yield the desired return upon the investment in them irrespective of their different earning capacity. It was hoped the consolidation of weak with strong roads would eventually iron out this complexity. Pending that attainment, the excess earnings of fortunate roads were to be recaptured by the Interstate Commerce Commission. Utilizing a more workable rate base, the Commission was to set rates yielding a “fair” return, in 1920 set provisionally at 6 per cent, upon the aggregate value of the property. In short the rate-making process focused upon the investment in the roads. This was a preoccupation of long standing. Courts emphasized it in their decisions; Congress had authorized, as we have seen, just before the war a physical valuation of the railroads; and in the Transportation Act of 1920 the Commission was given the power to pass upon the issue of new securities, the base of future rate making. Only a fair return, it was said, would tempt capital into the reconstruction and re-equipping of this essential transportation system.

In the quarter century after 1920, the bright promise of these policies dulled. The recapture of excess earnings proved so contentious an issue that a statute in the early thirties repealed the authorization. Though there were many ingenious plans for consolidation, owners and managers of strong roads were not eager to serve as wet nurses for weak ones and neither the
Interstate Commerce Commission nor any other agency could compel them to do so. On this score of sanctions the Omnibus Transportation Act of 1940 was even more nerveless than its predecessor of 1920. The hope of setting rates to yield a fair return fluttered haplessly for years through the fog shrouding the meaning of value. In their vernacular, the Commission preferred the original investment in the roads; the Supreme Court, paying reverence to Smyth v. Ames, thought investment should reflect "present" or reproductive value. Before these concepts could be reconciled, Congress substituted other standards for rate fixing. Whatever statutes might prescribe, rate regulation in practice emerged as an undertaking largely directed to rescuing the railroads from deficits in costs of operation. On this count labor costs, due to wage rates or working rules, played the largest rôle. From World War I, when the government in part took over the railroads to inaugurate without delay the higher rates essential to meet higher wages, to World War II when wage increases automatically led to appeals to the Interstate Commerce Commission for increased rates, the trend was unmistakable. Railroads had become not only a transport agency but also a means of paying wages.

Long since national regulation had gathered in the outstanding competitors of the railroad. As early as 1906 the Hepburn Act brought petroleum pipe lines under the suzerainty of the Interstate Commerce Commission. In 1935 the Commission was given power over motor carriers and five years later over carriers on the domestic waterways of the nation. Over these newer agencies, the Commission now exercised in general the array of powers once confined to the railroad network: the determination of just and reasonable rates, the prohibition of undue discrimination between persons and places, the promotion of safety, the approval or disapproval of mergers, acquisitions, or other forms of control, the imposition of accounting methods. Symptomatic of the reluctance to approve a brawling, active competitive order was the requirement that entrance into the public transportation business must wait upon a certificate of public necessity and convenience issued by the Commission, even the commodities carried might be designated; that these new agencies and the Commission should set minimum rates; and that the national transportation system should recognize the "inherent advantages" of each method of transportation and avoid "unfair or destructive competitive practices." Although there was considerable pressure to allot aviation to the Interstate Commerce Commission, the task was instead passed about or divided among various executive departments until 1938, when an independent agency was set up for the purpose. Two years later this became the Civil Aeronautics Board. The Board had searching oversight in matters of safety, set rates including those for mail, determined, through certificates of
convenience, the routes and who should fly them, forbade or authorized the abandonment of service, and regulated mergers and consolidations.

In short, so great were the powers given to regulatory commissions and so embracing were the objectives for which these could be used, that it was an error to designate them as “regulatory.” Actually they were planners of a transportation system. If this function were to be fulfilled, the competitive system had to be stiffened into order. During the period in question, in contrast with the early movement for regulation, neither shippers nor travelers generally pressed for such an outcome. With appropriate alterations for time and circumstance, the demand arose from advocates of planning, investors in railroad securities, large aviation companies fearful of competition, railroadagements anxious to slap down the motor carriers, and employees, almost the greatest apostles of stability, since they associated change with unemployment.

**The Disappearance of One World**

As for trade and investments abroad, the later nineteenth century had blessed them with an orderly and efficient world system. Its chief features were memorable. Since the currencies of the great trading nations were convertible into gold, the currency of one nation could be converted into another at a comparatively fixed rate of exchange. If the outflow of payments for imports, interest on foreign loans, and for services rendered by foreigners exceeded the inflow of payments for exports, investments made from abroad, and for services provided by fellow nationals, an export of gold discharged the balance and the consequent domestic adjustments of credit policy, interest rates, and price levels were permitted to effect a redress of the unbalance and an eventual equilibrium. In brief, domestic economy was permitted to respond to an international situation. Nor should this rough summary leave the impression that international trade and investment was a simple reciprocity between two nations. On the contrary, both were complicated, ramified, multilateral. Excess in one relationship was compensated by deficiency in another. In the commercial treaties of this period, the universal presence of a most-favored-nation clause, by which concessions granted to one nation were generalized for the others, both aided and reflected current arrangements. Furthermore, private enterprise managed this one-world economy. Though governments might enact tariffs and promote and protect foreign investments, individuals and corporations, not governments, made foreign loans, and individuals and corporations, not government agencies, exchanged goods. The ruler of this system was Great Britain. London was the world capital and the peace of the era was a Pax Britannica.

Two World Wars, the second far more damaging than the first, and the
intervening depression made rubble of this international order. Wars and
the peace treaties or agreements which followed them rearranged the paths
of world commerce and, more important, the productive facilities of the
world. Thus the movement of armies and air armadas wrecked the indus-
tries of Germany, Russia, and Japan, or the relocation of boundaries trans-
ferred from one nation to another coveted industrial or natural resource
areas. In neutral countries or in combatant ones outside the reach of con-
quest or devastation, war markets fanned agricultural, mineral, and metal
production to record heights and spurred the manufacture of machine tools,
munitions, and transport equipment, and of the iron and steel which went
into them. Submarines and blockades rearranged the customary sea routes.

These war interchanges had to be financed. Combatants, after borrowing
to the limit at home, sought loans abroad or secured credits which were
gifts rather than loans. With the peace the victors exacted reparations in
kind, for instance coal or machinery, or the transfer of astronomical sums
of money. All this substituted state policy for private enterprise. Reparations,
war debts, lend-lease, and Marshall plans were obligations not between
individuals but between governments. Furthermore, the perilous disloca-
tions of war convinced nations that they had to employ policy in behalf of
economic self-sufficiency or autarchy. The urgency varied all the way from
Great Britain, menaced by wartime starvation, to Brazil, made uncomfortable
by the interruption of her commerce with North America.

These compulsions toward economic nationalism were reinforced by the
increasing popularity of the idea that it was the peacetime obligation of
the state to promote aggressively the welfare of its citizens, particularly in
their capacity as producers and workers. Though Russia, incident to the
Bolshevist revolution, had placed in the twenties her foreign trade under
government monopoly, it was the depression of the early thirties that
hastened other nations, though generally not so far, along the same path.
The central fact was the cataclysmic world-wide decline of prices. Producers
could not find profitable markets, millions were unemployed, debtors could
not discharge their indebtedness—these familiar facts had an international
as well as a domestic bearing. They involved imports, exports, currencies
and exchange, foreign lending and foreign borrowing. Though stabs were
made at international solutions through the League of Nations and other-
wise, the preference for national salvation through national policy pre-
vailed. If these dislocations had been stretched over decades, the interna-
tional economic order might have evolved to meet them. As it was, the
revolutionary and emergency character of the age meant that international
commerce and finance lacked the clear long-time trends of an earlier period.
Instead their evolution was episodic and explosive. The resulting lack of con-
fidence in turn unsettled any equilibrium. Thus billions of dollars in "hot money" rushed from country to country and from financial center to financial center, searching to harvest speculative gains or to escape the insecurities of devaluation, the outbreak of a war, or the onset of restrictive regulations.

Relatively speaking, the United States neither invented nor initiated the details of the new international economic order. It originated in central and eastern Europe and spread in a diluted form to western Europe, Japan, and the Americas. This economic nationalism, as it had earlier, relied upon the protective tariff. Even before the international collapse of the thirties, countries were raising duties, particularly to protect their native agricultures, and the process continued until World War II. A new refinement was to levy lower duties on imports from regions taking large exports, for the stimulation of exports in this fashion and by subsidies was another mark of the thirties. But as the tariff proved singularly inadequate for the emergency, nations increasingly adopted the regimentation to which the emergency of World War I had accustomed them. They now placed quotas, rigid or flexible, upon the importation of selected commodities, or even more novel, resorted to the control of foreign exchange. Countries, whose credits in foreign countries were diminishing and who were shipping gold to meet their balances, hesitated to take at home any or all of the measures needed to reverse this situation: that is, to raise the domestic interest rates through discount or other central bank policies and thus, it was feared, check business expansion and lower prices. Instead some abandoned the traditional convertibility of their currency and decreed new exchange rates at devalued and sometimes multiple levels. Others kept a sort of nominal or fairy-tale convertibility. In either case they established stabilization funds, compelled citizens with claims on foreign exchange to sell them to the government, and rationed these acquisitions to the pursuits and purposes, among importers for instance, with high priority. Not only did exchange controls diminish imports to the amount which could be paid for; they frequently limited the sums which tourists could carry from the country and restricted the remission of interest payments to foreign investors.

Aside from their explicit restraints, the sheer mass and complexity of these measures burdened international commerce and finance. Licenses, permits, delays, discouraged even hardened profit seekers. Since loopholes continually had to be closed and the measures of one nation were redressed by the counter-measures of another, the new protectionism was cumulative. Applied in a limited area, it was soon extended to a large one; reprisals followed reprisals at continued higher and more restrictive levels. To keep alive the exchange of goods and the flow of capital which even the most ardent apostle of autarchy admitted was partially necessary, nations regressed to a more
primitive form of commercial diplomacy. Two countries would negotiate
an understanding for bilateral trade and exchange relationships; such were
less flexible and free than the most-favored or multilateral arrangements of
the pre-war era. Great Britain, once the high priest of the free, private enter-
prise system in international economics, compromised with the trend. In
1931 she abandoned the attempt to keep the pound at the parity set after the
war and allowed it, without extensive exchange controls, to seek its natural
level. In 1932 she deserted a comparative free trade system for a protective
tariff—later the rates were raised—and in the Ottawa Agreements admitted
free of duty most goods from the Colonies and Dominions, secured vari-
ed advantages for her exports to the Dominions, and sought to advance
reciprocal preferences throughout the whole imperial structure. In 1932 and
after she also adopted import quotas on a small scale. So cogent an example
was bound to compel imitation. It had overwhelming meaning for the
United States. During the prosperous twenties 41.9 per cent of our exports
had gone to Great Britain, her Dominions and colonies; 33.4 per cent of our
imports came from the same sources.

**American Commercial Policy**

Since nations knew from first-hand experience no other system of interna-
tional trade than that of the nineteenth century, the unconventional mea-
ures taken during World War I were “emergency” ones, and the return to
normalcy after Versailles was expected to involve a return to the interna-
tional gold standard. As early as 1919, therefore, the United States abandoned
its restrictions on the export of gold and by the middle of the next decade
the international gold standard had been, for all practical purposes, uni-
versally restored. Diplomacy and international agreement on such subjects as
German reparations had been a necessary prelude to the achievement. The
continuing responsibility for the operation of the system was, however, in
the hands of the central banks, especially those of France, England, and the
United States. Officials and governors of these institutions shuttled back
and forth across the Atlantic and visitors of this sort to America’s shores
were frequently in conference with the directors and experts in the Federal
Reserve Bank of New York and with the Federal Reserve Board at Wash-
ington. The American policy-makers facilitated the return to gold through
the setting up of credits for foreign central banks and through the manipulation
of the discount rate in such a way as to prevent at critical times the
flow of gold to the United States. Even in the late twenties, when all seemed
fair weather, the latter policy involved dilemmas. Thus, if the Federal Re-
serve System set a high interest rate to discourage loans for speculative
purposes on Wall Street, the new rate at the same time might tempt from abroad funds which should have remained there.

With the depression these difficulties multiplied. When England left the gold standard in 1931, the Bank of France which thereby lost heavily on its balances in Great Britain decided the path of safety lay in converting its balances everywhere into gold. For this and other reasons foreign runs upon the Federal Reserve System drained gold overseas; measures to prevent it, short of going off the gold standard, would have interfered with the cheap-money policy which the administration approved as a means of fighting the domestic depression. By Herculean efforts, including an amendment of the Federal Reserve Act, the Hoover administration managed to maintain low interest rates and keep on the gold standard. In the words of the President in 1932 we held to the latter because we were “fighting to hold the Gibraltar of world stability, because only by holding this last fortress could we be saved from a crashing world, with a decade of misery.” Soon thereafter the American banking system, as we have seen, collapsed because of domestic pressures.

Then came “Doctor New Deal.” Roosevelt first closed and then reopened the banks, and after six weeks of hesitation took the nation off the gold standard. The reasons were explicitly, not to say painfully, unveiled to a world conference summoned in 1933 to further international monetary stability and the revival of foreign trade. Roosevelt informed this gathering that stable international exchange rates were “old fetishes of so-called international bankers” and that the plan of the United States to raise domestic prices through currency management was “the most important contribution it can make.” In brief, the national emergency had triumphed in the United States as elsewhere. A few months later in January, 1934, when the gold content of the dollar was stabilized, the management of the foreign exchanges was in the last analysis entrusted not to the Federal Reserve but to the United States Treasury which could buy and sell gold bullion and permit the banks to import and export it. In general, the pieces of the old international order now settled into three blocs, a sterling, a dollar, and a gold one—in the last France took the leadership—within which the exchanges were tied to the dominant currency but between which shifting exchange relationships prevailed. Finally in 1936 Britain, France, and the United States signed a Tripartite Monetary Agreement enabling France to devalue her franc. The signers expressed a wish for stabilized exchange relationships. Throughout the whole period the United States never employed on a comparable scale the tight exchange controls to which so many European and Latin American countries had contemporaneously resorted.
On the other hand, in its use of the tariff, the chief reliance of American commercial policy during the inter-war period, the United States partially set the pattern for later European practices. Particularly was this true in the Republican twenties. In a rough way, the party's policy amounted to "exports good, imports bad." The Department of Commerce, under the secretaryship of Herbert Hoover, bustled to promote the former. Commercial attachés and trade commissioners scoured foreign countries to detect markets and the information was at once relayed to American producers who now directed inquiries by the thousands a day to the Department. Naturally enough, Hoover pronounced his own work good and a colleague informed a convention of exporters that, "Mr. Hoover is your advance agent and Mr. Kellogg [Secretary of State] your attorney." On imports two tariff acts, the Fordney-McCumber of 1922 and the Hawley-Smoot of 1930, raised rates to new high levels. They were a response to the demand for the protection of agricultural interests, already noted as a common objective abroad, to the drive for national self-sufficiency in case of war—the chemical schedules in 1922 were a case in point—and to the desire to keep industry functioning as a way of employment, for be it noted both acts were passed at a time of depression. They were also "scientific." Their rates were "to equalize differences in costs of production in the United States and the competing foreign countries." Since it was realized this complicated obligation required continuous attention, impossible for Congress, the President could raise or lower rates to the extent of 50 per cent, after investigation and report by a Tariff Commission.

At the time numerous and ignored critics pointed out the impossibility of this program. An enlargement of exports required an enlargement of imports; creditor countries, for such the United States was becoming, must receive interest payments in the form of imports; all these were the lessons, so it was said, of experience. These were the sentiments of the New Deal. To reconcile them with the promotion of exports, for which the new administration was as eager as the Republicans, the former proposed to induce foreign nations to abandon restrictions against us by lowering our tariff restrictions against them. The chosen means to this end were reciprocal trade agreements. In return for negotiated concessions from the other signatory to such an agreement the United States might raise or lower its existing duties by as much as 50 per cent. The concessions were then extended to all other nations. The power to make such agreements, first granted to the Executive in 1934, was renewed from time to time as late as 1949. By the mid-forties only 37 per cent of dutiable American imports still paid the Hawley-Smoot rates.

The effect of the program upon the volume and direction of American commerce cannot be measured with precision; so many other factors were
involved. Undoubtedly, with its emphasis upon lowered duties, liberalized quotas, and fewer restrictions, and upon multilateral trade, the reciprocal agreements pointed in the direction of a freer commerce. In many respects, particularly in application, American policy was not the sharp contrast to the contemporary programs of other nations. As in Europe and elsewhere the American tariff became an administrative rather than a legislative one. Sometimes it explicitly set quotas upon imports into the United States and more frequently did so through redefining tariff classifications. Rather than inducing other countries to drop their rationing systems, it often gained for the United States a larger share of a still hampered trade. Moreover, the prominence given to the reciprocal trade agreements concealed the extent to which the United States was in fact laying quotas upon imports and stimulating exports by subsidies. These will be noted in a later connection.

In spite of such reservations, the United States followed a commercial policy of relative freedom. It could afford to. The direct destruction of war did not touch it. Its economy was continental and to a remarkable degree self-sufficing. In contrast with a century earlier, foreign commerce was an incident. In 1929, a year of flourishing international trade, the value of imports was only 5 and of exports 6 per cent of America’s national income. For the United Kingdom the figures were 25 and 17. In the light of this comparison, the oft-cited explanation for American policy, that she was now in the position of nineteenth-century Britain, an industrial and creditor nation, and must needs adopt the same program, required explanation. A description of our international position, as trader and investor, was prerequisite.

The Flow of Trade

The increase in the totals of American foreign commerce was undeniable. By a quantity index, fairer than one based upon shifting dollar values, the export trade of the United States multiplied roughly three times between 1913 and 1947; in the same period by the same test import trade multiplied twice. As these figures suggest, the nation had throughout a surplus of merchandise exports over similar imports, a “favorable balance of trade” according to customary mercantilist notions. Mere increases, however, concealed the exceptional vacillations in the totals of foreign commerce. During war, America’s rôle as the greatest neutral or the most untouchable participant was a shot of adrenalin to the export trade. In the years, for instance, between 1938 and 1943, the quantity index increased from 110 to 293. The trend was partially prolonged into the period of immediate reconstruction. On the other hand, depression was an unwelcome sedative. Between 1929, a peak year, and the trough ones of 1932–33, the export index sank from 132 to 69. Whether rising or falling, the foreign trade of the United States attained in the world
setting during the inter-war period an amount roughly equivalent to that of the United Kingdom, though not of the British Empire.

As an exporter, the experience of the United States continued into the era of war, normalcy, and depression the trends foreshadowed toward the end of the earlier and more peaceful period. The country remained a shipper of raw materials. If it had no coal trade like Britain’s, it had one in petroleum. More distinctive were the exports of agricultural commodities, like tobacco and cotton, and of foods, like livestock, wheat, and flour. Such articles faced a highly competitive situation. Since most could be graded and stored, they achieved almost a world standardization. The market for them was highly inelastic; increased production at lower prices did not secure a corresponding increase in demand. American exports were, moreover, not generally destined for the undeveloped or immature economies of the world. On the contrary, these very regions competed with the United States in supplying the markets of the highly industrialized nations of western Europe and Japan, which as we have seen, were attempting to develop an agricultural self-sufficiency by tariffs and other devices.

Though war interrupted the depressive effect of these factors, American farm exports continued to decline. In the twenties livestock and grains slipped, and by the mid-thirties the export quantities of the former were but a quarter of what they had been before World War I and of the latter but a seventh. Cotton and tobacco resisted for a moment, but in the thirties the former so felt the impact of new conditions that toward the end of the decade exports sank to nearly a half of what they had been ten years earlier. This traditional staple of America no longer retained first place in American exports or its historic dominance in the world’s markets. In 1938 American cotton supplied only a fifth of foreign consumption, whereas in 1928 it had supplied 47 per cent. Though the reasons for this decline ranged from technological changes facilitating the use of a shorter staple cotton than the American to the inroads of rayon, foreign-cotton users were increasingly securing their supplies from Egypt, India, and Brazil. The explanation was that American protective tariffs made the exchange of goods for cotton expensive and American agricultural policy from time to time raised cotton prices above those for non-American cotton. To these dilemmas more government action was the answer. At the end of the thirties, the United States inaugurated a general policy of export subsidies on wheat and cotton.

