

**INDUSTRIAL
DEPRESSIONS**

GEO. H. HULL

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INDUSTRIAL DEPRESSIONS

THEIR CAUSES ANALYSED AND CLASSIFIED WITH A
PRACTICAL REMEDY FOR SUCH AS RESULT
FROM INDUSTRIAL DERANGEMENTS

OR

IRON THE BAROMETER
OF TRADE


BY

GEO. H. HULL

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1911

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FOREWORD

EACH new occupation of mankind that has brought large increase to his rate of wealth-producing has, in time, developed some malady which has retarded its effectiveness, until he has discovered the nature of the disorder and acquired skill in overcoming or abating its ravages.

In the great economic revolution which in a half-century has enabled the iron-producing nations to increase the products of their manufacturing and mechanical industries tenfold, a new malady, known as Industrial Depression, has developed and grown to serious proportions.

As the malady of depression has progressed and increased in its direful effects, a great flood of untenable reasons have been assigned as its cause. These have so obscured and buried the real cause from sight that the people have not yet realized its nature. They looked for something external and mysterious, whereas the real cause was internal, and so simple and commonplace as not to be suspected. They looked for the cause among great and much talked of events or occurrences, the operation of which was in opposition to their own ideas, whereas the real cause was the voluntary action of a silent motive that existed within the breasts of each one of them, and that each unsuspectingly contributed his share in making effective. They endeavored to solve the mystery by a synthetic method of reasoning, which was useless, instead of

by an analytical method which alone is effective in problems of this nature.

In this book we have given an account of the analysis of all these alleged causes; we have separated the tenable ones from the untenable ones, have identified and classified the real causes of each one of the serious industrial depressions which have occurred in modern times, whether they resulted from external or internal derangements, and have suggested a practical remedy for those which result from internal derangements.

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DEFINITIONS OF WORDS AND TERMS AS USED IN THIS VOLUME

At the outset it is important that the precise meanings of certain words and terms (as they are used in this book) should be clearly and definitely understood.

The word *Agriculture* must be understood in its broad sense, that is, as including not only the cultivation of the soil, such as farming, gardening, floriculture, etc., but all the other occupations practised by a cultivator of the soil in connection with such cultivation, as, for instance, dairying, the breeding and rearing of stock, poultry, etc.

The word *Commerce* must be understood in its broad sense, that is, as including the exchange of goods, products, or property of any kind; the trading or dealings in these, as well as the transportation of them from place to place or from seller to buyer. Also the transportation of persons from place to place.

The word *Finance* must be understood as including everything connected with the function or operations of money or the various mediums of exchange used by the civilized peoples of the world, such as coin, bank-notes, checks, drafts, bills of exchange, etc., and the use and management of these by individuals, banks, governments, corporations, etc., in payments, collections, expenditures, revenues, etc.

The word *Industries* must be understood to include all the manufacturing and mechanical industries; but as this word has, by common usage in recent years, taken on a more specific meaning than formerly, some further explanation is required to make clear just what is included by *industries*, and what is excluded. Agriculture, for instance, has always been spoken of as an industry, but modern usage excludes what pertains to agriculture from a place under the term *industrials*. Under the head of the industrial nations of the world are included only the nations within whose borders the value of the products of the manufacturing and mechanical industries exceeds the value of the products of agriculture. The agricultural nations are those within whose borders the value of the products of agriculture exceeds the value of the products of the manufacturing and mechanical industries. Modern usage, therefore, accepts the word *industries* as something entirely apart and distinct from agriculture, as it does something apart and distinct from the terms *commerce* or *finance*. Hence the word *industries* must be understood as including all the manufacturing industries, but those only, and as excluding everything which comes under the heads of agriculture, commerce, and finance.

Manufacturing is defined as "forming of products by any process, whether by hand or by machinery," "working on or combining materials," "to form by labor into useful or desirable forms," "to make into something."

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The term *Mechanical Industries* is defined as, "the industries by which products are formed or manufactured by tools or by machinery into useful or desirable forms and conditions" and "effects produced by mechanical contrivances."

The Products of the Industries must therefore be understood as including everything made or formed by any person, whether by hand or by machinery or by tools, as, for example, buildings, furniture, utensils, ornaments, goods, machinery, highways, public works, railroads, pipe-lines, telegraph-lines, ships and all the other various vehicles, with their equipments and furnishings.

Depression, in a business sense, is defined as, "a state of dulness or inactivity," "a protracted season when business falls below the normal."

Industrial Depression must therefore be understood to mean a state of dulness or inactivity in the manufacturing and mechanical industries of the country; a protracted season during which the production of houses, furniture, stores, goods, factories, machinery, railroads, ships, telegraph-lines, roadways, gas-works, water-works, pipe-lines, etc., has fallen below the normal.

It is the custom in iron-producing countries to speak of "stocks of iron" or "stocks of pig iron," meaning, in both cases, stocks of pig iron. When "production of iron" or "production of pig iron" is spoken of, however, it includes the production of both iron and steel, the latter being regarded as a secondary form of iron. These words and terms are used in this book in the above manner.

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INDUSTRIAL DEPRESSIONS

INDUSTRIAL DEPRESSIONS

CHAPTER I

EVOLUTION IN THE OCCUPATIONS OF MANKIND

AS long as man's efforts to provide himself with the necessities of life were confined to the hunting of wild game, he had few possessions. In this pursuit he was compelled to roam over vast territories, which gave him little opportunity to establish a permanent abiding-place, or become possessed of anything of value, except such things as he could carry about his person.

The adoption of the pastoral life was man's first important step toward the accumulation of wealth. As he grew skilled in the art of rearing and domesticating game, which he had formerly only hunted, his growth in wealth was accelerated. This new occupation enabled him to establish a home, about which he could gather and increase his flocks and herds.

With this new occupation came new conditions, new responsibilities, and new dangers. As his flocks and herds increased, disease made its appearance among them, and he soon learned that the degree of success in this new occupation depended largely upon his being able to discover the nature of the maladies which retarded the increase of his possessions, and to acquire the knowledge and skill necessary to check their ravages.

When man added the tilling of the soil to his occupations, another important step toward the accumulation of wealth was taken. As this new occupation grew in magnitude, new conditions, new dangers, and new maladies

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developed. Some of the dangers came from natural elements which were beyond his control, while others were of a nature which he could understand, and against which he could in a measure defend himself. In most cases, he has been able to restrain or suppress the ravages of the serious agricultural maladies which developed. In others, as, for instance, by irrigation, he has been able so to control and direct a natural element as to make it accelerate his rate of wealth-producing.

As man's knowledge of what accelerated or retarded the effectiveness of agriculture, and his skill in applying his knowledge increased, his rate of wealth-producing from that source has increased.

As far back as history goes, it is found that some portion of the workers in the more advanced nations were engaged in what we call manufacturing and mechanical industries.*

Yet, notwithstanding the antiquity of manufacturing and the accumulated wealth of some of the older nations, it is estimated that at the beginning of the nineteenth century, taking the civilized nations of the world as a whole, from 85 per cent. to 90 per cent. of the bread-winners were still engaged in agriculture, leaving but 10 per cent. to 15 per cent. engaged in all the other occupations, including manufacturing. In the United States, at this period, those engaged in agriculture were estimated at about 90 per cent.†

*In the fourth chapter of Genesis, Tubal-cain, who was born seven generations after Adam, is mentioned as: "The forger of every cutting instrument of brass and iron." In Jeremiah, we read of "pillars of iron"; in Isaiah, axes and hammers of iron are mentioned. Iron was used in the time of Nebuchadnezzar to strengthen buildings, bridges, and fortifications. Axes, saws, nails, and hammers were used in the time of David. Iron tools and implements were used in the time of Solomon. Nails were used in the construction of the Temple. Iron was used in the fortifications of Babylon. Saws, picks, armor, and helmets are found in the ruins of Nineveh.

† The following quotation is from page 26 of "A Century of Population Growth," published by the Bureau of the Census, United States Department of Commerce and Labor:

"The economic conditions which prevailed in 1790 present a marked contrast with those which have developed since and which prevailed univer-

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Under such conditions, the value of the products of agriculture in the United States at the beginning of the nineteenth century so greatly exceeded the value of the products of the industries, that the industries had little independent influence upon the volume or the tone of the nation's business. Good crops at that period meant good times and poor crops meant bad times. The industries, what there were of them, prospered or were depressed in accordance with the changes in the annual value of the crops, and not in conformity with any inherent and independent influence within the industries themselves.

In those days the means of communication and transportation between the seaboard and the interior were few, and necessarily expensive. The great body of the settlers in the new states lived in log cabins, and with the exception of the wagons, plows, rifles, and a few other necessities which they carried with them when they migrated, they produced on their farms and within their families nearly everything they consumed. The towns and villages were few and far between, simply because there was little commerce to build them up and support them.*

sally in 1900. In 1900 the population of those engaged in agriculture was only about one third of all persons gainfully employed. At the close of the eighteenth century the greater part of the inhabitants of the United States derived their support from this industry. It is probable that nine out of every ten breadwinners were engaged in some form of agriculture during the greater part of the year; indeed, in the Southern States, the proportion was somewhat larger."

* Alexander Hamilton in his "Report on Manufactures," to the House of Representatives, in 1791, gives a list of some seventeen classes of industries which had reached sufficient development to involve special buildings; the division of labor, the ingathering of raw materials from distant localities, and the distribution of the manufactured articles throughout the states. He lays much stress and gives much space to the "vast scene of household manufacturing" which was carried on in the thirteen original states of the Union, and which included, as he reports, "great quantities of coarse cloths, coatings, serges and flannels, linsey woolseys, hosiery of wool, cotton and threads, coarse fustians, jeans and muslins, checked and striped cotton and linen goods, bed-ticks, coverlets, and counterpanes, tow linens, coarse shirtings, sheetings, towelings and table linen and various

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Agriculture is confined almost exclusively to the production of the necessities of life which are consumed from day to day. Only the products of the manufacturing and mechanical industries comprise the objects of permanent wealth. It is then obvious that, under so powerful an incentive as the instinctive desire for wealth, the manufacturing and mechanical industries would have increased to greater magnitude during the thousands of years which elapsed before the beginning of the nineteenth century had they not been held back by some all-powerful condition or influence.

The Great Epoch

The middle of the nineteenth century marked the advent of the most remarkable material epoch in the history of civilization. We refer to the successful introduction of practical agricultural machinery. Previous to that time, and as far back as the history of mankind has come down to us, agriculture had been carried on by hand labor, supplemented by such help as man was able to obtain, in plowing and harrowing, by the use of horses and oxen. Under such conditions, a farmer and his family, if possessed of a farm of sufficient size and fertility, could, with diligence, produce of the necessities of life sufficient for their own maintenance and a small surplus, — *but only a small surplus.*

Conditions Which Limited Man's Growth in Wealth Up to the Middle of the Nineteenth Century

Broadly speaking, the surplus agricultural products of the United States up to 1845 were little more than the amount required for the sustenance of the 15 per cent.

mixtures of wool and cotton and of cotton and flax are made in the household way, and in many instances to an extent not only sufficient for the supply of the family in which they are made, but for sale, and even in some cases for exportation." He advises the House of Representatives that: "It is computed in a number of districts that two thirds, three fourths, and even four fifths of all the clothing of the inhabitants are made by themselves."

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of the population which were not connected with agriculture. This is conclusively shown by the small amount which, up to that time, was available for export. The exports of wheat and flour from the United States up to 1845 averaged only about one million bushels per year, and was less during the decade between 1830 and 1840 than between 1800 and 1810. In fact, in 1837 and 1839, it was necessary to import large quantities of grain to supply the people fully.* The growth in the relative value of the manufactured products up to 1840 did not even keep pace with the increase in population, which grew from 5,300,000 in 1800 to 17,000,000 in 1840. During this period of forty years, the relative value of the exports of merchandise fell from \$13.37 per capita to \$7.25 per capita, and the relative value of the imports fell from \$17.19 per capita to \$5.76 per capita.†

It has become our habit to attribute the rapid growth of wealth in modern times to the practical utilization of steam power, the introduction of railroads, and the factory system; but these three facilities had been in existence many years before there was any rapid increase in the growth of wealth. The factory system was inaugurated in the United States as early as 1790, but at the end of thirty years had shown little gain.‡ The first railroad in the United States was built in 1807, but twenty-three years afterwards there were but twenty-three miles in operation.§ Steam navigation was inaugurated on the Hudson River as early as 1807|| and on the Ohio River in 1811, but it was not until many years afterwards that it became commercially important.¶ As long as the power to buy and the power to produce were confined to narrow limits, the growth in wealth was

* See "American Farm Machinery" — *The Americana*.

† Progress of the United States, etc. Report of the United States Department of Commerce and Labor.

‡ See "American Labor" — *The Americana*.

§ See "American Railroads" — *The Americana*.

|| See "Steam Vessels" — *The Americana*.

¶ See "United States Economic Development" — *The Americana*.

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necessarily slow. Steam power, the factory system, and railroads were each one necessary to rapid growth in wealth, but these did not comprise *all* that was necessary. *Something* was lacking. The world would still have moved on with these three facilities in existence, but with little gain in growth had the fourth necessity not been supplied. Farm machinery was necessary to the full and free growth of the others. This fourth facility provided both the workers to produce and the power to buy. By one stroke, it created a demand and a supply greater than the world had ever dreamed of.

Even had the machinery, railroads, and factories which existed in 1840 been as perfect in mechanism at that time as they were at the end of the century, progress in the industries must have been slow. First, because the small surplus production of food and textiles was not sufficient to maintain large cities; second, because as long as agriculture produced little more than was necessary to maintain the agricultural workers themselves, they created for themselves little buying power, and consequently there was little demand among them for the products of manufacturing establishments.

Conditions in the older nations at this period were somewhat different from those in the United States. In this country there was very little accumulated wealth, while the older countries possessed the accumulations of many centuries. In Great Britain and France manufactures had made more progress. These nations imported more largely of the necessities of life, leaving a larger percentage of workers to take part in manufacturing. They possessed ample means for the encouragement of manufacturing, and the creation and increase of the necessary transportation facilities for the carriage of their manufactured products to the various seaports of the world.

The relative value of the products of the industries of these two nations exceeded the relative value of these products in the United States, but the buying power of

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the world, not excepting these two more wealthy nations, was still limited by the small percentage of population which lived in the cities, and the small buying power of the large percentage which were necessarily engaged in agriculture. The progress of manufacturing under such conditions was comparatively slow in all nations, and this had been the condition of the world from the beginning.

BIRTH OF THE MANUFACTURING AGE

Much is written and said of the wonderful growth of manufacturing in the United States during the last half of the nineteenth century, but little is written or said of what made that wonderful growth possible. It was the introduction of practical farm machinery. This so rapidly augmented the effectiveness of farm labor, that at the end of the century the agricultural workers were able to produce a surplus of 187 per cent. above their own necessities, instead of a paltry 17 per cent. By this means 35 per cent. of the nation's workers were able to supply all the people with food and textiles, and thus release 50 per cent. to take part in manufacturing and the other occupations.*

Lest this statement should not carry the full force and meaning it deserves, let us analyze it. The workers of the United States in 1900 amounted to 29,000,000 persons. By the gradual release of 50 per cent. of the nation's workers from agriculture between 1800 and 1900, 14,500,000 workers, broadly speaking, were in effect transferred from the farms to the cities and towns, where they became engaged in manufacturing and the other occupations, which in the first part of the century had been carried on by 15 per cent. of the workers.

This marvelous economic revolution provided a market

* See "Agriculture"—*The Americana*: "The amount of human labor necessary to produce a bushel of wheat was reduced in sixty-six years from three hours and three minutes to an average of about ten minutes, while the cost of that labor fell from seventeen and three fourths cents to three and one half cents a bushel."

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in the cities and towns for the great increase in the volume of the surplus agricultural products, and the large revenue derived by the remaining agricultural workers from the sale of these surplus products created such a tremendous buying power among them, that they were able to absorb a large share of the manufactured products of such portion of the 14,500,000 as became thus employed. But this is not all. Commerce and finance, which were small before the introduction of farm machinery, were proportionately augmented by the transportation and distribution of the increased volume of surplus agricultural products transported from the farms to the cities, and the increased volume of manufactured products transported from the cities to the farms. Through this remarkable change, the 35 per cent. of workers which are still employed upon the farms are not only able to produce food and textiles in sufficient quantities to supply their own needs and the needs of the greatly augmented population of the cities, but are able to supply a vast amount for export to foreign lands, thus enriching themselves and adding to the resources of the nation.

WONDERFUL GROWTH OF WEALTH AT THE MIDDLE OF THE NINETEENTH CENTURY

This wonderful economic revolution may be said to have commenced in 1845 with the commercial introduction of a practical reaper. Within two years the exports of wheat and flour had jumped to \$32,000,000, which was five times as great as the average for the previous forty years.* Within five years nearly all kinds of labor-saving farm machinery had been introduced.† Railroad building, which had averaged about 300 miles per year up to that time, more than doubled in 1847, reached 1,656 miles in 1850, 2,452 miles in 1853,

* See "American Farm Implements" — *The Americana*.

† "By 1850 the chief forms of labor-saving agricultural implements of American manufacture were introduced." "American Manufacturers" — *The Americana*.

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and 3,600 miles in 1856.* The value of all farm property increased from \$3,900,000,000 in 1850 to \$7,900,000,000 in 1860—* over 100 per cent. in ten years, a rate of increase which had not been paralleled in any age or in any country.† Savings-bank deposits increased from \$14,000,000 in 1840 to \$43,000,000 in 1850, and to \$149,000,000 in 1860. Gold and silver in circulation increased from \$79,000,000 in 1840 to \$147,000,000 in 1850, and to \$228,000,000 in 1860. The coinage of gold increased from \$1,600,000 in 1840 to \$31,900,000 in 1850. Gold production increased from \$11,600,000 in 1840 to \$50,000,000 in 1850, and immigration from 84,000 to 369,000 within this wonderful decade.*

At the beginning of the nineteenth century the products of agriculture in the United States were the source of maintenance to 85 per cent. of the inhabitants of the country, while the products of the manufacturing establishments were the source of maintenance to but a small portion of the remaining 15 per cent. of the inhabitants. At the end of the century, the value of the annual products of agriculture was \$5,017,000,000; while the value of the products of the manufacturing establishments was \$13,014,000,000; cost of materials used in manufacturing, \$7,346,000,000; wages and salaries paid by the manufacturing establishments, \$2,731,000,000.*

Is it exaggerating the case to call the period of the introduction of farm machinery the most remarkable material epoch in the history of civilization? Glance over the history of the world for a thousand years or more. Is there anything to compare, in a material sense, with the bursting of bonds which for all time had limited man's effectiveness in the production of wealth? ‡

* Bureau of Statistics, Department of Commerce and Labor.

† "In the rate of increase it was the most remarkable decade in history, the national wealth having increased 126 per cent. from 1850 to 1860, as against 36 per cent. from 1890 to 1900." (Congressional Record, Vol. 47, p. 850.)

‡ See "Agriculture"—*The Americana*: "If we may judge of the results, however, this century has witnessed more progress in many directions than the three thousand years preceding."

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Is there anything to compare with the rapid release of this large percentage of farm-workers to swell the percentage of workers in the manufacturing industries and the consequent rapid increase in the accumulated wealth of such of the nations as had adopted farm machinery?

That the United States should have been the birth-place of this important evolution was entirely logical. Its population of twenty millions was the spontaneous gathering together of people from many nations,—people in whose blood the spirit of progress was too intense to hold them in their native lands. The new nation had recently obtained its independence. From 1790, when the last of the thirteen original states ratified the Constitution, to 1846, seventeen new states were added to the Union. During this fifty-six years, a great flood of settlers had poured in a continuous stream from the Atlantic states to the Mississippi Valley, until it had covered that vast territory with an almost unbroken expanse of farms. Here was a vast empire of civilized, energetic, and progressive people. Cognizant of the luxuries of the older nations from which they came, they were able to produce little beyond the bare necessities of life; yet they occupied a vast territory of virgin soil, out of which they might wrest more wealth than the world had ever dreamed of, if each of the workers had but possessed more hands with which to win it.

This was the impulse which consciously or unconsciously pervaded this vast country, greater in extent than the combined territory of many of the nations whence these people had their origin. Something had to happen. As to have more than two hands was a human impossibility, those hands and the brains which directed them found means to harness and bring to their aid the winds, the waters, and the metals of the earth. They grappled with and controlled the wonderful powers of electricity. By this means they have increased the product of those hands tenfold in one short half-century.

This change brought far-reaching consequences. As

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the per capita consumption of agricultural products could not be increased to keep pace with the increase in the per capita production, a vast army of farm-workers was from year to year forced to seek other occupations. At first this was difficult. Before the adoption of farm machinery the farmers of this vast territory not only produced nearly all their household necessities, but raised the fiber for cloth, wove the cloth, and made the clothing they wore. But when machinery increased the per capita production of food and fiber so greatly, they could produce so large a surplus of these things at so low a cost in labor, that it paid them better to buy factory-made clothing and household necessities, and to give all their energies to increasing their surplus of agricultural products to sell in exchange for manufactured products. This was the evolution which, at one stroke, provided occupation for the 50 per cent. of farm-hands as they were thrown out of employment by the adoption of agricultural machinery, provided a market for the great increase in surplus farm products, and gave a heretofore unknown impetus to the rapid growth of commerce, finance, and the manufacturing and mechanical industries. This last evolution in the occupations of mankind surpassed all former evolutions in its vast importance. Before it occurred, the greater part of man's energies was required to produce the necessities of life, which were consumed from day to day. After it occurred, the greater part of man's energies could be given to the production of permanent wealth, which endures for generations.

THE MOST SERIOUS MALADY DEVELOPED BY THE GREAT INCREASE IN THE MANUFACTURING AND MECHANICAL INDUSTRIES

As long as the industries were small in volume, they contained little force within themselves either to retard or accelerate their own growth, and they developed no serious internal malady. Any increase or decrease in

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their volume was the result of some external cause, such as war or peace, large or small crops, favorable or unfavorable financial conditions, etc. But in the nations where the industries have largely increased, new forces have developed, new maladies have appeared, and these new influences have at times greatly accelerated or retarded the growth and prosperity of the industries.

One reads of nations which were destroyed by their great wealth. It was not great wealth which destroyed these nations; it was the uncorrected maladies and evils which grew up with the wealth. The instinctive desire for gain is a motive implanted in man's breast by his Creator. It is not only an incentive to the increase of wealth, but it is the motive which from the beginning of the world has transformed barbarism into civilization. This motive must be recognized as ever-present and as the great power which controls man's acts in all the material interests of life. It cannot be eradicated. If it were eradicated in any nation, that nation would sink back to barbarism.

Just as man has been obliged to understand and contend against the diseases which developed with the herding of large numbers of animals, and as he has been obliged to understand and contend against the diseases and pests which developed with the growth of agriculture, so he must learn to understand and contend against the diseases which have developed with the growth of the industrial system. Already the country has had twenty-six years of retarded growth out of the last fifty-five years, as a result of these maladies.* These years of depression have been attended by suffering and privation, through the enforced idleness of great numbers of the bread-winners of the land, and the industrial system can only become a steady and constant yielder of maximum wealth when its maladies are understood and their ravages overcome or alleviated.

* See Table, page 109.

CHAPTER II

ADVENT OF THE MALADY OF INDUSTRIAL DEPRESSION, AND EFFORTS MADE TO DISCOVER ITS CAUSE

WHEN these depressions first made their appearance they "did not involve the modern industrial conditions"* and were not recognized or spoken of as industrial depressions. Agriculture had been the dominating force for all time. The people had become accustomed to see what few industries there were, prosperous when crops were good and depressed when crops were poor, so they failed to recognize any independent influence of the industries for a long time after these influences were actually of some moment.

As the industries grew in volume and importance, the fact that these disturbances affected them primarily, and at times exclusively, was gradually forced upon the attention of the public. Then arose a great diversity of opinion as to their cause. By many persons they were attributed to some celestial or terrestrial influence acting upon the human mind in some such manner as the moon influences the tides of the ocean. Others thought they resulted from some mysterious psychological law, while still others attributed them to some occurrence or train of events which came under their personal observation. For instance: The banker cited reasons connected with finance; the laborer cited reasons connected with wages, or with the relations of capital to labor; the merchant cited reasons connected with tariff, transportation, competition, and the like; the clergyman and moralist cited reasons connected with morals and religion; the manufacturer thought depressions came from overproduction,

*First Annual Report of the United States Commissioner of Labor, page 13.

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etc., while the politician traced them to changes of administration, bad laws, etc. The English farmer attributed them to the free admittance to that country of foreign agricultural products. A Dutch committee in 1886 found an important cause in the low price of German vinegar; a German committee, in the great decline in the price of beet-root sugar.

Professor Jevons thought crises resulted from sun spots; that is, the sun spots affected the harvest, the harvest affected the money market, and the money market affected all business. The untenability of this theory was demonstrated when time developed that sun spots occurred when there were no financial or industrial disturbances, and that financial and industrial disturbances occurred when there were no sun spots.

That unfavorable weather produced poor crops, and that poor crops affected finance and the industries unfavorably, had been recognized for centuries, so when it was decided that sun spots affected the weather, it was doubtless at once concluded that sun spots were the cause of the mysterious industrial depressions for which no other satisfactory reason could be given. The theory probably originated at a time when the above indications took place contemporaneously, and this apparent evidence of its correctness, together with the high standing of the author, probably caused its acceptance by millions of people. They regarded it as an elucidation of the fundamental principles underlying an economic science, a working hypothesis accounting for a great phenomenon; whereas it was simply a false conclusion arrived at by an unreliable system of reasoning.

Adolph Wagner thought crises resulted from some psychological law in which an organic defect of human nature was betrayed. Many have thought that the periodicity of crises came from the procession of economic generations, meaning the replacement of an older by a younger generation; in other words, the rashness of younger business men.

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Bonamy Price, Professor of Political Economy in the University of Oxford, in an article published in "The Contemporary Review" of April, 1877, asserted that the one and only cause of the existing economic disturbance was "overspending, overconsuming, destroying more wealth than is reproduced, and its necessary consequence, poverty." This theory seemed plausible and satisfied many for a time, but the awkward feature about claiming this theory is that industrial depressions for a hundred years have always followed periods of greatest increase in wealth and have been most severe in the countries which have made the greatest progress in *wealth*, — not those which have made the most progress towards *poverty*.

Gradually it was realized that these depressions sometimes came when there was no apparent cause for them; when crops were large; when the industries, finances and general business were at the height of prosperity, and in the face of conditions which seemed to insure maximum prosperity for a long time to come.

Each depression brought out a new crop of alleged causes, each with sufficient plausibility to satisfy a portion of the people, and enough of them in number to satisfy almost every one for a time. But the whole people have never been satisfied by any one of the alleged causes, and as the mystery has deepened with each decade, so the interest in its solution has increased.

EFFORTS MADE TO DISCOVER THE CAUSE

As years have passed, many of the learned and scientific men of different nations have attempted to solve the mystery. Thus the number of alleged causes has been greatly increased, but in all the efforts to discover the cause there seems to have been no recognition of the fact that such depressions were the natural effect of a new malady; a malady generated by the great increase in industrial production, just as new maladies were generated when the great increase occurred in herding and in agriculture.

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The industrial depression of 1872 to 1878 was of such severity and duration that it stimulated the study of depressions to a greater extent than ever before, and this study has since been prosecuted by many national governments, among which are the United States, Great Britain, France, Belgium, Germany, Switzerland, Italy, and Canada. The substance of the reports of all these government commissions is that the cause of these mysterious industrial depressions is still an unsolved mystery.

In 1885, the United States Bureau of Labor was established in accordance with an Act of Congress approved June 27, 1884, and the late Hon. Carroll D. Wright was appointed Commissioner of Labor by the President. This bureau devoted its first year's work to the investigation and collection of information relating to industrial depressions.* Its report was published in 1886. It presents a voluminous collection of facts and opinions which are of great value in the study of industrial depressions. The facts, because they constitute a basis from which to draw reliable conclusions; the opinions, because they emanate from men selected from every walk in life, and from every industrial section of the globe. These facts and opinions having been gathered from so wide a field may be accepted as representing, approximately, every shade and variety of opinion. In fact, we have, as a result of the work of the Bureau of Labor, all the hundreds of opinions reduced to a concrete form, and, after making a thorough analysis of them, one may feel that the field has been substantially covered.

The opinions as to the cause of industrial depressions gathered in both the United States and in foreign countries by the agents of the Bureau of Labor during the year devoted to this work, after being classified and alphabetically arranged by that bureau, are given in its report under no less than 135 different heads.† Appendix C

* First Annual Report of the Commissioner of Labor, page 5.

† *Ibid.*, page 76.

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is a full copy of this list. The opinions given by the multitude of witnesses who testified before the three government commissions appointed by the two houses of Congress during the decade before the organization of the bureau, as classified and arranged by it, are given in its report under no less than 180 different heads.* Appendix B is a full copy of this list. These alleged causes range all the way from the most trivial to the most serious. Some of them require no evidence to convince one of their groundlessness; others are accepted by so large a number of people that nothing short of a thorough analysis would establish their untenable nature, while still others stand out against all the tests brought to bear upon them.

In the five chapters immediately following will be found analyses of all the alleged causes contained in the two lists named above, as well as all which could be gathered from other available sources.

We will first analyze separately the *chief* alleged causes of industrial depressions; that is, the causes which are believed in by the largest number of people. Among this class are such as Financial Panics, Overproduction, Poor Crops, Presidential Elections, Reaction, Periodicity, Turning Circulating Capital into Fixed Capital, etc.

* First Annual Report of the Commissioner of Labor, page 61.

CHAPTER III

“FINANCIAL PANICS” vs. “INDUSTRIAL DEPRESSIONS”

MANY people believe that industrial depressions are the result of financial panics. *Many of them are*, but when they result from this cause they are of short duration and their origin is always apparent. Long-continued and mysterious industrial depressions result from something more lasting than a panic. They originate from something wrong within the industries themselves. They are independent of panics and come whether panics occur or not.

The causes and conditions of a financial panic and of an industrial depression are so radically different that any condition which is a direct cause of one cannot by any possibility be a direct cause of the other. When an acid is mixed with an alkali, they neutralize each other and the active qualities of both are destroyed. The causes and conditions which lead up to an industrial depression are just as opposite and antagonistic to the causes and conditions which lead up to a financial panic as are an acid and an alkali.

DIFFERENCES BETWEEN THE CAUSES AND CONDITIONS OF PANICS AND DEPRESSIONS

Panic is defined as “a sudden, unreasoning, overpowering fear, especially when affecting a large number simultaneously; extreme and sudden fright.”* A “*Financial Panic*” is therefore the effect produced upon the finances of a country by sudden, unreasoning, and overpowering fright.

Depression is defined as “a state of dullness or inactivity;

* Standard Dictionary.

a protracted season when business falls below the normal." "*Industrial Depression*," therefore, means, literally, a state of dullness or inactivity in the industries of the country; a protracted season during which the production of buildings, furniture, goods, machinery, railroads, ships, etc., falls below the normal.

A financial panic is precipitated by sudden, excited, and imprudent action. An industrial depression is precipitated by deliberate, thoughtful, and prudent inaction.

One is the effect of mental excitement, which results in a temporary check to the natural flow of the mediums of exchange. It is a mental disorder.

The other is the effect of calm, deliberate consideration, which results in reducing the rate of production of materials of physical wealth. It is a physical disorder.

A financial panic is an acute malady. Its beginning is sudden, vivid, intense, and startling. Its chief element is fright. It paralyzes finances at a single blow. Each subsequent step in its course is an alleviation. Each day, week, or month shows a marked recovery. From its nature, as well as from its intensity, it is short-lived.

An industrial depression is a stubborn, chronic malady. Its beginning is gradual and quiet. It commences and goes on increasing in force for many months, unnoticed. Its cause is silently doing its fatal work while actual business is increasing by leaps and bounds. When actual depression appears, its cause has almost ceased to exist. From its nature, as well as from its deep-seated and gradual growth, industrial depression is long-lived.

A financial panic is usually a matter of a few months, weeks, or days. An industrial depression is usually a matter of one or more years.

A financial panic may be compared to a mob, in which a great number of excited minds work upon and excite each other until men act in a body as no one of them would act if left to himself. Industrial depressions, on the other hand, are the cumulative results of the deliberate and thoughtful decisions of individual men.

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These two calamities and their causes resemble each other in no way. They can be classed together only from the one fact that the results of each have a disastrous effect upon business; but even in this there is a wide difference. A panic has an effect which is short, exciting, and a temporary disaster, not to existing material wealth, but to the documentary representatives of wealth; a loss from which the country may entirely recuperate within a short time. The other is a compulsory laying down of the tools which produce wealth, by a vast army of wealth-creators; a loss which can no more be regained than a lost day or a lost year can be regained.

There is no doubt that a financial panic, like any other great disturbance, such as war, pestilence, or famine, may have a depressing effect upon the industries while it lasts; but if a financial panic comes when industrial conditions are favorable, then the industries will revive as soon as the panic has spent its force, and the panic will rightfully be considered responsible for the check given to the industries.* On the other hand, if a panic takes place when the industries are already depressed by internal causes, then the industries will not necessarily revive when the panic has ceased. They will revive only when their real cause has ceased to have its natural effect. The public, however, will almost invariably identify the panic as being responsible for the prolonged depression, simply because the panic, being startling and spectacular, will make a vivid impression upon the public mind.†

A PANIC NEED NOT NECESSARILY CAUSE A DEPRESSION, AND VICE VERSA

The causes and conditions of industrial depressions and financial panics being entirely different, there is no logical reason why an industrial depression should neces-

* Ample illustrations of this are given in Chapter XIV, entitled "Analysis of the Industrial Depressions from 1887 to 1897."

† Ample illustrations of this are given in Chapter XIII, entitled "Analysis of the Industrial Depressions from 1833 to 1887."

sarily be accompanied by a financial panic, or vice versa, any more than that an individual suffering from one disease should on that account contract another disease originating from a different cause. At the same time it must be admitted that the physical weakness caused by one disease will naturally render the patient more liable to succumb to the second disease, if exposed to the conditions which ordinarily cause the second disease. Just so with financial panics and industrial depressions.

Among the facts established and emphasized by the government commissions appointed to investigate industrial depressions, is the fact that financial panics have often occurred without being either attended or followed by industrial depressions; and that industrial depressions have occurred without being followed or attended by financial panics.* The most favorable industrial conditions will not prevent a financial panic if financial conditions are sufficiently deranged, nor will the most favorable financial conditions prevent an industrial depression if the industrial conditions are sufficiently deranged.

In consequence of the opposite quality of the causes of these two calamities, it is plain that the two sets of causes should never be confounded, yet in the efforts made to discover the cause of industrial depressions, the causes of financial panics have been so constantly and persistently cited that it has been one of the chief obstacles, if not *the* chief obstacle, to success in discovering the true cause of depressions. As will be explained later in this volume, everything connected with finances should be rigidly excluded from any consideration in endeavoring to identify the cause of the mysterious industrial depressions which come in the absence of financial disturbances. To admit them will not only confuse the searcher, but will almost certainly defeat the object of his search.

* First Annual Report of the United States Commissioner of Labor, page 15.

CHAPTER IV

ANALYSIS OF THE THEORY OF OVERPRODUCTION

FROM reports of the commissions appointed by various governments to investigate the subject of industrial depressions, it is found that overproduction is one of the two most frequently alleged causes for these great industrial calamities.* This pernicious belief has not only obtained lodgment in the minds of mechanics and workmen, but has deluded great numbers of merchants and manufacturers, and evidences of the belief are constantly appearing in the commercial reviews of many of our ablest newspapers. It is a plausible theory, and has every appearance of being true, but analysis shows that the appearance, in this case, is not in accordance with facts.

The political economists admirably define production as follows: "Objects cannot be created by human means; nor is the mass of matter, of which this globe consists, capable of increase or diminution. All that man can do is to reproduce existing materials under another form, which may give them a utility they did not before possess, or merely enlarge one they may have before represented. So that in fact there is a creation, not of matter, but of utility, and this I call production of wealth." † Wealth is produced whenever value is added through any act or any process. For example, the process of collecting natural products is called farming, or mining, or fishing. The process of chemical or mechanical change to which they are subjected in fitting

* First Annual Report of the United States Commissioner of Labor, page 80.

† Jean-Baptiste Say — "Treatise on Political Economy."

them to satisfy the various wants of man is called manufacturing. The act of transporting and placing them within the reach of the consumer is called commerce. Each act or process which adds to the utility and exchangeable value of matter is production of wealth. A mahogany log in a West India forest is relatively of small value; delivered in London or New York it is relatively of large value. The acts of chopping it down and transporting it to a market are just as much production of wealth as the voluntary process of nature in producing the tree. Even the latter is not a production of matter.

Just as production is a creation of utility and value, so consumption is a destruction of utility and value. Food is consumed by eating it; coal is consumed by burning it; lumber, stone, brick, and iron are consumed by using them in the manufacture or construction of things desired by man. Houses, ships, machines, clothing, and utensils are consumed by wearing them out, or in their destruction by the elements.

Take the article of milk as an illustration of the production of wealth. Delivered in cans on the farm, it may be worth two cents per quart; delivered at the railroad depot in a city, it may be worth three cents; delivered to the merchant, it may be worth four cents; delivered to the residences of the citizens, it may be worth ten cents per quart. If 5000 quarts of milk had been consumed on the farm, it would have been a consumption of \$100 in value. If consumed in the city at the residences of the citizens, it would have been a consumption of \$500 in value, although the same quantity was involved in either case. By the process of farming, \$100 of exchangeable value was produced; by the acts of commerce, \$400 of exchangeable value was produced. Professor Jevons says: "Though exchange cannot create the materials of wealth, it creates wealth, because it gives utility to the materials."

In short, creation of value, utility, and wealth is pro-

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duction. Destruction of value, utility, and wealth is consumption. *When, therefore, the words production or consumption are used in this volume, they must be understood to mean production of wealth or consumption of wealth.*

PRODUCTION IS CREATION OF POWER TO BUY

The theory of overproduction is founded upon the belief that by the introduction of machinery, improved methods, etc., it is possible for man to produce more than man is able to buy, or more than man desires to acquire. Let us analyze these propositions.

First, — *Is it possible for man to produce more than man is able to buy?* The members of an uncivilized tribe, each of whom produces only what is necessarily consumed in the daily maintenance of existence, possess nothing with which to buy the products of others. While such conditions continue, wealth and buying power do not exist in that community. But when each member of the tribe produces something of value in excess of daily necessities, something desired by another, then each has something with which to buy the products of others, and the production of wealth, the creation of buying power, has commenced in that tribe. In other words, *products are buying power*. Money is only the medium by which products are exchanged. John Stuart Mill says: "Could we suddenly double the productive powers of the country, we should double the supply of commodities in every market; but we should, by the same stroke, double the purchasing power. Everybody would bring a double demand, as well as supply; everybody would be able to buy twice as much, because every one would have twice as much to offer in exchange." Professor Cairnes says: "Purchasing power, in the last resort, owes its existence to the production of a commodity." Thus we see plainly that *production is creation of power to buy*.

Money, the medium of exchange, is a necessity to modern civilization, but, unfortunately, its use sometimes

obscures or distorts industrial facts. Producers, especially wage-workers, are apt to think their comforts would be doubled if their pay were doubled. To analyze this, let us suppose that at a given time the pay of all persons engaged in any gainful occupation be doubled, while production remains the same. Is it not clear that the cost of everything would be doubled, and that each one, with his double pay, would be able to buy only as much as he did before? On the other hand, let us suppose that the pay remain the same to each, and that at a given time, by improved machinery or otherwise, the productive force of each worker be doubled. Is it not plain that the cost of everything would be reduced one half, and that each one, on the same pay, would be able to buy twice as much as before?

The only practical way to double the reward to workers is to double their products. Larger production per man, through machinery and improved methods, accounts for the fact that workers are to-day able to enjoy comforts which fifty years ago would have been impossible. If money were eliminated, many of the popular delusions would not exist. All would understand that if every worker turned out twice as many products as formerly, deposited them in a public receptacle, and then each carried away what he desired, in proportion to what he had deposited, each would carry away twice as much, and thus have twice as much to enjoy.

W. Stanley Jevons says: "It is absurd to suppose that people can *become rich by having less riches*. To become richer, we must make more riches." Furthermore, wealth accumulates only when production exceeds consumption. The eighty-eight billions of wealth which existed in the United States in 1900 was simply the result of an accumulation of products, — an accumulation of eighty-eight billions of exchangeable values — eighty-eight billions of buying power. Thus we see that the buying power not only preserves an equilibrium with products, in theory, but that they are, in fact, exactly

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the same after 260 years of growth. There can be no year, month, or day, when the value of products is not exactly equal to the buying power which exists in those products. Hence, it is not possible for mankind to increase products rapidly or greatly enough to exceed the ability of mankind to acquire from each other all of those products.

THE DEMAND FOR WEALTH IS LIMITLESS

Second, — *Is it possible for man to produce more than man desires to acquire?* Professor Jevons says: "There can never be, among civilized nations, so much wealth that people would cease to wish for any more. However much we manage to produce, there are still many other things which we wish to acquire."

There is no limit to human desire. Every man who owns a factory, a house, or a yacht, would like to own a larger or better one. The man who controls a bank would like to control a number of banks and a number of trust companies; having gained these he would like to control great railroad systems, steamship lines, coal mines, and manufactories; having gained these in one country, he would like to control them in many countries. Man's desires increase with his success. Whatever one man achieves in wealth and power, others will desire to achieve and will strive for. The average wealth of the individual in this country has increased 1000 per cent. in less than a century, and no man is yet so gorged with possessions that he desires no more. If in time the poorest in the land enjoy the luxuries now possible only to the richest, there will still be a desire for more wealth. There are hundreds of millions of people in other lands who have not even commenced to produce wealth. Not one human being in twenty, on this globe, has to-day what might be called the reasonable comforts of life. If every man on the earth owned a palace, a yacht, a private car, and all corresponding comforts and luxuries, he would still wish for more and strive for more, and there would still be more to gain.

The luxury and comfort of to-day were not imagined a century ago, and perhaps the human mind to-day does not conceive what may be obtainable in the way of luxuries and comforts a hundred years hence. The desire to gain and possess wealth and power is a natural instinct implanted in man's breast by his Creator. It is this instinct which lies at the base of all production. The instinct is as strong in a nation after it has increased its possessions an hundred fold, as it was when it commenced to accumulate possessions.

If it is impossible for man to produce more than man is able to buy, or more than man desires to acquire, then the claim of overproduction has not the slightest foundation to rest upon.

When people see unsold products piling up and call it overproduction, they are basing their conclusions upon synthetic reasoning (see Chapter IX), which for the solution of such questions is totally untrustworthy; such reasoning will lead to a hundred other conclusions with equal facility. One step taken in the science of analysis would have resulted in the discovery that the accumulation was in consequence of a falling off in the production of things in which these accumulating objects were commonly consumed, so that the accumulation was in reality the result of underproduction and not overproduction. Another step in analysis would have added the discovery that the accumulating objects were chiefly construction materials, and such things as are commonly sold to furnish, stock, or equip newly constructed enterprises.