Meanwhile the industrial expansion of the United States was increasingly reflected in the export figures. The trend was clear before the first of the two World Wars which so hectically hastened it. While the quantity index of agricultural exports crawled forward or stood still, that of finished manufactures multiplied somewhat less than seven times between 1913 and 1947. For five
years during World War II, the value of manufactures and semi-manufactures accounted for over 80 per cent of the value of American exports. New categories of manufactures now took the place of the old consumer goods which had a century earlier given the United States a timid start in this direction. The primacy of the automobile industry in the domestic economy meant a similar primacy for “automobiles and other vehicles” in the export trade. Industrial machinery was not far behind. In third place, petroleum and its products somewhat surpassed the semi-manufactures of iron and steel. Since most exports were generally capital goods whose purchase could be postponed, depression dealt their overseas shipment a shattering blow. Theoretically, exports of manufactures should have gone to the under-developed regions of the globe: Canada, Mexico, Asia, South America, Australia, and Africa. Though united these absorbed the larger part of such shipments, a highly industrialized Europe persisted as the most important single market for American manufactured and semi-manufactured products. The products of industrial nations were so diverse that interchange between them was necessary and fruitful.

Imports were the reverse picture. By World War I, imports of manufactured and semi-manufactured articles were but a fraction of their former glory. In the era of war, normalcy, and depression they were inferior still. On the other hand, the quantity index for imports of crude foodstuffs doubled between 1913 and 1947 and that of crude materials increased two and a half times. These two categories really high-lighted the changing character of the import trade, for a wealthy industrial economy demanded the tropical foods to sustain its high standard of living and raw materials, if they were not produced within its border, to process and to manufacture. Though these import classifications were numerous, a few products were outstanding. American silk manufacture relied upon foreign supplies; the American rubber industry, handmaiden of automobile manufacture, imported its latex; woolen textiles, in spite of the efforts of tariff makers, drew their raw material from abroad; American newspapers were printed on Canadian forests; Americans roused themselves and kept themselves awake on alien coffee; and drew energy and sweetening from foreign sugars. Just before World War II, the only imports valued at over $100,000,000 a year were rubber; cocoa, coffee, and tea; non-ferrous metals, copper, and tin; sugar and its relatives; paper; and unmanufactured silk. That these were not frivolous items, a World War, which deprived the American economy of some of them, soon demonstrated; and the technological retaliation of synthetic rubber, nylon, and rayon had upsetting potentialities for erstwhile suppliers and present enemies.

Inevitably the shift toward raw material imports turned American com-
merce away from Europe. On the whole, that continent had neither the supplies nor, after the rearrangement of trade routes and international finance following World War I, the ability to assemble them for shipment to us. Since Japan sent silk and Malaysia and the East Indies rubber and tin, Asia furnished a majority of the crude material imports; since Brazil furnished coffee, Cuba sugar, and the Caribbean fruits, South America was the largest single source of crude foodstuffs. Whereas in 1913 Europe had been the source of half our import trade, it was surpassed in 1948 by Canada, South America, and Asia, and very nearly equaled by the southern portions of North America.

To bring certainty and profit into their business operations, the private producers whose commodities flowed through the channels of international commerce negotiated with each other private international agreements, often loosely christened cartels. To attain the price stability and limited competition at which they aimed, their organizers and members operated through assigned markets, joint-selling agencies, fixed prices, interlocking stock-ownership, agreed sharing of raw materials, and through the assignment of patents to producers who assented to the restrictive arrangements. Sometimes so devious was the method of international cooperation that its only sign was "friendly relations" between competitors. In the twenties such arrangements became far more commonplace than earlier. Consolidation, rampant at home, hardly paused at the water's edge. The sudden appearance of American producers in manufacturing fields, like chemicals, already highly cartelized in Europe, meant simply another recruit for existing combinations. Overseas investments and the construction of branch plants brought American invaders whom their foreign rivals thought had better be partners than interlopers. Thus to the earlier participation of American oil, tobacco, and copper companies in cartels were now added the manufacturers of electric bulbs, explosives, dyes, drugs, fixed nitrogen, magnesium, synthetic oil, and synthetic rubber. To those Americans always restive about the trusts and their kind, these business alliances with aliens were a peculiarly sinister bugaboo.

Ironically enough, the American government eventually found the cartel useful. The first retreat was to tolerate overseas the actions prohibited at home. Americans should be encouraged to stand up to the cartels by imitating them. At least such was the announced purpose of the Webb-Pomerene Act of 1918, permitting American producers to combine into coöperative agencies for the export trade. Soon the Federal Trade Commission was permitting such associations to fix prices, allocate the orders to their members, and coöperate with foreign producers if the object of their concern was not the domestic market of the United States. Perhaps further steps toward car-
telization were justifiable if the government rather than private interests took them, if the restrictive measures benefited agriculture rather than manufacturing, and if the motives were not economic but political. During the twenties such excuses did not impress American policy-makers. When the British rubber producers in the Far East formed a cartel with government assistance to raise the price of latex and Brazil adopted like measures for coffee, the Department of Commerce, Herbert Hoover, Secretary, reacted in hostile fashion. Common opinion stigmatized these schemes as a “hold-up.” Less than a decade later American policy had turned about. In 1933 the Roosevelt administration signed, indeed helped initiate, an agreement among wheat producing and importing nations to reduce acreage and set export quotas. In sugar it assigned the American producers of beet and cane a portion of the domestic market, gave to the American colonies their proportion, and established a quota for Cuba. In the late thirties the United States finally joined a world sugar agreement. Then in 1941, with many an ardent appeal for hemispheric solidarity, came adherence to an inter-American coffee agreement, by which the United States agreed to limit its imports to a quota divided in agreed percentages among the chief South American producers. Such steps were consonant with the philosophy of cartelization represented by NRA and AAA; it was less easy to reconcile them logically with the drive to rehabilitate competition under the Sherman Anti-Trust Act contemporaneously refurbished for that express purpose.

**AMERICAN OVERSEAS INVESTMENTS**

With the abruptness then so characteristic of most doings in the field of international economic affairs, the era of war, normalcy, and depression revolutionized America’s position in international finance. Before World War I the nation had still been a debtor one; foreigners had invested more here than we had invested abroad. But during the conflict alien holdings in this country were turned into cash as Europeans were forced to draw on their resources and as European governments used these securities to balance their international payments. At the same time American banking houses had begun to make loans to foreign governments in their hour of need. By 1919 American long- and short-term loans abroad were not quite twice those of foreign lenders in this country. The necessity which pushed the United States along the paths of international finance continued in the years of peace. European nations and industries required funds for rehabilitation so urgently they could not meet their own wants. The nations and enterprises of the Orient, Latin America, Canada, and Australia, finding no response in traditional European money markets, made demands upon ours. Nor were American lenders backward, at least during the twenties, in searching out potential
borrowers and selling them on the advantages of going into debt. For reasons which will be noted in a moment, American corporations steadily increased their foreign investments in plants, facilities, and subsidiaries. By the end of the twenties American long-time investments abroad were to the tune of $15,400,000,000 as against $5,900,000,000 by foreigners in the United States.

These novel billion-dollar totals created the impression that New York had supplanted London as the financial center of the world, that the dollar had routed the pound as the standard of exchange, and that the United States was the greatest creditor nation of the world. Actually what had happened was that the United States shared dominance with Great Britain. Nor was this participation as vital to our economy as Britain’s was to hers. The United States was a continental area and foreign investments on our exchanges were, comparatively speaking, but a small fraction of the domestic total. The tentative character of this achievement was demonstrated during the thirties. Foreign debtors defaulted, scaled down their loans, or bought back their securities at lowered prices. Americans abruptly ceased further lending and often jettisoned their earlier commitments. The totals of debt were written down. By the end of this dismal decade, American long-time investments had shrunk to $11,400,000,000; the amount of its short-time investments also declined. At the same time foreign holdings increased in both categories. The United States was a creditor country still, but by a narrower margin. Then the Second World War again turned the United States into a debtor nation, but only by the strictest of definitions. The accumulations here by foreign nations and individuals of large short-term balances, in part due to the flight of capital already noted, as well as a smaller increase in more permanent investments, explained this outcome.

By and large, the achievement described in the preceding paragraphs was made by private capital. If critics wished to stigmatize it as imperialism, it was private-enterprise imperialism. These loans were first of all portfolio investments, that is securities—the majority were “governments”—purchased by American corporations, banks, estates, and individuals for investment purposes. During the twenties such portfolio investments had their heyday in the American market. In the year of the grand break-up, 1929, they constituted over half the $15,400,000,000 of our long-term investments abroad. Americans had purchased the bonds of the German Republic and the issues of her subordinate governments; they had invested in Canadian private and government securities; and absorbed, far from prudently as it turned out, a flood of portfolio investments from South America. Then the depression blew the house down. By 1939 the value of portfolio investments had not quite halved; they constituted only a little over a third of American totals. It was this spectacular collapse that underlay the frequent charge that the
American market was neither consistent nor courageous enough to play the rôle of world's banker, a reprimand only partially justified.

The other category of long-term investment was direct investments, that is, investments, primarily by American corporations, in American-controlled foreign enterprises. After a decade of growth following World War I, their dollar total was inferior to that of their portfolio cousins. The depressed thirties, however, wrought no comparable damage upon them; indeed, they maintained their total value remarkably. With the forties they renewed their growth and in 1947 attained a figure of $9,400,000,000. In the realm of private enterprises overseas, they typified America to foreigners and Americans alike. Furthermore, these investments were closely interrelated with the domestic economy of the United States, both geographically and functionally. Using the former test, Canada by the forties was the most important destination for American direct investments and Cuba was the second; two European countries, the United Kingdom and Germany, followed suit.

One function of these investments was to promote the growth or extraction of those commodities which the American market, and to a less extent others, required. Thus American capital, particularly after World War I, flowed into the sugar plantations of Cuba and these huge plantations shipped to the refineries, candy-makers, and soft drink manufacturers of the United States; the United Fruit Company, a pre-war creation, expanded its banana and sugar empire in Central America and in the Caribbean islands; American rubber enterprises in the Far East, though far inferior to British, Dutch and native producers, provided latex for Akron, the American tire capital. American paper companies and American newspapers invaded the Canadian wilderness to such effect that they controlled 40 per cent of the capacity of the Canadian newsprint industry.

Mining, smelting and refining enterprises, utilizing American capital and direction, ministered from overseas deposits to the American market, though perhaps less exclusively than in the instances mentioned. Before the discovery of American deposits in the forties, the aluminum companies drew their raw material from British and Dutch Guiana. The International Nickel Company, an American-controlled concern in Canada, marketed before World War II over 50 per cent of its product in the United States. The quest for copper in Canada, Chile, and Africa by American copper kings, including the Guggenheims, was to supply American markets or other markets, after transit through America and American processing. All these petroleum overshadowed. American oil men had gone early in the century to Mexico. Then in the twenties American companies validated earlier concessions or secured new ones for the rich pools in Venezuela and Colombia. Already the more foresighted had turned their eyes toward the Dutch East Indies and the Near
East, the commerce from whose storied lands had once quickened the economic life of western Europe. But now instead of luxuries and camel trains, it was "crude" and pipe lines. Through many a hugger-mugger of diplomacy, where governments and private corporations could be distinguished from each other, if at all, only formally, British interests dominated the fields of Iran, the old Persia, and shared control with American concerns, among others, in Iraq once Mesopotamia. On the other hand the giant American oil concerns staked out an exclusive domain in Saudi Arabia and participated at least equally with the British in some of the concessions clustering about the Persian Gulf.

Of the other American direct investments abroad, those in manufacturing and public utilities made their way, as did exports of American manufactured goods, into new economies, like the Argentine's or Cuba's, or mature ones, like Japan's and Great Britain's. In the case of public utilities, Americans hoped for a profit from their construction and the provision of services. On the other hand, investments in merchandising structures and branch plants were essentially outgrowths of the American export trade. Thus for the Singer sewing machine, the corporation first provided sales centers in South America and then assembly plants. American automobile manufacturers purchased foreign concerns, established subsidiaries, erected plants, and from Mexico to Great Britain installed the assembly line of Ford and General Motors. No single reason explained this decision to supply foreign markets from abroad rather than from the United States. Though the new device was occasionally a search for cheaper labor costs, freight rates on the export of raw materials and knocked-down machines which were lower than on the finished product had more influence. Most importantly, these migrations were an attempt to get within the tariffs, quotas, and financial arrangements by which nations or groups of nations, like the British Commonwealth, sought self-sufficiency and administered preferences for home industries.

These foreign outthrusts of the American dollar aroused the concern of Washington policy-makers, at least at the verbal level. An illustration of one governmental function, the promotion of American investments abroad, was furnished in the frequent notes demanding the open door for American investments in areas where concessions were going to rivals or where opportunities were otherwise restricted. On the related and more complex question, the protection of American investments, the government took high ground. In the Coolidge administration the Secretary of the Navy proposed before a state Chamber of Commerce to protect American ships, goods, investments, holdings, and property on the high seas and in foreign countries as well. "To defend America we must be prepared to defend its interests and our flag in every corner of the globe."
In practice, however, the twenties saw a slackening of the purpose and procedure of an early day. Marines and advisers came home from Central America and the Caribbean, and the efforts of Coolidge and Hoover to retain the Philippines within the American empire came to naught. The thirties hastened the weakening process. The armed forces were not despatched to South America to exert a moral influence against the default of American-owned securities, and if social revolutions, with different ends than the encouragement of capital importations, levied heavy taxes on foreign investments and expropriated foreign property, the State Department resorted not to the “big stick” but to protests, homilies, and the promotion of materialistic compromise. Mexico was illustration. In 1917 a revolutionary government wrote a constitution vesting in the state the ownership of subsoil deposits. For the better part of two decades American diplomacy busied itself over whether the clause applied retroactively to hitherto acquired rights. Hardly had this quarrel been temporized when the Mexican government in 1938 expropriated American and British holdings for failure to conform with a labor award. When the State Department finally secured compensation for the seizure, the oil companies claimed the settlement was only a quarter of the real value of their former property.

Meanwhile the American government in its own right stepped forth as a foreign investor. When we loaned our associated powers $9,386,700,000 between 1917–22, the first signal of the trend fluttered at the masthead. A decade or so later, after the depression, most of the loans were in default. In World War II the Roosevelt administration, too wise to repeat a procedure packed with political explosives, devised lend-lease, a form of gift rather than of investment. After the war, though there was a loan to Great Britain, grants and aid under the Marshall Plan and other legislation secured the ascendancy. All in all, by 1948 the total of these transactions, in large part highly novel, was more than seventy billion dollars. Since 1941 the United States had loaned or given a sum greater than the world’s total private long-term foreign investments before World War II. Taken in connection with other evidence, such figures seemingly marked the eclipse of private-enterprise imperialism.

A MECHANISM FOR FOREIGN TRADE

In the years when the United States gradually equaled or surpassed Great Britain as trader and investor, the government, in alliance with private management and money, proceeded to build a mechanism for its foreign enterprises. The program was stridently nationalistic; the arguments for it frequently more assertive than accurate.

With many a claim that the financing of American trade by British bank-
ing houses gave these foreigners “inside information” about American shipments or more favorable rates and information, Congress in the Federal Reserve Act allowed national banks with a capital and surplus of at least a million dollars to establish branches abroad and created a market for foreign paper by permitting member banks to accept bills of exchange, to purchase and sell foreign acceptances, and to rediscount this paper at the Federal Reserve Banks. The dislocation of foreign trade during the war brought a speedy utilization of this machinery. While one alarm thus won a remedy, observers prone to mercantilist thought and hostile to big business discovered that the world of international communications, cable and wireless, was largely in control of the British. Such companies enjoyed preferences and charged monopoly rates. “Furthermore it is a matter of common knowledge that the highly efficient cable system of Great Britain is so closely coordinated with the diplomatic and commercial interests of that country that no message which might be of value either to the British Foreign Office or to the British Board of Trade is assured of secrecy if at any point in its journey it passes over a British line.” The only solution was “all-American” cables or wireless. So diplomats quarreled over the possession of small islands where cables came to the surface for relaying and opposed preferential or exclusive grants to any corporation. Eventually Radio Corporation of America breached the “British monopoly.”

More traditional had been the complaint that to rely upon the merchant marines of other nations, particularly the British, to carry a large share of American commerce was both humiliating and dangerous. Only American vessels would develop, ran the argument, a foreign market for American commodities; only American vessels would remove discriminations in rates and treatment. Actually the picture was over-painted. Moreover, the admitted fact that Americans built and operated vessels more expensively than their rivals deterred government action. In this matter two wars removed all uncertainty. In both the nation suddenly required immense flotillas to transport millions of armed men overseas and to equip and feed not only them but also the soldiers and civilians of her allies. The resultant construction was spectacular. A merchant marine for foreign trade of just over a million tons in 1913 became one of 11,077,000 in 1921; one which had shrunk back to 3,311,000 tons by 1939 became one of 29,730,000 at the outset of 1946. A nation whose vessels had constituted before the First World War only 14.6 per cent of the entrances and clearances in foreign trade at American ports saw the figure attain 70 per cent in 1946.

After each war the sheer disposal of these huge fleets presented a problem. Additional difficulties were raised by the desire to protect an important industry, shipbuilding, and an occupation, ship operation; to promote trade over
old and new routes by American flagships; and to buttress army and navy strategy. The accepted canon was that this should be done by a merchant marine in private hands. On the other hand profits were so uncertain as to dampen such possibilities. Major acts, at eight-year intervals, finally terminated in the Merchant Marine Act of 1936. Under the guidance of a Maritime Commission, the government was to advance money for the construction of vessels, give a construction subsidy to compensate for the lower costs of foreign builders, and an operation subsidy to overcome the advantages of the foreign operator. If private enterprise would not take the bait, the govern-

**GROWTH OF THE AMERICAN MERCHANT MARINE**

1789

1810

1830

1860

1910

1922

1950

Each ship represents 1 million gross tons employed in foreign trade. PICTOGRAPH CORPORATION

ment could build the vessels and sell or charter them. These acts and their administration assured the United States a sounder preparation for the Second than for the First World War.

Trade promotion, national prestige, and military considerations also inspired a national concern with international aviation, for this new instrument seemed to set at naught the once-impregnable boundaries of mountain, desert, and sea. From the mid-twenties, therefore, American-flag planes operating overseas were given air-mail payments probably somewhat more generous than those to domestic airlines, and in 1938 they were placed under the supervision and encouragement of the CAB. Aviation differed from the merchant marine, however, since most nations, after World War I, with only
half-hearted or occasional dissent from the United States, contended that its medium, the air, was not "free" above their territories but subject to national jurisdiction. Permits to fly and to land were essential. In the twenties, when Pan-American was pushing into the Caribbean and South America, the negotiations were between the corporation and the countries involved; the national government gave only incidental assistance. In the thirties the spanning of the Pacific by American Airlines was facilitated by the possession of national bases as far west as Manila and entrance into China, New Zealand, and Australia was easily obtained. For the historic route across the North Atlantic, however, the United States government itself negotiated with other governments the bilateral agreements bestowing the privilege of routes and landing fields. Comparatively speaking, American policy refrained from transforming the private airlines into an arm of the government.

In building an American mechanism for its foreign undertakings, the success of all this stir paradoxically made more difficult the operations it was designed to promote. A continuously favorable balance of exports over imports depended upon the ability of foreigners to close the gap by securing dollars for their purchases through immigrant remittances, borrowing, and the performance of services. In the twenties restriction of immigration curtailed the first reliance; by the thirties the inflow of interest payments, amortization, and liquidation on American investments abroad exceeded the annual outflow of new funds; and all the while the American policy described in this section diverted the payments for many services from foreigners to Americans.

**VISIONS OF RECONSTRUCTION**

As the warm gratification of military victory in World War II at last brought so many delayed plans to fruition, policy-makers and statesmen turned to the reconstruction of the international economic order. They confronted not only the devastation of the conflict but the longer failure to create a substitute for the English system of the nineteenth and early twentieth century. So great was the current prestige and wartime necessity of planning that many now hoped a workable international mechanism could be designed to take the place of the quarrels and dangers characterizing the national systems of the thirties. A deep dilemma was at issue. The United States, albeit with reservations, was the supporter of stabilized exchanges, multilateral trade agreements, competition, private enterprise, and the abatement of the whole apparatus of restriction and quota. Other nations, particularly the undeveloped ones, thought all or part of an opposite program was a necessity. Great Britain, the traditional protagonist of free trade but now socialist, occupied a middle position.
As best they could, a series of international conferences forged instruments. Within the United Nations, established in 1945, was an Economic and Social Council to promote higher standards of living, full employment, conditions of economic progress and development, and the solution of international economic problems. More specifically, the United Nations equipped itself with a number of specialized agencies: the International Bank for Reconstruction and Development, the International Monetary Fund, the Food and Agricultural Organization, and the International Trade Organization. The first was to collect a capitalization of billions. These sums, as well as those obtained by the sale of securities, it was to loan either to nations or to private organizations on a long-term basis. The International Monetary Fund was to set the exchange parities of various currencies, prevent the easy resort to exchange control and competitive devaluations, and accumulate from the subscribing nations an immense fund from which countries needing foreign exchange could borrow. The Food and Agricultural Organization, in addition to its informational and technical work, ultimately fathered an agreement for export quotas in wheat. The International Trade Organization planned a super-reciprocal trade agreement program under which national delegates passed tariff reductions and then extended the changes on the most-favored-nation basis. In varied degrees it forbade or frowned upon exchange restrictions, import quotas, export subsidies, and cartels.