The difference between periods of prosperity and periods of depression is chiefly in the amount of manufacturing and construction; or, to be more explicit, depression is chiefly a decrease in the rate of production of permanent wealth, such as buildings, railways, ships, goods, materials, etc. This decrease is not caused by lack of power to buy, or lack of desire to acquire, but by a lack of desire to buy at the high prices asked. People

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will buy or construct if you will sell at prices low enough to satisfy them that they will gain by so doing. They will stop buying or constructing when prices are so high, that they are satisfied they will lose by so doing. History shows that the check to manufacturing and construction has always occurred when prices were abnormally high, prosperity greatest, and stocks of materials abnormally low. Let us illustrate this by applying the test to a period so recent that the truth must be plain to every one.

Between September 1898 and December 1899, the production of iron in the United States increased from a rate of 10,750,000 to a rate of 15,750,000 tons per annum. This enormous increase of production caused no accumulation of unsold iron. On the contrary, the stock decreased from 630,000 to 124,000 tons. — Now note the difference. During the eleven months which followed, the production decreased from a rate of 15,750,000 tons per annum, to a rate of 11,250,000 tons per annum. The stock of unsold iron increased to 720,000 tons, and immediately the cry of overproduction was raised all over the country. What an absurdity to cry overproduction of iron, when the country was actually producing less iron by 4,500,000 tons per annum, than it was one year before when there was no accumulation! The accumulation did not occur when production was greatest; it occurred when production had been greatly reduced. It was the falling off of manufacturing and constructive enterprises which caused the accumulation of iron, as it did also the accumulation of all other construction materials. The same truth was still more signally demonstrated in the first part of 1903 and 1907 when in this country the production in each case increased to the largest rate ever known up to those dates, and stocks of materials decreased to the smallest amounts on record.

Each period marked by the accumulation of unsold goods in this country for a century has been a period of small production. History shows no instance in which a period

of large production has been marked by the accumulation of unsold goods. It is the unnatural stoppage of production, in one or more branches of industry, which causes the accumulation of the materials which would otherwise have been consumed in those branches of industry. Eleven times within ninety-four years this unnatural stoppage of maximum production has occurred when finances were most prosperous, when stocks of materials were at the lowest point, and when prices were abnormally high.

The small stocks caused the high prices.

The high prices checked manufacturing and construction.

The checking of manufacturing and construction caused the accumulation of materials.

Underconsumption is another absurdity. Its literal meaning is, "too little destruction of wealth." A certain amount of consumption is a necessity to the maintenance of life and to the production of other things of greater value. But all consumption in excess of what is necessary to bring about the most desirable result, is waste. What the producers of a country need is large sales of products, and large sales are most certain to be realized when every one produces largely. But to waste is to destroy buying power.

It must of course be admitted that if the manufacturers of all the various things made in the country were to cease turning out their usual product, and should instead direct all their capacity to the production of chairs, there would be an overproduction of chairs and an underproduction of all other articles; but it is *not* admitted that any such happening is possible, or that *any* absurd amount of any article will be thus overproduced. "The instinctive desire for gain" is an ever-present influence, and it can be relied upon to check the production of any article as soon as it becomes manifest to the manufacturer that more of that article is being produced than can be sold within a reasonable time. The only danger is that they will stop too soon; that they will not produce enough. What the manufacturers of the country have suffered

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from in the past is too little production, not too much. We need no better evidence of this than a glance at Appendix Z and the table on page 204, showing that ten times during the last seventy-five years the great staple of pig iron has advanced in price from 84 per cent. to 316 per cent., and that these abnormal advances have not only checked construction, but have put up the cost of producing iron from 50 per cent. to 100 per cent. each time. Then has followed another long period of struggle to get the cost price down to the constantly declining selling price, and this movement has continued until products reached figures low enough to stimulate another boom.

TEMPORARY SURPLUS PRODUCTION

All authorities agree that general overproduction is an impossibility, though many admit that overproduction in one or more articles frequently occurs. The writer takes issue with all who make this admission. He claims that these exceptions are not cases of overproduction, but simply cases of temporary surplus production, and that temporary surplus production is not only natural and desirable, but that it is necessary to man's comfort and welfare. Sometime in the past, man discovered that the earth yielded its food products during short annual periods which we now call harvests, and that if he would enjoy these products continuously, he must during these periods gather and store up of the surplus produced sufficient to satisfy his wants until the next harvest. This was man's first lesson in nature's demonstration that temporary surplus production was a necessity to his comfort and welfare, and was not overproduction. *Overproduction* is a term which should never be applied to the economical production of any useful or desirable commodity which can be preserved and carried to a place or time when it will surely be needed.

Only a few years ago there were seasons when the

receipts of fruit in large cities were sometimes so great within a few days and the prices were forced so low that the fruit scarcely brought the amount of the freight, and in some cases large quantities went to decay for lack of demand. This in turn discouraged shipments, and then would succeed a season of great scarcity. It took experience and many years of loss to teach man how to rectify these irregularities, but finally it was accomplished by the establishment of cold storage warehouses. In these, fruits could be kept in a temperature at which chemical change ceased, and thus be preserved in a perfect condition for months. The result is that the prices of such products are now more uniform and reasonable; the public is more regularly supplied; the profits of both producers and dealers are more uniform and remunerative, and as a result both the production and consumption of these articles have been greatly augmented. It was *temporary surplus production* of fruit, before it was brought under intelligent control, that caused the irregularity. In our ignorance we called it overproduction. It was not such. It was an object lesson which, despite man's slowness to appreciate it, unerring nature persisted in thrusting before his notice until he discovered that this temporary surplus *was the one and only thing out of which it was possible to create regularity in both supplies and prices*. So we find vegetables, eggs, butter, fish, poultry, and many other perishable articles, getting the benefit of an intelligent system which brings regularity of supply out of irregularity of production. *As man masters the art of dealing intelligently with the temporary surplus production of each article, we shall hear no more of overproduction in connection with that article.*

Cases of temporary surplus production are a necessity to growth and progress, and will only cease when the business of the country ceases to increase and develop. In colonial times, every nail produced was hammered out by hand. Now, by the aid of machinery, one man can turn out a thousand times as many nails as in colonial

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days. During the interim, the temporary inequalities between the supply and demand have many times required to be adjusted to each other. We have had, in other words, frequent temporary surplus production of nails; but in the end the nails have been consumed. None have been destroyed for want of a market, and hence we have had no overproduction of nails. The fact that such inequalities have always occurred and will continue to occur, simply emphasizes the importance of taking the greatest possible advantage of these opportunities of temporary surplus production when they do occur.

In some tropical countries they mine gold by hydraulic power and must do it in daylight. But, owing to the climate, the streams are full of water at night and practically dry all day. So long as the people lamented the nocturnal overproduction of water they produced no wealth. When they built dams to store the water at night, they provided means to mine by day. This is a striking example of the way we must turn to profit these seasons of temporary surplus production. It is during periods of large surplus production that we can most economically and profitably gather reserve stocks of such products as we know will surely be in demand during periods of recurring prosperity.

In the reign of Louis XVI there were at one time, in certain departments of France, such abundant harvests, that wheat was almost unmarketable, while in other and in not far distant sections of the country there was such a lack of food that the inhabitants perished of hunger. General Wilson, in his "Study of China," cites the fact that in 1877 over ten millions of people died from starvation in two provinces of China, while great abundance prevailed in other parts of the country. It is quite likely that overproduction was claimed in these sections of France and China where food was so superabundant. But was it overproduction? Was it not rather the lack of an adequate system of transportation?

Many men still living can recall years when grain was so abundant at the time of harvest, in parts of the United States, that it would not sell for as much as the cost of gathering it, and great quantities were allowed to decay in the field; and yet before the next harvest grain was so scarce that it brought fabulous prices. Could this be called overproduction? Was it not rather a lack of an effective storage system for preserving the temporary surplus crops until needed?

LESSONS TO BE LEARNED FROM THE FACTS ILLUSTRATED

While it is true that overproduction is not an admissible proposition, it is also true that supply and demand for any one thing rarely preserve an equilibrium for any great length of time, nor can it be expected that nature or art will ever arrive at such a condition as automatically to provide products exactly where and when they are needed. But by creating the modern system of transportation and by inaugurating the present system of cold storage, two long strides have been taken in this direction. These strides would not have been possible but for the existence of *temporary surplus production*. Yet another long stride forward will be taken when the producers of stable commodities like coal, iron, lumber, cement, steel, tin, copper, lead, etc., realize, as the producers of perishable articles have done, that it is stability in prices which will give them greatest wealth. They will then take logical and timely measures through large temporary surplus production, to secure this stability in prices. In the same manner that man has encouraged the temporary surplus production of agricultural products, he must encourage the temporary surplus production of construction materials and other durable manufactured products. As he husband the temporary surplus of grain, he must husband the temporary surplus of manufactured materials.

This could manifestly be done with iron, coal, lumber, cement, etc., with less risk and more certainty of success

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and profit than with more perishable articles such as grain, fruit, vegetables, etc., but it should be done with the same degree of forethought, preparation and fixed purpose. It would not do, for instance, after carrying products through a part of the dull period to lose confidence in the outcome and abandon the purpose before the boom period developed, any more than it would do for the farmer to abandon the cultivation of his crop in the midst of the cultivating season.

In the manufacturing nations we have had eight depressions followed by booms within seventy years. As long as the conditions which bring about booms are permitted to exist, they will continue to occur; hence the ultimate market for a temporary surplus of grain accumulated during harvest is no more certain than the ultimate boom market for construction materials accumulated during dull years. Seven times in the last seventy years iron has been produced in dull periods and carried for boom prices in Scotland, and always with large profits, although in one case the accumulation continued for fifteen years and was in amount equal to over twelve months' production. In this extreme case the advance in price was 78 per cent., on the first return of prosperity, and 109 per cent., if we include the first substantial boom.* In the United States during the last sixty years the average advance in price during boom periods has been more than 200 per cent., and yet we know of but few cases in which accumulations have been made in this country, with due preparation and the distinct purpose of carrying the iron to secure the high prices of the next boom. In each of these few cases the business was a great success and attended by enormous profits. The most notable was that of David Sinton, of Cincinnati, Ohio, who carried iron about ten years. His profits were so great that after he sold out on the boom of 1864 he was rated as the richest man in Ohio.

* From 37/1 in 1888 to 66/3 in 1890 and to 77/10 in 1900. Official Report of Royal Exchange, Glasgow, Scotland.

Money made in this manner does no harm to any one, and is a blessing to a great multitude. It gives employment during dull years to many who would otherwise suffer, and when the boom years come, the accumulated stock pays its owners a handsome profit and yet goes far toward preventing extreme high prices. In Scotland, for instance, the advance in price caused by booms in the last seventy years has averaged but a little over 50 per cent. as against more than 200 per cent. in the United States. It is these excessive advances and declines which are largely responsible for so many failures in iron-making in this country.

Our boom advances are so enormous that they usually increase the cost of iron production from 50 per cent. to 100 per cent., and the heavy losses sustained by producers, while these fictitious prices melt away, carry many of them into bankruptcy. A Scotch iron-master said to the writer a few years ago, on the floor of the Royal Exchange in Glasgow, in effect, that the American iron-producers take such short views of business that they not only pave the way for large losses, when prices go down, but that they throw away opportunities for reaping large profits when prices go up.

To give an idea of what rich opportunities of this character have been thrown away in the past, let us illustrate what might have been done in this country between 1890 and 1899, at which time it was claimed that pig iron was being produced as low as \$6 per ton in Alabama, and \$9 per ton in Pennsylvania. Let us suppose that a furnace company in Alabama, making 100 tons of iron a day at a cost of \$6 per ton, had kept in blast from 1890 to 1899, inclusive. Suppose also that they had piled up their product, carrying it at an expense of 50 cents per ton per annum for interest and storage, and during the summer of 1899 had sold the entire accumulation at \$12 per ton. The result would have been as follows:

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Cost of making 328,500 tons, at \$6.00 per ton . . .	\$1,971,000
Cost of storage and interest, at 50 cents per ton per year . . .	<u>739,125</u>
Total outlay	\$2,710,125
Total yield, 328,500 tons, sold at \$12.00 per ton . . .	<u>3,942,000</u>
Net profit remaining	\$1,231,875

Has any furnace company ever existed in the United States making a hundred tons of iron per day, and selling it at the current market prices as made, which could show anything like such a profit over a period of nine years? Yet we have figured the selling price at \$12 per ton only, whereas the market price rose during the fall months to over \$18.50 per ton. If sold at, say, \$18, the net profits would have been \$3,202,875: more than 100 per cent. net profit on the cost price of the entire nine years' product, whereas it is doubtful if any furnace company in that State made as much as 10 per cent. profit on its nine years' product by selling at the market prices as produced.

Now, if we transfer this illustration to Bessemer iron in Pennsylvania and Ohio, which cost, say, \$9 per ton to produce, 66 cents per ton per annum to carry, and was sold at \$18 (the market price went to \$25), we shall have the following result:

Cost of making 328,500 tons, at \$9.00 per ton . . .	\$2,956,500
Cost of storage and interest, at 66 cents per ton per year	<u>975,645</u>
Total outlay	\$3,932,145
Total yield of 328,500 tons, at \$18.00 per ton . . .	<u>5,913,000</u>
Net profit remaining	\$1,980,835

Let us apply this illustration to the entire furnace interest of the United States for the 1890-1899 period. We were producing and consuming in 1890, in round numbers, 9,000,000 tons per annum; in 1897 we were producing and consuming about the same amount, but during the interim many of the furnaces went out of blast, and the production and consumption fell at times to a 6,000,000, 7,000,000, and 8,000,000 ton-per-annum rate. Now, if all the furnaces which were running in

1890 had been kept in blast until 1899, and the consumption had remained what it was, we should have accumulated in the year 1891 a surplus of about 1,000,000 tons; in the year 1893, about 2,000,000 tons; in 1894, about 2,500,000 tons; in 1896, about 500,000 tons—aggregating a total, up to the end of 1897, of about 6,000,000 tons. For illustration, we will suppose this iron cost \$9 per ton to produce, that the interest and storage amounted to 66 cents per ton per annum, and that it was carried until the middle of 1899. The result would have been as follows:

Cost of making 6,000,000 tons, at \$9.00 per ton . . .	\$ 54,000,000
Cost of storage and interest, at 66 cents per ton per year	22,440,000
Total outlay	\$ 76,440,000
Total yield of 6,000,000 tons sold at \$18.00 per ton . . .	<u>108,000,000</u>
Net profit remaining	\$ 31,560,000

And yet we have figured the selling price at \$18 per ton, whereas for six months, commencing in October, 1899, the price of iron averaged about \$22 per ton. Had the six-million-ton surplus been sold at this figure, it would have brought more than 100 per cent. above its first cost.

These illustrations are given only to show how entirely safe and assuredly profitable it is to accumulate large reserve stocks in long dull periods; they have no bearing upon the remedy we shall later propose, since that remedy will cause the fluctuations in price to be very much smaller than they have been in the past, and will render the accumulation of large stocks during dull times unnecessary. *The remedy we shall propose will not only prevent the prices of iron and all other construction materials from advancing to abnormally high figures, but will be equally effective in preventing their declining to abnormally low figures.* Neither of these desirable results could be accomplished practically through the accumulation of reserve stocks, simply because it is not practical to accumulate or carry enough to have any substantial

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effect in preventing abnormal advances. Let us analyze this matter.

We have already shown, on page 34, that an accumulation of iron in Scotland equal to more than twelve months' production did not prevent an advance in price of over 78 per cent. on the first return of prosperity. Now let us analyze conditions and see whether it would be safe and profitable to carry large surplus stocks of pig iron in the United States. As shown on page 37, a temporary surplus production of about 6,000,000 tons might have been accumulated up to the close of 1897 by simply keeping the product of the furnaces up to 9,000,000 tons per annum from 1890 to 1897. This would have been about 500 per cent. more than had ever been accumulated in the United States, would have been regarded as an enormous stock, and the cry of over-production would have been loud and long. To illustrate what short views we take of this business, and how utterly we fail to appreciate what large and small stocks are, will be a simple matter, as it requires but few figures to show that if we had held a stock of 93,226,874 tons at the end of 1907, and had continued to produce at the rate of 9,000,000 tons per annum, it would all have been consumed by the end of 1907. Here are the figures:

Imaginary stock at end of 1897	93,226,874 tons
Ten years' product at 9,000,000 tons per annum	90,000,000 "
Total	<u>183,226,874</u> "
Consumption ten years (1897-1907),	183,226,874 "*

These figures should satisfy any one that to produce and carry iron through long dull periods, is not only safe, but much more profitable than to sell it as made, and that there is no danger that this condition will change as long as the country continues to grow. Dr. William Kent, in his review of the iron trade for forty-two years,

* This item is the total of the ten years' production, as given in the reports of the American Iron and Steel Association.

published in "The Iron Trade Review" of January 10th, 1907, gave statistics showing that the rate of increase in the iron production of the United States for forty-one years (1864-1905) had been over 114 per cent. per decade, and that for the last decade (1895-1905) it had been over 143 per cent., so that even if the rate should fall as low as 100 per cent. per decade, we have a prospective production of 67,340,000 tons per annum by 1920.

Let it be distinctly understood that we do not suggest any such absurdity as an accumulation of 93,000,000 tons, or even a tenth part of it; the figures are only used to show that a stock of 7,000,000 tons at the end of 1907 might have been accumulated, and it would *not* have been an absurdity. On the contrary, it would have paid a handsome profit to the accumulators, and would have prevented prices going up so quickly or so high. It would also have been a useful object lesson, in that it would have called more marked attention to the rapid increase in consumption, and would have prompted earlier and more extensive efforts to increase the producing capacity.

To waste the labor and the facilities for producing the great staples to the full capacity in dull times, when it is certain that they will be in great demand in active times, as Talleyrand says, "Is worse than a crime, it is a blunder." This is true, because, whenever scarcity in the supply of any important commodity forces the price of that commodity up to the point of restricting its use, it is simply nature reminding us that there has been too little temporary surplus production and husbanding of that article in the past. Indeed, the time is probably not far distant when the cry of overproduction applied to any useful article, in any country, will be recognized as an evidence of a lack of knowledge, forethought, and wisdom on the part of the people of that country in taking care of temporary surplus products when they can be had for use during periods when they otherwise could not be had.

Both nature and art, undoubtedly for a wise purpose,

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give their products to man in a disproportionate manner, not to be wasted but to be cared for intelligently, and if he does not so care for them, he is certain to suffer for his neglect. Is there anything in nature or history which does not teach man that if he would have anything in plenty when needed, he must raise and gather it when it can best be produced? Is it not good business to gather surplus products when they are plenty and cheap and hold them until they are scarce and high? Have any ten years passed in the recollection of men now living, in which the people of this country have not suffered through abnormally high prices for the want of an adequate supply of some of the great staples which might have been produced and stored in times of plenty? In the 260 years of the country's growth, has any one ever heard of useful manufactured products being destroyed because of want of a market? Have they not all been consumed in time? Is not this proof that each one of the overproduction claims put forth during the last two and one half centuries has been rank nonsense? Has not modern society simply failed to grasp one of nature's greatest economic truths?

Since the dawn of civilization, the greatest and most powerful nations of every period of history have been those which have recognized to the fullest degree the importance of producing and storing up such temporary surplus productions as were necessary to the life, defense, and well-being of its citizens. The nations which have crumbled into decay in times of peace or in times of war are those which have failed to learn this great truth which nature is constantly thrusting before man's attention. The Scriptures, from Genesis to Revelation, abound in accounts of the immense storehouses and store cities builded and maintained by the great nations of ancient times. They not only gathered in the months of harvest sufficient to supply the people until the next harvest, but they stored up, in years of plenty, sufficient to provide for years of famine. This wise provision

ranked first in importance in all temporal affairs. Is this one of the lost arts? Verily what Thomas Arnold wrote years ago is still true: "What is called ancient history is the most truly modern, the most truly living, and the most rich in practical lessons for every succeeding age."

CONCLUSIONS

Thus we see that the accumulation of unsold goods is not an evidence of too much production of that kind of goods, but of too little production in other lines of business which ordinarily consume that kind of goods; that the only natural limit to a people's power to acquire, possess, and enjoy material wealth is their capacity to produce that wealth; that products are in themselves buying power; that it is impossible to create products in excess of buying power; that products are wealth; that wealth increases in the proportion that production exceeds consumption; that it is impossible for wealth to increase so rapidly or so largely that it will exceed man's desire to possess it or his power to pay for it. We see also that if the country is to have the maximum of prosperity it must have the maximum of production; that we cannot become richer by producing less riches; that there cannot be too much temporary surplus production of any useful article which can be safely stored until the people need that article.

The difference between the poorest nation on the globe and the richest is simply the natural conditions resulting from the difference of production. Every day of idleness is a permanent and irreparable loss, and can no more be replaced than the lost day can be replaced. It has sacrificed something the community might have possessed. The natural condition of man is to be at work. He wishes to earn in order that he may buy. When willing, competent workers cannot secure employment, some external or internal malady has deranged the industrial machinery, and that wrong is working injury

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not only to the unwillingly idle individuals but to the whole country. No obstacle should be allowed to stand in the way of man's capacity to produce to the utmost such things as add to the well-being and elevation of mankind. Nothing should be allowed to stand in the way of man's increasing his comforts and wealth except the natural and reasonable limit to his energies.