Superficially, the program seemed a return to an earlier day. Actually it was an amalgam. It expressed a preference, perhaps buttressed by moral compulsion, for a world of freed commerce; it permitted the resort to the restrictive devices of the thirties, within limitations. In the late forties, as some of these agencies came slowly, partially, or provisionally into operation, it was clear that they could not bind tightly even those who had subscribed to them. Devaluations of the franc and the pound, for instance, mocked at the procedures to fix stable exchange rates. From time to time the whole concept of international planning threatened to give way to a dominantly American program. When the American Congress enacted a European Recovery Program, in which western Europe participated, and made the appropriations for it, the loaning activities of the International Bank and the exchange manipulations of the International Monetary Fund descended at once to a subordinate rôle. If the Marshall Plan did not directly touch the other areas of the globe, there were plenty of ingenious proposals for its supplementation. Perhaps after all, two World Wars would do for the United States what the Napoleonic struggle had done for Great Britain, make her the manager of the international economic order.
CHAPTER XXII

Manufacturing, Business, and Government

From time to time during the years of war, normalcy, and depression, the immense productive capacities of their economic system inspired Americans with an almost lyrical delight. During the First World War their farms, factories, and mines provided the sinews of war for the battles in Europe. In the second conflict the United States, undamaged by direct military attack, became the “arsenal of democracy” and its “miracles of production” supplied armies and civilians from Moscow to Lands End and the American armed forces and civilian economy as well. The most destructive years in the world’s history thus held the promise of abundance. In more peaceful times the production and the profits of the golden twenties led Herbert Hoover to the incautious utterance that “we shall soon, with the help of God, be in sight of the day when poverty shall be banished from the nation,” a sentiment echoed by successors of a different political persuasion. Nor was the vision surrendered during the depression. Though factories were quiet and machinery stilled, Americans realized with dour satisfaction that their inventors, engineers, investors, and businessmen had brought into being the means of producing a degree of well-being which, for some reason, they were not enjoying.

In spite of all its triumphs, the advance of industrial productivity was neither steady nor uniform. The index of physical production compiled by the Federal Reserve Board might multiply over three times between 1919, the end of one war, and 1943, the middle of another; it also fell dishearteningly from 72 to 58 between 1919 and 1921 and from 110 to 58 between 1929 and 1932. Somewhat less abruptly it receded from the production high point of 1943. Within these averages there were significant distractions. Production of consumer goods, non-durable goods, had greater continuity; the production of durable goods, whose construction and purchase could be postponed, followed a curve of higher peaks and deeper valleys. Prosperity stimulated such heavy industries, and so did war. Thus, though World War II seemed to spur every industry, actually the expansion of manufacturing was markedly
concentrated in making machinery, airplanes, ships, and motor vehicles, and in the metal industries which, like steel, furnished the raw material for the ways of Mars.

Nevertheless, manufacturing as a whole increasingly dominated the economic life of the United States. Industrial migration carried the factory and the mill into regions once mainly agricultural. To be sure, throughout the entire period of war, normalcy, and depression the area north of the Ohio and east of the Mississippi still retained its hold upon the nation's industry. But subsections, like New England, within this general area suffered a relative decline, and the center of industrial power tended to shift from the Atlantic coast to the Great Lakes. Until World War II, industrialization also continued the rapid transformation of states from Virginia to Georgia. Then, once the nation had embarked upon defense or war, a spectacular growth took place in the Southwest and along the Pacific coast. While industrial employment throughout the country rose 59 per cent between 1939 and 1943, it increased in California by 172 per cent. Not textiles but the building of ships and planes explained this development. Nor was the only test of the importance of manufacturing a geographical one. Throughout the period this calling provided the largest single item in the national income and the proportion tended on the whole to grow larger. If war can be compared to war, manufacturing in 1918 contributed 24 per cent of the national income; in 1943, 32.5. These percentages included neither mining nor services.

**The Mine and the Well**

More than ever the nation's economy relied not upon the earth's surface fertility but upon its subsurface capital, mineral deposits. This truism, indifferently grasped in peacetime except by ardent conservationists, became grim reality in years of war. The minerals were strategic, essential for national survival. When military leaders announced in the First World War that oil was the means to victory and in the second that "an army without copper would be an army without speed, maneuverability, communications, or fire power," they were not uttering extravagances. Water power and rayon could not win a war. In an age of conflict, therefore, the production of minerals was bound to expand. Old war horses, like coal and iron, redoubled their efforts, and newcomers, like aluminum and magnesium, entered the race. The richness of American resources was revealed in the simple fact that at the peak of war production, 1942 or 1943, the nation produced ten times as much aluminum, five times as much petroleum, 30 per cent more iron ore, and 5 per cent more copper than in 1917. Since the supplies of minerals were definitely limited, lamentations over the prodigality of military uses and fears for the exhaustion of deposits accompanied and followed each war. Such
moods reinforced the reflections of conservationists, who since 1900 had given frequent warning of depletion.

That the moment when one natural resource after another went dead had not come earlier was due to importations, already discussed, the discovery of new deposits, and the advance of technology. In the last field cumulative changes amounted after 1920 to a veritable revolution in handling earth materials. One avenue of advance was the management of the mine. With the constant improvement and enlargement of the power shovel and other earth-moving machinery, there was an increasing use of open-pit mining. In a sense a primitive method, the massed machinery and scale of operations now made it anything but rudimentary. Applied in the nineties, as we have seen earlier, to the Mesabi iron range, stripping was extended to copper mining in the next decade and by the late forties was producing 20 per cent of the nation's coal, a large figure for a traditionally underground industry. Even where the latter method dominated mineral extraction, power drills, or other machines, rather than hand labor, loosened and undercut the deposits; mines were often designed so that gravity helped detach the mineral or ore, break it, and load it; everywhere there was a wider employment of automatic loaders and scoops. Electric locomotives aided underground transit and rubber-tired vehicles emancipated haulage from the track.

These large-scale mechanized operations were not adapted to sorting and selecting the material. In the mine they took everything, waste as well as mineral. Consequently, extensive and complicated plants were required to separate the products. Though most bituminous coal and iron ore went to market untouched by such treatment, tidal waves of water flowed through anthracite breakers to separate the waste from the coal; they worked so effectively that old culm banks, now put through the washer, provided 5 per cent of the anthracite output. In copper, as well as other metals, the output of the mine was reduced to dust; water, oil, and chemical compounds were added; and when air was blown through the pulp the desired product adhered to the bubbles. This flotation process, applied and refined after 1912, could select from mixed ores their various components. Low-grade deposits once neglected could now be exploited with advantage. At the end of the thirties a copper magnate informed a government committee "that the lowest cost copper is being produced from the lowest grade ore." The engineer had taken the place of the prospector in enlarging America's mineral resources.

Petroleum, though a mineral, was in a category of its own, since for the industrial life of the nation it had a unique significance. By the late forties, in company with natural gas, it became the leading fuel of the country. Anthracite was a stagnant industry. Staggering to its peak production in
1917, not even World War II resuscitated it. Bituminous coal, its more powerful cousin, responded sensitively to prosperity, depression, or war, and neither leanness nor limitation of deposits hampered such instant adjustment. Still oil and gas thrust steadily to the fore. In 1917 the energy the couple provided was somewhat less than one-sixth that of coal; in 1946 they were neck and neck. In 1919 coal provided 78 per cent of the nation’s energy; in 1948 only 39. The triumph of petroleum was explained by the fact that coal was not a feasible fuel for automobiles, airplanes, tractors, mobile machinery, or small motors; that the convenience of smaller bulk and ease of handling gave fuel oil the preference in raising steam on vessels and heat in homes; and that the coal mine rapidly lost its most important customer, the railroads, when the Diesel locomotive in the late forties demonstrated its superior operating economies. Furthermore, price reductions in the case of petroleum after World War I were more rapid than in the case of bituminous coal.

In spite of ninety years of development, the oil industry in the mid-twentieth century was still a new industry. For one thing it depended largely upon the discovery of new deposits. These were constantly forthcoming. In the era of war, normalcy, and depression the extractive industry, California excepted, moved into the Southwest. In World War I, Oklahoma was the chief producer; in World War II, Texas. In the latter state alone fifty new “fields” were discovered in 1945. The search for such deposits was no longer dependent upon seepages, outcappings, and crude guesses. Geophysicists, by their instruments and artificial earthquakes, deduced the character of underlying strata and placed prospecting upon a more exact basis. In oil drilling, the
rotary drill and accompanying techniques drove to horizons three miles deep and opened wells without lavish losses of oil and gas. These methods, coupled with conservation methods, led to a higher recovery of oil from the oil sands than in the pioneer days of Pennsylvania. A highly efficient transportation system carried products to the refining and marketing centers. Where sea transport was possible, tankers remained more flexible and inexpensive than huge pipe lines. The spectacular Big Inch and Little Inch from Texas to New Jersey, built by the government during the war, were transferred after it to natural gas. In the refining operations, since the demand for motor fuels was imperative, casing-head plants squeezed the “natural gasoline” from natural gas, and the industry had every motive to install and perfect the cracking process, patented in the United States by one of the Standard concerns in 1913. Eventually a continuous process, flowing its product and catalysts through “magic towers,” refined oil under high pressures and temperatures and extracted from the crudes a much higher percentage of gasoline. Further manipulation of this superior product produced gasolines that made possible the high-compression engines of motor car and airplane.

Startling economies in the utilization of minerals joined improved methods of extraction and refining to postpone the high costs and alarming adjustments arising from depleted natural resources. The coal used in the iron and steel industry was once made into coke in beehive ovens whose waste of smoke was a fabulous loss of power and of coal tar, the latter a source of dyes, medicines, solvents and chemicals largely imported from Germany. During World War I the interruption of this commerce and the need for toluene, derived from coal tar, for explosives hastened the adoption, already under way, of the by-product oven, a European invention. In 1945 the latter accounted for 92 per cent of coke production. When coal was used to raise steam, it was burned in larger furnaces and under boilers built to withstand higher pressures. The steam was utilized in turbines, far more efficient than the huge reciprocating engines which had impressed observers at the Centennial Exposition in 1876, for the turbine spun in a rotary motion. They were an ideal mate for the electric generator. In 1913 central electric stations on the average used 4.02 pounds of coal per kilowatt hour; in 1945, 1.3. Meanwhile the metal industries drew their raw material not only from the mine but from vast reserves of waste material accumulated above ground by decades of mining and fabrication. In the thirties scrap aluminum and scrap copper furnished over half the material used for the new metal, and in the next decade when the steel industry was stretched to the breaking point, the absence of scrap, not of ore, was the real handicap. The prosaic dump and the waste depot rivaled the Mesabi range.
THE CHEMICAL INDUSTRY

In the twentieth century the automobile and petroleum industries, judged by their mounting productivity, were two of the most rapidly growing among the major industries of the nation. A third was the chemical industry. Before World War I it largely devoted its energies to producing the heavy chemicals, the acids and alkalies used in the processing of leather fibers, the refining of petroleum, and in the actual fabrication of products like glass, soap, and paper. In some instances, the chemical manufacturers had done more. In the nineteenth century they had created an explosives industry, furnishing the materials for war and the means for mining coal, clearing land, and building public works; and in the late nineteenth and early twentieth century they had developed a large fertilizer industry. For such manufacturing the United States, with certain crucial exceptions, had ample natural resources: salt, lime, sulphur, coal, and wood. The essential research precedent to industrial processes and the actual methods of profitable production were usually imported from Europe. The American industry had an alien air.

The First World War did much to change this situation. As the habitual interchanges with Europe, particularly Germany, were interrupted or severed, the American industry turned to the manufacture of new products. The national government confiscated a multitude of German patents for dyestuffs and medicines from coal tar and distributed this knowledge to the American industry. Since the whole war experience pointed up the dangers of reliance upon foreign producers and the desirability of self-sufficiency, Congress in the twenties gave chemical products an almost unexampled protection. The result was growth but not complete independence. Aside from such strategic considerations, the achievements of the industry held the promise of dispelling the specter of deficiency or depletion of natural resources. Research into molecular structure and manufacturing processes applying heat, pressure and electrolysis seemed to fulfill the alchemist’s dream of transmutation. They enabled men to transform into new products the raw materials furnished by agriculture, forest, mine, oil well, and even the air. The virtuosity of the industry was so great that if one basic resource were lacking it could turn to another.

When painstaking prospecting failed to discover within the United States an American equivalent to the nitrate beds of Chile, the American chemical industry turned somewhat slowly to the contemporary discoveries abroad of means for manufacturing a synthetic product. Foreign chemists, convinced that man could be at least as clever as the clover in extracting the inexhaustible nitrogen from the atmosphere, had devised various mechanical processes of fixation. About 1912 these were superseded when a German chemist by
terrific pressures and temperatures fused nitrogen and hydrogen into ammonia, and a contemporary discovery made it possible to derive nitric acid from this synthetic product. Government plants, using various methods, were built during World War I and liquidated for all practical purposes after it. By the end of the twenties, however, chemical companies had adopted the best methods and produced synthetic nitrates at lower prices.

A more showy example of synthetics was the field of plastics. As early as 1870 John Hyatt, an American mechanic ignorant of chemical theory, mixed camphor, cellulose, the raw material of growing plants, and alcohol; subjected the mixture to heat and pressure, and produced celluloid, one of the first synthetic plastics. Thirty-five years later Leo H. Baekeland blended phenol, a coal tar derivative, and formaldehyde, a descendant from wood distillation, and subjected the mixture to heat. The result was a substance christened bakelite. Though these and other plastics were no substitute on a large scale for metals, they were light and easily molded, pressed, and machined. They found employment in the electrical, automobile, radio, and gadget industries. Assuming other guises, plastics were lacquer paints, drying in two hours rather than days, and relieving the automobile industry from the excessive storage of car-bodies; or they were cellophane, originally an immigrant from abroad, but eventually so Americanized that chewing gum and cigarettes were clothed in it.

Chemistry provided new textile fibers. French and English inventors in a quest for artificial silk took cellulose, transformed it into a solution, squirted the liquid through perforated plates to form fibers, and hardened these yarns with hot air or chemical solutions. This synthetic silk had an offensively high sheen, little elasticity, and an inability to survive the combat of the wash tub. After 1920 its advance was phenomenal. Although ingenious promoters, by christening artificial silk rayon, were partly responsible for this success, mechanical improvements produced a non-luster finish, increased tensile strength, spun finer yarns, and made this chemical product a competitor not only of silk but of linen and cotton. In 1914 rayon production was 2,400,000 pounds; in 1947 it was 975,000,000. The rayon industry used chemicals in the millions of gallons. It derived its basic material, cellulose, increasingly from wood or agricultural wastes rather than from linters, the fuzz adhering to the cotton seed. No wonder both the cotton growers and the cotton industry were angered and alarmed. Then at the close of the thirties an American chemical concern deliberately invented nylon, a fiber derived ultimately from coal, water, and air.

In the twenties and thirties some American chemists and firms turned without any sense of urgency to the making of "synthetic rubber." Products with some of rubber's properties resulted; their tonnage and their sales were
limited. In Germany, spurred by shortages and later military needs, the chemical industry in 1936 produced a rubber suitable for tires, Buna-S. Butadiene, derived ultimately from coal and lime, or alcohol, or petroleum, furnished 75 per cent of this compound; styrene, derived from petroleum and coal tar, the remainder. An arrangement between the German producers and an American concern luckily brought the knowledge of the patent to this country before World War II, for when Japan's conquests in the Pacific cut off the imports of natural rubber from British Malaya and the Netherlands East Indies, the government desperately promoted in its own plants the manufacture of the synthetic substitute. Political pressures, notably for the use of grain as a source of alcohol, and organizational difficulties be-deviled the preliminary steps. Nonetheless, the challenge was met. In 1941 the United States produced no Buna-S; in 1945, 756,000 long tons. The costs of production, originally estimated at 45 to 75 cents a pound, were in a number of plants 13 to 20 cents in 1946.

**People at Play**

The precise fellows who furnish statistics have shed away from the industries providing pleasure or entertainment. Probably it was too difficult to order chewing gum, theaters, fishing, Coney Island, smoking, professional baseball, and book reading into any harmonious time series. The definition of so formless a thing as pleasure was elusive; attending college might be entertainment for some and work for others. Nonetheless, it was clear that the economic changes after 1915 profoundly stimulated the entertainment industry. One explanation was the automobile. It spurred "pleasure-driving," travel, and a host of ancillary amusements and services. Another factor was the shortened work day and week and the ubiquity of vacations with pay, both directly enlarging that "leisure time" which had to be filled, according to the creed, with activity. Changes in moral attitudes and shifts in fashion likewise played their part. The liquor industry, reduced to impotence and illegality by the prohibition movement of the twenties, was re-created by the repeal of the Eighteenth Amendment under the New Deal. The manufacture of distilled spirits multiplied over five times between 1921 and 1941. The tobacco industry was placed on an entirely new basis when World War I made a man of the sissy cigarette. Almost within a decade, the weaker sex saw fit to imitate the stronger. From the machines the millions of white wrapped cylinders rolled forth, eighteen times as many in 1945 as in 1915.

Drinking and smoking were traditional pleasures. Novel were the ingenious mechanisms now devised and organized to entertain the people. First came the moving picture, invented toward the end of the last century, popularized by the "nickleodeons" early in this, and finally achieving the respect-
ability of patronage by intellectuals and society, at higher prices, by the First World War. In the twenties the addition of sound emancipated the players from mugging and gesture. Paid admissions to motion picture “palaces” and more humble neighborhood theaters reached 100,000,000 a week, and movie stars, magnates, and producers enjoyed salaries Wall Street envied.

If the movie took the family out of the home, the radio brought it back. During World War I people with home-built or purchased sets listened through headphones to the noises and occasional broadcasts riding the air waves or imprisoned in the apparatus itself. To provide more substantial fare the Westinghouse Electrical and Manufacturing Company announced the election returns from Pittsburgh in 1920 and began a daily broadcasting service. Chaos ensued. As stations battled for a hearing, the radio waves could hardly separate the sermons from advertisements of toothpaste. In 1927 a commission, later rechristened the Federal Communications Commission, was established to bring order into programs, frequencies, and wave lengths. Two decades later over two thousand commercial broadcasting stations were in operation and probably 66,000,000 radio sets served a varied fare to listeners who left the machine turned on or listened selectively to symphonies or weather reports. The broadcasting pattern of government control and individual reception was later applied to frequency modulation, which improved the quality of sound, and in the forties, to television when cameras with electronic guns, relay stations, and the cathode ray tube made possible the broadcasting and reception of images in movement. The cultural result of all this innovation was in dispute. So was the cost of entertainment, as an industry. A calculator in the early thirties, working with an incomplete inventory, estimated that the nation’s annual bill for recreation was in the neighborhood of $10,000,000,000.

Invention, Research, and Efficiency

Even a partial and simplified recital of these complex achievements reveals that invention was increasingly a systematic process. For one thing, the discoveries of pure science were now the necessary prelude to technology, and technological needs compelled a constant resort to the expanding bulk of scientific knowledge. A handy mechanic can hardly manipulate molecules he cannot see. Since engineering, science, and production were now allies, the period of war, normalcy, and depression was notable for joint attacks upon common problems. Increasingly industries financed scholarships or research projects in universities or resorted to private consultant or research agencies or erected their own laboratories, often so divorced from the production imperatives of the moment that they encouraged pure research by armies of Ph.D.’s. However necessary such activities, they occasionally dis-
tressed those with an outlook of an earlier day. “Bankers,” announced a
director of General Motors in the twenties, “regard research as most danger-
ous and a thing that makes banking hazardous, due to the rapid changes
it brings about in industry.” At the same time, agencies under no necessity
to show a profit made vast contributions to the advance of science and tech-
nology. Engineering schools, privately endowed or aided by land-grants and
government appropriations, multiplied in numbers and enrollment. And war
spurred the national government to coördinate scientific activities for victory
and endow them with generous budgets. The First World War created the
National Research Council; the second, the Office of Scientific Research
and Development. Appropriately enough, the high council of the latter in-
cluded the leaders of America’s oldest university, of one of her greatest
engineering schools, of a private foundation to aid research, and of an indus-
trial laboratory. The atom bomb, invented and built under the direction of
the OSRD and the Army, was an unparalleled triumph of coöperative re-
search and manufacture. In fact, so useful were both of these agencies that
after each war they furnished precedents or stimulus for the continuation of
their functions. After World War II this experience also entailed the en-
larged impact of the government upon the economy. The Atomic Energy
Act of 1946 established a government monopoly of the sources of atomic
energy and coupled this affirmative decision with broad prohibitions on
private activity.