There is no greater fallacy than the claim that overproduction is the cause of industrial depressions. Maximum production is maximum prosperity. Depression is distinctly underproduction.

CHAPTER V

POOR CROPS — PRESIDENTIAL ELECTIONS — REACTION — PERIODICITY

A LARGE portion of the people believe that poor crops have been the cause of many of the industrial depressions which have occurred in the United States during recent years. This belief exists, first, for the reason that poor crops *were* the cause of most of the depressions which occurred in this country previous to the nineteenth century and that they continue to be the cause of depressions in the nations which are still chiefly agricultural; second, because people are slow to realize any change in every-day affairs, no matter how great these changes may be.

In July, 1900, an interview appeared in one of the principal dailies of London from a well-known New York financier in which he asserted that the crops were the chief source of railroad earnings in the United States. This article was extensively copied in the papers of this country without calling forth criticism or correction, although at that time the official report of the Interstate Commerce Commission for the fiscal year ending June 30, 1899, had been widely published for many months, showing that the products of agriculture were less than 12 per cent. of the total tonnage transported by the railroads of the country. We quote from this report as follows:

Classes of Commodities	Tonnage reported as originating on line	Per cent. of aggregate
Products of Agriculture	50,073,963	11.33
Products of Animals	13,774,964	3.12
Products of Mines	227,453,154	51.47
Products of Forests	48,122,447	10.89
Manufactures	59,415,205	13.45
Merchandise	19,844,735	4.49
Miscellaneous	23,197,155	5.25
Grand Total	441,881,623	100.00

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Of course, everything has its due effect. Whatever shortage occurred in the volume of a year's crop in any district would unquestionably result in less freight to the transportation companies of that district. As, however, the railroad tonnage of the entire agricultural products of the country is but $11\frac{1}{2}$ per cent. of the whole tonnage, such shrinkages as occur in this $11\frac{1}{2}$ per cent. on account of short crops must necessarily be small. Compare with this the shrinkages which occur, during an industrial depression, in the tonnage of mining and manufacturing products, which comprise about 65 per cent. of the whole tonnage of the railroads.

Whatever shortage occurred in the *selling price* of the nation's crop would result in that much less buying power in the hands of the proprietary farmers. But is there any tangible shortage in the selling value of a small crop as crops occur in juxtaposition from year to year? It is almost an axiom that small crops bring big prices. Let us analyze this matter. The corn crop of 1901 was only a two-thirds crop in amount, and yet it brought 38 per cent. more money than the large crop of the year before; the tobacco crop of 1907 was in quantity 11 per cent. less than the average for the preceding five years, but brought 16 per cent. more money; wheat was 5 per cent. less in quantity, but brought 6 per cent. more money; oats were 19 per cent. less in quantity, and yielded 24 per cent. more money.* Poor crops affect the industries injuriously at times, but not to the extent generally believed, and not often in the manner commonly supposed; that is, it is not "because the farming population has less money with which to buy industrial products." It is more often because the non-farming population, being obliged to pay more for their necessities, have less to spend upon luxuries. To illustrate this, take the corn crops of 1900 and 1901, the statistics of which were as follows:

* Letter from the United States Agricultural Department to the author.

POOR CROPS

Year	Area Planted. Acres	Production. Bushels	Farm Value Dec. 1	Value per Bushel Dec. 1	Yield per Acre in bu.	Value of Yield per Acre
1900	83,320,872	2,105,102,516	\$751,220,034	.357	25.3	\$9.02
1901	91,349,928	1,522,519,891	921,555,768	.605	16.7	10.09

As will be observed, the farmers received a total of \$170,335,734 more for the two-thirds crop than they did for the large crop of the year before. Statistics show that the consumption of corn per capita, was $24\frac{17}{100}$ bushels in 1901, against $24\frac{44}{100}$ in 1900. It was, therefore, the consumers of the corn, who used about the same quantity each year, and who were obliged to pay the farmers $60\frac{1}{2}$ cents per bushel in 1901 as against $35\frac{7}{10}$ cents in 1900, who had one hundred and seventy millions of dollars less money with which to buy industrial products. This is not an exceptional case. Compare the tables in "The Statistical Abstract of the United States," of the three chief cereals — corn, wheat, and oats—for the forty-one years from 1866 to 1907, and it will be found that there were twenty-seven instances in which a short crop brought more than the large crop of the year before, as against twenty-four instances in which a short crop brought less than the large crop of the year before. The total gain to the farmers was \$1,450,000,000 on the twenty-seven instances, against a total loss of \$1,314,000,000 on the twenty-four instances. This shows a net gain to the farmers, in the period of forty-one years, of \$136,000,000 on poor crops, over good crops of the year before. Then again there were only three instances in the forty-one years in which poor crops of the three cereals came the same year, whereas in many cases a poor crop of one cereal was offset by a good crop of another.

This analysis indicates that there is little difference in the amount realized by the proprietary farmers of the

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country, as a whole, whether the crops which closely succeed each other are large or small, and that the small crops pay them, on the average, a little more than the large crops. Note the facts, that the two-thirds corn crop paid them 38 per cent. more money; that the tobacco crop of 11 per cent. less paid them 16 per cent. more money; that the wheat crop of 5 per cent. less paid them 6 per cent. more money; that the oat crop of 19 per cent. paid them 24 per cent. more money.

In the case of the small corn crop of 1901, for which the consumers paid and the producers received \$170,000,000 more money than they did for the large crop of the year before, these conditions might have offset each other if the producers had expended the additional amount they received for the same class of articles that the consumers were obliged to deny themselves, but this was probably not the case. The extra income of the farmers, instead of being invested in general goods, is more likely to be used in paying off mortgages or in buying "the land just joining" them, so that, even when a short crop does bring more money, it may result in less general trade and have a depressing effect to that extent. Mr. James J. Hill, in a letter to the author under date of September 3, 1910, writes as follows:

"While it often is true, as you state, that the farmers as a whole receive as much money for a short crop as for a full one, this does not prevent industrial disturbance. The farmers whose crops are short must restrict their purchases, while those who receive actually more cash for their product do not add proportionately to their purchases. On the other hand, the advance in the price of food products and the cost of living cuts down the purchasing power of the whole non-agricultural population. As a rule they make the necessary economies not by lowering the quantity or quality of their food, but by doing without other comforts or necessaries. This restricts the demand and operates precisely as a falling off in demand for construction material to produce depression. While this might make your statement of construction cost as the sole cause of depression less sweeping, it does not, of course, affect the validity of your argument as a whole."

The products of agriculture have not only ceased to be the chief source of income to our twenty-nine millions

of workers,* but the difference in the earnings of those engaged in agricultural pursuits, between a year of poor crops and a year of good crops, is remarkably small. On the other hand, the difference in the earnings of those engaged in the industries, between a year of industrial prosperity and a year of industrial depression, is very great. The area of the United States is so large and its climate so varied, that when crops are poor in one section of the country, the shrinkage in volume is almost invariably offset by large crops in some other section. Then, too, there is little or no change made from year to year in the number of laborers employed upon the farms, except to keep pace with the change in population. The demand for farm products being regular, the preparations for supplying it are regular. If the crops are poor, it is the result of unfavorable weather, not because fewer laborers were employed in raising them. Thus the wages of farm-laborers, as well as the profits of proprietary farmers, is remarkably uniform.

The conditions which confront those engaged in the industries are entirely different. Statistics show many cases in which the building of railroads, ships, and factories is doubled within a year or falls off one half within a few months.† We see also communities where a large number of residences, factories, etc., may be built one year and none the next. With these increases and shrinkages in construction, come full proportionate increases and shrinkages in revenue to the industrial workers and proprietors. There are no such equalizers as uniformity in the number employed, and high prices when crops are small, as noted in agriculture. It is just the reverse, for, when construction falls off, a proportionate number of construction workers are discharged, and the wages of those still employed are usually reduced. A falling off of 20 per cent. in the business of the nation means the discharge of one fifth of the workers. A check

* See "American Manufactures"—*The Americana*.

† See Appendix L.

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to the industries which resulted in the loss of employment to five out of each twenty-nine of those engaged in the gainful occupations of the nation in 1900, would have cut down the earnings of the people at the rate of \$3,000,000,000 per annum, an amount nearly equal to the total value of the whole agricultural crop of that year. The largest loss which has ever occurred in this country in consequence of a poor crop is infinitesimal in comparison with the loss resulting from the discharge of one out of five of the industrial workers.

If large crops should be harvested in this country in the same season that small crops were harvested in other countries, the farmers of this country would undoubtedly receive a greatly increased revenue through the larger exports of their products. But often our large crops are offset by large crops abroad, so that the fortunate conditions which might produce a greatly increased revenue are rarely enjoyed. Nevertheless our farmers have on some occasions experienced these fortunate conditions and in consequence have in these instances realized greatly increased revenue. But the largest gain ever realized from such fortunate crop conditions does not compare in amount with the gain realized from the industries during a year of industrial prosperity over a year of industrial depression. Take, for example, the year 1905, when the industrial production was about 40 per cent. greater than in 1904; this increased revenue amounted to a difference of several billions of dollars.

The following figures, taken from "The United States Statistical Abstract," show how little influence the total value of farm products has had upon the total volume of the industries, as far back as the government has given annual crop values on which comparisons can be made. †

† Previous to 1900 the government has gathered crop statistics but once each decade.

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Year	Total Value of Farm Products in Dollars	Production of Pig Iron	Total Bank Clearings
1900	\$5,017,000,000	13,789,000 tons	\$114,000,000,000
1901	5,317,000,000	15,878,000 "	84,000,000,000
1902	5,617,000,000	17,821,000 "	116,000,000,000
1903	5,917,000,000	18,009,000 "	113,000,000,000
1904	6,159,000,000	16,497,000 "	102,000,000,000
1905	6,309,000,000	22,992,000 "	140,000,000,000
1906	6,755,000,000	25,307,000 "	157,000,000,000
1907	7,488,000,000	25,781,000 "	154,000,000,000
1908	7,848,000,000	15,936,000 "	126,000,000,000
1909	8,622,000,000	25,795,000 "	165,000,000,000
1910	8,926,000,000	27,303,000 "	163,000,000,000

As will be observed, the industries fell off largely in 1904, as compared with each of the two previous years, in both of which the value of the crops was much less; showing that the small crop years were the largest industrial years. The same relative conditions took place in 1908, as compared with 1906 and 1907.

A thorough analysis would undoubtedly show a uniform sequence of poor crops and industrial depressions in early times when all nations were chiefly agricultural. A thorough analysis, however, shows no sequence of poor crops and industrial depressions in the five industrial nations since they became large manufacturers. Analysis also shows that poor crops have not been contemporaneous in these five nations, during recent years, while industrial depressions are pronouncedly so.* It is quite clear, therefore, that in the five industrial nations, where these severe industrial depressions have occurred, the size of the crops has not been the cause of the class of depressions which we call "mysterious."

PRESIDENTIAL ELECTIONS

Many people in the United States have attributed industrial depressions in the past to presidential elections.

* First Annual Report of the United States Commissioner of Labor, page 290.

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Undoubtedly they do have more or less effect upon the industries. Every hour of time taken from the production of wealth by the producers of the country and given to the elections has its due effect in cutting down the volume of agricultural and industrial products and to that extent reduces the wealth and buying powers of the people. Then, again, if either party advocates something which the people believe would injure business, it undoubtedly retards business until the threatened danger is past. For instance, the uncertainty as to whether the future basis of the currency was to be gold or silver, which attended the presidential campaign of 1896, affected all business during the campaign, and the volume of the industries declined enormously;* but after the election in November, which decided the question in favor of the gold basis, business quickly revived and before the close of 1897 was greater than ever before in the history of the country.† Outside of this instance, the presidential years show a gain in the volume of the industries as often as they show a loss, and in each of these cases the gain or loss can be unmistakably traced to causes more potent than presidential elections.

If presidential elections had been the cause of industrial depressions, then there would have been some reasonable connection shown between the two, and there would have been some sequence in these recurrences; but nothing of the kind can be discovered in the most searching analysis of these events. This can best be illustrated by the accompanying diagram. The intervals between presidential elections, as every one knows, have always been four years, while the intervals between industrial depressions, as will be observed

Presidential Election Years	Years of Industrial Depression
1812	1812
1813	1813
1814	1814
1815	1815
1816	1816
1817	1817
1818	1818
1819	1819
1820	1820
1821	1821
1822	1822
1823	1823
1824	1824
1825	1825
1826	1826
1827	1827
1828	1828
1829	1829
1830	1830
1831	1831
1832	1832
1833	1833
1834	1834
1835	1835
1836	1836
1837	1837

* See page 162.

† Then, too, there was nothing mysterious about this depression, for every one knew the cause.

Presidential Election Years	Years of Industrial Depression
1838	
1839	
1840	
1841	
1842	
1843	
1844	
1845	
1846	
1847	
1848	
1849	
1850	
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1900	
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1904	
1905	
1906	
1907	
1908	

from the accompanying table, have been four, eight, eleven, ten, ten, ten, six, nine, eight, three, one, one, one, four, three, and four years respectively. Four times depressions have come one year after elections; five times they have come one year before; six times they have come half-way between, and twice they have come on the same year. This shows neither sequence nor connection. The only noticeable fact revealed by the diagram is, that during this period of ninety-six years they have come on the same year only twice, as against four, five, and six times on the intervening years.

When a presidential election affects the industries at all, it is either a short-lived effect, like the case of 1896, when the cause is known to every one, or it is so moderate in effect as to be fully covered by the common remark, that they are "off years." It seems quite apparent, therefore, that the long-lived and mysterious industrial depressions, which have occurred in the United States, have not been the result of presidential elections, and it must be even more apparent that presidential elections were not the cause of the contemporaneous depressions in the four other industrial nations.

REACTION

Reaction is a spontaneous recovery from some forced and unnatural condition. A steel spring if forced out of its natural condition will react as soon as the force is removed; but from the natural flow of water downward there is no reaction. If

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industrial prosperity is unnatural and industrial depression is natural, or if the condition of a maximum number of citizens at work earning and producing wealth is unnatural and the maximum number of citizens idle is natural, then reaction might be claimed as a cause of industrial depression; but there is nothing in nature which points to idleness as a natural condition of the citizens of a civilized community. Quite the reverse. Even in a condition of complete savagery, man must do some labor, for the spontaneous products of the soil cannot be enjoyed by him except through some exertion on his part. Wild fruits must at least be gathered, and if one would have clothing to protect him from cold, or shelter to protect him from the elements, he must labor to fit nature's products to his purposes. Barbarism, which is defined as "only one remove from the savage state," "only a little advance in industry and art,"* is attained only as a consequence of a greater amount of labor; while the highest state of civilization is only attained by the maximum amount of labor. Civilization is defined as the result of "the multiplication of the means of culture and enjoyment or progress and achievement; the lifting up of men mentally, morally and socially."† Every step of this progress and uplifting results from labor. Mental and muscular action and exertion, because they are natural, come with the first hour of the infant's life. Compulsory idleness is a severe punishment at any age. We permit labor in our prisons, because it is considered inhuman and unnatural to compel human beings to idleness. It is natural for even the animals to work for themselves and those of their kind dependent upon them.

Civilization not only results from labor, but it increases the natural desire for labor. The United States is a civilized community, hence the normal and natural condition of an able-bodied American citizen is to be at work. He may not love the particular employment he is engaged in, but he wishes to work that he may be able

* Standard Dictionary.

† *Ibid.*

to earn and buy for himself and those dependent upon him. Idleness begets want, poverty, crime, disease, and all their resultant evils. It is natural for the normal man to shun these, and he works to escape them. Work begets plenty, comfort, wealth, honor, happiness, and health. These are what man desires for himself and those he loves, and it is natural for him to work to attain them.

The degree of civilization attained by a nation is in exact ratio to the proportion of its citizens who are able to enjoy the natural desire for mental and physical work. In the year 1900, the United States had a population of about seventy-six millions, of which over twenty-nine millions were engaged in some gainful occupation, although there were at that date only about twenty-three millions of male citizens between the ages of fourteen and sixty. There was no law of man which compelled these people to work; it was the law of their natures. Broadly speaking, if any one of those twenty-nine millions of workers had lost the opportunity to work, his or her greatest anxiety and desire would have been to secure another opportunity.

It is a mistake to believe that when all the workers are employed, production is being overdone and reaction must result. Maximum production is natural in a civilized community. There are, of course, "drones in every hive," but keep the industrial machinery free from the retarding influence of all external or internal derangements, and all the willing workers will be fully employed. We have had a century of object lessons to demonstrate this truth. We have witnessed a spontaneous recovery from every one of the industrial depressions of the past, after the retarding conditions were removed; but never until they were. A vigorous effort was made to bring back full prosperity in the latter half of 1909, but it was a failure; the retarding influences had not all been removed. You cannot force prosperity, but open the way for it and it will come of itself. The unsuccessful

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effort made in 1909 to bring back full prosperity should prompt us to find out what retarding influence was blocking the way.

It is time that this false belief, that with all the breadwinners at work we can produce too much permanent wealth, should be exploded forever. This belief seems to be as common to-day as it was a hundred years ago, when the production of permanent wealth was limited to what could be produced by a small part of the 10 per cent. or 15 per cent. of the workers not required in agriculture. During the last sixty years we have not only increased the percentage of manufacturing and mechanical workers probably 600 per cent., but by machinery have added vastly to their individual effectiveness. What would have become of the 14,500,000 breadwinners who were, in effect, released from agriculture during the last sixty years, if there had been any truth in the belief that there is a limit to the production of permanent wealth? The enforced idleness of a vast number of willing workers, with the suffering it brings to them, and the loss it brings to the whole community, is an unnatural condition and is contrary to the first principles of reason.

When workers are thrown out of employment and deprived of the opportunity to work and earn, and when maximum production gives place to minimum production, it is not a spontaneous recovery from some forced and unnatural condition; it is an unnatural condition forced by some external or internal derangement.

PERIODICITY

The theory of periodicity in poor crops, financial crises, industrial depressions, wars, pestilences, earthquakes, and other occurrences in which a noticeable coincidence as to time of repetition has occurred, has for centuries had many advocates. Clement Juglar regarded the periodicity of ups and downs, crises and liquidations as an economic law, the action of which was more certain than the action of the law of supply and demand.

The absurdity of these claims of periodicity as applied to industrial depressions is emphasized by the great diversity in the length of the cycles claimed by different persons for the same things, as well as the great variety of causes assigned for them by the respective advocates. There are ups and downs in many things, hence there is nothing remarkable in the coincidence of an equal interval of time elapsing between the occurrence of two wholly unconnected events, and, taking into consideration the natural desire for mystery, it is not surprising that these coincidences are seized upon and claimed by some one as the cause of a coincident depression.

At one period we find seven years claimed as the time that intervenes between poor crop cycles; at another time a fourteen-year period seems to have taken a firm hold. In industrial depressions, ten years seems to be most generally claimed, while others claim the periods to be nine or eleven years.

The theory of Mr. John Mills* was that the cycles of ups and downs came in periods of ten years, divided as follows:

First. Three years of diminished trade, lack of work and falling prices.

Second. Three years of active trade, slowly rising prices, and fair employment.

Third. Three years of unduly excited trade and rapidly rising prices.

Fourth. One year of crisis.

Compare the above description with the length of periods in the table on page 50 and it will be found that although there were three periods in the ninety-three years between 1814 and 1907 when the intervals of time between industrial crises were ten years each, there were also three periods in which the intervals were one year each, three when they were four years each, two when they were three years each, two when they were eight

* John Mills "On Credit Cycles and the Origin of Commercial Prices," printed in the Manchester Statistical Society Transactions for 1867-1868.

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years each, and periods when they were six years, nine years, and eleven years respectively.

Then compare the above description with Appendix Z and Appendix L and note how remarkably the description differs from the facts in all particulars. Instead of there being three three-year and a one-year division, the actual divisions range all the way from one to fifteen years. Then in the second division of Mr. Mills, instead of being attended by slowly rising prices, the periods in question have, during the last 107 years, been almost invariably attended by slowly falling prices. See years 1870 to 1871, 1876 to 1878, 1888 to 1889, and 1896 to 1898. Then take Mr. Mills' third division. Instead of the period being three years of rapidly rising prices, the periods of rapidly rising prices are only from four to twelve months, and for the whole century average but eight and one half months.

After the belief in cycles of uniform length had been so repeatedly discredited that it became unpopular, compound cycles of two or more interims of time came into vogue, the most notable of these being that of Benner,* in which he claimed that from 1834 to 1875 the intervals between the high prices of iron in the United States (which marked booms) had been eight, nine, and ten years, and the intervals between its low prices (which marked depressions) had been nine, seven, and eleven years. He also predicted that this order in its advance and decline would be continued in the future, as he claimed it had been in the past. Mr. Benner's book made a marked impression at the time, as iron had already experienced a three years' decline, during which it had dropped from \$54 to \$23 per ton for No. 1 Foundry in Philadelphia. It was then below the cost of production, and iron men were confidently predicting an early advance; but iron continued to decline during the next two years, 1876 and 1877, as Benner had predicted. This made a profound impression, and during

* Benner's Prophecies, page 45.

those two years it required several editions of his book to satisfy the demand. The following year, 1878, prices moved directly contrary to his prediction, and, although prices since that date have more often moved with his predictions than against them,* they have nevertheless been against them repeatedly, and the theory, like all other theories based upon periodicity, has been discredited.

Suffice it to say, the periodicity theory, as a cause, has for three hundred years or more been harnessed to a great variety of phenomena, only to be found totally untenable after a practical time test. There is literally nothing in periodicity, as applied to the industries, except the simple fact that when the industries increase from their lowest point to their highest point, and in turn fall from their highest point to their lowest point, a period of time necessarily elapses. That lapse of time has probably never been exactly the same in two instances and probably never will be. If it should be, it would simply be a phenomenon or a coincidence, not a cause. Lightning and thunder are the phenomena of a storm, not the cause of the storm.

* See diagram of Benner's Predictions on Appendix Z.

CHAPTER VI

TURNING TOO MUCH CIRCULATING CAPITAL INTO FIXED CAPITAL—A MENTAL DISEASE—THE WORLD ALREADY PROVIDED WITH ECONOMIC TOOLS

MANY prominent authorities, particularly among bankers and economists, believe turning too much circulating capital into fixed capital to be one of the chief causes of the mysterious industrial depressions which come in the absence of any apparent cause.

The mistaken beliefs upon this subject and the subject of overproduction are probably the most harmful of all the popular delusions. The harm from the former comes chiefly from the banking community, when they look with alarm upon the large amount of money being put into construction of railroads, buildings, and other objects of fixed wealth and draw closer lines on loans for such purposes. By such acts they are unconsciously using the most effective means in their power to dwarf prosperity. The harm from the latter comes chiefly from the trades-unions through their mistaken belief that there is only a certain amount of work to be done, and that, by restricting the amount turned out by each worker, all will be employed for a longer time.

How the mistaken theory that too much circulating capital was at times turned into fixed capital ever gained lodgment in the minds of men is hard to imagine. Perhaps it dates back to periods when it required nearly all of the workers to provide the necessities of life, and in those days there were instances when a portion of those, whose labor was necessary to supply the necessities, gave their time to the production of permanent wealth. In such instances the volume of necessities was not suffi-

cient for the maintenance of the people, and they were obliged to import food or suffer for the want of it.

To say that men do not work for money, but for commodities, simply because they exchange money for commodities, and that therefore these commodities are circulating capital is ignoring important facts. Sometimes they exchange money for a hair-cut or a Turkish bath. Does that make hair-cuts and Turkish baths circulating capital?

The persistent efforts of some economists to elucidate this false theory by denominating commodities as the circulating capital of a country, is simply prostituting science and distorting facts. It is going back to barbarism in an attempt to illustrate civilization. It is even worse, for commodities were not circulating capital even then. They were nothing more than the materials of barter. When barter was the only means of securing something which was desired, it was because there was no circulating capital in existence. When circulating capital was introduced, something *new* was created. It was a step in civilization. It was a powerful and active *something*, and the revolution it has brought about in the exchanges of real estate, groceries, dry goods, etc., cannot be elucidated by setting aside actual circulating capital and borrowing groceries, dry goods, etc., as a substitute. When we see a great corporation preparing to build a railroad by collecting a huge quantity of flour, meat, molasses, etc., with which to pay its workers, we shall be ready to entertain the theory that commodities are circulating capital.

ANALYSIS OF THE FACTS

Real circulating capital (money and credit) performs such a large share of modern business, and its function is so different from that of any other thing, that one cannot illustrate modern business by substituting for it something which has an entirely different function. When the business men of a nation prepare themselves for the

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creation of great constructive enterprises, they do it by accumulating money or providing credit balances in banks. Part of this may be done by borrowing on their possessions. This is done more largely upon their buildings, railroads, ships, etc. (so-called fixed capital), than it is upon their groceries, dry goods, tools, etc. (so-called circulating capital). Commodities are actually no more circulating capital than are buildings and machinery.

In order to analyze the theory that turning circulating capital into fixed capital is the cause of industrial depressions, we will suppose that Mr. A. has \$1,000,000 in real circulating capital. He builds with it a block of residences. At the end of, say, twelve months he has completed and paid for them. Mr. A. has thus turned his circulating capital into so-called fixed capital. Mr. A. has the block of residences, and the circulating capital is in the hands of the people who furnished the labor, the materials, and the skill to erect the block of residences. If, when these workers received their pay, it was their custom to destroy it, there would be some reason for alleging this as a cause, but such a disposition of the circulating capital never occurs. Not one dollar of it is destroyed. It is simply transferred into other hands and is being circulated by them and others to whom it is in turn paid. *The country at the start had only the capital; at the finish it has the capital plus the buildings.* To illustrate further, let us suppose there are ten thousand Mr. A's in one community, not all building residences, but each producing something needed; the result would be business prosperity and growth of wealth in that community. Imagine another community where the ten thousand Mr. A's are holding their circulating capital or paying it out only for the necessities of life, and you have a community suffering from industrial depression. In such a community there is absolutely no increase in wealth. Its inhabitants are simply existing, and at the end of one hundred years they will be no richer.

Will any person claim that this action of Mr. A's in

putting up the block of buildings was a drawback to the prosperity of the country, or imperilled its prospects in any way? Was it not better in every way that these workers should be employed and not idle? If they had remained idle, they would probably have continued to live; and to live, they must in some way have procured and consumed the necessities of life. If idle, they would have reduced the wealth of the country. As it was, they added to the wealth of the country. Would the erection of this block of buildings have intensified an existing depression, or have tended to create one which did not exist?

When real circulating capital is transferred in payment for some fixed product, that capital is not deprived of any of its natural functions. The individuals who parted with it may, for the time, have parted with their individual power to continue production, but the individuals who secured that capital acquired the power which the others lost. The power of the community to produce is as great as before, and it matters little into what class of the breadwinners' hands the capital falls, as in due time substantially all of it finds its way back into the regular channels of business, where it is again just as available as before.

When an industrial depression comes, it is not because of any initial check to the production of the commodities which are included under the head of circulating capital. The stocks of vegetables, groceries, dry goods, furnishings, utensils, etc., which come under that head are usually abundant. It is because of the initial check to construction which comes under the head of fixed capital.

This bugaboo about turning circulating capital into fixed capital is simply a delusion. The people who have turned most circulating capital into fixed capital have simply been most industriously employed producing wealth instead of wasting their time in idleness. Stop turning circulating capital into fixed capital and you stop growth in wealth. Pick out the town or city where there has been the least progress and improvement, and you

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have the locality where there has been the least "turning of circulating capital into fixed capital."

Pittsburg is the greatest iron and steel market in the United States, and one of the greatest centers of circulating capital. Why? Because of the large amount of circulating capital which in years gone by has been turned into fixed capital in the shape of furnaces, mills, and steel plants. It is the investments in fixed capital which draw business to any locality and hold it there. Wise investments in fixed capital are the surest means of increasing the amount of circulating capital in any community or country.

It is not necessary for the public to give one moment's thought to the production of necessary commodities or so-called circulating capital. That is a part of economics which takes care of itself almost automatically. There is, for example, no more intricate system connected with the supply of necessities than the production and placing of fresh, sweet milk upon the breakfast table of four millions of people in the city of New York three hundred and sixty-five mornings in the year, yet not one statesman or economist has been obliged to give an hour's thought to this intricate problem. The business has regularly grown with the demand. Reliable and regular demand prompts reliable and regular supply. But it is necessary that the earnest thoughts of the influential men of the nation should be given to the problem of putting an end to the unnatural and disastrous checks which are allowed to come to the production of fixed capital. *Keep the production of fixed capital up to the maximum capacity of the country, and industrial depressions will not exist.*

Stated in different language, "turning too much circulating capital into fixed capital" means simply producing too much permanent wealth and too little perishable wealth, which, as a cause of industrial depressions, is wholly untenable. The true theory of the wealth of the nations, as well as of individuals, lies in the art of living upon the smallest amount of so-called circulating capital

consistent with the well-being of the people, and creating the largest amount of so-called fixed capital.

A MENTAL DISEASE

Mr. N. C. Fredericksen, late Professor of Economics and Finance in the University of Copenhagen, was an enthusiastic believer in the theory that industrial depressions were "due to waves in the minds of men," that they were the result of "mental process." He said: "I like to compare the movements of prices with the waves of the sea." In speaking of the great ups and downs of prices, he writes: "The total movement is formed from the mental situation of the human world, and it is this that has created sometimes a too high, sometimes a too low level of prices. When there is rather a regular alternation of economic excitement and depression, the real reason is that such an alternation seems to be a necessity for the human community." The same views seem to have been entertained by John Mills, Courcelle Seneuil, the French economist, and by William Langton, the Manchester banker. Vilfredo Pareto thought the mental waves a necessity to man, and compared them with the necessity of alternating temperature to plant life, in which even the daily changes must be kept up in the hothouse, without which the plants would die. When we realize that these are but a few of the many forms in which this aspect of the subject has been presented by intelligent men, we can appreciate the unlimited scope of the vagaries and wild fancies of the human mind.

The increase and decrease of the industries are the direct effect of man's will, influenced by his judgment as to what he believes to be for his material interest. While it is true that his will is directed by his mind, that mental decision is no more the result of mysterious mental waves, when he wills to start or wills to stop an industrial operation, than when he buys something he wishes if the price be reasonable, or goes away without buying if he consider the price too high. There is no more mystery in the man's

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motive and act in connection with the industrial operation, than there is in his motive and act in connection with the wished-for article. One is as natural and simple as the other. Both are purely business decisions governed by business motives.

THE WORLD ALREADY PROVIDED WITH ECONOMIC TOOLS

After each season of great prosperity in the nations, succeeded by a mysterious industrial depression, there comes a mistaken belief on the part of many that the industrial nations are now so completely supplied with the tools and facilities of civilization that the future must necessarily be confined chiefly to maintenance and repairs.

Georges de Laveye, editor of the "Moniteur des Intérêts Matériels," of Brussels, in writing of the industrial depression which took place in Belgium and other European nations between 1872 and 1876, says, in effect, that the industrial activity of the last half-century has resulted in fully equipping the civilized countries of the world with economic tools, and the work of the future must necessarily be repairs and replacement, rather than new construction. M. Piermez, a prominent Belgian banker, in writing of the same period of depression and of the wonderful prosperity experienced by the civilized nations in the two or three years of prosperity just preceding the period of depression then existing, says: "It is not likely that there will be again an economic progress comparable to that by which this century has changed the face of the whole world."

The late Hon. Carroll D. Wright, formerly United States Commissioner of Labor, in his valuable report of 1886 on industrial depressions, calls attention to the fact that the Suez Canal had been built; Amsterdam had been united to the sea; the Pyrenees and the Alps had been tunneled; the merchant marine had been transformed from wood to iron; harbors and rivers had been sufficiently developed; railroads in England, Belgium, France, Italy, Spain, Russia, Germany, Austria, Turkey, and the

United States had been built; and he adds: "What is strictly necessary has been done oftentimes to superfluity, but it will not leave room for a marked extension, such as has been witnessed during the last fifty years, or afford a remunerative employment of the vast amount of capital which has been created during that period. The market prices of products will continue low, no matter what the cost of production may be. The day of large profits is past. There may be room for further intensive but not extensive development of industries in the present era of civilization."*

Now, these opinions were written by men who had rare opportunities of knowing their subject—men of unusual ability and intelligence. In shrewd insight and correctness of conclusions upon industrial subjects, the writer has always placed Mr. Wright second to no man, and yet twenty years' additional experience shows that his and the other opinions upon this subject were utterly groundless. Yet, how many would have disputed these opinions at the time they were written? When pig iron was \$6.50 per ton in Alabama and \$9 per ton in Pennsylvania in 1897, if any one had predicted that the same quality and grade of iron would sell for \$25 and \$27 per ton within five years, how many would have believed it? The theory that any boom will carry a nation to a point of completion in improvements, will be untenable until after that nation has passed its zenith and commenced to decay. "The tools and facilities of civilization" must increase with the growth of civilization in every progressing nation.

* First Annual Report of the United States Commissioner of Labor, pages 256-257.

CHAPTER VII

MINOR ALLEGED CAUSES OF INDUSTRIAL DEPRESSIONS

IN the United States, as well as in some other countries, public opinion is divided on the question of high and low tariff. Some believe that high tariff is largely or wholly responsible for our periods of business depression, while others believe that it is the chief cause of our periods of great prosperity. There is nothing in history to support either belief. The revivals of business have come when the tariff was high, and when it was low, and the depressions have done likewise. During a good part of the last century, the United States maintained high tariff, and the other four industrial nations low tariff, and yet the seasons of prosperity and of depression came to all of these five nations contemporaneously. In 1889 out of fifteen nations the United States was second in highness of tariff, while France was eleventh, Germany twelfth, Great Britain thirteenth, and Belgium fourteenth, and these are the five nations which have suffered most severely from industrial depressions. In the United States, between 1897 and 1907, the ups and downs of business were among the largest in history (see Appendix Z), and yet the tariff rates were the same throughout the whole period. The United States with high tariff, and Great Britain with free trade, have been the two nations which have suffered most severely from depressions and have suffered at substantially the same time.

The prospect of early tariff change has undoubtedly had violent temporary effects upon imports, but these violent effects come from the ever-present and instinctive desire for gain. When a dealer knows or believes there will be an early advance in the duty on an article that he

OTHER ALLEGED CAUSES 67

imports, he will make extraordinary efforts to import a large quantity of that article before the advance goes into effect. A notable example was the increase in the duty on tin-plate. Between the passage of the law and the date on which the advance took effect, the demand from this country was so great that the Welsh mills were run to full capacity night and day, and towards the close of the period heavy premiums were paid for fast steamships to land cargoes in this country before the date the larger duty was to take effect. After this, the importations of tin-plate ceased almost entirely. On the other hand, when a dealer knows or believes there will be an early reduction in tariff rates, he will put off imports of the goods affected, as far as possible, until the reduction has gone into effect.

OTHER ALLEGED CAUSES

Then there are a considerable number of causes for depressions alleged, which are untenable because they increase business, whereas depression is a decrease of business. Among this class are: "Large Importations of Goods and Exportations of Gold," "Large Transfers of Money," "Influx of Foreign Capital," "Immigration," "Coolie Labor," "Convict Labor," etc. Let us consider these briefly.

If "Large Importations of Goods and Exportations of Gold" were a cause of depression in the United States, then they should have been a cause of prosperity in the foreign countries, such as England and France, both of which undoubtedly profited by the extravagance of our people; but these countries suffered from depression at practically the same time the United States did.

Importations of goods and exportations of gold are simply exchanges of values. One person wishes certain goods more than the gold he possesses, the other wishes gold more than certain goods he possesses; each parts with something of value for something he considers of more value. To stop such exchanges would lessen pros-

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perity or intensify depression. Examine our exports and imports for a hundred years, and it will be seen that the balance of trade was largely against us almost constantly during the first three quarters of the nineteenth century, in the most prosperous years, as well as in the most depressed, and almost constantly in our favor during the last quarter, during the most depressed years as well as the most prosperous. No connection can be demonstrated as having existed between this alleged cause and the industrial depressions of the last century in any of the industrial nations.

If "Large Transfers of Money" brought industrial depression to the country which suffered the loss of the money, as many have claimed, then the payment of the immense war indemnity by France to Germany, in 1871 to 1873, should have brought industrial depression to France; whereas the depression which occurred in all the industrial nations at that period commenced in Germany several months before it did in France, and was much more severe in Germany. This transaction was an exceptional case, in that it was a transfer of money without a return of value. The actual result, as revealed by analysis, was perfectly logical, where the real cause of the mysterious industrial depressions is understood. The 5,500,000,000 francs poured into Germany stimulated the building of factories and other permanent improvements to a degree never before experienced. The capacity of the country not being sufficient to furnish the materials to supply this extraordinary demand, prices of construction materials advanced enormously. This abnormal advance in prices brought a sudden and unexpected check to contracts for construction and in due time to actual construction; this threw large numbers of workers out of employment, and put the endless chain of depression causes in full motion. The war indemnity hastened and intensified the abnormal advance of prices in Germany, hence she was the first and the greater sufferer from the depression which followed. In this case the large transfer of

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money was a powerful cause of industrial depression; but it did not come in the manner those who advocated this alleged cause imagine, but just the reverse.

Large transfers of money are usually made in adjustment of large transfers of products. They are natural, they promote, they do not retard the industries. The large transfers of money from the cities to the agricultural districts to pay for the crops, and the retransfer of that money to the cities to pay for manufactured products, is a necessity to business; to stop it would almost certainly bring immediate depression. The transfer of money between nations in exchange for values is of the same necessary and healthful nature, and promotes the prosperity of each.

"Influx of Foreign Capital" is another promoter of business and therefore untenable as a cause of depression. The unrestrained flow of capital from one place where there is a surplus, to another place where there is a deficiency, is not only natural but beneficial to both sections. It furnishes needed capital to the pioneers who carry progress to new territories, and yields a revenue to the older countries which supply it.*

"Immigration," "Coolie Labor," "Convict Labor," and all like things, which in themselves add to business, a thorough analysis shows, cannot be maintained as causes of an industrial depression, for depression is a lessening of business. Additional laborers, from whatever source, may be detrimental to other laborers, when the supply exceeds the demand, but this condition should never exist. When the industrial system is understood and adequately controlled and directed, each additional worker will simply be understood to mean a larger increase in the rate of wealth-producing.

* "It is at least evident, that in a country situated like the United States, with an infinite fund of resources yet to be unfolded, every farthing of foreign capital which is laid out in internal melioration and in industrial establishments of a permanent nature, is a precious acquisition." Alexander Hamilton, "Report on Manufactures" made to Congress, December 5, 1791.

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"Bad Laws" and "Bad Legislation," like financial panics, may be a cause of industrial depressions, but when they have this effect it is a blow from the outside and is known. Take the Sherman Silver Coinage Law, for instance, passed in March, 1890; the working of this law was clearly the cause of the financial disturbance in 1893, and the financial disturbance had a disastrous effect upon the industries, but the cause was perfectly apparent, there was no mystery about it. What we are endeavoring to identify is the mysterious and unknown cause which for generations has brought depressions contemporaneously in all five of the industrial nations in the absence of any known or apparent cause. (See table, page 80.) It is altogether likely that all these nations have bad laws as well as good ones upon their statute books, and have had them through prosperous times as well as hard times, but we do not find that they have all had epidemics of bad laws contemporaneously to correspond in periodicity with the industrial depressions from which these nations have suffered contemporaneously.

"Want of Confidence in Government" may also be a cause of industrial depression, or of financial panics, or even of a political revolution; but if it were of sufficient gravity to cause an industrial depression, it would be known, and therefore it must be eliminated from the list as a cause of the *mysterious* industrial depressions which are the subject of the present analysis. It is, in other words, not a known cause for which we are searching.

CHAPTER VIII

RESULT OF ELIMINATING THE UNTENABLE ALLEGED CAUSES

IN old times, when one wished to designate a proposed task as impossible, or at least supremely difficult to accomplish, one would be apt to designate it by the homely but expressive adage, "You might as well hunt for a needle in a haystack." Now if a needle were known to be in a haystack, and the finding of it were of as much importance as is the identification of the cause of these depressions to the manufacturing nations of the world, it would be possible to find the needle, provided the task could be accomplished in an exhaustive and analytical manner; that is, if in the search each straw composing the stack, from the top down, were carefully examined and analyzed, and, as the examination progressed, each straw found not to have the needle in or about it were removed. Of course, if the straws were allowed to remain after they had been examined, the task would be hopeless, for as long as the mass of straws remained to obstruct the view and distract the attention of the searcher there would be little chance of discovering the needle; hence the removal of the straws, after they are found to be free of the needle, is necessary to success.

Just so with the search for the cause of these mysterious depressions. With the hundreds of alleged causes claimed by thousands of people constantly distracting attention, the task of distinguishing the real cause from the great mass has necessarily been almost hopeless; but if each alleged cause is removed after it is found to be untenable, it will then cease to distract the searcher; the view will be unobstructed, and, in the end, the real cause will

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necessarily be identified, simply because it will be the only one remaining.

In carrying out the experiment of eliminating from the lists of alleged causes gathered by the various government commissions and the Bureau of Labor* in the effort to discover and identify the unknown cause, the first and most important step is to eliminate everything connected with known and acknowledged causes, such as wars, earthquakes, floods, famines, financial panics, etc. This is particularly necessary in the case of everything connected with finance, not only because financial panics are known to be a cause of industrial depressions, and hence not among the unknown and mysterious causes sought for, but because the admission of financial matters by the searcher has for fifty years or more been the chief reason for the failures to identify the mysterious causes. In fact, financial influences are so numerous and are so frequently the known cause of depressions that they comprise a large part of the mass of "straws" which for these many years have obstructed the search and confused the searcher. No man can hope to fathom the mystery who allows his thoughts to stray in such a distracting field. It is the cuttlefish, which simply muddies the water and obscures the vision of the searcher. For these reasons, the progress of elimination will be commenced by placing the letter "F" opposite everything connected with finance in the tables in Appendices B and C.

In our analysis of the discoveries of the United States Commissioner of Labor, as to the contemporaneousness of depressions of the past, in the five manufacturing nations of the world,† such strong and persistent evidence was developed as to make it almost certain that these depressions were the result of something which occurred contemporaneously in all of them. When Chapter IX, which contains the analysis of this subject, is read, it will undoubtedly be admitted that all alleged causes which

* Appendices B and C.

† Chapter IX, commencing on page 79.

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occurred in one nation only, or were purely local in a natural sense, such as "Presidential Elections," "National Banking System," "Demonetization of Silver," "Refunding Act," etc., may be tentatively eliminated. To indicate which these are, we have placed the letter "A" opposite each in Appendices B and C.

The United States Commissioner of Labor gives "Falling Prices" as one of the chief alleged causes of these depressions.* This is one of the alleged causes which has the strongest appearance of being true, but analysis shows that appearances, in this case, are totally deceptive. Full analysis will be found in Chapter XI, under the heading "Demand for Immediate Delivery vs. Demand for Future Delivery," commencing on page 110.