Less glamorous than invention, even than team invention, were the
achievements of scientific management, a conception now so embracing that
its father, F. W. Taylor, would hardly have recognized it. To be sure, jobs
were still analyzed and the selection and training of workers for them under-
taken, but all on a new scale and inclusiveness. There was still attention to
the efficiencies of individual machines. Built on a larger scale, a single one,
like a press, performed the multiple purposes once assigned to several sepa-
rate machines, or single machines were run at higher speeds and with in-
creasing automatism. Furthermore, electrical power gave a new freedom and
flexibility to the rational arrangement of machines and processes, for fac-
tories now could stretch horizontally and wires brought to each motor,
wherever located, the precise power charge it required. Straight-line opera-
tions, continuous processes, assembly lines reorganized industry after in-
dustry. Thus Henry Ford, discontented with the fact that his workers were
“pedestrians” within his factory, took a lesson from the overhead track of
packing establishments where carcasses were pulled along from worker to
worker, and progressively extended assembly line techniques from parts of
his Model T to the finished product. Whether he realized it or not, he was
in the tradition of Eli Whitney. All automobiles used steel sheets and the steel
industry in the late twenties introduced the continuous strip mill to roll them. The hot ingot, traveling on rollers, passed between several stands of rollers and came out at the end a long strip reduced to the proper thickness.

Assembly lines reduced the number of automobile workers; in the continuous strip mill 126 men, armed with electric power, could produce the same tonnage in the same time as 4,512 men in a hand mill. Impressive as these facts were, they overemphasized a single achievement: a savings in labor costs through labor-saving machinery or processes. There were also capital-saving innovations. The efficiencies of American industries, furthermore, depended upon considerations more fundamental than inspired technological tinkering. They could not have been adopted on the scale they were, if it had not been for mass markets and for the possibility of continuous operation. The full-functioning of the economy was as essential for success as scientists and engineers.

Clearly, efficiency was more than a matter of arrangement, it was a matter of scale. Prerequisites were big tools, big markets, big machines—and big industry. On the last count observers were not so sure. Even where technological or operating considerations alone were involved, the answer was not simple. Nevertheless, the trend toward larger manufacturing establishments, characteristic of the decades since the industrial revolution, persisted. There was a chronological unevenness in the advance. War apparently hastened it. The prosperity of the twenties apparently made little difference; the hard times of the thirties bore more heavily on the smaller establishments. By 1939, when the census examined manufactures, 22.4 per cent of the nation's industrial workers were in establishments employing more than 1,000 workers; in 1914 the percentage had been 18. This slow but persistent increase took place while population, wealth, and industrial productivity were increasing more rapidly. Furthermore, the trend toward large establishments was peculiarly marked in the heavy and distinctive industries of the era: copper mining, iron and steel, chemical works, electric machinery, automobiles, shipbuilding, aircraft, and tires.

**Bigger Business**

Of wider importance to the economy and thus to the nation was the degree to which economic activities were concentrated in a few hands. The form of control might be a monopoly, virtual domination by a single concern, or duopoly or oligopoly, frightening words coined by the economists to describe less centralized variations of control. Generally, these enterprises were not single establishments; they were groupings of establishments under unified direction from a single office or controlling corporation. They might unite establishments making a similar product, rayon; or integrate the various
steps in a production process, steel making; or turn out a diversity of products, refrigerators, stoves, Diesel locomotives, and motor cars, a trend peculiarly marked in the years since 1915 and one hastened in large measure by the ingenuity of research staffs and economies in distribution. Nor was it necessary that this concentration of control bear a direct relation to the size of the business enterprise. A small concern could monopolize a small but critical product, and ways were increasingly found to bring about an harmonious policy among a multitude of producers. In short, it was the control of the market that counted.

However advantageous such a concentration of control might be to the providers of goods and services, it had usually alarmed most Americans. They had an inbred dread of unchecked power, economic as well as political. In the business world this power could be used to extort higher prices than in a competitive, free economy. Its alleged use to prevent newcomers entering the business or to crush what little rivalry still existed in it, denied that free dom of opportunity Americans had always cherished and that right to a job, in this case the right to remain in business, that seemed during the twenties and after a popular instinct. Vaguer was the theory that monopoly or big business led to a concentration of wealth and power unsuitable in a democracy.

Certainly in the era of war, normalcy, and depression the trend toward concentration of control proceeded apace. War favored it. The government found it more feasible to deal with the larger concerns or with associated producers. They had access to capital and fluid funds, flexibilities of operation, organized research facilities, large staffs, and also the knowledge of how to deal with big government. Even an administration like that of Wilson, on the whole suspicious of big business, felt the force of these considerations and Franklin D. Roosevelt, whose policy on this matter was a series of vacillations, needed no conversion. Furthermore, the prosperous twenties, 1925–29, fathered a merger movement whose color, excitement, and results inspired comparisons with the earlier one of 1898–1901. The political atmosphere was favorable. The Supreme Court in 1920 had observed that the large size of a business enterprise did not make it sinful under the Sherman Anti-Trust Act. Economic conditions were favorable. After the setback of 1921 the country entered upon a period of almost uninterrupted prosperity, profits furnished investors with money to embark in new enterprises or they could borrow from the brokers or banks, however much Federal Reserve authorities disapproved; and the marketing of the government loans during the war and the blandishments of salesmen publicizing the usual efficiencies and economies in consolidation created an army of market followers. Promoters and insiders once again saw the chance to control enterprises, consoli-
date them, and sell the securities, all at a profit. The old cravings for pride and power made business leaders anxious to head large enterprises rather than small. As a result, between 1918 and 1928 six thousand independent manufacturing and mining enterprises were absorbed by other companies; four thousand public utilities and more than eighteen hundred banks followed the same route to oblivion; and in the retail trade the chains merged independent units or destroyed them. For the merger movement of the twenties touched in spectacular fashion areas of economic activity where it had been hitherto either quiescent or non-existent: railroads, entertainment, electric power, banking, and retail trade.

In the thirties this merger movement abruptly collapsed, and the observers, professors, journalists, publicists, and politicians, moved in to see what had happened. In 1937 the four largest producers of electrical machinery, of most chemical products, of most heavy iron and steel products, of trucks and automobiles, of cast aluminum, of cigarettes, and of rubber tires manufactured at least 75 per cent of the total value of each item. Put in another fashion, the fifty largest manufacturing companies in the country employed 16 per cent of all wage earners and turned out 28 per cent of the value of all manufactured products. Or turning to the larger field of business as a whole, it was estimated that in 1930 the two hundred largest of the 300,000 non-banking corporations in the country controlled nearly half the corporate wealth of the nation; the tiniest of these two hundred corporations had gross assets of at least ninety million dollars; fifteen of them had assets of over a billion. Small enterprises persisted in agriculture, only nominally in view of government cartelization, retail and wholesale trade, service, and building. Transportation, public utilities, manufacturing, mining, and finance had the larger enterprises.

The concentration movement accomplished its objectives by the extravagant use of old devices and the ingenious use of new ones. In the first category was the holding company which in the twenties enjoyed a sudden and wide popularity among banks, railroad and utility consolidations. It enabled all of them to detour irritating regulation. The Interstate Commerce Commission could regulate the securities of a railroad but not of a company holding railroad stock; state and national restrictions upon branch and chain banking did not apply to holding companies; and public service commissions, though they could issue commands on rates and practices to operating electric power companies, could touch only tangentially the concerns that held their stock. Within the empire they created, holding companies expedited the concentration of control. By pyramiding holding company upon holding company, each holding a controlling interest in the company below it, it was possible continually to pare down the amount of investment required to
govern the whole edifice. Two railroad plungers, the Van Sweringen brothers of Cleveland, thus controlled a system of railroads with assets of two and a half billion dollars through an investment of less than twenty million, and Samuel Insull, a onetime English stenographer who became the public utility magnate, patron of the arts, and political boss of Chicago, eventually created a labyrinth of holding and investment concerns that baffled his understanding and the subtle minds of outside experts. He was Chairman of the Board in sixty-five concerns and President in eleven.

Less flamboyant and frequent than the holding company was the outright purchase of the property, rather than the stock, of the concerns to be consolidated. By thus melting several enterprises into one, the architects of consolidation avoided the pitfalls of interlocking stock ownership, interlocking directorates, or collusion in fixing prices, all practices of varying illegality, and simply created a large concern whose size was not in itself an occasion for statutory or judicial disapproval.

Whether big or little, other devices enabled business enterprises to abate the rigors of competition and follow the path of cooperation in matters of policy and prices. Investment bankers refrained from snatching clients from each other; manufacturers, no matter where located, quoted identical prices at a single basing point, the Pittsburgh of the steel industry before 1924; or at many basing points, the steel industry after that date; and then added the freight from the basing point or points. No matter where the producers were they thus confronted the purchaser with the same price from all suppliers. Market leadership by the largest corporation or the traditionally dominant concern was another answer. Through fear, self-interest, or gratitude the sheep followed the bell wether. "It is God's blessing to the industry that they have a Standard Oil Company to set the prices," announced one oil producer. Or perchance a corporation, owning a patent, licensed its use by another provided the latter kept to certain territories, output, or prices.

Increasingly business found the answer to a common policy in the trade association whose real popularity dated from the decisions of the Supreme Court in 1911 and the publication the following year of The New Competition, by A. J. Eddy, a corporation lawyer. According to his gospel, producers should tell each other everything: sales, purchases, shipments, production, prices. With such information on hand, each member would refrain instinctively from cutting because he knew that if one cut all would, inasmuch as "the industry has probably been through more than one disastrous trade war and is ever on verge of another." Just to make sure that the unaided intellect would arrive at these conclusions, one association had a "manager of statistics" who described the features of overproduction, advised the restriction of output, and suggested levels at which to maintain prices. In this in-
stance the association crossed the line between coöperation and conspiracy and was rapped over the knuckles by the Supreme Court. Nevertheless, in the half-light of judicial interpretation and executive favoritism, the associations grew. By 1940 there were over 8,000 of them, of which 2,000 were national. They covered most segments of industry from the Toy Manufacturers of the United States to the Casket Manufacturers Association of the United States. One could go from the cradle to the grave under their influence.

In one field after another, in one way or another, business enterprise disproved the concepts of perfect or pure competition, at least as they had been ideally or classically formulated. In practice the prices of “competing” and “independent” producers often were identical down to the last cent and over the years the quotations for certain products, steel rails were the most frequently cited example, exhibited instead of vacillating and constant adaptation to market conditions a remarkable stability or rigidity. On the other hand, competition, choked in one direction, broke out in another. Uniform prices were shaded by elaborate discounts or more generous credit arrangements; products were given quality distinctions, sometimes genuine and sometimes bogus; styling was added to make everything old ugly and everything new socially and esthetically desirable. Besides, the proliferation of substitutes and choices presented by modern industry soon created interproduct competition, perhaps more deadly than any other variety because of its massive character. Oil threatened coal; rayon threatened silk and cotton; electric refrigerators and television threatened the purchase of a new automobile.

In spite of consolidation, the outstanding feature of the business world was the constant rearrangement and redivision of power within it. By the time of the era of war, normalcy, and depression many of the great trusts at the turn of the century had disappeared. Even fewer had survived untouched. The great pioneer of consolidation, the Standard Oil of New Jersey, had dissolved into constituent units whose interests were no longer identical and the expansion of the industry had given the opportunity to a host of “independent majors” to encroach upon the Standard’s refining and transportation monopoly. That other giant, the United States Steel Corporation, was faced within two years of its birth by the new Bethlehem Steel Corporation, and thirty years later by the Republic Steel Company. In 1908 the “corporation” controlled 51 per cent of the steel ingot production, in 1938 only 35.5. Meanwhile in the motor industry the Ford joke and the Ford car swept the nation; in 1920 Ford manufactured nearly half the automobiles of the country. Then a spectacular decline set in. General Motors seized the leadership, and in spite of pronouncements that entrance into the field was impossible, Chrysler became one of the big three in the thirties, and Kaiser-Frazer in the next decade posed the threat of another entrant. Probably the picture
should be generalized by reference to the two hundred largest manufacturing concerns of the thirties. By 1943 thirty producers of war goods had moved into this elite category and thus displaced an equal number. Though many of the war babies soon dropped out, twenty-six of the largest pre-war concerns had by the end of 1946 failed to regain their place in the select group.

After devoting three hundred pages to a detailed scrutiny of monopoly and competition in industry after industry, a careful student in 1940 was so impressed by the dark flux of economic change that he confessed: "No sort of an estimate concerning the comparative extent of competition and monopoly in American markets is justified by the available evidence. . . . Indeed it may be doubted if such an estimate can ever be made with any assurance." Conclusions almost as nihilistic could be drawn after World War II from figures assembled by the Federal Trade Commission. When the basic data were so controversial, the enforcement of the anti-trust acts was bound to follow a weaving path.

**New Meaning for Anti-Trust**

The period of war, normalcy, and depression had as prelude a stirring fanfare in the battle against big business. Though the reasoning of the majority later proved to be both hindrance and mystery, the Supreme Court had, as we have seen, dissolved in 1911 the two industrial giants, the Standard Oil Company of New Jersey and the American Tobacco Company, and Congress had passed in 1914 the Clayton Anti-Trust Act "to arrest the creation of trusts, conspiracies, and monopolies in their incipiency and before consummation," to employ the words of the Senate Judiciary Committee. The War, however, soon cooled the anti-trust movement and in 1920 the Supreme Court passed down its decision in the United States Steel Corporation case. Only seven judges participated, the majority decision had the narrow margin of one vote. The learned judges announced with finality that mere size was not illegal; business acts and practices were the issue. On this score many of the illegalityes complained of had been abandoned and in any case the corporation had not resorted to the "brutalities or tyrannies" of earlier combinations. There was, in fact, competition within the industry; if these competitors imitated the prices of the corporation, they did so of their own will without restraint or illegal influence. In fact, to dissolve the corporation would injure the public interest and disturb foreign trade. In this fashion, and in no other, the Sherman Anti-Trust Act celebrated its thirtieth birth year.

For well over fifteen years thereafter, anti-trust measures were of limited use. The courts, well wonted to the conception of conspiracy, with fair con-
sistency condemned agreements or "collusion" among producers to fix prices, allocate markets, restrict production, or in other ways to restrain trade. Often, as in the case of trade agreements, such decisions had to cope with subtle matters of action and definition and the judicial finding was not always to the satisfaction of the suspicious. Bigness or leadership, attained without agreements among producers, was a more baffling problem. Whether the provisions of the Sherman Act explicitly prohibited such a business outcome was highly dubious. Nor were the supplementary statutes of the Wilson era effective. They were filled with double talk, to "substantially" diminish competition was illustration, and they were easily outwitted. Stock ownership by one corporation in a competitor, even if it could be proved illegal, was often a prelude to a merging of assets, a perfectly valid procedure; nor was interlocking ownership by individuals, singly or in groups, forbidden. The prohibition of interlocking directorates was equally farcical since various partners in a banking house, for instance, could be strategically distributed in key corporations without any illegal overlapping. In preventing unfair methods of competition the Federal Trade Commission was at the end of a short tether. Though it might curb commercial bribery and misrepresentation in labeling, advertising and endorsements, it was excluded from applying a more thorough statesmanship toward monopoly. Nor was the explanation of this outcome found in the myopia of courts. The Anti-Trust Division of the Department of Justice was understaffed and received meager appropriations, and frequent changes of bureau heads, attorney-generals, and presidents altered its directions. Consistency and vigor of policy was unlikely. Nor, as we shall see, was it certain that either quality was desired.

In his second term the second Roosevelt suddenly resolved to emulate his like-named predecessor in the White House and win the title trust-buster. An elaborate study of the concentration of power was launched; the Anti-Trust Division was enlarged, given more funds, and infused with new energy under a leader who a short while before had jestingly dismissed the Sherman Anti-Trust Act as a folkway of capitalism. Between 1938 and the end of 1946 more cases were initiated than in all the previous decades of anti-trust activity. Probably the disturbing recession of 1937 explained the crusade by an administration which in its first year undertook less than half the suits begun by Herbert Hoover in 1929. Somewhat belatedly, therefore, Roosevelt discovered new sins in bigness. In times of depression monopolies and their like cut prices slowly, if at all, and preferred a curtailed production to an adventure upon a lower price level. Unemployment increased and so did Federal expenditures to take care of the unemployed. In short, the concentration of
economic power accounted for the difficulties which the administration for all its efforts had failed to solve.

Larger staffs, larger appropriations, a deluge of cases would make the Sherman Anti-Trust Act work, because, among other things, it would compel the courts, through a mere mass of decisions, to define what the Sherman Act meant after a half century of enforcement and interpretation. The resulting portents were far from clear. Some business aggregates were broken up, some heartening judicial words against bigness, as such, were spoken; but the welter of considerations involved—intent, agreement, degree of competition, righteousness of methods—made every case a law unto itself. Some restraints upon competition were legal. To determine the question of legality,

"... the court must ordinarily consider the facts peculiar to the business to which the restraint is applied; its condition before and after the restraint was imposed; the nature of the restraint and its effect, actual or probable. The history of the restraint, the evil believed to exist, the reason for adopting the particular remedy, the purpose or end sought to be attained, are all relevant facts."

So asserted Mr. Justice Brandeis.

The Flight from Competition

The unchartable course of anti-trust disturbed businessmen bent upon order, stability and the abatement of "cutthroat" or "destructive" competition; nor was it particularly palatable to those apostles, outside of business, who believed in planning, though they grudgingly vouchsafed a negative or punitive value to the Sherman Act. Thus interests hardly sympathetic in other respects could unite for limited objectives. During the golden day of the Republican twenties, business leaders continually resorted to the Department of Justice in quest of advisory opinions as to what action was legal or illegal and received reassurance of sorts, and the Federal Trade Commission coöperated with trade associations in the formulation of codes of unfair competition. Instead of repressive policies, it relied upon "the forces of self-criticism and self-reliance in business." Then in a single dramatic stroke the Roosevelt administration elevated these diffident beginnings to the blazing pinnacle of high policy. In 1933 the National Industrial Recovery Act in the ecstatic words of the President represented "the most far-reaching legislation ever enacted by the American Congress. It represents a supreme effort to stabilize for all time the many factors which make for the prosperity of the Nation, and the preservation of American standards."

Just to clear the field, the act of 1933 expressly discarded the legislative
experience of the previous four decades. The codes, agreements, and actions authorized were to be exempt from the provisions of the anti-trust laws of the United States. Then it authorized producers to form codes for their industries. Though the words of the statute seemed to give labor, consumers, and the government a share or veto over this process, the codes were really formulated by trade associations. The provisions, thus arrived at, were to be the law of the land whose violation, punishable by fine, was to be prosecuted before the courts by Federal officials. With a wealth of detail, codes now regulated output, quotas, the hours machines should run, the installation of new machinery and the enlargement of plant. They proceeded even more directly to control prices. Some code authorities could set minimum prices “in an emergency” and then define an “emergency”; other industrial covenants prohibited sales below “cost,” and set up standards of accounting practices to determine costs. Under an open-price reporting device, producers were to file prices, to adhere to those prices, and to change them only after a waiting period. To prevent hidden price shading, complex provisions governed credits, discounts, and premiums. A goodly portion of these activities would probably have been outlawed by the courts in a previous decade. This novel attempt to grant producers the right in combination to set prices and other policies staggered down the primrose path of irresponsible administration and at the end collided with the Supreme Court. In 1935 a majority of the justices invalidated the code mechanism. The President was far from expressing gratitude. This highly useful decision, nevertheless, enabled the administration three years later to appear, except for those with long memories, as the champion of competition.