To identify the untenable alleged causes which have received special treatment and are eliminated, either because they were found not to be causes of depression, or, when so, were known and recognized, and therefore are not the unknown and mysterious causes sought for, the letter "G" has been placed opposite each in Appendices B and C.

As maximum production, maximum creation of buying power is in itself industrial prosperity; nothing which contributes to the increase of business can be logically rated as a cause or contributory cause of industrial depressions.† Everything, therefore, which adds to business, whether great or small, may be eliminated as untenable, and so designated, by placing the letter "D" opposite each in Appendices B and C.

We may also eliminate from the lists of alleged causes as untenable everything which exists continuously, in good times as well as in bad times, such as "Destitution Caused by Sickness," "Taxation," "Intemperance," "Tobacco," "Combinations of Capital," "Competition of Products in Market," "Patent Laws," "Educational

* First Annual Report, 1886, page 79.

† See page 41.

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System," etc. To identify such as are eliminated on this ground, the letter "B" has been placed opposite each in Appendices B and C.

We may also eliminate from the lists of alleged causes as untenable everything which affects individuals, or a collection of individuals only, and which does not affect the business of a nation as a whole; also such things as may be a loss to an individual, or a collection of individuals, but at the same time are a corresponding gain to some other person or persons, or to the government, such as "Taxes," "Land Grants to Corporations," "Unequal Division of Profits," "Unjust Taxation," etc. To identify such as are eliminated on this ground, the letter "E" has been placed opposite each such alleged cause in Appendices B and C.

Among the alleged causes of industrial depressions referred to at the close of Chapter II, which are too trivial to require any evidence to convince one of their untenable nature, are such as "Adulteration of Food," "Piece-work," "Neglect of Laboring Men by the Aristocracy," "Conspiracy Laws," "Free Passes," etc. These alleged causes may be dismissed as untenable on the ground that they are too unimportant to cause such a great revulsion as a widespread industrial depression. To identify such as are eliminated on this ground, the letter "C" has been placed opposite each in Appendices B and C.

By reference now to Appendices B and C, it will be observed that all but twenty-one of the alleged causes have been eliminated for one or more of the six reasons, represented by the identifying letters A, B, C, D, E, and F, or by separate and special treatment identified by letter "G." The twenty-one not eliminated are as follows:—

1. Want of Demand,
2. Decrease of Home Demand,
3. Want of Foreign Market,
4. Want of Market for Home Products,
5. Under-consumption,

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6. Decreased Building of Railroads,
7. Want of Employment,
8. Too many Non-producers,
9. Enforced Idleness,
10. Surplus of Labor,
11. Enforced Economy of the Laboring People,
12. Increased Public and Private Economy,
13. Want of Confidence,
14. Inflation of Prices,
15. Expanding Values,
16. Variation in the Cost of Production,
17. Variation in the Rate of Wages,
18. Reduction of Prices to Cost of Production,
19. Uneven Production,
20. Want of Adjustment between Production and Consumption,
21. Erroneous Industrial System.

None of these can be eliminated on any of the tests thus far tried.

The first twelve are found on analysis to be *conditions* of depression, and conditions which do not exist in any of the five industrial nations during a season of industrial prosperity. As long as the boom is at its height and all business is kept up to the maximum rate, there is no "want of demand"; no "decrease of home demand"; no "want of foreign market"; no "want of market for home products"; no "under-consumption"; no "decreased building of railroads"; no "want of employment"; no condition of "too many non-producers"; no "enforced idleness"; no "surplus of labor"; no "enforced economy of the laboring people," and no "increased public and private economy." It is only after the microbe of industrial depressions has existed and been at work many months, and finally the malady has broken out upon the surface, that any of these twelve conditions appear in the five industrial nations. Then they appear in all of them, grow rapidly, and continue to exist in these nations, all through a period of industrial depression. When they cease to exist, depression has ceased to exist. In fact, they are the sum and substance of depression. We may, therefore, still further contract the field of our search for the *mysterious cause*, by eliminating these twelve alleged

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causes on the ground that they are clearly *conditions* of depression, and hence not the *cause* of depression. To identify such as are eliminated on this ground, we will place the letter "H" opposite each in Appendices B and C.

Before leaving these twelve conditions of depression, however, we must call special attention to their great importance. They are the links in the endless chain of industrial depression events. This chain is started by the reduction in active business. Then follows, in turn, reduction of production, reduction of employment, reduction of earnings, reduction of expenditures, and reduction of demand; followed by a series of repetitions of this chain of events, each acting upon and intensifying the others, until the depth of depression is reached. What this means to the five nations can be imagined, when we remember that in this one nation the average earnings of each of its twenty-nine millions of workers is estimated at \$600 per annum.* If five out of each twenty-nine of these workers are thrown out of employment, it means a loss at the rate of \$3,000,000,000 per annum in the earnings of the people of this one nation.

A careful examination of the six following alleged causes (13 to 18), which we have not been able to eliminate by any of the tests applied, shows that they can all be summed up in the one term, "High Prices," which everything thus far points to as the cause of the *mysterious* industrial depressions under review. "Inflation of Prices" and "Expanded Values" (14 and 15), for example, are simply high prices expressed in different words, and the same may be said of the high, inflated, or expanded elements of "Variation in the Cost of Production" and "Variation in the Rate of Wages" (16 and 17). The reverse elements of 16 and 17, and "Reduction of Prices to Cost of Production" (18), are simply the natural rebound from high prices. It is these high, inflated, and expanded wages, values, and prices, when they have entered into production, which create the "Want of Confidence" (13), and it is

* First Annual Report of the Commissioner of Labor, page 66.

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the want of confidence which tightens the purse-strings, and this in turn cuts down production, thus bringing on "Uneven Production" (19), and "Want of Adjustment between Production and Consumption" (20). While the boom is on, and maximum production is kept up, all materials which can be produced are quickly absorbed, and this is in effect a perfect "adjustment between production and consumption"; but when production of buildings, ships, railroads, etc., falls off, the materials ordinarily used in these enterprises accumulate, and the perfect "adjustment between production and consumption" ceases.

No one can deny that we have an "Erroneous Industrial System" (21). There could be no stronger evidence of this than the fact that our industrial system has for a century permitted these enormous fluctuations in the prices of the principal materials which enter into our growth in permanent wealth. First comes the period of abnormally low prices, under the stimulus of which contracts for production are made, which later on are found to be far in excess of the country's capacity to execute. Then follows as a natural consequence the period of abnormally high prices, which checks the contracts for production to a degree which later on is found to reduce actual production far *below* the country's capacity to execute.

In these nine uneliminated alleged causes (13 to 21), we have a complete list of everything which requires to be remedied, to do away with and prevent the twelve conditions (1 to 12) which make up industrial depressions, as far as they are the result of internal microbes.

If anything be needed to free this conclusion from doubt or uncertainty, it can be found in the fact that every industrial depression which has occurred in the five industrial nations, not recognized as the result of some external cause, has been preceded by the nine causes (13 to 21), and attended by the twelve conditions (1 to 12), which are the subject of this chapter, and by the further fact

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that there has not been, during the century, a single case of an abnormal advance in the price of important commodities which has not been followed by a depression.

From these facts it would appear, that of all the alleged causes gathered by the three commissions appointed by the United States Senate and House of Representatives, and those gathered by the Bureau of Labor during the first year of its existence, together with those gathered from all other available sources, there is but one alleged cause which stands the test of all forms of analysis which can be brought to bear upon it. That one, "High Prices," stands the test, no matter in what manner it appears or in what particular form of words it may be expressed.

CHAPTER IX

IRON THE BAROMETER OF TRADE

CONTEMPORANEOUSNESS AND SEVERITY OF INDUSTRIAL DEPRESSIONS IN THE FIVE CHIEF IRON-PRODUCING NATIONS*

IN the previous chapter our analysis of facts has indicated that high prices were the cause of industrial depressions in the United States from 1832 to 1884. Turning our attention now to the other great nations, which suffered most severely from industrial depressions during the same period, we are confronted with some remarkable corroborative evidence.

The United States Commissioner of Labor, in the summary of his first annual report, gives some data from analysis of the information gathered, which is of great value. *First* in importance is the fact that industrial depressions during the last century were most severe in Great Britain, United States, Germany, France, and Belgium, and were not felt to any comparable extent in other nations. *Second*, that the degree of severity in these five nations, as related to each other, was in the order above named,—that is, most severe in Great Britain, least severe in Belgium, etc. *Third*, that industrial depressions were nearly or quite contemporaneous in these five nations. The following paragraph and table are taken from page 290 of said report:

“It has been clearly shown that the depressions of the past in the manufacturing nations of the world have been nearly or quite contemporaneous in their occurrence. Summarized as to dates, the following table is deduced:”

* This is chapter and subject referred to on page 72.

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		YEARS OF DEPRESSIONS											
United States	}	—	—	1814	1818	1826	—	1837	1847	1857	1867	1873	1882
		1803	1810	1815	1818	1826	1830	1837	1847	1857	1866	1873	1883
Great Britain	}	1804	1810	1813	1818	1826	1830	1837	1847	1856	1866	1873	1882
France		—	—	—	—	—	—	1837	1848	1855	1864	1873	1882
Belgium		—	—	—	—	—	—	1837	1847	1855	—	1873	1882
Germany		—	—	—	—	—	—	1837	1847	1855	—	1873	1882

VALUABLE CLUES

The above table of contemporaneousness of depressions in the five industrial nations gives several valuable clues. It indicates that the cause of these mysterious industrial depressions will be found:

First. In something which took place in these five nations contemporaneously.

Second. In something which did not take place, or did not exist to so great a degree, in other nations.

Third. In something which occurred only, or existed only to so great a degree, in Great Britain and France, from 1800 to 1810.

Fourth. In something which occurred only, or existed only to so great a degree, in Great Britain, France, and the United States, from 1811 to 1826.

Fifth. In something which occurred only, or existed only to so great a degree, in Great Britain, France, the United States, Germany, and Belgium, from 1831 to 1883.

Sixth. In something which occurred in these five nations, as above noted, on or before the times they suffered from these various contemporaneous industrial depressions.

Seventh. In something which, when it occurred, was always followed or accompanied by an industrial depression in these five nations.

Eighth. In something which did not exist, or which disappeared during the periods in which these nations experienced an industrial revival.

Ninth. In something powerful enough to affect the volume of business in these nations to the extent that

they respectively suffered during these industrial depressions.

Tenth. In something which was not, at the time, recognized as a calamity, as would have been an external blow, such as a financial panic, famine, war or pestilence.

Eleventh. In something internal, and inherent to the industries themselves.

Twelfth. In something so slow, silent, and gradual in its action as to continue for many months without creating alarm, yet so pernicious and powerful in its cumulative force as to produce disastrous industrial depressions in five nations, contemporaneously, and, frequently, during an entire century.

Here is a rich and most promising field in which to make an analytical search for the unknown cause of industrial depressions, for in all these twelve conditions we should be able to find something in which these five nations are ranked together, even if we cannot find anything in which they are ranked in the same order in relation to each other. Note the fact that the table of contemporaneousness on page 80 places Belgium in a group with four great nations, while among the nations which are not included are several that outrank her not only in population and area, but in wealth, agriculture, and many other important things. The question that naturally arises is; why should this small nation be ranked with the United States, Great Britain, Germany and France, while Russia, Austria, Italy and Spain, which outrank her, in most of the important things, from 300 to 3000 per cent., are not even admitted to the group? Let us analyze this matter.

In the 800 pages of Mulhall's Dictionary of Statistics are found exhaustive data upon all the important affairs which affect nations. In a thorough search through this volume nothing is found which even places these five nations in a group by themselves in anything connected with either agriculture, commerce, finance, population, area, education, wealth, banking, money, labor, wages, cost of food, mining or taxes (see Appendix H); while, on

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the other hand, in the statistics connected with the industries are found four cases in which the five nations are grouped by themselves, namely:

Horse Power per Inhabitant.

Coal Consumption per Inhabitant.

Total Amount of Iron Production in the World from 1800 to 1900.

Value of the Total World's Iron Production, from 1800 to 1900.*

ADDITIONAL CLUES

Here we have a remarkable and valuable clue, for if the mysterious industrial depressions of the last century were so much more severe in these five nations that it placed them in a group by themselves, and if there is nothing in all the affairs of nations which places them in a group by themselves, except conditions connected with the industries, it would seem to be another indication that the cause of these depressions originated from within the industries, and not from anything outside.

Pursuing the analysis further, it is found that only two things of the above four place these five nations in the same order as relating to each other which they occupy in relation to each other in the severity of industrial depressions. These two are, "Total Amount of Iron Production in the World, from 1800 to 1900," and "Value of the World's Iron Production, from 1800 to 1900." (See columns 60 and 61, Appendix H.) Here we have a clue which points to something connected with iron production, as in some way responsible for these industrial depressions,

Pursuing the analysis further, it is found that for several centuries Great Britain and France were not only the chief manufacturing nations, but the chief producers of the world's iron supply, and that they maintained this position during the early part of the nineteenth century, when, as shown by the foregoing table, they were the only two nations which suffered severely from industrial

* See columns 55, 59, 60 and 61, Appendix H.

depressions. It is found also that, during the War of 1812, the United States was largely thrown upon her own resources for iron, and that by 1820 she was producing 110,000 * tons per annum, against 140,000 tons produced by France, and 400,000 tons produced by Great Britain; and that in 1814 the United States commenced to suffer severely from industrial depressions. It is found also that later on Germany and Belgium became large iron-producers, and that when this took place they, too, commenced to suffer from industrial depressions.

Although Russia, Austria, Sweden, Spain, and Italy are excluded from the list of five nations which suffered most severely from industrial depressions, it is found that most authorities mention Russia, Austria and Sweden as having suffered to some extent, while some few make casual mention of Spain and Italy as being slight sufferers. By referring to Appendix M it will be found that the five nations included in this second list were also iron-producers, though to a much smaller per capita amount. Now, by referring to columns 60 and 61, of Appendix H, it is found that the relative amount of iron produced by this second list of five nations, as compared with each other, was in the same order they are named at that time in relative degree of sufferers from depressions.

This remarkable correspondence, between the rank of ten nations, in the production of iron, and their rank in the severity of industrial depressions, is of great significance. Such facts cannot be waived aside by calling them ten coincidences. Nor can the fact that these mysterious industrial depressions were entirely absent in the nations which did not produce iron be waived aside as another set of coincidences. The chain of connection between iron production and these mysterious industrial depressions is too persistent and continuous. But the chain of connection does not stop here. Iron is universally acknowledged to be the foundation of the mechanical and manufacturing industries. Where iron is produced,

* Mulhall's Dictionary of Statistics, fourth edition, page 332.

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there it is most largely consumed; where it is most largely consumed, there the industries are greatest, and where the industries are greatest, there the suffering which results from an industrial depression is most severe.*

Do these remarkable, corresponding conditions not point unmistakably to the probability that the cause of these mysterious industrial depressions will be found within the industries which iron production created, and possibly in something immediately connected with iron?

But still the chain of connection does not stop. In chapters XIII, XIV, and XV, will be found a perfect sequence, from the abnormal advance in the price of iron to all the corresponding industrial depressions which occurred from 1832 to 1908, which were at the time not recognized as the effect of some external cause. Here is something "within the industries," and something "immediately connected with iron," something, too, which existed in all the five nations immediately preceding each of these ten depressions, and which did not exist in these nations at other times. Furthermore, high price of iron, as will be shown hereafter in this volume, is the condition which is chiefly responsible for high prices of construction, and high prices of construction we claim to be the unknown cause of the "mysterious" industrial depressions from which the five industrial nations have suffered during the last century.

To illustrate further the remarkable national and periodic conformity between industrial depressions and pig iron production, and the complete lack of conformity in everything outside of the industries, we give in Appendix H the relative rank of the nations in sixty of the most important matters. The dates used are either the date of the table of contemporaneousness (1886), or the nearest obtainable to that date. To illustrate the remarkable na-

* Some pronounced changes have occurred since 1886 in the rank of nations as iron-producers. At the present time (1911) they stand as follows: United States, Germany, Great Britain, France, Russia, Austria-Hungary, Belgium, Canada, Sweden, Spain, Italy.

tional and periodic conformity between these mysterious industrial depressions and high prices of iron, we give in Appendix G a table showing the persistent sequence between high prices of pig iron and industrial depressions from 1825 to 1908.

INFLUENCE OF THE PRICE OF IRON UPON ALL BUSINESS

Now the advance in the price of iron which takes place during each boom, while it is but a small portion of the aggregate advance in the general prices of construction, yet it has a remarkable influence in bringing about the advance in labor and general construction costs. This is partly because iron is first to advance, partly because its advance is so great, and partly because the ups and downs in iron are so generally watched by those engaged in all the other industrial interests. Few people keep posted in the ups and downs in the prices of lumber, brick, stone, cement, etc., but nearly every one watches the price of iron. Even as far back as fifty years ago business men watched iron prices as an indication and guide as to what they could look for in the future of their own business.

In the dark days of 1862 and 1863, when the United States was in the throes of the great Civil War, when business was confined almost exclusively to dealings in war supplies and the necessities of life, and when prices of all materials that entered into construction or permanent improvements were greatly depressed, there came a slow but persistent advance in the price of iron. Several of the important business men called upon a prominent iron firm in one of our large cities to inquire about this advance. They said in substance that they had found from long experience that such an advance, if maintained any length of time, was always followed by a great revival in business and an advance in all important staples, and if the present advance promised to be maintained, they intended to advance the price of their own commodities. These gentlemen were satisfied, from their interview, that the advance would not only be maintained, but that it

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would probably continue and be very much greater. The result was that an immediate advance was made in the commodities dealt in by these visiting business men, and it was rapidly followed all over the country. If you wish quick action from a business man, show him how he can gain by the act.

In all our investigations, we have never interviewed a dealer in the other commodities who did not acknowledge that he had watched the price of iron and been largely influenced in his own business by the pronounced fluctuations in this "Barometer of Trade." In an interview, the oldest and largest dealer in lumber frankly admitted to the writer that in his active business days he always kept close watch of the price of iron, and acted promptly and largely on its indications; and in later life, as he expressed it, "I always told my young men to buy heavily and sell sparingly when iron commenced to advance, and to buy sparingly and sell rapidly when iron commenced to go down."

During the thirty-eight years in which the writer has observed the course of events attending each boom, iron has been the first important staple to develop a short supply, and the first to experience a large advance in price. This advance has sometimes been as much as 50 to 100 per cent. before any considerable advance has occurred in the other materials of construction. History does not show any instance in which there has been a large advance in the price of the other building materials before, or at the same time, that the advance occurred in iron, unless there was some unusual condition to cause it.

The cause of the great advance in the price of iron has always been the same, namely, fear of a famine in its supply; there is never any such fear as to the supply of lumber, brick, stone, cement, etc.; hence these other materials do not advance when iron does. The extra demand for the other materials comes at the same time, and in the same proportion, that the extra demand for iron comes; if the conditions of supply were the same, they

would undoubtedly advance in price at the same time, and in the same proportion, but this has never been the case. The advance in the price of iron has always been greater and has commenced a long time before the advance in the other materials.

Does any one familiar with these staples believe that the prices of lumber, brick, stone and cement would go up 80 to 300 per cent. if the advance in the price of iron was confined to 10 or 15 per cent.? There is no such danger of a famine in the supply of these other materials. It is profitable to carry lumber for seasoning purposes, and the ordinary stock is equal to two or three years' consumption, while the output of brick and stone can be doubled within a short time by simply doubling the workers in the quarries and brick-yards; but it takes a year to build an iron-furnace, and the stock of iron carried in the United States is rarely more than two or three weeks' product. Under these circumstances, whenever the demand for iron increases largely and quickly, say 100 per cent. within four or five months, it creates a vacuum which it is impossible to fill for many months, and in the ensuing struggle among the many consumers to get what little is produced over and above what is pledged by contracts, these enormous advances take place.*

The advance of 100 per cent. in the price of iron is no reason for an advance in the price of the other building materials, it is only an excuse. The dealers in these other materials see the opportunity, and, being human, take advantage of it. The advance in iron is because of the absolute impossibility of supplying the demand; not so with the other materials. After the enormous building of 1899, the year terminated with a stock of iron equal to but three days' production, while the stock of lumber was equal to two years' production. No abnormal advance in the price of lumber, brick, stone, etc. has ever occurred or is likely to occur, without a preceding advance in the

* The *average* stock of pig iron carried in the United States during the last twenty-five years was less than twenty-three days' product.

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price of pig iron. — Keep the price of iron within bounds, and you keep everything within bounds.

Think of iron advancing from 80 to 300 per cent.! Is it any wonder that the producers of lumber, brick, stone, cement, etc., try to realize some of this advance, and that they succeed? The same controlling influence seems to be almost as potent during the dull years, in which prices settle back to the abnormally low basis which stimulates another boom; that is, every one looks to see what iron is doing.

Then, too, the large advance in iron at the beginning of a boom soon prompts the laborers engaged in iron-making to demand higher wages, and this movement spreads among all laborers. Thus the cost of production is raised inordinately in all commodities. Broadly speaking, a boom in this country advances the *price* of iron from 80 per cent. to 300 per cent. within a few months, and usually advances the *cost* of producing it from 50 to 100 per cent. before the boom is over. This addition to cost is very serious in many ways, but the most serious feature about it is the long time it takes to effect a cure. It is made up, partly in the advance of labor and partly in the advance of profits; both of these elements are in the hands of many people, and each one holds on to his extra pay, or extra profit, as long as he can, and so it nearly always takes a long time to get back to a basis low enough to stimulate another boom.

It is only in the iron-producing countries that these enormous advances in prices of building materials during what we call booms reach such proportions; hence it is only in these countries that the great set-backs in construction, which we call industrial depressions, reach such severity.