Not entirely, for the thinking of N.R.A. persisted. That act was but the latest and most extreme application of theories which had long questioned the value or possibility of competition. For decades individual states had chosen to regulate railroads, banks, and utilities, withdrawing them in varied degrees from the area of competition in the market place. Since early in the twentieth century, the Federal government had set railroad rates and in 1920 had measurably abandoned competition as the highest good. Since 1913 it had openly centralized the banking system of the nation and determined the price of money, the interest rate. Currently the New Deal was replacing competition in agriculture with a series of crop cartels and encouraging collectivism rather than individualism in labor bargaining. In some instances this departure from the competitive norm was justified on the ground that the businesses in question, railroads and electric power, were “natural” monopolies. In other cases, notably agriculture and labor, they were “depressed” or “sick” segments of the economy. Special measures by state and nation were required as cure.
The evidence of illness was often the mere strength of the political pressures brought to win exemptions from anti-trust. Thus to deprive large distributors, often chain stores, of their advantages of mass purchasing and low mark-ups, a series of measures in the thirties, amending the Clayton and the Sherman acts, permitted manufacturers to set the minimum price at which distributors could resell the product and curtailed the former’s freedom to shade prices for purchasers who bought on a large scale. Often made palatable by the designation “fair trade” acts, such legislation was a response to the lobbies of small merchants as well as to the ideological preference for little people, even at higher prices. In the name of conservation, the Federal government and the chief oil states proceeded to weld various agencies into a trade association for the petroleum industry. The former provided statistics and quotas; the latter, thus educated, authorized various commissions to shut down production when prices were “too low.” Bituminous was likewise an “over-competitive” industry. After a period of experimentation with various agencies, the key to control was found in the Department of the Interior where a Division was given power to set minimum and maximum prices for producers who subscribed to the code. Those who didn’t had to pay a 19½ per cent tax on the value of the coal they sold. At least such arrangements took the form of law; in the anthracite industry the cartel was run by instinct. After 1940 a board, appointed by the Governor of Pennsylvania without legal authority, apportioned production quotas and the “moral compulsion” of the operators and the “punitive power” of the United Mine Workers compelled adherence. These collusions between government and business to restrain trade and keep prices stable would have been inconceivable to the generation of Woodrow Wilson.

Of the more traditional exemptions from the area of free competition, banking and transportation have already been discussed. The enforcement of a similar policy for the utilities, telephone, telegraph, gas, electric light and power, had generally before the New Deal rested in the hands of state commissions. Their ability to set rates successfully was limited by long-standing judicial decisions—Smyth v. Ames was the most important—defining the investment base upon which rates were to be earned. As in the case of the railroads, the courts had insisted upon reproduction costs or upon a “fair value,” a mystical entity hovering between reproduction cost and actual investment. In the thirties a series of decisions loosened these infallible inflexibilities and by the mid-fourties the judges permitted regulatory commissions to discard reproduction cost and fair value in favor of a rate base yielding a return enabling “the company to operate successfully, to maintain its financial integrity, to attract capital, and to compensate its investors for the risks assumed.” This new freedom for commissions led to greater certainty and
precision in the setting of rates. Contributing to the same outcome was the more systematic regulation of utilities by the national government. National statutes covered matters which states could not control and created national commissions which gave to many moribund state bodies an example of vigor, knowledge, and inspiration.

These national measures came in the mid-thirties. The Federal Power Commission, an ex-officio body established in 1920, originally had jurisdiction over hydro-electric enterprises in public lands or Indian reservations and on navigable streams. Through its power to determine the conditions of a license for construction it possessed some oversight over rates and capitalization. In 1935 the Commission was given explicit jurisdiction over the interstate transmission and sale of electric power: three years later the authority was extended to natural gas. In both instances the rates regulated were wholesale ones, sales by one corporation to another. At the same time, legislation concentrated and enlarged the piecemeal regulation of communications under the Federal Communications Commission. In its jurisdiction over telephone, telegraph and radio it dealt with technical matters, like the assignment of invisible "channels" through the ether, and exercised regulatory powers over interstate rates and intercorporate relationships. Powers of this sort, the Roosevelt administration clearly felt were quite inadequate to handle those corporate houses of mystery, thrown together in the golden twenties by the power and light corporations. Such holding companies could not be regulated; they must be destroyed. In 1935 after a Homeric legislative battle, the Securities and Exchange Commission was to draw up and enforce a simplified régime for the industry. Forbidden to spread all over the map, holding companies were now to confine their operation to a single area or region. To flatten the pyramid of control, the act permitted a holding company to hold stock in an operating company and a holding company to hold stock in the holding company that held stock in an operating company. In the contemporary setting, this maximum permission was thin diet. Furthermore, the Commission could regulate the issue of securities of holding companies and supervise all relations between companies in the same system and between a holding company and its affiliates. For years a quarrel over the constitutionality of the act and the actions taken under it slowed the process of conformity.

On the whole, the effect of these various governmental interventions was to introduce into the areas involved a uniformity and rigidity of prices which, if administered by big business, would have been cited in the courts as evidence of restraint of trade. To be sure, the decisions on such matters were now presumably in the hands of government bodies defending the public
interest. Since the public interest was the aggregate of many group or individual interests, often irreconcilable, there was no guarantee that policy would be disinterested or far-sighted. Particularly was this true when decision was intrusted in fact to the parties who would derive quite tangible benefits from it. Anthracite and agriculture were cases in point. Furthermore, those who relished the degree of control and planning these developments made possible, often lamented that their tendency was protective rather than promotional. The latter quality was the characteristic of an expanding economy.

**Government Enterprise**

From time to time proposals were made that the government itself enter business as financier, owner, operator, or manager. The colonial era furnished examples; the banking and transportation experiments in the early day of the Republic were nearer precedents; and a multitude of government activities in the twentieth century, the post office, roads, education, should have been enough to turn aside the curse of novelty or revolution. Still the extension of government ownership and operation to new fields usually occasioned a major quarrel over the proper division of the economy between public and private enterprise.

Though early in the era of war, normalcy, and depression the proposal to nationalize the railroads had been completely buried, the stresses of these years hastened the advance of government enterprise in other fields. One was housing. In one way or another governmental bodies had concerned themselves for decades with this matter, as the mountain of building codes, tenement house laws, and tax exemptions demonstrated. Such measures had been designed to stimulate construction by private capital and to ensure certain standards of safety, health, privacy, and decency. These objectives were often contradictory and the need for housing, for instance in New York City, brought about the continued occupancy of substandard or illegal dwellings. As municipalities and states experimented with devices for progress, the national government, here as elsewhere, was drawn into the housing field on an emergency basis. During World War I it built company towns, owned by the government, in boom industrial areas. Fifteen years later, when the depression set going a tidal wave of mortgage foreclosures the Roosevelt administration took steps to stay disaster. On a temporary basis it first interposed the government's credit on behalf of home owners, and then, in order to stimulate building as well, to organize the various private lending agencies in such a fashion that they could call upon the government for credit reserves or to permit government agencies to insure or guarantee the mortgages which private institutions financed in the first instance. Though savings and
loan associations, banks and trust companies, and insurance companies remained the lenders, government credit in large measure buttressed this façade.

All this private investors and owners might tolerate or even commend. The direct provision of housing by the national government unsettled them. After a customary period of haphazard experimentation, the Roosevelt administration was convinced that private enterprise could not afford to provide adequate housing for receivers of low incomes. Government must do so. As the years passed this public obligation grew into a civil right. In the late forties a key administrator of the Federal housing program was asserting as fundamental "that every American family should have an opportunity for a decent home in a suitable environment." It was not necessary to provide a precise measurement for the adjectives employed in this statement to demonstrate that the construction costs per room could not be discharged by any rent per room collected from those for whom such housing was intended.

A variant of the grant-in-aid device provided a solution. State laws were to authorize local building authorities which could borrow from the national government as much as 90 per cent of the construction costs of low-rent, public housing. After the project was built, the appropriate agency of the Federal government was to pay a yearly subsidy to the local housing authorities to help bridge the gap between total annual charges against the project and the rents the tenants could afford to pay. The contribution of the local authority to this subsidy, at least one-fifth of the Federal one, was usually in the form of tax exemption. During World War II and its aftermath, emergency programs for defense workers and veterans, rising costs, and rent control, originally granted to OPA for the war emergency and extended after much bickering into the years of peace, added new complications to a program assigning to private enterprise the provision of homes for the upper and middle class and to public bodies the experiment with decent housing for those who could not otherwise afford it.

The welfare considerations, here implicit, were somewhat less prominent in the arguments for the public production of electric power. Rather an emphasis on the benefits of cheap power and the possibilities of attaining it, on a profitable basis, by public enterprise had inspired the municipal ownership movement early in the century. Nevertheless, circumstance and event, as well as general considerations, explained the later and larger undertakings of the nation. During World War I, the Wilson administration built a dam across the Tennessee River at Muscle Shoals to produce the electric power required in the fixation of nitrogen. Every effort during the twenties to transfer the installation to private hands failed. Toward the end of the decade, the Hoover administration poured government millions into the
construction of the Hoover Dam on the Colorado for purposes of flood control, irrigation, and electric power production. The government had always "improved" rivers; it was clear that improvement now embraced so many large purposes that only government funds and direction could accomplish it. It was the achievement of the Roosevelt era to draw these various tendencies together and give them an imaginative and humanitarian scope. During his first campaign he proposed great national projects on the St. Lawrence, Tennessee, Colorado, and Columbia. The rates on the power they produced were to "be forever a national yardstick to prevent extortion against the public and to encourage the wider use of that servant of the people—electric power."

This vision was not completely realized, though the expenditure of government funds for public works in the thirties and then for desperately needed additional power resources during World War II, pushed ahead the projects already under way. To build and operate a vast series of dams, powerhouses, and locks along the Tennessee, whose watershed and course involved seven states, Congress established in 1933 the Tennessee Valley Authority. A few years later the Bonneville Power Administration on the Columbia River was endowed with two powerful installations at Bonneville and Grand Coulee. Unlike Hoover Dam, which sold its power at the bus bar, these new authorities or administrations could build distributing systems of their own. In their rate policies they fulfilled their own insights and the injunctions of Congress. Allocating a portion of their construction costs to electric power production, a highly abstract method of fixing a rate base, they gave priority in the sale of power to governmental bodies or cooperatives, regulated retail costs of power by contract with these purchasers, promoted through low rates the wider use of power by domestic and rural consumers, and, in short, operated as the evangelists of a new power age. For these projects were a phase of governmental planning, knitting together conservation, land use, power, and transportation. Their proponents claimed they were democratic, decentralized, and successful. Their opponents asserted they masked their real costs through accounting subterfuges and the failure to pay taxes. While the debate went on, so did the trend toward governmental ownership. In 1945 20 per cent of the electric power producing facilities in the country were owned and operated by the Federal or local governments. Two years later substantially all the electric utilities in Tennessee and Nebraska were publicly owned.

A Planned Economy

War was the archangel of a planned economy. Since the masters of cyclical theory have so far failed to formulate any satisfactory cycle of war and peace.
it has been difficult to prepare for the former's occurrence. This basic perplexity was heightened by the rapid technological change in the methods of making war in the twentieth century. As a consequence the United States did not take in advance very effective measures for the control of the war economy. Such legislation has been improvised and experimental. If the conflict lasted long, it usually arrived at workable solutions.

In war the great customer was the government. In 1941 15 per cent of America's industrial production was devoted to war; in 1943, the peak year, roughly 66 per cent fell in that category. To accomplish this redirection of effort the government might rely upon patriotism or the classic incentives of high profits, or it might commandeer plants and businesses. Comparatively speaking, the government in World War I relied upon voluntary incentives. Through taxes and a partial price control it placed some limitations on profits; it kept the power to commandeer as a birch rod in the closet. In World War II, the administration elected to dampen the operation of the profit motive. Taxes hit excess profits, statutes limited profits upon government contracts to varied per cents, 8 and 10 were common, and the renegotiation of contracts plugged the gaps. All other considerations aside, the wide popularity of the cry "take the profits out of war" made the choice of this policy inevitable. As in the earlier conflict the President possessed the power to seize and operate plants refusing to work on government contracts.

In spite of vast administrative complexities, the problems of war production essentially involved two tasks: the expansion of production through conversion of old plants and the building of new ones, and the division of the resulting product among the varied and clamorous claimants. In both World Wars the government aided the construction of new facilities by government loans. The government might erect at first hand the desired structures and authorize a private corporation to operate them on an agency basis, or it might loan the money for the former purposes to the corporation. In World War II government billions built shipyards, airplane and motor factories, the synthetic rubber plants and the immense installations at Oak Ridge, Tennessee, and Hanford, Washington, manufacturing the mysterious materials for the atomic bomb. Private funds, nevertheless, financed approximately a third of the wartime expansion, a process stimulated by permitting for profit and tax purposes the rapid amortization of such investments.

The apportionment of the industrial output was a far more difficult task. Among government consumers there were the Army, Navy, Air Force, Maritime Commission, and Lend-Lease Administration. Each felt their requests were critical. Outside the charmed circle was the civilian market. Though it might wear the mien of a drab drudge, bewailing the lack of auto-
mobiles, washing machines, vacuum cleaners, refrigerators, and new bungalows, its morale was a prerequisite to the productivity upon which all depended. With these clashing demands, as well as with personal ambitions and class interests, some central government agency had to cope. In the First World War the War Industries Board was finally given the task. The war was too short to prove its effectiveness, but long enough to accumulate experience embodied in the government archives and the recollections of the administrators.

Though some of this background was useful in World War II, several months of experiments with differently titled agencies preceded a solution. In 1942 the War Production Board, under Donald Nelson, one-time Sears Roebuck executive, emerged as the grand headquarters of industrial organization. In various incarnations and times, it used a priorities system which entitled producers on military contracts to go to the head of the queue for their materials, or simple allocation systems by which selected products were separately rationed, and finally rationing and scheduling devices under which those who got an order were entitled to receive the amount of raw materials or component parts to complete it. The prime contractors channeled these allocations down to sub-contractors and they in turn to others. Within the War Production Board a requirements committee brought the requests of claimants into line with available materials and made the requisite allocations. In effect, by the end of the war the Federal government was deciding what should be produced, by what producers, in what quantities, for what consumers, in what time, and for what price. Whatever freedom the market possessed was in the cracks of the structure.

With the end of the war came the question of demobilizing industrial controls and liquidating government investments. On the whole, the resulting decisions occasioned less acrimony and debate than comparable ones in other fields of the economy. No structure of price supports, as in agriculture, created a lobby of millions of interested voters; the institutional position of business corporations depended on legislation of ancient vintage rather than on measures as fresh as those prescribing collective bargaining. The critical battle for control really centered not over WPB but over OPA. Here other interests joined businessmen in their eagerness to dissolve the apparatus of price control. In the narrower field of industrial production the government soon withdrew from planning by priorities or rationing. Its plants, except a significant few required for strategic reasons, notably atomic materials, were placed on the auction block. Some argued that their disposal should be so managed as to stimulate competition or distribute industry more uniformly throughout the nation. Only a very limited realization of either objective proved feasible.
Nevertheless, the war years, added to those which had gone before, hastened the trend toward the governmentalization of the economy. Even though boards, commissions, and controls disappeared or withered back, they left a residue of experience and of habit. Men had become accustomed to new procedures and new ways of thought; and such is the rapidity of change that the revolution of yesterday became the inertia of the present. But though the march toward government business had gone far, it had not gone the full way. In the late forties the economy still remained a mixed one, the despair of the logician and the systemizer. In spite of its many vicissitudes and guises, it proved a productive economy. The national income in terms of dollars multiplied approximately two and a half times between 1929 and 1947. Though no comparably sweeping changes had taken place in its distribution among the people of the nation—the 10 per cent of the population with the highest incomes received much the same proportion of the national income in 1937 as in 1918—the expanding totals had brought a standard of living without parallel elsewhere in the world.

The nation which achieved these material triumphs occupied an area which three and a half centuries before had been hardly explored, much less settled, by the outriders of western Europe. Within that time span, short by the test of history, Africans and Europeans and their descendants had peopled the new land; the agricultural frontier had pushed across the continent; and a great industrial civilization had been brought into being. A scattered fringe of colonies had become a nation, a republic and a democracy. The newness of a continent, the abundance of its resources, the millions of its producers and consumers explained much. But the unrivaled position and power of this newcomer was due even more to the aspirations and ardors of its people and to the ingenuity with which they adapted or devised political and economic institutions to attain their aims.
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GENERAL WORKS

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somewhat reduced in extensiveness. In its reviews the *Journal of Economic History*, beginning publication in 1941, redressed the balance. The excellent lists of recent publications compiled for the *Journal* by Mulford Martin do not, however, contain periodical entries.

**CHAPTER I**

**THE IMPERIAL FRONTIER**


The European background of colonization can be found in great detail in *The Cambridge Modern History*. E. P. Cheyney, *European Background of American History* (1904) has not been superseded as a succinct treatment. Fundamental are the various volumes by G. L. Beer. His *The Origins of the British Colonial System, 1578–1600* (1908), *The Old Colonial System* (1912)—of which unfortunately only the two volumes dealing with the period 1660–88 were completed—and *British Colonial Policy 1734–1765* (1907) together form a classic treatment of colonization by no means confined to Great Britain. The theory of mercantilism is given brief treatment in most texts on the history of economic theory. Valuable are J. W. Horrocks, *A Short History of Mercantilism* (1925); E. F. Hecksher, *Mercantilism*, 2 vols. (1935); and the brilliant work, E. S. Furniss, *The Position of the Laborer in a System of Nationalism* (1920).


The classic treatment of the French in America is that by Francis Parkman. In spite of the passage of time his scholarship still stands and his literary style has never been equaled. Of his volumes, *The Old Régime in Canada* (1874) most completely describes the economic life of New France. The best short treatment of the French in America


A HISTORY OF AMERICAN ECONOMIC LIFE


It is unnecessary for an economic history which deals only incidentally with immigration to give a bibliography for the subject. Of the few works which have surmounted the special obstacles of research abroad and a knowledge of foreign languages, the most useful single volume is M. L. Hansen, The Atlantic Migration, 1607–1860 (1940). Edith Abbott, Historical Aspects of the Immigration Problem: Select Documents (1926), an indispensable collection, is brief on the colonial period. See also the works on indentured servants listed in the following chapter. For figures of colonial population consult E. B. Greene and V. D. Harrington, American Population before the Federal Census of 1790 (1932) and S. H. Sutherland, Population Distribution in Colonial America (1936). Inevitably the distribution of population leads to internal migration and the westward movement. F. J. Turner is the maker of the West in American history. Every student should read his “Significance of the Frontier in American History,” the first essay in his The Frontier in American History (1920). Turner has paid attention to the colonial period in the next two essays, “The First Official Frontier of the Massachusetts Bay” and the more important “The Old West.” For the western company promotions, C. W. Al- vord has a wealth of information in his The Mississippi Valley in British Politics, 2 vols. (1917).

CHAPTER II

PRODUCTION IN THE BRITISH COLONIES


The colonial fur trade has not yet received complete treatment. Although Innis and Alvord, cited in Chapter I, devote considerable attention to the fur trade and policy, M. G. Lawson, Fur: A Study in English Mercantilism, 1700–1775 (1943) is the best specialized introduction. Detailed treatments of the trade in specific colonial regions are F. X. Maloney, The Fur Trade in New England, 1620–1676 (1931); A. T. Volwiler, George Croghan and the Westward Movement, 1741–1782 (1926); C. A. Hanna, The Wilderness Road (1911); and for the southern colonies V. W Crane, The Southern Frontier, 1670–1732 (1928), a work which repays perusal as a whole for its picture of the influence of American economic conditions upon imperial policy.

On the timber business the only complete work is the diffuse J. E. Defebaugh, History of the Lumber Industry of America, 2 vols. (1906–07). On the mast trade and naval stores production there are able treatments in R. G. Albion, Forests and Sea Power (1926), which occasionally deals with the general lumber business; W. A. Knittle, Early Eighteenth Century Palatine Emigration: A British Government Redemptioner Project to Manufacture Naval Stores (1936); and E. L. Lord, Industrial Experiments in the British Colonies of North America (1898). The conservation policy of the British govern ment and the rivalries of lumber kings are interestingly described in L. S. Mayo, John Wentworth, Governor of New Hampshire, 1767–1775 (1921) and in L. H. Gipson, Jared Ingersoll (1920).