PREVALENCE OF IRON IN ALL THINGS

It may at first sight seem unreasonable to those not familiar with iron to place so much importance upon the influence of this one article; but think for a moment how

thoroughly iron pervades everything. Look about you, out of doors or in, and try to find something which was produced by man without the aid of iron. It is used in nearly every stage of the production and preparation of the food we eat, in the manufacture of the clothing we wear, and in the construction of the houses which shelter us. The pipes which conduct gas, water, oil, and other substances under the surface; the ever-increasing network of rails which lie upon the surface, and the vehicles of war and peace, are composed almost entirely of iron. Each year it becomes more and more necessary to every enterpriser of civilized man. Withdraw iron from the manufacturing and mechanical industries of a nation, and the whole business of that nation would become paralyzed.

When all these things are considered it is not surprising that iron has come to be known as "The Barometer of Trade." It is not only the foundation of the industries, but the fluctuations in its price are so excessive and abnormal that they have a wonderful influence upon the prices of all construction materials.

The excessive and abnormally high price of construction answers every one of the twelve clues given on page 80, which indicate where the cause of these mysterious depressions will be found.

If iron is the foundation of the industries; if the industries could not exist in their present volume without it; if these depressions occur only in the iron-producing nations, and in their relative severity correspond exactly to the relative volume of iron production; if there is something about the production of iron which causes it to advance first, and to an abnormal degree; if these advances have a marked influence in bringing about a corresponding advance in the price of other materials consumed in the industries; if the abnormally high prices thus developed are always followed by a depression even in the absence of other causes, and when all outward appearances indicate a continuance of prosperity; if these high prices have never been reached without one

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of these depressions; if all the depressions of modern times can be accounted for either as the effect of some external cause, which is generally recognized and acknowledged, or is accompanied by this remarkable and persistent chain of connections and sequences between iron production, high prices, and severity of industrial depressions; and if in all these years we find no other generally recognized cause for these depressions, then it certainly behooves us to turn our attention to a thorough analysis of the industries of which iron is the foundation, for within them must rest the unknown cause of these mysterious depressions. — How should this be done?

WHY THE CAUSE OF INDUSTRIAL DEPRESSIONS HAS SO LONG REMAINED A MYSTERY

Sir Conan Doyle has said that the reason many mysteries remain so long unsolved is that nearly every one "reasons forward," whereas a reliable conclusion can be reached only by "reasoning backward." Most people, he explains, will take a train of events which has passed under their observation, turn it over in their minds, and decide that these events are the cause of a specific result; this he calls "reasoning forward, or synthetically." He maintains that the only trustworthy and effectual way to solve a mystery is to begin with the result, and follow events back by *analysis*, in the reverse of the order of their happening. At the start you must give no thought or consideration to any past event, or chain of events, as being responsible for the result. You must start with the bare result, follow each clue back, step by step, to its inception, excluding and rejecting everything which does not stand the test of analysis. By this method you will evolve "a chain of logical sequences without a break or a flaw." This is what he calls "reasoning backward, or analytically."

Industrial depression is a known result; what we are searching for is the unknown cause. If a competent chemist were employed to ascertain the ingredients of a

certain compound, he would procure a sample of the compound, and proceed by analysis until he had separated each element from the others, and identified them. What would one think of a chemist, if, instead of proceeding in this analytical manner, he should proceed in a synthetical manner, that is, procure a few hundred different substances, and proceed to mix them together in several hundred different ways, in hopes of discovering which combination made up the compound? And yet, this is precisely the way the world for fifty years has been endeavoring to discover the cause of industrial depressions.

Synthetic reasoning will guide one in any path one chooses to go. Take, for example, the hundreds of witnesses who were called before the various government commissions to give their testimony as an aid in discovering the cause of industrial depressions in the United States (See Appendices B and C). Without exception, they apparently all arrived at their opinions by a course of synthetic reasoning. Almost as great a diversity of beliefs was revealed by the witnesses before the Royal (British) Commission, and the Commission appointed by the French Chamber of Deputies.

The United States Commissioner of Labor, in his First Annual Report, issued in 1886 (page 76), says: "In searching, whether in Europe or America, for the cause of the industrial disease which has affected the manufacturing world since 1882, it is interesting to note how fully trade, profession or calling influence opinions given," and further states that: "As a rule, one's opinion can be foreseen by knowing his calling in life." Opinions are not evidence; they prove nothing, and would not solve this question in another fifty years.

In reviewing the testimony given by hundreds of witnesses before the various government commissions in different countries, as well as the published works of individuals, we do not find a single case in which the analytical method has been pursued. The First Annual Report of the United States Commissioner of Labor is a most valu-

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able work. It contains many analyses of special things, and is a wonderful collection of valuable tables and information upon the subject of which it treats, but it mentions no effort to solve the cause of these depressions by analysis, and even the summing up of the commissioner, commencing on page 291, under the title of "Causes," is simply a very skilful effort to solve the mystery by the synthetic method, although it does not claim to have accomplished the purpose. It is, however, an admirable example of valuable knowledge, which required much special research to acquire. The collection of tables of facts and the compilation of opinions are material for the analyst, and to that extent help in the location of the unknown cause.

Now the "known result" is Industrial Depressions; not the class of depressions that have been occurring for centuries, and which come to all the nations as a result of war, pestilence, famine, financial panics, or some other great calamity, which is known and recognized at the time to be the cause of the depression; but the new class of depressions which have developed within the last century, and that have occurred so repeatedly in the manufacturing nations in the absence of any recognized cause. This is the bare result. If we would know the cause or causes, we "must start with the bare result, and follow back step by step to its inception, excluding and rejecting everything which does not stand the test of analysis," in the hope that by this method we will evolve, as Sir Conan Doyle declares, "a chain of logical sequences without a break or a flaw," and that by this course we shall find that what has appeared "to be the greatest mystery may be a matter of the most intrinsic simplicity."

Let us first determine what relations the manufacturing and mechanical industries bear to the whole business of the nation.

PART II
ANALYSIS OF THE NATION'S BUSINESS

CHAPTER X

ANALYSIS OF THE NATION'S BUSINESS

SUBJECTING the business affairs of the nation to analysis, we find they are made up chiefly of four systems, namely: agriculture, the industries, commerce, and finance. Broadly speaking, the agricultural system produces the necessities of life; the industrial system produces the materials of more permanent wealth; the commercial system transports and distributes the products of both; while the financial system furnishes the medium for settling the bills of all.

There is a limit to agriculture, and broadly speaking this limit is reached when the existing living beings are provided with food and clothing, or, in other words, with what we may call the necessities of life. A much larger sum of money may be paid for the necessities at one period than at another, or by one person than by another, but still each being has but one stomach to fill and but one body to clothe. There is a limit to commerce; this limit is reached when it has distributed the products of agriculture and the industries in accordance with the demands of the owners or purchasers. There is a limit to finance; this limit is reached when it has adjusted the bills and demands of existing business. On the other hand, to the industries, there is no known limit; for, as has been shown elsewhere in this volume, it is impossible to produce of the objects of permanent wealth more than man desires to possess or more than he is able to buy, and the products of the industries may be multiplied indefinitely within the borders of such nations as possess adequate deposits of coal and iron, and have the energy and intelligence to use them with wisdom.

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GROWTH OF COMMERCE

The growth of commerce during the last century is shown by the facts that there were at its beginning no railroads to carry products from the interior of the country to the seaboard; no steam vessels to carry them from continent to continent, and no telegraph system for intercommunication. Even as late as 1840 there were but 5,420 miles of railroads in the world. In 1850 steam vessels had a tonnage of but 1,000,000 tons, of telegraph lines there were but 5,000 miles, and of submarine cables but twenty-five miles; while in 1903 there were 500,000 miles of railroads, a steamship tonnage of 17,000,000 tons, land telegraph lines of 1,200,000 miles, and submarine cables of 200,000 miles.

The commerce of the world, which was but \$1,470,000,000 at the end of the eighteenth century, had increased to \$20,715,000,000 at the end of the nineteenth century. The increase of the international commerce of the world was about:

\$1,000,000,000 in the eighty years between 1720 and 1800; \$2,500,000,000 in the fifty years between 1800 and 1850, and \$16,000,000,000 in the fifty years between 1850 and 1900. This wonderful growth in the commerce of the world came partly from the increase in the products of agriculture, but chiefly from the tremendous increase in the products of the manufacturing and mechanical industries.

GROWTH OF FINANCE

The growth of finance is shown by the commensurate increase in banking capital and facilities of the banking system. The banking capital of the United States 125 years ago was represented by the bank established by Robert Morris in Philadelphia with a capital of \$400,000. In 1910 the capital, surplus, and undivided profits of the banking institutions of the United States amounted to \$3,832,000,000, and this money only settles a small amount of the business of the country. Ninety-seven per cent. of

international commerce is settled by bills of exchange; ninety-two per cent. of domestic trade by checks. This wonderful increase in finance was brought about partly by the increase in the volume of agricultural products, but chiefly by the increase in the products of the industries, and the resultant growth in trade, and the transportation facilities necessary to distribute these products.

INDEPENDENCE AND INTERDEPENDENCE OF THE FOUR SYSTEMS

At the beginning of the century, one giant, agriculture, dominated and controlled all the other business interests of the country. At the close, four giants occupied the arena.

It was the large growth of the industries which brought about the large and contemporaneous growth in both commerce and finance. On the other hand, the industries could not have increased as they did without an increase in commerce to distribute their products, nor could the industries and commerce have increased as they did without an increase in finance to adjust the bills of both.

Yet, notwithstanding the complicated interdependence of the four great systems of business, they are, nevertheless, four separate and distinct instruments, each propelled or retarded at times by its own independent forces. Each system embodies features which are individual and peculiar to itself. Each is radically different in its nature, purposes, and functions; each requires for its prosecution different kinds of knowledge and skill; different plans, powers, and appliances; different organizations, acts, and operations. Hence any fundamental derangement which causes an increase or a decrease in the volume of one system is necessarily different from a fundamental derangement which causes an increase or a decrease in either of the other systems.

The independence of these four systems, and their interdependence upon each other, may be compared to the alimentary system, nervous system, circulatory system,

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and respiratory system of the human body. If a human being is suffering in consequence of a diseased condition of the alimentary system, no cure can be expected to result from a treatment of the respiratory system, nor can the whole body be in a healthy condition, unless all its parts are in a healthy condition. When the business of a nation is suffering, to effect a cure it is necessary to find out first in what particular system the malady is located. If this is accomplished it may be possible to discover the microbe of the disease, otherwise there is little hope of administering an effective remedy.

Three of the business systems, as has been shown, grew from dwarfs to giants simultaneously. They not only attained nine tenths of their growth in one half-century, but in their progress and actions they were so intricately interwoven and dependent upon each other that any cause of disorder in one was not readily distinguished from a cause of disorder in the others. It is extremely difficult to distinguish between causes and effects in one chain of events; how much more difficult to so do in dealing with four chains of events.

LIMITS IN INCREASES AND DECREASES

There is another feature connected with the limited quality of three of the business mediums, and the unlimited quality of the remaining one, which is also of vital significance. Agriculture, commerce, and finance not only have their maximum limits which cannot be exceeded, but they also have their minimum limits which must necessarily be maintained.

The products of agriculture, being chiefly composed of the necessities of life, must be kept up to the standard volume of the people's necessities at any cost. The volume of supply cannot be permitted to shrink below this standard in the smallest degree. If any nation produces a smaller volume of the necessities of life than is required, the deficiency must be made up by procuring a

supply from some nation which produced a surplus, else the first-named nation must suffer.

Commerce is not only limited to transportation and distribution in accordance with the demands of the people, but its facilities must necessarily be kept up to meet their necessities. It is not permitted to fall below this standard. A like position, limit, and standard control the volume of finance.

To the industries, however, there is no maximum limit nor minimum limit which must necessarily be maintained. Its products are mainly the objects of permanent wealth, and, apart from the necessities, the maintenance of its volume is not a matter of life and death; hence it may fall off in volume to almost any degree, just as it may rise in volume to almost any degree.

The unlimited possibilities of the industrial system are illustrated by its relative volume at the beginning and at the end of the nineteenth century (see page 9). At the beginning it required one person out of every five to produce clothing for the people. At the close, by the aid of machinery, one person could make enough for 250 persons. In 1888 the United States produced 600,000 sewing machines, which could do the work of 7,200,000 women. In 1880 there were 3,100 shoemaking machines at work, producing 150,000,000 pairs of shoes annually.* And who will say that the maximum limit to the effectiveness of man's productive power by the aid of machinery has been reached?

The unlimited character of the industries is vividly illustrated by the fact that the *increase* of wealth in the United States in the first four years of the present century was greater in amount (\$18,500,000,000) than the entire *accumulated* wealth of the United States in 1860 (\$16,250,000,000).

These facts all point unmistakably to the conclusion

* In 1900 the capacity to produce had been increased to 400,000,000 pairs and the quantity actually made to 219,000,000 pairs. See "Boots and Shoes," *The Americana*.

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that the cause of booms and depressions must be within the industries, where great increases and decreases in the volume of business can and do take place, and not in the other three business mediums, where increases and decreases cannot take place to any comparable degree. The search for the cause of the mysterious industrial depressions should, therefore, be made within the industries.

HOW THE SEARCH SHOULD BE MADE

In searching for the cause of a disturbance in one of the business systems by analytic methods, the searcher should not only analyze the system apart from the other three, as a first necessity, but in the entire process of his investigation should carefully exclude from consideration any of the occurrences, functions, instrumentalities, or effects which were known to be permanently united as an element or an original quality of any of the other three. In other words, to detect the hidden internal cause, he must insure himself against complication by rigidly excluding everything connected with known and external causes.

Nature and natural laws are very much the same wherever you find them. The analogy between the working of these laws on the human system and on the industrial system is very close. The disorders from which the human system suffers may be divided into two classes: those which result from external causes, and those which result from internal causes. If a disorder result from an external cause, as for instance, from a blow, the cause of the disorder is recognized and known at once, — there is no mystery about it; but if the disorder result from some internal cause, the malady in some cases may progress for months or even years without its presence being even suspected by the victim. Even after the disorder has revealed its presence, as for instance in breaking out upon the surface, the initial cause may still be so hidden as to defy detection, even after the most earnest search.

It is precisely the same with the disorders of the indus-

trial system. If depression in the industries result from an external cause, such as war, pestilence, famine, bad crops, commercial or financial crises, the cause is at once recognized and known. There is no mystery surrounding it; but if the disorder result from some internal cause, some microbe within the industries themselves, it may go on and reach a condition of gravity before it is even suspected, and even after its presence is revealed by a great check to all industrial enterprises, the real cause may not be suspected, simply because the microbe was hidden and did its fatal work before the disease made its presence known by breaking out upon the surface.

In searching for the cause of these mysterious industrial depressions, therefore, the search must be confined exclusively to the industries and such things as are distinctly a part of them; all things which are distinctly a part of the other three systems must be rigidly excluded from consideration.

IN WHAT PART OF THE INDUSTRIES SHOULD THE SEARCH BE MADE?

Among the facts discovered by the government commissions is, that the volume of business in the necessities of life is substantially the same in dull times as it is in active times. Let us analyze this and determine whether or not the conclusion commends itself to our minds as reasonable and true.

The workers of the United States, meaning all persons engaged in any gainful occupation, comprise about one third of the population. If one fifth of the workers were thrown out of employment, it would be an unusually large percentage, and yet would amount to only about one fifteenth of the population, and that one fifteenth and those dependent upon them would not stop eating or go unsheltered or unclothed. In some way they would live and continue to consume the necessities of life. The other four fifths of the workers being still employed, they, as well as those dependent upon them, would make little or

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no change in their consumption of necessities. Whatever change these people made would be chiefly in a reduction of their outlay in luxuries, such as ornaments and permanent improvements. Then, again, we have the large number of people who have accumulated savings to draw upon when out of employment, and the large number of well-to-do people who live upon the income derived from the hundred billions of wealth which has been accumulated in this country. Another reason that the fluctuation in the production of the necessities of life is small is because the demand is comparatively regular, hence the supply can be, and is, more nearly adjusted to it.

It must be admitted, therefore, that this conclusion of the government commissions is not only reasonable but true, and, if true, then the great periodic increase and decrease in production must be outside of the necessities of life. Now what are the chief products of man's labor outside of the necessities of life? In the absence of statistics this question can be answered approximately by ascertaining what is the sum total of the accumulated products of man's industrial labor outside of the necessities of life.

The wealth of the United States in 1904, taken from the report of the Bureau of Census, Department of Commerce and Labor, was \$107,104,211,917, classified as follows:

Real property taxed	\$55,510,247,564
Real property exempt	6,831,244,570
Steam and street railways and equipment; telegraph and telephone systems; electric light plants; water-works; shipping and canals	16,085,298,909
Manufactured products	7,409,291,668
Agricultural products	1,899,379,652
Mining products	408,066,787
Imported merchandise	495,543,685
Manufacturing machinery, tools, etc.	3,297,754,180
Farm implements and machinery	844,989,863
Furniture, carriages, etc.	5,750,000,000
Clothing and personal ornaments	2,500,000,000
Live stock	4,073,791,736
Gold and silver coin and bullion	1,998,603,303
Total	\$107,104,211,917

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To answer the question: "What are the chief products of man's labor outside of the necessities of life"? the above items must be reclassified and separated into four divisions: first, land, which is not a product of man's labor; second, the necessities of life and the machinery necessary for their production; third, construction; fourth, all other property.* The following table gives the re-classification of the one hundred and seven billions of wealth on the basis named:

WEALTH OF THE UNITED STATES IN 1904, RECLASSIFIED.

	Land	Necessities	Construction	All other property
Real property.				
Land	\$31,170,746,067			
Buildings and other improvements			\$31,170,746,067	
Railroads and other public works			14,085,298,909	\$2,000,000,000
Manufactured products			6,009,291,668	1,400,000,000
Agricultural products		\$1,899,379,652		
Mining products		108,066,787	100,000,000	200,000,000
Manufactured machinery, tools, etc.				3,297,754,180
Farm implements and machinery		844,989,863		
Furniture, carriages, etc.				5,750,000,000
Clothing and personal ornaments		2,000,000,000		500,000,000
Imported merchandise				495,543,685
Live stock		4,073,791,736		
Gold and silver				1,998,603,303
Totals	\$31,170,746,067	\$8,926,228,038	\$51,365,336,644	\$15,641,901,168

RECAPITULATION

Land	\$31,170,746,067		
Necessities	8,926,228,038	\$40,096,974,105	
Construction	\$51,365,336,644		
All other property	15,641,901,168	67,007,237,812	
Total		\$107,104,211,917	

* Just what proportion of the above sixty-two billions of real property is land and what proportion is buildings cannot be accurately stated, but the authorities rate buildings and other improvements, in the United States and Great Britain, as more than half of the whole, so that this item has been divided equally between land and construction, which is within bounds. The sixteen billions in public improvements has been divided

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CONSTRUCTION IS THE MAIN THING WHICH INCREASES AND DECREASES

From the above table we see that after deducting land and the necessities of life, construction, in round numbers, is fifty-one billions of the remaining sixty-seven billions, or say 77 per cent. of all industrial products of the nation, *the large increases or decreases of which create what we call booms and depressions. Even this does not fully represent the preponderating importance of construction*, for, continuing the analysis, we find that when an additional residence is occupied it involves the purchase of furniture, carpets, utensils, ornaments, etc.; that when an additional store is opened it involves the purchase of an additional stock of goods; that when an additional factory is opened it must be equipped with machinery and provided with raw materials for manufacture into other products before it can be operated; that when an additional railroad is put in operation or a steamship is put in commission, it necessitates the purchase of all the various furnishings and vehicles essential to their operation; in short, that with the large increase or decrease in the volume of construction comes a commensurate increase in the demand for nearly all the smaller and more numerous articles of permanent wealth, these being chiefly included in the remaining 23 per cent., which is subject to large increases and decreases in volume.

Note, however, the fact that the increases and decreases in the volume of smaller articles not only come after construction, but depend chiefly upon new construction. People do not buy furniture, carpets, utensils, goods, machinery, cars, locomotives, etc., and store them in ware-

by putting fourteen billions under the head of construction (the estimated value of the plants), and two billions as the estimated value of the equipment. Manufactured products have been divided into the proportion that construction bears to all the other industrial products on the supposition that this proportion of the manufactured products comprises construction materials. There are no existing statistics from which these divisions can be made exactly accurate, but the divisions made above are sufficiently exact for the purpose.

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houses or on vacant lots, and then build their houses, stores, factories, ships, and railways into which they may put them, or upon which they may run them. They first construct and then buy the things necessary to furnish or equip the new construction. It follows that construction proper is not only 77 per cent. of the industrial production from which the increase and decrease chiefly come, but that construction also controls a large share of the increase and decrease in the remaining 23 per cent.

From these facts, it is quite obvious that what we call booms result almost entirely from the great periodic increase in the volume of construction, and what we call industrial depressions result almost entirely from the great falling off in the volume of construction.

CHAPTER XI

ANALYSIS OF CONSTRUCTION

FOR the purpose of analysis, construction may be divided tentatively into two parts: first, that portion which never ceases, but goes on during panics, depressions, wars, etc., which for the purpose of illustration will be called *necessity* construction. This includes repairs, replacements, and such new construction as is made necessary by the growth of population, etc. Second, that portion which at times so greatly increases and decreases as to create what we call booms and depressions, which for the purpose of illustration will be called *optional* or *investment* construction. This includes additional houses, stores, factories, railroads, terminals, ships, docks, tunnels, etc., which are not put up from necessity as above noted, but as an investment from which the investors expect to derive additional income.