On labor in the colonies, M. W. Jernegan, *Laboring and Dependent Classes in Colonial America, 1607–1783* (1931) is a series of essays which places greater stress on education and relief than on the economic aspects of its subject. A. E. Smith, *Colonists in Bondage, White Servitude and Convict Labor in America, 1607–1776* (1947) is a highly readable account of the recruitment, transportation and treatment of this class of workers, while R. B. Morris, *Government and Labor in Early America* (1946), which goes far beyond Jernegan, deals with both free and bound labor. Detailed treatments are K. F. Geiser, *Redemptioners and Indentured Servants in the Colony and Commonwealth of Pennsylvania* (1901); C. A. Herrick, *White Servitude in Pennsylvania* (1926);
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Samuel McKee, Labor in Colonial New York, 1664-1776 (1935); and L. J. Greene, The Negro in Colonial New England, 1620-1776 (1942). The slave system of the South has stirred extensive treatment. U. B. Phillips, American Negro Slavery (1918) and Life and Labor in the Old South (1929) have not been superseded. On the general question of slavery, the student will also consult W. E. DuBois, The Suppression of the African Slave Trade to the United States of America, 1638-1870 (1896); Elizabeth Donnan, Documents Illustrative of the Slave Trade to America (1930-35); and A. W. Lauber, Indian Slavery in Colonial Times within the Present Limits of the United States (1913). Oscar and M. F. Handlin, "Origins of the Southern Labor System," William and Mary Quarterly, VII, 199-222 is a provocative analysis. Detailed and localized treatments are J. C. Ballagh, White Servitude in the Colony of Virginia (1895) and A History of Slavery in Virginia (1902); J. S. Bassett, Slavery and Servitude in the Colony of North Carolina (1896); J. R. Brackett, The Negro in Maryland (1889); E. McCrady, "Slavery in the Province of South Carolina, 1670-1770," ARAHA, 1895 631-73; and E. I. McCormac, White Servitude in Maryland, 1634-1820 (1904).


CHAPTER III

THE DOMAIN OF COLONIAL COMMERCE

The first volume of E. R. Johnson et al., History of Domestic and Foreign Commerce of the United States, 2 vols. (1915) is the best brief narrative of the commerce of the American colonies. It has an extensive bibliography.

The internal trade of the colonies still awaits adequate treatment. There is only a brief chapter in E. R. Johnson et al., cited above. Seymour Dunbar, A History of Travel in America, 4 vols. (1915) is scatterbrained but contains useful information about early routes and has splendid illustrations. Richardson Wright, Hawkers and Walkers in Early America (1927) has collected curious and valuable information which helps to an understanding of the distributive rôle of the peddler.

The financial systems of the colonies have received considerable treatment. Two manuals give good introductions. D. R. Dewey, Financial History of the United States (1936) has a chapter on colonial finance, but Horace White, Money and Banking Illu-
BIBLIOGRAPHY

tered by American History (1902) is a better approach for the inexpert. C. J. Bullock, Essays on the Monetary History of the United States (1900) is a scornful arraignment of colonial practices by a professional economist. An illuminating contemporary account, edited by C. J. Bullock in 1897 and expressing the same point of view, is William Douglass, A Discourse Concerning the Currencies of the British Plantations in America (1740). Of the more specialized works A. M. Davis, Colonial Currency Reprints, 1682-1751, 4 vols. (1910-11) collects interesting source material, and his Currency and Banking in the Province of Massachusetts Bay, 2 parts (1901) gives a background for colonial paper money which serves for more colonies than Massachusetts Bay. Finance in the broader setting of commerce is brilliantly treated by C. P. Nettels, The Money Supply of the American Colonies before 1720 (1934). D. L. Kemmerer, “The Colonial Land Office System in New Jersey,” JPE, XLVII, 867-74, and R. A. Lester, Monetary Experiments, Early American and Recent Scandinavian (1939) profitably turn the preoccupations of a later era to an earlier one.

A short but excellent summary of the foreign commerce of the colonies is provided by C. M. Andrews, “Colonial Commerce,” AHR, XX, 43-63, while the works of G. L. Beer, cited earlier, give a full picture of colonial commerce. These accounts might well be read in connection with the first three essays in C. M. Andrews, The Colonial Background of the American Revolution (1924). On the English Acts of Trade and Navigation the fourth volume of Andrews, The Colonial Period of American History is particularly valuable. G. L. Beer’s thesis that these regulations were not unusually oppressive to the colonies represents a scholarly reaction against the older patriotic conceptions. W. J. Ashley, Surveys Historic and Economic (1900) has a chapter on “England and America, 1660-1760,” which deals with this legislation.

The books cited in the previous chapter for various industries and staples touch upon the trade in the products with which they were concerned. For southern commerce in tobacco there are P. A. Bruce and A. O. Craven, both cited above, and the excellent studies by C. M. MacInnes, The Early English Tobacco Trade (1926); J. S. Bassett, “The Relation between the Virginia Planter and the London Merchant,” ARAHA, 1901, i, 53-75; and L. C. Gray, “The Market Surplus Problems of Colonial Tobacco,” AH, II, 1-34. These studies are given personal life in Louis Morton, Robert Carter of Nomini Hall, A Virginia Tobacco Planter of the Eighteenth Century (1941) and L. B. Wright, ed., Letters of Robert Carter, 1720-1727, The Commercial Interests of a Virginia Gentleman (1940). On Maryland’s trade consult C. P. Gould, Money and Transportation in Maryland, 1720-1765 (1915) and M. S. Morriss, Colonial Trade of Maryland, 1689-1715 (1914).


A history of shipbuilding in the colonies would fill a grave deficiency. Only New England activity has been moderately well chronicled. Henry Hall, Report on the Ship-Building Industry of the United States, 10th census, 1880, VIII (1884) is inadequate
CHAPTER IV

THE AGRICULTURAL CONQUEST OF THE WEST

For the middle period of American history J. B. McMaster, A History of the People of the United States, 8 vols. (1883–1913) pays extended attention to the economic and social features of American history, but it lacks interpretation and logical organization. It is in some respects source material, so extended are its quotations and paraphrases from contemporary documents, particularly the newspapers. The style, sprightly in the early volumes, tires toward the close of the work. In the History of American Life this period is treated by J. A. Krout and D. R. Fox, The Completion of Independence, 1790–1830 (1944), and C. R. Fish, The Rise of the Common Man, 1830–1850 (1927). In the Economic History of the United States series the forthcoming volume G. R. Taylor, The Revolution in Transportation, 1820–1860 brings scholarship and balance to the treatment of the non-agricultural aspects of the economy.


On public land policy Thomas Donaldson, The Public Domain, Its History with


It is unnecessary to give a complete bibliography for the westward movement. F. J. Turner has three stimulating essays—“The Middle West,” “The Ohio Valley in American History,” and “Significance of the Mississippi Valley in American History”—in his The Frontier in American History (1920). Of the many texts on the westward movement R. E. Riegel, America Moves West (1947) and R. A. Billington and J. B. Hedges, Westward Expansion (1949) have extensive bibliographies. In view of the importance of agriculture in the United States it is at once astonishing and depressing that it has received so little attention from the general historian and even from the
specialist. The bibliographies of L. B. Schmidt and E. E. Edwards, cited in Chapter II, continue to be useful. P. W. Bidwell and J. I. Falconer, History of Agriculture in the Northern United States, 1620–1860 (1925) gives the most extended treatment. The period between 1800 and 1840 is the best handled. The volume has an extensive bibliography. Agriculture of the United States in 1860, Compiled from the Original Returns of the Eighth Census (1864) pictures progress to that date and has short sketches of worth on the history of agricultural machinery, the beef industry, and wheat cultivation. C. L. Flint, "Progress in Agriculture," in Eighty Years' Progress (1861), is an old work which contains some useful information in spite of the narrative's gross disproportion. As for the costs of farming, a beginning has been made in C. H. Danhof, "Farm-Making Costs and the 'Safety Valve,'" 1850–60, JPE, XLIX, 317–59 and "The Fencing Problem in the Eighteen Fifties," AH, XVIII, 168–86.


CHAPTER V

SLAVERY: THE AGRICULTURAL REVOLUTION

The most complete treatment of the economics of southern agriculture remains L. C. Gray, History of Agriculture in the Southern United States to 1860, 2 vols. (1933). But U. B. Phillips, American Negro Slavery (1918) and Life and Labor in the Old South (1929), particularly the latter, give a more literary and pictorial treatment of this vanished civilization. Phillips has also edited the first two volumes of A Documentary History of American Industrial Society, 11 vols. (1910–11), which collect interesting source materials on plantation and frontier. On the history of southern crops there are the journalistic account, J. A. B. Scherer, Cotton as a World Power (1916), placing American development in a world setting; Meyer Jacobstein, The Tobacco Industry in the United States (1907), very brief on the pre-war period; and J. C. Robert, The Tobacco Kingdom: Plantation, Market, and Factory in Virginia and North Carolina, 1800–1860 (1938); and for rice, the excellent introduction in J. H. Easterly, The South Carolina Rice Plantation as Revealed in the Papers of Robert F. W. Allston (1945) and A. V. House, "The Management of a Rice Plantation in Georgia, 1834–1861," AH, XIII, 208–17. There have been many state treatments of southern slavery or agriculture: H. A. Trexler, Slavery in Missouri, 1804–1865 (1914); I. E. McDougall,

Of the contemporary descriptions of the South, J. D. B. DeBow, The Industrial Resources, Etc. of the Southern and Western States, 3 vols. (1852–53) is a mine of information. F. L. Olmsted, Journeys and Explorations in the Cotton Kingdom, 2 vols. (1861), abridging previous volumes, reflects the point of view of a northern reporter whose observations were of influence in molding northern opinion. H. R. Helper, The Impending Crisis of the South: How to Meet It (1857) is a passionate partisan arraignment of the southern economic system but still repays reading. W. E. Dodd, The Cotton Kingdom (1921) is a masterly synthesis of the features of southern civilization. Amidst a good deal of controversy salutary detailed studies are filling in the picture of an economic and social order. B. H. Clark, The Tennessee Yeoman, 1840–1860 (1942) and Herbert Weaver, Mississippi Farmers, 1850–1860 (1945) are monographs illustrating the trend. Shorter but equally important are F. L. and H. C. Owsley, “The Economic Basis of Society in the Late Ante-Bellum South,” Journal of Southern History, VI, 24–45 and P. H. Buck, “The Poor Whites of the Antebellum South,” AHR, XXXI, 41–54.


CHAPTER VI

THE DECLINE OF FOREIGN COMMERCE

A general and complete history of foreign trade and commerce has not yet been written which at the same time integrates foreign commerce with the domestic life of the nation and places it in international proportion. The best single work is E. R. Johnson *et al.*, *History of Domestic and Foreign Commerce of the United States*, 2 vols. (1915). It has a full book list. The vital statistics for American commerce can be obtained from *American State Papers* (1832–39) and after 1821 from the valuable annual *Report of the Secretary of the Treasury on Commerce and Navigation*. Figures for the earlier period are provided by Timothy Pitkin, *A Statistical View of the Commerce of the United States of America* (1816,1835) and Adam Seybert, *Statistical Annals* (1818).

The struggle against the commercial and navigation systems of Europe is best prefaced by R. L. Schuyler, *The Fall of the Old Colonial System, A Study in British Free Trade* (1945). K. E. Knorr, *British Colonial Theories, 1570–1850* (1944) covers a wider chronological sweep. The best over-all picture of the American attack upon the British and other systems is in J. G. B. Hutchins, *The American Maritime Industries and Public Policy, 1789–1914* (1941), a volume which is at the same time the most


J. G. B. Hutchins, The American Maritime Industries, cited earlier, supersedes previous general histories of the merchant marine. Morison, Rowe, Saltustall, and Albion, all previously mentioned, are highly useful. See also R. G. Albion, Square-Riggers on Schedule (1938). Probably the best introductions to naval architecture for the layman are H. I. Chapelle, The History of American Sailing Ships (1935) and A. K. Laing, Clipper Ship Men (1944), intended as a boy's book but thus comprehensible by the adult landlubber. A. H. Clark, The Clipper Ship Era, 1843–1869 (1910) is a classic and C. C. Cutler, Greyhounds of the Sea: The Story of the American Clipper Ship (1930) is beautifully illustrated and concludes with exceedingly valuable tables of voyages, records, and ships. Information and illustrations concerning individual vessels have also been collected in several volumes by F. C. Matthews on American clipper and commercial sailing craft. For steamships consult D. B. Tyler, Steam Conquers the Atlantic (1939). Varied estimates on subsidies are in Royal Meeker, History of Shipping Subsidies (1905) and M. M. McKee, The Ship Subsidy Question in United States Politics (1922).

CHAPTER VII

THE RISE OF DOMESTIC COMMERCE

The bibliography of domestic trade and transportation is unusually complete for an economic subject and most modern American historians have treated the subject extensively in their general works. Transportation also is a subject which the foreign traveler experiences and the descriptions of the transportation system by observers such as Michel Chevalier in his Society, Manners, and Politics in the United States (1839) are an important source of information. Of the more specialized works E. R. Johnson et al., cited in the previous chapter, is useful for domestic commerce. Fortunately one of the few extensive surveys of the field of domestic commerce ever made was in 1851–52, and the results are published in I. D. Andrews, Report on the Trade and Commerce of the British North American Colonies and upon the Trade of the Great Lakes and Rivers, 32nd Cong. 1st Sess. Ex. Doc. No. 136 (1853). It has extremely valuable appendices. W. F. Switzler, Report on the Internal Commerce of the United States, 50th Cong. 1st Sess. House Ex. Doc. No. 6, Pt. 2 (1888) completes the picture for the internal river basins. On transportation, as distinguished from commerce, there is no satisfactory account. J. L. Ringwalt, Development of Transportation Systems in the United States (1888) is full but needs to be used critically; B. H. Meyer, C. E. MacGill, et al., History of Transportation in the United States before 1860 (1917) is not complete and is poorly organized but has maps and a full bibliography; Seymour Dunbar, A History of Travel in America, 4 vols. (1915) is picturesquely diffuse. For certain regions these deficiencies are overcome by special studies. U. B. Phillips, A History of Transportation in the Eastern Cotton Belt to 1860 (1908); W. J. Lane, From Indian Trail to Iron Horse, Travel and Transportation in New Jersey, 1620–1860 (1939); G. P. Baker, Formation of the New England Railroad Systems (1937); and E. C. Kirkland, Men, Cities and Transportation, A Study in New England History, 1820–1900, 2 vols. (1948) are the most useful. J. W. Livingood, The Philadelphia-Baltimore Trade Rivalry, 1780–1860 (1947) and W. W. Belcher, The Economic Rivalry between St. Louis and Chicago, 1850–1880 (1947) are in effect regional transportation histories. On technical details consult David Stevenson, Sketch of Civil Engineering of North America (1859) and R. H. Thurston, A History of the Growth of the Steam-Engine (1902).
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Though A. B. Hulbert has made a study of separate turnpikes, the early history of highways and highway transportation is in desperate need of scholarly attention. The turnpikes have been covered systematically in J. A. Durrenburger, Turnpikes, A Study of the Toll Road Movement in the Middle Atlantic States and Maryland (1931) and P. E. Taylor, “The Turnpike Era in New England,” MS Thesis, Yale University. F. J. Wood, Turnpikes of New England (1919) summarizes the history of individual projects. P. D. Jordan, The National Road (1948) is the best on that enterprise though, like its predecessors, it is “romantic.”

For the invention of the steamboat, J. T. Flexner, Steamboats Come True (1944) is a good summary. Admirable works on individual inventors are: H. W. Dickinson, Robert Fulton: Engineer and Artist (1913); Greville and Dorothy Bathe, Oliver Evans (1935); and Thomas Boyd, Poor John Fitch: Inventor of the Steamboat (1935). The history of commerce on the eastern waters is almost untouched. M. E. Martin, Merchants and Trade of the Connecticut River Valley, 1750-1820 (1939) is an exception. The1700s-1820s. The history of commerce on the eastern waters is almost untouched. M. E. Martin, Merchants and Trade of the Connecticut River Valley, 1750-1820 (1939) is an exception. The coasting trade is also comparatively untreated, but see Albion and Hutchins, cited in Chapter VI, Kirkland, cited above, and W. J. Lane, Commodore Vanderbilt: An Epic of the Steam Age (1942) for a beginning. J. H. Morrison, History of American Steam Navigation (1903) remains more useful than its successors. On the Mississippi the definitive account is L. C. Hunter, Steamboats on the Western Rivers: An Economic and Technological History (1949). This should be supplemented by L. D. Baldwin, The Keelboat Age on Western Waters (1941) and W. J. Petersen, Steamboating on the Upper Mississippi (1937). For the Great Lakes, Harlan Hatcher, Lake Erie (1945) in the American Lake Series has the most material on navigation.


On the canals as a whole, A. F. Harlow, Old Towpaths (1926) is an admirable popularization. Of the more detailed treatments there are N. E. Whitford, History of the Canal System of the State of New York, 2 vols. (1906) with interesting statistics; A. L. Bishop, “The State Works of Pennsylvania,” Transactions of the Connecticut Academy of Arts and Sciences, XIII (1908); G. W. Ward, The Early Development of the Chesapeake and Ohio Canal Project (1899); E. L. Bogart, Internal Improvements and State Debt in Ohio (1924); W. F. Dunaway, History of the James River and Kanawha Company (1922); E. J. Benton, The Wabash Trade Route in the Development of the Old Northwest (1903); J. W. Putnam, The Illinois and Michigan Canal (1918); C. L. Jones, The Economic History of the Anthracite-Tide-Water Canals (1908); Christopher Roberts, The Middlesex Canal, 1793-1860 (1938); and W. S. Sanderlin, The Great National Project: A History of the Chesapeake and Ohio Canal (1946). The financing of internal improvements is of course discussed in the above works. More specialized treatment is provided in the extremely valuable contemporary account Alexander Trotter, Observations upon the Financial Position ... of Such of the States ... as Have
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Contracted Public Debts (1839) and in the monographs by L. H. Jenks, The Migration of British Capital to 1875 (1927); R. C. McGrane, Foreign Bondholders and American State Debts (1935); G. S. Callender, English Capital and American Resources, ms. thesis in the Harvard College Library; B. W. Ratchford, American State Debts (1941); and R. W. Hidy, already cited.


CHAPTER VIII

STATE AND NATION IN BANKING AND FINANCE

In spite of the intense current interest in matters of governmental finance and banking, historical work in the field is still far from adequate. There are a large number of books but they take in each other’s washing and neglect many essential areas of research. The best single summary of the material in this chapter remains D. R. Dewey, Financial History of the United States (1936). A beginning has been made on the more specialized study of government finance. Sidney Ratner, American Taxation: Its History as a Social Force in Democracy (1942) covers part of the subject from a decided point of view and B. U. Ratchford, American State Debts (1941) is an admirable treatment. On the finances of the Revolution and after there is a good discussion in R. A. East, Business Enterprise in the American Revolutionary Era (1938). See also R. V. Harlow, “Aspects of Revolutionary Finance, 1775–1783,” AH, XXXV, 46–68 and Allan Nevins, The American States during and after the Revolution (1924). On price fixing Anne Bezanson, “Inflation and Controls, Pennsylvania, 1774–1779,” Tasks of Economic History, VIII, 1–20 is illuminating.

For the metallic currency consult D. K. Watson, History of American Coinage (1899) and A. B. Hepburn, History of Coinage and Currency in the United States (1903), the latter somewhat of a tract.

Any discussion of banking of interest to others than technicians of the subject should consider the ideas and social conceptions conditioning the banking system. Of the two volumes that accomplish this objective, H. E. Miller, Banking Theories in the United States before 1860 (1927) and Fritz Redlich, The Molding of American Banking: Men and Ideas, 1781–1840 (1947), the latter is more mature and more successful in describing the impact of ideas upon banking devices. In this connection see Bray Hammond, “Long and Short Term Credit in Early American Banking,” QJE.
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XLIX, 79-103 and L. W. Mints, A History of Banking Theory in Great Britain and the United States (1945). A useful over-all compendium on banking is W. G. Sumner, A History of Banking in All the Leading Nations (1866), of which the first volume deals with the United States.


CHAPTER IX

MARKETS AND MACHINES

The best complete volume on manufacturing still remains V. S. Clark, History of Manufactures in the United States, 1607-1860 (1916). The older J. L. Bishop, A History of American Manufactures from 1608 to 1860 . . . 1866, 3 vols. (1868) is a chronological compilation difficult to use. R. M. Tryon, Household Manufactures in the United States, 1640-1860 (1917) is a detailed picture of the era, and Isaac Lippincott, A History of Manufactures in the Ohio Valley to the Year 1860 (1914) is a regional history of the handicraft and small-mill era. The essential English background for the American industrial revolution is differently treated in A. P. Usher, An Introduction to the Industrial History of England (1920) and J. L. and B. Hammond, The Rise of Modern Industry (1925). The former has a stimulating discussion of the meaning of the industrial revolution; the latter is a brilliant interpretation.


The history of the cotton industry is best followed in C. F. Ware, The Early New England Cotton Manufacture: A Study in Industrial Beginnings (1931). This volume fills a long-felt want, but it could well be fuller on the southern New England industry. Vera Shalakman, Economic History of a Factory Town: A Study of Chicopee, Massachusetts (1935); C. M. Green, Holyoke, Massachusetts (1939); M. T. Parker, Lowell: A Study of Industrial Development (1940); T. R. Smith, The Cotton Textile Industry of Fall River, Massachusetts (1944); and E. H. Knowlton, Pepperell’s Progress: History of a Cotton Textile Company, 1824-1945 (1948) are excellent detailed studies. Broadus Mitchell, William Gregg, Factory Master of the Old South (1928) is the best narrative of the pre-war southern machine industry. Unfortunately only one volume of the com-


**CHAPTER X**

**The Formation of a Laboring Class**

No treatment of labor during this period is possible without reference to the ten volumes in *A Documentary History of American Industrial Society* (1900-11). Edited by J. R. Commons and others, this work contains valuable documents and introductions. There are many histories of labor and of organized labor; partisanship and doctrinaire views characterize many. On the whole, the best single treatment remains the first volume in J. R. Commons et al., *History of Labor in the United States* (1918), which pays more attention to the philosophy and organization of the labor movement than the conditions under which the laborer works. P. S. Foner, *History of the Labor Movement in the United States* (1947) has the same interests but is more opinionated. An over-all picture of working conditions is provided by the brilliant Norman Ware, *The Industrial Worker, 1840-1860* (1924) and by volume 2 of Jürgen Kuczynski, *A Short History of Labour Conditions under Industrial Capitalism* (1943). The data on wages and hours in this chapter were derived from Kuczynski's volume and A. H. Hansen, "Factors Affecting the Trend of Real Wages," *AER*, XV, 27-42; *Report of the Committee on Finance (Senate) on Wholesale Prices, Wages, and Transportation* (Aldrich Report), 52nd Cong. 2nd Sess. Sen. Rep. No. 1394; and "History of Wages in the United States from Colonial Times to 1928," *Bulletin of the United States Bureau of Labor Statistics*, No. 604. The impact of depression upon labor is described in part in Samuel Rezneck, "Depression of
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CHAPTER XI

THE RAILROAD AGE

In spite of the increasing attention devoted to it by scholars, the period between 1865 and 1915 remains in large measure terra incognita as far as economic history is concerned. The extensive general histories for the earlier period do not come beyond 1865. So far only one volume in the ambitious Rinehart series has been published for this period, and that on agriculture. From the History of American Life series, Allan Nevins, The Emergence of Modern America, 1865-1878 (1927); A. M. Schlesinger, The Rise of the City, 1878-1898 (1933); I. M. Tarbell, The Nationalization of Business, 1878-1898 (1936), really written by other hands; and H. U. Faulkner, The Quest for Social Justice, 1898-1914 (1931) cover the period.


Trade and commerce have also received episodic treatment. The best secondary account, none too complete, remains E. R. Johnson et al., History of Domestic and Foreign Commerce of the United States (1915). For more detail and contemporary flavor the student should consult the Reports on Internal Commerce issued for about a
decade after 1876 by the Bureau of Statistics, Treasury Department. Especially valuable in this series are the reports for 1876, 44th Cong. 2nd Sess. House Ex. Doc. No. 46, Pt. 2 (1877); and for 1887, 50th Cong. 1st Sess. House Ex. Doc. No. 6, Pt. 2 (1888).


On special phases of railroad history there are for finance two excellent histories, W. Z. Ripley, *Railroads: Finance and Organization* (1915) and F. A. Cleveland and F. W. Powell, *Railroad Promotion and Capitalization in the United States* (1909), which has an excellent bibliography useful for the whole of railroad history. C. S. Longstroth has written on the early pools in *Railway Co-operation in the United States*, Publications of the University of Pennsylvania, Series in Political Economy and


Upon the electric railroad there are the *Proceedings of the Federal Electric Railway Commission*, 3 vols. (1920), with a poor index. This material is elaborately analyzed by D. F. Wilcox, *Analysis of the Electric Railway Problem Prepared for the Federal
Electric Railway Commission (1921). Consult also the invaluable history by E. S. Mason, The Street Railway in Massachusetts (1932).

CHAPTER XII

THE INDUSTRIAL STATE


Of the many volumes on the oil industry, P. H. Giddens, The Birth of the Oil Industry (1938) and his informing pictorial history, Early Days of Oil (1948) are on the pioneering period. Allan Nevins, John D. Rockefeller, The Heroic Age of American Enterprise, 2 vols. (1940) is admirable in its inclusiveness.

V. S. Clark, cited above, treats the iron and steel industry fully on the technical side.
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CHAPTER XIII

COMPETITION, CONSOLIDATION, AND CONTROL

There is an immense library on the business developments and organizations of this period. New interpretations and general works are still required for much of the research and writing has been extraordinarily ephemeral. To this generalization H. R. Seager and C. A. Gulick, Jr., Trust and Corporation Problems (1929), with its excellent summaries of individual industries and M. W. Watkins, Industrial Combinations and Public Policy (1927), an admirable interpretation, are exceptions. John Moody, The Trusts about the Trusts (1904) pictures developments at the end of the first consolidation era. The titans who accomplished this transformation are dealt with in popular and spirited fashion in Matthew Josephson, The Robber Barons (1934). C. M. Estes, “Entrepreneurial Leadership among the ‘Robber Barons’: A Trial Balance,” JEH, VI, Supplement, 28-49 takes an equally acid view, while William Miller, “American Historians and the Business Elite,” JEH, IX, 184-208 combats myths. On institutions other than men G. H. Evans, Jr., Business Incorporations in the United States, 1800-1943 (1948) is essential.

On competition and consolidation in individual industries some of the works cited in the previous chapter make contributions. For anthracite consult in addition Eliot Jones, The Anthracite Coal Combination in the United States (1914); J. I. Bogen, The Anthracite Railroads (1927); and M. W. Schlegel, Ruler of the Reading: The Life of Franklin B. Gowen, 1836-1889 (1947). Bituminous is covered as well in the Report of the United States Coal Commission (1925) which was summarized in What the Coal Commission Found (1925). For the automobile L. H. Seltzer, A Financial History of the American Automobile Industry (1928) should be joined to Epstein, cited above. For the electrical industries as well as the works cited earlier there are J. W. Hammond, Men and Masts, The Story of General Electric (1941); Federal Trade Commission, Electric Power Industry: Supply of Electrical Equipment and Competitive Conditions (1928); J. W. Stehman, The Financial History of the American Telephone...

For the oil industry as a whole G. W. Stocking, The Oil Industry and the Competitive System (1925) is the best introduction. The results of government curiosity are embodied in Report of the Commissioner of Corporations on the Petroleum Industry (1907) and Report of the Federal Trade Commission on the Petroleum Industry: Prices, Profits, and Competition (1928). Allan Nevins, John D. Rockefeller (1940), a magnificent achievement, supersedes all previous work for fact and interpretation. The student will find J. T. Flynn, God’s Gold (1932) briefer but not as authoritative, and will wish to examine I. M. Tarbell, The History of the Standard Oil Company, 2 vols. (1904) for its historic importance. J. D. Rockefeller, Random Reminiscences of Men and Events (1909) is interesting, if not enlightening. R. H. Maybee, Railroad Competition and the Oil Trade, 1855–1873 (1940) provides a complete treatment for one of Nevins’ contributions.


There is no institutional history of investment banking and its influence in the United States. Perhaps the best brief introduction is John Moody, The Masters of Capital (1921). Otherwise the student must rely upon biographical material. H. M. Larson, Jay Cooke, Private Banker (1936) fortunately treats a pioneer in the setting of his times. On Morgan Lewis Corey, The House of Morgan (1930) is critical; H. I. Satterlee, J. Pierpont Morgan, An Intimate Portrait (1939) has masses of material; and F. L. Allen, The Great Pierpont Morgan (1949) is a readable and benign interpretation. See also Cyrus Adler, Jacob H. Schiff, His Life and Letters, 2 vols. (1928); Robert McElroy, Levi Parsons Morton (1930); and sketches in the Dictionary of American Biography. The Report of the Committee to Investigate the Concentration of Control of Money and Credit [Pujo Committee] 62nd Cong. 3rd Sess. House of Rep. Report, No. 1593 (1913) is an historic document, unbalanced but indispensable. The work of Wall Street has yet to receive competent historical attention, but a glimpse of its activities is afforded by Henry Clews, Fifty Years in Wall Street (1908) and T. W. Lawson, Frenzied Finance (1905), an extravagant expose. They Told Barron, ed. Arthur Pound and S. T. Moore (1930), should not be neglected by students of the psychology and motivation of the American businessman. Two valuable critiques are L. D. Brandeis, Other People’s Money and How the Bankers Use It (1914) and W. Z. Ripley, Main Street and Wall Street (1927).


The legislative background of the Sherman Anti-Trust Act can be found in Bills and Debates in Congress Relating to Trusts, 57th Cong. 2nd Sess. Sen. Doc. No. 147 (1903). The details of a preliminary investigation are provided in Report on Investi-
gation of Trusts, 50th Cong. 1st Sess. House of Rep. Report No. 3112 (1889). The history of the Sherman Anti-Trust Act is told by O. W. Knauth, The Policy of the United States Towards Industrial Monopoly (1914), a book badly organized, and in J. D. Clark, The Federal Trust Policy (1931). W. H. Taft, The Anti-Trust Act and The Supreme Court (1914) is an early interpretation of its meaning. Walton Hamilton and Irene Till, Antitrust in Action, Temporary National Economic Council (TNEC), Monograph 16 (1940) and Milton Handler, A Study of the Construction and Enforcement of the Federal Antitrust Laws, TNEC, Monograph 38 (1941) have a longer view. The literature on government regulation of business and the trust problem has been very extensive but ephemeral. For a long time J. W. Jenks and W. E. Clark, The Trust Problem (1917) was the most used work. It has been superseded by H. R. Seager and C. A. Gulick, Jr., and M. W. Watkins, already cited. The latter has an admirable bibliographical survey. D. M. Keezer and Stacy May, The Public Control of Business (1930) is a well-organized summary.

The progressive movement has produced more books on political theory than on its own history. The best accounts are B. P. Dewitt, The Progressive Movement (1915) and J. R. Chamberlain, Farewell to Reform (1932), intended as an epigraph for the movement; C. C. Regier, The Era of the Muckrakers (1932); and Louis Filler, Crusaders for American Liberalism (1950). Roosevelt’s relation to the movement, as well as his philosophy, is treated by H. F. Pringle, Theodore Roosevelt (1931) and Selections from the Correspondence of Theodore Roosevelt and Henry Cabot Lodge, 1884–1914, ed. H. C. Lodge, 2 vols. (1925). Roosevelt’s speeches and articles printed in the National Edition of his works, which Scribner issued in 1926 in twenty volumes, still repay perusal. B. H. Meyer, A History of the Northern Securities Case (1906) chronicles an important episode.


CHAPTER XIV

THE MONEY QUESTION

Many of the books cited in Chapter VIII remain extremely useful for this later period. In this classification fall D. R. Dewey, Financial History of the United States (1936); Sidney Ratner, American Taxation (1942); B. U. Ratchford, American State Debts (1941); and L. W. Mints, A History of Banking Theory (1945). These should be supplemented by A. D. Noyes, Forty Years of American Finance: A Short History of the Government and People of the United States since the Civil War, 1865–1907 (1909) and The War Period of American Finance, 1908–1925 (1926). Though perhaps dated by their devotion to “sound” finance, these volumes, especially the former, are indispensable. F. C. James, The Growth of Chicago Banks, 2 vols. (1938) has some excellent chapters on the national scene.

For the period of Civil War and Reconstruction, consult A. M. Davis, The Origin of the National Banking System (1910); W. C. Mitchell, A History of the Greenbacks

The silver movement is in large measure a Populist movement. J. D. Hicks, The Populist Revolt (1931) is the standard work on this subject. S. J. Buck, The Agrarian Crusade (1920) is shorter and more popular. Destler, already cited, adds details. W. H. Harvey, Coin's Financial School (1894) is a classic landmark of propaganda. For the difficulties of the Cleveland administration with bimetallism J. A. Barnes, John C. Carlisle, Financial Statesman (1931) is the most illuminating and extensive account.


CHAPTER XV

THE FARMER IN THE MACHINE AGE

No complete history of American agriculture for the period since 1860 exists. F. A. Shannon, The Farmer's Last Frontier (1945) is superb and authoritative for the period to 1897. Fortunately materials for the whole period are abundant—a voluminous agricultural press and a mountain of official publications. Among the latter should be mentioned the Bulletin of the Department of Agriculture, Bulletin of the Office of Experiment Stations, Annual Report of the Secretary of Agriculture, and the Yearbook of the Department of Agriculture, sometimes cited as Agriculture Yearbook. An excellent bibliographical guide to this material is E. E. Edwards, "A Bibliography of the
A HISTORY OF AMERICAN ECONOMIC LIFE

History of Agriculture in the United States," Dept. of Agri. Misc. Pub. No. 84 (1930). Certain of the Agriculture Yearbooks are exceedingly valuable. That for 1899 summarized agricultural history "for distribution at the Paris Exposition," those for 1921-25 have valuable monographs on different crops and features of farm life, and those since 1936 have each been devoted to a single subject. The governmental figures for agriculture can be secured from the various decennial censuses, from the special United States Census of Agriculture, 3 vols. (1925) and from the Yearbooks, whose statistical information since 1935 has been published separately. Of peculiar value in this category are Frederick Strauss and L. H. Bean, "Gross Farm Income and Indices of Farm Production and Prices in the United States, 1869-1937," Dept. of Agri. Technical Bulletin, No. 703 (1940) and Harold Barger and H. H. Landsberg, American Agriculture, 1899-1930. A Study of Output, Employment and Productivity (1942).


Among the regional studies there are J. A. Hopkins, Economic History of the Production of Beef Cattle in Iowa (1928); Staff of Iowa State College and Iowa Agricultural Experiment Station, A Century of Farming in Iowa, 1846-1946 (1946); E. Van D. Robinson, Early Economic Conditions and the Development of Agriculture in Minnesota (1915); J. K. Howard, Montana, High, Wide, and Handsome (1944); and R. B. Vance, Human Geography of the South: A Study in Regional Resources and Human Adequacy (1932); and the numerous works on Wisconsin which might well be imitated by other states—Joseph Schafer, A History of Agriculture in Wisconsin (1922); B. H. Hibbard, The History of Agriculture in Dane County (1904); J. G. Thompson, The Rise and Decline of the Wheat Growing Industry in Wisconsin (1909). State histories, particularly those cited in Chapter XI for Wisconsin, Illinois, and Minnesota, have value. Unique among regional studies are the fascinatingly written W. P. Webb, The Great Plains (1931); J. C. Malin, Winter Wheat in the Golden Belt of Kansas (1944), so good it discourages textbook writers; and E. M. Dick, Vanguards of the Frontier (1941) and The sod-House Frontier, 1854-1890 (1937). B. I. Wiley, "Salient Changes in Southern Agriculture since the Civil War," AH, XIII, 64-76 and J. D. Hicks, "The Western Middle West, 1900-1914," AH, XX, 64-77 are stimulating summaries. Consult also R. H. Taylor, "The Sale and Application of Commercial Fertilizers in the South Atlantic States to 1900," AH, XXI, 46-52.

The geographical and climatological bases of agriculture can be traced in J. R. Smith and N. O. Phillips, North America (1942). Only a few sections of the beautiful Atlas of American Agriculture published by the United States Department of Agriculture have so far appeared. In the Agriculture Yearbook of 1921 O. E. Baker has an exceedingly valuable and interesting "A Graphic Summary of American Agriculture" with maps.


The references on agricultural invention in Chapter V are still useful. H. W. Quaintance, The Influence of Farm Machinery on Production and Labor (1904) is a standard account. Leo Rogin, The Introduction of Farm Machinery in Its Relation to the Productivity of Labor in the Agriculture of the United States during the Nineteenth Century (1937) deals in detail with the plow and with wheat production. For the period since 1900 see the suggestive article of O. E. Baker, “Changes in Production and Consumption of Our Farm Products and the Trend in Population,” Annals, March, 1929.


On the subject of agricultural marketing there is an extensive bibliography, most of it describing practices current at the time of writing. Of such works, "American Produce Exchange Markets," *Annals of the American Academy of Political and Social


On agricultural credit the best summaries are in E. S. Sparks, History and Theory of Agricultural Credit in the United States (1932); and J. B. Norman, Farm Credits in the United States and Canada (1924). On a phase see G. C. Fite, “South Dakota’s Rural Credit System,” AH, XXI, 238–49.

CHAPTER XVI

THE WAGE EARNER UNDER COMPETITION AND MONOPOLY

The literature dealing with labor and its conditions is probably more controversial than that in any other field of modern economic history, with the possible exception of the relations between government and industry. In both cases the reason is the same. Such writing tends to be either an attack upon or a defense of the capitalist system. Not only is this writing passionately partisan but also, since it attempts to win popular support, it strives to make out an attractive case which will conceal the bias of its author.

Unfortunately the ten volumes of the monumental A Documentary History of American Industrial Society (1910–11) stop at 1880. For this deficiency there is compensation in the increasing amount of government publications. In 1890 the publication of the Bulletin of the Bureau of Labor commenced. The early numbers of this Bulletin were monographs on various features of labor history. Later it became the Bulletin of the United States Bureau of Labor Statistics, hereafter cited simply as Bulletin. In accordance with its change of title more attention was given to statistical data, but other subjects, such as labor legislation and court decisions, are included. The Bulletin is a mine of information on wages, hours, prices, union standards, and industrial accidents. The
Monthly Labor Review, a government publication, contains shorter articles than the Bulletin. In addition there are the Reports of the Commissioner of Labor until 1913, which generally are of a monographic nature. The bureaus in the Department of Labor, such as that for women and children, have important publications.

There have been surveys of the whole labor movement at intervals. The Report of the Industrial Commission devotes vols. VII, and XIV to "Labor, Manufactures and General Business"; vol. XII to "Capital and Labor Employed in the Mining Industry"; and vol. XVII to "Labor Organizations." Later comes the Report of the Commission on Industrial Relations, 64th Cong. 1st Sess. Sen. Doc. No. 415, 11 vols. (1916). The valuable material in this survey is practically unavailable because of the poor index. In 1916 the Rand School undertook the publication of The American Labor Year Book. Unfortunately this useful work has not appeared every year. Finally, the student is fortunate in the two-volume continuation of Commons' earlier work, History of Labor in the United States, 1896-1932 (1935). These new volumes no longer confine themselves to the labor union movement. D. D. Lescohier writes on working conditions and Elizabeth Brandeis on labor legislation in the third volume, while Selig Perlman and Philip Taft devote the fourth to labor movements. Of the shorter treatments Jürgen Kuczynski, A Short History of Labour Conditions under Industrial Capitalism, II (1943) and P. S. Foner, History of the Labor Movement in the United States (1947) are useful. On labor personnel, J. D. Durand, The Labor Force in the United States, 1890-1960 (1948) focuses more on the later period.

The Report of the Immigration Commission contains the most material on this subject. This report in forty-two volumes is abstracted in two volumes, 61st Cong. 3rd Sess. Sen. Doc. No. 747 (1911). There are sixteen volumes dealing with immigrants in industry. Unfortunately the usefulness of the work is jeopardized by errors of interpretation which have been pointed out with considerable intensity by I. A. Hourwich, Immigration and Labor (1912). There are works on particular races, of which R. F. Foerster, The Italian Emigration of Our Times (1919) is important for its subject and its value. Harry Jerome, Migration and Business Cycles (1926) is a statistical treatment with graphs of an important phenomenon.

Any description of labor migrations within the United States confronts great technical difficulties. The most valuable single analysis so far is Carter Goodrich et al., Migration and Economic Opportunity, the Report of the Study of Population Redistribution (1936) which summarizes several monographs, the most useful of which for our purpose is that by C. W. Thornthwaite. C. H. Wesley, Negro Labor in the United States, 1850-1925 (1927) and C. G. Woodson, A Century of Negro Migration (1918) treat this important racial migration. Other data have been published by the Department of Labor. In view of the attention which it has aroused, the labor of women and children has received little excellent historical treatment. Most of the historical works in the nineteen volumes of the Report on the Conditions of Women and Child Wage Earners in the United States, 61st Cong. 2nd Sess. Sen. Rep. No. 645 (1910-13) are best on the earlier period. In this series H. L. Sumner, History of Women in Industry in the United States is an exception. The whole Report is conveniently summarized in Bulletin, No. 175 (1916). Exceedingly interesting figures and interpretation are given in J. A. Hill, Women in Gainful Occupations, Census Monographs, IX (1929).


For the effects of industrial changes upon industrial education consult P. H. Douglas, American Apprenticeship and Industrial Education (1921); and W. E. Weyl and A. M. Sakolski, "Conditions of Entrance to the Principal Trades," Bulletin, No. 67, 681-780. The subject of industrial hygiene and fatigue is not yet reduced to a scientific basis. Josephine Goldmark, Fatigue and Efficiency (1912) was a pioneer work; P. S. Florence, Economics of Fatigue and Unrest (1924) is an interesting work. In 1908 F. L. Hoffman summarized "Industrial Accidents," Bulletin, No. 78, 417-65, and frequent issues of the Bulletin have since dealt with that subject. M. C. Cahill, Shorter Hours, A Study of the Movement since the Civil War (1932) is less a scientific analysis of hours worked than of the agitation and methods by which reduction was accomplished.


The histories of separate industries, cited in Chapter XII, often deal fully with their peculiar labor problems. Books from the purely labor side are less frequent. On textiles, in addition to Cole and Copeland, cited above, the Report on Strike of Textile Workers in Lawrence, Mass., in 1912 by the Bureau of Labor, 62nd Cong. 2nd Sess. Sen. Doc. No. 870 (1912) shows conditions of life and labor in a textile center of the North, while H. L. Herring, Welfare Work in Mill Villages: The Story of Extra-Mill Activities in North Carolina (1929) treats a controversial subject interestingly and judiciously. R. W. Dunn and Jack Hardy, Labor and Textiles (1931) is a left-wing approach. For the sho


**CHAPTER XVII**

**AN INTERNATIONAL ECONOMIC ORDER**

Naturally this bibliography can make no claim to even partial completeness on a subject like foreign trade and investment, both aspects of world history. For a more complete bibliography the student can turn to P. T. Moon, *Syllabus on International Relations* (1926). This can be brought up to date by the quarterly lists of books in *Foreign Affairs* (1922—). On the more specific role of the United States in world affairs, adequate treatments generally did not appear until the 1920's. The Council on Foreign Relations undertook in 1928 the publication, unfortunately now abandoned, of an excellent yearly volume, *Survey of American Foreign Relations*, really a collection of monographs on specialized subjects. The Foreign Policy Association has issued varied publications which manage to treat passing events with impartiality and to apply past history to an understanding of the present. In 1922 the quarterly *Foreign Affairs* began the publication of articles important for their points of view if not for their disclosures.

The government documents dealing with foreign commerce are too numerous to be enumerated. The Departments of Agriculture, State, Commerce and Labor, and of Commerce have all had bureaus concerned with foreign trade. The Department of State issued an annual *Commercial Relations* from 1835 to 1902; it began in 1880 the publication of *Monthly Consular and Trade Reports*; and in 1898 *Advance Sheets of Consular Reports*. The Treasury published a *Monthly Summary of Commerce and Finance* from 1866 to 1903. When the Department of Commerce and Labor was established it took over the *Commercial Relations, Monthly Consular and Trade Reports, Daily Consular* and *Trade Reports*, the successor to the *Advance Sheets of Consular Reports*, and the *Monthly Summary of Commerce and Finance*. The first was discontinued in 1912 and the second in 1910. The Department of Commerce also issues publications dealing with features of foreign trade under the titles of *Special Agents Series, Miscellaneous Series, Special Consular Reports, Trade Information Bulletin*, and *Trade Promotion Series*. It also issues the annual *Foreign Commerce and Navigation of the United States*, published until 1903 by the Treasury. An understanding of these publications and of the work of the government in behalf of foreign commerce is best derived from L. F. Schmeckebier and G. A. Weber, *The Bureau of Foreign and Domestic Commerce: Its History, Activities, and Organization* (1924).


About the Philippines there has grown up a bulky literature, most of which is decidedly partisan. The best approaches to its economic relations with the United States are J. S. Reyes, *Legislative History of America's Economic Policy toward the Philippines* (1923) and W. C. Forbes, *The Philippine Islands*, 2 vols. (1928), a voluminous and judicious narrative by an admirer of the American achievement. The appraisal of the economic advantages of the Philippines is well contrasted in R. S. Tucker, "A Balance Sheet of

Unhappily the number and calibre of the works describing American economic relations with the nations and regions of the world is not proportioned to their relative commercial importance. For Europe consult F. A. Southard, American Industry in Europe (1931), the complete picture of a novel movement. For Canada H. L. Keenleyside, Canada and the United States (1939) is an excellent but summary approach. Consult also W. J. Wilgus, The Railway Interrelations of the United States and Canada (1937) and H. L. Marshall, F. A. Southard, and K. W. Taylor, Canadian-American Industry, A Study in International Investment (1936).

American trade relations with the Orient are excellently handled in Tyler Dennett, Americans in Eastern Asia (1922), but the treatment does not extend into the twentieth century. J. M. Callahan, American Relations in the Pacific and Far East, 1784–1900 (1901) covers the same period. The article “The New Pacific,” Survey of American Foreign Relations for 1930, 1–342, is an exceedingly good summary of our economic and political interests in that region, as is A. W. Griswold, The Far Eastern Policy of the United States (1938). The Chinese trade with the United States is described in Shü-lun Pan, The Trade of the United States with China (1924). C. F. Remer, Foreign Investments in China (1933) is the best approach to the whole subject; the attempt to describe American penetration is taken up in M. C. Hsu, Railway Problems in China (1915). The campaign to increase these investments there and in Manchuria is described sympathetically by Herbert Croly, Willard Straight (1924) and with a more pro-Japanese point of view in P. H. Clyde, International Rivalries in Manchuria, 1689–1922 (1928). F. V. Field, American Participation in the China Consortiums (1931) is a lucid account of an extremely complicated subject. For Japan the best treatment is United States Tariff Commission, The Foreign Trade of Japan (1922). See also G. Odate, Japan’s Financial Relations with the United States (1922).

For Latin American economic relations the best brief treatments are W. S. Robertson, Hispanic American Relations with the United States (1923); G. H. Stuart, Latin America and the United States (1922); and J. F. Rippy, Latin America and the Industrial Age (1944). The Bulletin of the Pan American Union, formerly the International Bureau of American Republics, is a mine of detailed information. On the subject of investments consult F. M. Halsey, Investments in Latin America and the British West Indies, Dept. of Comm. Special Agents Series, No. 169 (1918). Relations with South America have not received proper treatment. M. A. Marsh, The Bankers in Bolivia (1928) and J. F. Rippy, The Capitalists and Colombia (1931) are exceptions. W. R. Sherman, The Diplomatic and Commercial Relations of the United States and Chile, 1820–1914 (1926) is inadequate. D. M. Phelps, Migration of Industry to South America (1936) traces the movements of American industry into the larger countries of South America.

For the Caribbean area C. L. Jones, Caribbean Backgrounds and Prospects (1931) has the most emphasis on commercial development of his many volumes. Consult also the excellent section on “The Caribbean,” Survey of American Foreign Relations for 1929, 1–329, and D. G. Munro, The United States and the Caribbean Area (1934). For the islands more detailed treatments are provided by M. M. Knight, The Americans in Santo Domingo (1928), which suffers from condensation; C. C. Tansill, The United States and Santo Domingo, 1798–1873 (1938); and L. H. Jenks, Our Cuban Colony (1928). D. G. Munro, The Five Republics of Central America (1918) is a sympathetic and judicious interpretation of their domestic difficulties and international relations. F. U. Adams, Conquest of the Tropics (1913) is a syrupy panegyric, to which C. D. Kepner and J. H. Soothill, The Banana Empire, A Case Study of Economic Imperialism
(1935) and C. D. Kepner, Social Aspects of the Banana Industry (1936) are acid antidotes. The two best works on the United States and Mexico are Ernest Gruening, Mexico and Its Heritage (1928) and J. F. Rippy, The United States and Mexico (1926). See also the convenient narrative on “Mexico and the United States,” Survey of American Foreign Relations for 1931, 1–315. F. W. Powell, The Railroads of Mexico (1921) and Edgar Turlington, Mexico and Her Foreign Creditors (1930) are both useful. It is impossible at present to write a history of the oil men in Mexico. The two volumes of the Investigation of Mexican Affairs by the Committee on Foreign Relations of the United States (Fall Report), 66th Cong. 2nd Sess. Sen. Doc. No. 285 (1920) shed some light on this question.

CHAPTER XVIII

THE NEW POWER OF NATIONAL FINANCE

For the period covered in the next five chapters, the volumes in the Rinehart series are already available: G. H. Soule, Prosperity Decade (1947) and Broadus Mitchell, Depression Decade (1947). The volumes are so different in tone, method, and emphasis that they hardly constitute a continuous narrative.

To compile a bibliography on the relations between the economic order and war or its preludes would be quite unfeasible. Quincy Wright, A Study of War, 2 vols. (1942) pays systematic and balanced attention to the matter. It should be supplemented by Edmund Silberner, The Problem of War in Nineteenth Century Thought (1946). Gottfried Haberler, Prosperity and Depression: A Theoretical Analysis of Cyclical Movements (1941) excellently summarizes the various theories on depressions. Briefer but still useful are the articles on “crises” and “business cycles” in the Encyclopaedia of the Social Sciences.


**CHAPTER XIX**

**Agriculture: Science and Prices**


The organization of agriculture as a business still awaits a unified treatment. Material on tenancy is plentiful though evaluations do not agree. For recent conditions consult L. E. Truesdell, *Farm Tenancy in the United States,* Census Monographs, IV (1924) and the President’s Committee, *Report on Farm Tenancy* (1937). More passionate and human are Carey McWilliams, *Ill Fares the Land* (1942) and *Factories in the Fields* (1939). Rescue measures by the national government are described in C. R. Woodward, *Woodrow Wilson’s Agricultural Philosophy,* *AH, XIV, 129-42,* and for the Roosevelt era in the annual reports of the Farm Security Administration and other agencies.

On the larger questions of government control of agricultural prices, every student should read J. C. Malin, “Mobility and History: Reflections on the Agricultural Policies of the United States in Relation to a Mechanized World,” *AH, XVII, 177-91.* This is a provocative essay. The best treatment in book length is G. S. Shepherd, *Agricultural
A HISTORY OF AMERICAN ECONOMIC LIFE


CHAPTER XX

LABOR: THE PATH TO POWER

Unhappily for the period as a whole the J. R. Commons et al., History of Labor in the United States, 1856–1932 stops at the edge of the New Deal Period. Most of the books for the later era are journalistic. Meritorious samples with different points of view are Edward Levinson, Labor on the March (1938); Wellington Roe, Juggernaut. American Labor in Action (1948); and Aaron Levinstein, Labor, Today and Tomorrow (1945). The biographical approach is exemplified in C. W. Mills, The New Men of Power, America's Labor Leaders (1948) and Eli Ginzberg, The Labor Leader, An Exploratory Study (1948), the latter leaning more to theoretical analysis. Florence Peterson, American Labor Unions, What They Are and How They Work (1945) is a scholarly and useful condensation. Of the many publications by government departments and bureaus, the one of widest usefulness is the Bureau of Labor Statistics, Handbook of Labor Statistics. The first edition was in 1926; the sixth in 1947.


Before the thirties most writing on labor and the government dealt with protective legislation; in the last two decades the emphasis has been upon legislation regulating labor-management relations. Recent books that cover both phases are A. L. Bernheim and others, Labor and the Government, An Investigation of the Role of Government in Labor Relations (1935); J. R. Commons and J. B. Andrews, Principles of Labor Legislation (1936), the latest edition of a classic manual; and H. W. Metz, Labor Policy of the Federal Government (1945). The immense convenience of this last summary is marred by its tendentious quality.
BIBLIOGRAPHY


Sumner Slichter, Union Policies and Industrial Management (1941) is a landmark in the analysis of the new jurisprudence required of management and unions. Briefer and with an eye cocked to the future is his, The Challenge of Industrial Relations (1947). N. W. Chamberlain, The Union Challenge to Management Control (1948) has a somewhat more sociological tone, and S. T. Williamson and Herbert Harris, Trends in Collective Bargaining (1945) is a convenient summary. Of the large literature dealing with details of this matter consult J. L. Toner, The Closed Shop (1942); V. D. Kennedy, Union Policy and Incentive Wage Methods (1945); J. P. Rowland, The Legal Protection of the Worker's Job (1937); and L. A. Wood, Union-Management Cooperation on the Railroads (1931). The controversial question of collective bargaining and wages is challengingly handled in J. T. Dunlop, Wage Determination under Trade Unions (1944) and A. M. Ross, Trade Union Wage Policy (1948).

CHAPTER XXI

Transport and Trade: Domestic and Foreign

The best single approach to the recent history of transportation and government is C. L. Dearing and Wilfred Owen, National Transportation Policy (1949). Somewhat more detailed are the studies made at the direction of the Transportation Act of 1940 by the U. S. Transportation Board of Investigation and Research, The National Traffic Pattern (1945), Public Aids to Domestic Transportation (1945), Federal Regulatory Re-
restrictions upon Motor and Water Carriers (1945), and Practices and Procedures of Governmental Control (1944).

For the various methods of transportation there is unfortunately no history of railroading in the recent period. W. N. Leonard, Railroad Consolidation under the Transportation Act of 1920 (1946) deals adequately with one important phase. Every student who values a combination of insight and experience should read J. B. Eastman, "The Transportation Problem," AER, XXX, Supplement, 124-29 and "Public Administration of Transportation under War Conditions," AER, XXXIV, Supplement, 86-93. On pipe lines for natural gas, the Temporary National Economic Committee (TNEC) has a monograph Natural Gas and Natural Gas Pipeline in U. S. A., No. 36, already gravely outdated. On water transport works mentioned in paragraph above are valuable. Of the particular enterprises the Panama Canal exercises a perennial fascination. Of the books contemporary with its building E. R. Johnson, Panama Canal Traffic and Tolls (1912) gives historical background and Johnson with R. E. Backenhaus, and H. S. Knapp, The Panama Canal (1915) helps on the construction. Of the more recent work the most satisfactory single volumes are N. J. Padelford, The Panama Canal in Peace and War (1942) and Gerstle Mack, The Land Divided (1944), the former somewhat fuller on economic matters. Unfortunately M. P. DuVal's projected three volume work, of which Cadiz to Cathay (1949) and And the Mountains Will Move (1947) have appeared, is so far not completely satisfactory. See also J. B. Bishop and F. Bishop, Goethals, Genius of the Panama Canal (1930) for the construction period.


The bibliography on international economic affairs is so extensive that selection seems presumptuous. Nonetheless the student can get a usable picture of the general structure from J. B. Condiffe, The Reconstruction of World Trade, A Survey of International Economic Relations (1940), a stimulating essay; from M. S. Gordon, Barriers to World Trade, A Study of Recent Commercial Policy (1941), which clarifies techniques; and from N. S. Buchanan and F. A. Lutz, Rebuilding the World Economy (1947) which has the advantage over Condiffe of being more recent and paying greater attention to the United States. In a somewhat different category is W. A. Brown, Jr., The International Gold Standard Reinterpreted, 1914-1934, 2 vols. (1940). Though technical and highly detailed the work is a literary tour de force.

These pamphlets are a partial compensation for the failure of the Department of Commerce to continue on the same scale after 1932 the publication of its admirable Commerce Year Book, first undertaken in 1922. See also United States Department of Agriculture, World Trade Barriers in Relation to American Agriculture, 73rd Cong., 1st Sess. Sen. Doc. No. 70 (1933). As for American international economic policy the general works mentioned above are important. On tariffs, however, it is essential to consult F. W. Taussig, The Tariff History of the United States (1923); Wallace McClure, A New American Commercial Policy as Evidenced by Section 317 of the Tariff Act of 1922 (1924); J. D. Larkin, The President's Control of the Tariff (1936); J. M. Jones, Jr., Tariff Retaliation, Repercussions of the Hawley-Smoot Bill (1934); and P. W. Bidwell, The Invisible Tariff, A Study of the Control of Imports into the United States (1939), the last an antidote to illusions of self-righteousness. The Hull-Roosevelt program has already occasioned a considerable literature: William Diebold, New Directions in Our Tariff Policy (1941); Grace Beckett, The Reciprocal Trade Agreements Program (1941); C. J. Kreider, The Anglo-American Trade Agreement, A Study of British and American Commercial Policies, 1934–1939 (1943); and R. C. Snyder, The Most-Favored Nation Clause (1948) are scholarly examples. See also C. R. Whittlesey, “Import Quotas in the United States,” QJE, LI, 37–65.

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The standard works on American investments abroad are Cleona Lewis, America's Stake in International Investments (1938) and her The United States and Foreign Investment Problems (1948), a continuation on slightly different lines. Particularly convenient are the United States Treasury Department, Census of Foreign-Owned Assets in the United States (1945) and Census of American-Owned Assets in Foreign Countries (1947). Of the many studies of the penetration of American capital and industry into foreign areas, the most satisfactory are F. A. Southard, American Industry in Europe (1931); D. M. Phelps, Migration of Industry to South America (1936); Herbert Marshall, F. A. Southard, Jr., and K. W. Taylor, Canadian-American Industry, A Study in International Investment (1936); and J. F. Rippy, Latin America and the Industrial Age (1944). For the Caribbean and the Orient consult Council on Foreign Relations, Survey of American Foreign Relations for 1929, 1–329 and Survey of American Foreign Relations for 1930, 1–342. Of all the individual American enterprises abroad, oil has accumulated the largest library. Most of it is partisan, ephemeral and frequently naive. L. M. Fanning, American Oil Operations Abroad (1947), the best summary, must be used with caution. For Latin America consult J. F. Rippy, The Capitalists and Colombia (1931); Council on Foreign Relations, Survey of American Foreign Relations for 1931, 1–315; and W. C. Gordon, The Expropriation of Foreign-Owned Property in Mexico (1940). On the Near East K. S. Twitchell, Saudi Arabia with an Account of the Development of Its Natural Resources (1947) is a personal narrative; E. A. Speiser, The United States and the Near East (1947) succinct; and R. F. Mikesell and H. B. Chenery,
A HISTORY OF AMERICAN ECONOMIC LIFE

Arabian Oil: America's Stake in the Middle East (1949) is the most detailed. On American policy toward investment J. W. Angell, Financial Foreign Policy of the United States (1933) needs a supplement.


CHAPTER XXII

MANUFACTURING, BUSINESS, AND GOVERNMENT

Succinct, often highly statistical, approaches to the role of manufacturing are provided in E. G. Nourse and associates, America's Capacity to Produce (1934); Harry Jerome, Mechanization in Industry (1934); National Resources Committee, Technological Trends and National Policy (1937); Solomon Fabricant, Manufacturing Output, 1929-1937 (1940); and W. B. Stewart, “Shifts in the Geographical and Industrial Pattern of Economic Activity,” American Economic Association, Proceedings, XXXVI, 56-57. Lewis Mumford, Technics and Civilization (1934) is stimulating but sometimes masks wishful thinking as historical fact.


For particular industries, obituaries of the New England cotton manufacture are provided by T. R. Smith, The Cotton Textile Industry of Fall River, Massachusetts (1944); S. L. Wolfebin, The Decline of a Cotton Textile City, A Study of New Bedford (1944); and B. F. Lemert, The Cotton Textile Industry of the Southern Appalachian Piedmont (1933). While it is possible to write of stagnant industries with objectivity, expanding ones, like the chemical industry, seem to elicit glorification. The note is somewhat too insistent in the monumental Williams Haynes, American Chemical Industry (1945-46), four of whose six volumes have appeared. Simpler for the non-

The wartime spurs to technological advance are described in Irvin Stuart, *Organising Scientific Research for War* (1948) and more vividly in J. P. Baxter, 3rd, *Scientists against Time* (1946).


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