NECESSITY CONSTRUCTION *vs.* INVESTMENT CONSTRUCTION

As an aid to the analysis of construction generally, the diagram (Appendix L) has been prepared. "Necessity" construction is represented on this diagram by the space between the base line *BB* and the line *CC*. "Optional" or "investment" construction is represented, tentatively, by the space between the line *CC* and the line of actual iron consumption *FF*.

Many people in the industrial nations believe that prosperity is overdone when all the breadwinners of a country are fully employed, earning and buying; and most of them believe that twin absurdity, that during a long period of depression the maintenance and repairs to existing property fall so far behind, that the ultimate necessity

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to replace and repair existing property eventually brings on a boom. Neither of these theories will stand the test of analysis. Necessary construction, repairs and maintenance, go on all the time, even during a financial panic or any other startling calamity, and their volume even in depressed times is about two thirds as much as the whole volume of construction in the most prosperous times. This is not only made clear by diagram, Appendix L, but it is confirmed by the records of iron consumption for fifty years or more.

These periods of great increase in construction come from plain, simple business conditions and motives. When the cost of construction reaches such an abnormally low figure that the bargain-counter instinct is aroused in the minds of a large number of the far-seeing ones who hold the purse-strings of the country, the desire for gain prompts them to take advantage of the conditions while they may. These are the early birds; but gradually the whole community follows, and the boom is soon at its height. That, in a nutshell, is what creates an industrial revival.

When the contracts for construction in five great nations silently and mysteriously increase 50 to 100 per cent. within a few months, it is a great event, and it cannot be called a "mental wave" or an epidemic of repairs, any more than it can be called a cadencé in lumber or an anthem in brick.

IT IS INVESTMENT CONSTRUCTION WHICH LIFTS THE COUNTRY TO A NEW LEVEL OF CAPACITY

It is not maintenance and repairs to existing property which produce a boom. It is a great volume of new and additional construction, made chiefly for investment, which greatly increases the permanent wealth of the country and lifts its wealth-producing capacity to a new and higher plane. When a depression follows, the capacity of the country does not sink down to the old level. It substantially moves forward on its new level until the

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next revival in investment construction, when it takes another great step forward and attains a still higher plane.

This can be made more obvious by the following table, which gives an analysis of iron production for the last fifty years:

GAINS IN IRON PRODUCTION DURING BOOMS AND GAINS OR LOSSES DURING FOLLOWING DEPRESSIONS.

Percentage of increase	Year	Iron production	Gain	Lapse of time years	Change during depression		Lapse of time years	Percentage of boom gain lost in depressions
					Gain	Loss		
57	1852	500,000	288,000	4	58,000		7	
	1856	788,000						
100	1863	846,000	854,000	6		5,000	2	1/10 of 1
	1869	1,711,000						
49	1871	1,706,000	842,000	1		247,000	6	29
	1872	2,548,000						
100	1878	2,301,000	2,322,000	4		579,000	3	25
	1882	4,623,000						
127	1885	4,044,000	5,158,000	5		579,000	6	12
	1890	9,202,000						
57	1896	8,623,000	4,995,000	3	169,000		(Part of 1)	
	1899	13,620,000						
30	1900	13,789,000	4,220,000	3		1,512,000	1	36
	1903	18,009,000						
56	1904	18,497,000	9,284,000	3				
	1907	25,781,000						

If the increased construction which takes place during a boom was for maintenance and repairs, then the volume of construction would fall back to the old plane when the next depression came. The fact that it does not fall back is evidence that the boom is made up of new and additional construction which adds that much to what we call the permanent wealth of the country, and raises its producing capacity to a higher level.

REMARKS

It was after the boom of 1871 and 1872 that some of the authorities (see page 64) were telling the world that

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the civilized countries were now fully equipped with economic tools; that the work of the future must necessarily be repair and replacement rather than new construction, and that it was not likely that there would be again an economic progress comparable to that which had just closed. And yet the United States in 1907 produced nearly 1000 per cent. more new construction than she did in 1872. This cannot be accounted for by the increase in population, for that was only a little more than doubled. It was chiefly the increase in fixed capital in the shape of factories, mills, mechanical appliances, etc., which was responsible for our capacity to produce and consume 25,700,000 tons of iron and other construction material in proportion in 1907. It was due to the several successive steps by which the country reached a higher plane on each revival of prosperity that it produced in 1907 an amount of wealth which surpassed all previous records in the world's history.

As shown by the above table, the country, through periods of industrial depression, has lost twenty-six years of possible increase in wealth in the last fifty-five years. In the last nine years of increase, between 1896 and 1907, the annual production of iron has increased 16,500,000 tons. Figuring on the actual cumulative rate, it is obvious that if all the breadwinners of the land had been fully employed the whole fifty-five years, the country would have passed the twenty-five million-rate of iron production so many years ago that we would have been well up to the fifty million-rate in 1907.

These checks to production, which we call industrial depressions, are simply unnatural and unnecessary checks to the country's possible growth in wealth. The natural and healthful condition of the country, morally, physically, and financially, is for all the breadwinners of the land to be employed, earning, and thus made able to pay for what they and those dependent upon them need for their sustenance and enjoyment. If all these gaps in the growth of production illustrated by the above table had been

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filled by maximum production, the nation would not only have been that much farther advanced in permanent wealth, but the suffering which was caused by the enforced idleness of millions of our people during those twenty-six years of depression would have been avoided.

There is nothing so disastrous to a nation's business as industrial booms and depressions, and the unnatural and abnormal fluctuations in the price of construction are responsible for both. Those who are engaged in business are deceived by the great fictitious and temporary advance in market values during a boom, and harmed by the great declines which necessarily follow during a depression.

These violent changes in prices are a prolific source of discontent and consequent strikes. The workers strike when these abnormal advances come, to get their share of the supposed profits, and when prices go down the employers must at times reduce wages to save themselves from manufacturing at a loss, and the workers again strike, in the vain effort to prevent these reductions.

Then the country goes through a period of what is termed liquidation and adjustment, during which prices and profits sink to a very low level. When the financial and industrial skies are all clear, comes renewed prosperity, which should be so thoroughly anticipated that its continuance might be possible through adequate preparation without the disastrous boom in prices. Through the lack of this preparedness, the supply of important materials is so hopelessly short of the demand that prices of some articles of even vital importance advance one, two, or three hundred per cent., and all business is again upset for another period of years.

DEMAND FOR IMMEDIATE DELIVERY VS. DEMAND FOR FUTURE DELIVERY

In the "First Annual Report of the Commissioner of Labor on Industrial Depressions" published by the United States Government in 1886, "Falling Prices"* is specially

*Attention was called to this on page 73.

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treated as among the chief alleged causes of industrial depressions.* This is a plausible theory, and many high authorities have been deceived by it. The mistaken belief arises from the fact that the fall in prices of construction materials is the first occurrence which attracts attention, but analysis shows that it is not the first to occur. First comes the falling off in demand for construction materials, after which follows the resultant fall in prices. As long as the demand for anything exceeds the supply, prices are kept up. When the supply exceeds the demand, prices fall. This is a self-evident truth. Any theory based upon the reverse of this truth is a virtual contradiction of the natural and inflexible working of the law of supply and demand.

On reference to Diagram L, it will be observed that the price of iron commenced to fall rapidly in February, 1900, while the actual consumption of iron kept up to boom proportions for five months thereafter. Again, the price commenced to fall rapidly in October, 1902, while actual consumption kept on increasing rapidly for eight months thereafter. Again the price commenced to fall in May, 1907, while actual consumption kept up to boom proportions for five months thereafter. During all of these periods there was a famine in the iron supply. Here are three cases, so recent as to be fresh in the minds of the people, and each of them apparently seems to be a direct contradiction of the law of supply and demand. Now what were the facts?

To analyze this matter properly we will divide the element of *demand* into two classes, namely, the demand for *immediate delivery* and the demand for *future delivery*.

Many articles that are bought and sold are carried in stock by the manufacturers or dealers. The people being aware of this do not usually purchase such articles until they need them, consequently the demand for these articles is almost entirely a demand for immediate delivery. For such articles the falling off in demand, the falling off

*First Annual Report of the Commissioner of Labor, page 79.

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in price, and the falling off in delivery, all come at substantially the same time; consequently the public are constantly reminded of how perfectly supply and demand control the prices of all immediate delivery articles.

In the case of construction materials, however, it is entirely different. If the contemplated work is of any considerable magnitude, it may be several weeks or months after the price is fixed and a contract for the materials signed before the delivery of materials is even commenced, and several months, or even a year or two, before the delivery of materials is completed. The fixing of prices on construction material must therefore antedate the delivery by several months, or even years, according to the magnitude of the enterprise and the rapidity of the work done in its execution. To give a practical illustration of how actual contracts for construction materials are frequently negotiated and closed, we have permission to quote from the private telegraph code of the selling agents for a large number of pig iron producers. In doing this we shall give, first, the code words verbatim, followed by their meaning, and the dispatch thus translated will represent the manner in which hundreds of large contracts were closed by this concern. The code words were as follows: "A.B. & Co. Magnet — Amends — Squal — April — Saint — Taken — Malone — Name price — Maimed — Quart — Major — Making." The translation of the above is as follows:—"A. B. & Co. About to bid on some work and wish an offer on — 5000 tons number two foundry pig iron — deliverable proportionately during ten months commencing in — April — deliverable F.O.B. cars at Chicago — terms cash on tenth of month following delivery — parties will not make an offer, they have asked different parties for bids, and when bids are all in they will accept the most favorable and reject balance — name price — open until award is made for work which will probably be Thursday of next week — they will advise us of the rejection or conditional acceptance of your bid — if accepted condi-

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tionally, it will become a sale if the work is awarded to them, and become void if the work is not awarded to them." Now this manner of buying is not exceptional; all prudent contractors must necessarily protect themselves during the negotiation for all large constructive work, as well as during its execution. Now if the lapse of time between the naming of the price and the closing of the contract be, for instance, one month; the delivery of materials be commenced in three months after the contract is signed; the delivery extended over ten months as per contract, and the work be completed in two months after the materials are all delivered, we have a total of sixteen months between the making of the price and the completion of the work. Now a constructive work which requires no longer time than sixteen months would not be a very extensive enterprise. If it were a large structure requiring deep excavation through rock for one or more stories below the surface, it might be more than sixteen months before the first construction materials would be needed, and the whole work would probably occupy two or more years to complete. The demand for construction materials, therefore, is almost entirely a demand for future delivery and in large enterprises a very extended delivery.

In all such cases, therefore, the determination of the amount of materials to be used and the fixing of the prices to be paid for them, becomes the *time of demand*. This time must antedate the actual delivery of the materials and the completion of the structure, by at least as much as the signing of the contract antedates these occurrences. This may be several months or perhaps one or more years.

Unfortunately there are no statistics gathered or published, to keep the people advised either of the extent of the contracts being made for construction from time to time, or of the rate at which this contracted construction is being completed. In Appendix L, the line *DD*, which is drawn to represent the rate of demand for construction, is the result of a careful analysis and is believed to represent fairly the volume of construction contracted for from

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month to month during the twelve years between 1896 and 1907. The line *FF* being the exact rate of iron consumption, must correctly represent the rate at which this construction was completed.

On reference to that diagram, it will be observed that in the boom period of 1899, the demand for extra construction commenced to fall off in February, 1899. Four months later the extra demand had nearly ceased, and in February, 1900, the price of iron commenced to fall off. Now the amount of actual construction was increasing all this time, and kept on increasing until April, 1900, when the extra volume of construction contracted for in the low-priced period was practically completed. Three months later the volume of actual construction was nearly down to the line *CC*, which is supposed to represent the necessity basis, though, in effect, it is a depression basis.

The following table gives the data of these occurrences during the three like periods between 1898 and 1908:

First Event		Second Event		Third Event		Fourth Event		Fifth Event
Demand for extra construction commenced to fall off	Lapse of time, mos.	Demand for extra construction had about ceased	Lapse of time, mos.	Prices commenced to decline	Lapse of time, mos.	Extra construction about completed	Lapse of time, mos.	Actual construction had fallen off to a depression basis which attracted general attention
Feb. 1899	4	June 1899	8	Feb. 1900	2	April 1900	3	July 1900
Dec. 1901	7	July 1902	3	Oct. 1902	8	June 1903	5	Nov. 1905
Oct. 1905	10	Aug. 1906	9	May 1907	8	Jan. 1908		Oct. 1907*

*Panic.

Now, of the five events which occurred in regular sequence in the decline of the three booms illustrated by the above table, the only events of which the public had any knowledge were the third and fifth, that is, the fall in prices, and the falling off in the volume of actual construction. No statistics were either gathered or published to inform them when the contracts for extra construction had commenced to fall off, nor when they had about

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ceased, nor when the extra construction which created the boom was about completed; consequently, when it was actually completed, and mechanics commenced to be discharged in great numbers all over the country, the people were greatly surprised, and did not know how to account for it. Later, they remembered that prices had commenced to fall off several months before the construction fell off, so they believed that the *fall in prices*, which was the first occurrence they became aware of, was the cause of the industrial collapse.

The sequence of events preceding the six periods of depression between 1837 and 1886 was precisely the same as in the three cases described in this chapter. In all these cases, the natural working of the law of supply and demand was fully demonstrated. In all these cases, the falling off in the demand for construction, as evinced by the falling off in the making of construction contracts, although unnoticed, was the first to occur, while the falling off in prices was the second to occur, although the first to attract attention. The actual sequence of events was therefore in strict accordance with the law of supply and demand instead of being contrary to it.

RESULT OF DELIVERY COMING SO LONG AFTER DEMAND

When delivery and demand come together, manufacturers and dealers may know at once should the demand exceed the supply; but in construction materials in which the delivery is made months or perhaps one or more years after the contracts are closed, the amount of materials contracted for may greatly exceed the possible supply. The manufacturers and builders may have no knowledge of this fact until many months after the contracts are made.

It is in consequence of these things that the construction builders and the producers of iron, steel, lumber, cement, brick, stone, etc., in boom times, sometimes have their order books filled up with 50 to 100 per cent. more work than they are ultimately able to get out on contract time. None of the parties realize the difficulty they are

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getting themselves into at the time this excessive contracting is done. In dull times, the few who are fortunate enough to be able to contract for 50 to 100 per cent. more constructive work than usual have no difficulty in procuring, on time, 50 to 100 per cent. more labor and materials than usual, and thus they are able in dull times to complete their contracts with ordinary promptness; but when a great number of builders and material producers secure 50 to 100 per cent. more contracts than usual, and all try to secure 50 to 100 per cent. more labor and materials than usual, there comes an unpleasant awakening.

If construction contracts involved immediate delivery of the materials involved, the parties interested would know when the capacity of the country to produce these materials was reached, and this blind involvement of the building contractors and material producers of the country would be avoided.

But these parties have no means of knowing that construction contracts are being made in excess of the capacity of the country to execute on contract time, until the period arrives when they need the unusual amount of labor and materials. Up to this time of gradual awakening, each calculates upon his being able to get the 50 to 100 per cent. more materials needed. Had they not contracts for them? And, as for the extra labor, had it not always been more than easy to secure all they needed? This unpleasant awakening is not confined to the contracting builders and manufacturers of material; it is extended all along the line; to the raw material producers, the quarrymen, the brickmakers, the miners, and to every one who employed labor in the production of construction materials.

Now, the history of the industries all through this remarkable twelve-year period between 1896 to 1907 was a simple illustration of the perfect and inexorable working of the law of supply and demand. As long as the *known* supply exceeded the *known* demand, prices kept down. When the *known* demand exceeded the *known* supply, prices advanced. During some periods the known demand

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for *quick* delivery exceeded the possible supply, and at the same time the known demand for *future* delivery was far below the possible supply. In such periods quick delivery prices were at a premium, and future delivery prices were at a discount, thus accentuating the truth of the perfect and inexorable working of the law of supply and demand.

This explains why, near the end of a boom, prices drop, while the demand *appears to be* greater than ever. The facts are that contracts for construction which involve only future-delivery demand, have almost ceased, while the pressure to complete old, low-priced contracts has carried the prices of materials which can be delivered immediately to abnormally high figures.

ILLUSTRATION

Perhaps no better illustration can be given of this last named condition than the situation which developed when the United States Steel Corporation, with the commendable purpose of checking the rapid advance in prices of iron and steel, gave public notice that it would not again advance prices, and that all responsible consumers might rely upon its booking and filling all orders, in turn, at the then existing figures. The Steel Corporation lived up manfully to its voluntary proposition. (We think this was about June, 1901, at which time the seven important shapes of iron and steel, used as typical of prices in the annual tables of "The Cleveland Iron Trade Review" averaged about 65 per cent. above the lowest prices of 1897.) The announcement apparently had a marked effect upon the market for several months; but price depends upon the supply, *when* the consumer needs it. As the Steel Corporation could not produce all that was wanted, and could only deliver as much as it was able to produce, and as the immediate necessities of some of the consumers were such that they could not wait, prices soon commenced to advance rapidly, and by June, 1902, the independent mills, and new mills which had started up, were selling all they were able to

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furnish, at prices 124 per cent. above the prices of 1897. Here was a broad illustration of a difference of 47 per cent. between quick delivery and future delivery prices. The United States Steel Corporation in its statement of July 1st, 1902, gave its *unfilled orders* at 4,741,993 tons. This 47 per cent. was the premium which consumers paid to get materials promptly, over and above what they might have purchased these materials for, if they had elected to wait until they could get them, *in their turn*, from the United States Steel Corporation.

THE SMALL BENEFIT OF BOOM PRICES REALIZED BY MANUFACTURERS

By reference to Appendix L, it will be observed that the demand for construction commenced to fall off soon after prices made any considerable advance, and that it continued to fall off in almost exact mathematical proportions with the advance in prices. This explains very clearly some of the phenomena attending a boom which without the knowledge of these facts would seem very unaccountable.

First among these is the fact that the manufacturers of construction materials in this country realize such a very small benefit from the large advance in prices which takes place during a boom. The fact is that the great bulk of the construction which takes place in all booms is the construction which is contracted for before any considerable advance in prices takes place; consequently, the producers of construction materials, as a rule, have booked contracts for the larger part of everything they are able to turn out during the continuance of a boom, long before there is any considerable advance in prices. Of course, there are exceptions to this rule. We have known of iron-furnaces and steel-works which were not in operation when the boom commenced, and in consequence made no contracts during the low-priced period, but after prices had advanced largely these plants were put into operation, consequently made all their contracts

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at the high prices, and were thus enabled to reap large profits. On the other hand, we have known of other concerns that contracted all they could make for more than a year ahead at the low prices, and, before they were able to fill these orders, the advance in labor and raw materials so enhanced the cost of manufacture that the boom brought them out with a loss. For this reason, the profits of the producers of construction materials during a boom are, as a rule, very disappointing. We might give many illustrations if it would not be a virtual betrayal of what should be considered confidential, but this fact is well known among those who are directly interested in the production of materials used in construction.

We will, however, give one illustration, first, because it is public property, having been published in "The Iron Age" of February 27th, 1908, and, second, because it covers the entire period from 1899 to 1907, inclusive. It is taken from the annual report of the President of the Empire Steel & Iron Company, of Catasauqua, Pa., to his stockholders. This company is a large, prosperous, and well-managed company, having eight blast furnaces in Pennsylvania and New Jersey. We quote from the report as follows: "We submit for comparison the following statement of the result of business year by year since this company was incorporated, the first year covering a period of nine months:

Year.	Tons pig iron made.	Tons ore mined New Jersey mines.	Net Earnings.	Dividends.
1899	150,481	8,416	\$320,666.30	\$81,595.31
1900	201,847	40,637	244,523.85	106,395.00
1901	185,990	83,414	85,271.52	71,043.00
1902	186,485	59,179	203,087.37	75,000.00
1903	245,513*	107,905	308,651.02	75,000.00
1904	163,202	111,375	88,154.16	75,000.00
1905	172,763	93,568	91,511.96	75,000.00
1906	205,477	131,740	300,695.07	112,500.00
1907	234,538	146,253	517,256.15	150,000.00
Totals	1,746,296	782,487	\$2,159,817.40	\$821,533.31

* Two additional furnaces operated under lease.

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“From this it will be seen that in all important respects the results during the past year have surpassed all previous records, and it might be interesting to note that our profits from all sources have amounted to \$2.20 per ton of iron produced.”

As will be observed from the above quotations, the average profit for the nine years was but about \$1.23 per ton on their entire output of 1,746,296 tons of pig iron. This, it must be borne in mind, was during a period in which there were three great advances in prices, viz., from \$11.25 per ton for No. 1 Foundry in Philadelphia in July, 1898, to \$25.00 per ton in November; from \$15.50 in October, 1901, to \$24.87 in November, 1902, and from \$15.00 in September, 1904, to \$27.00 per ton in December, 1906. Here we have, on the three advances named within the nine years, an average advance of \$12.70 per ton, while the best year's profit was \$2.20 per ton, and the average profit for the whole nine years less than \$1.24 per ton; although this concern, not being in existence in 1896, 1897, and 1898, escaped filling up their order books with low-priced contracts in these early years.

This is not an exceptional case. If the balance sheets of all the furnace companies in the country could be consolidated for this period of twelve years, or any other boom period, they would in all probability not show any better average result. We think this case may be taken as a fair indication of the average proportion of boom-price advances actually realized by the whole body of producers of construction materials during any of the booms of the last century. Of course many individual cases can be cited where much larger proportions of the advance have been realized; but that does not change the facts.

Now if this illustration (which shows a net profit of about \$1.24 per ton during the nine years in which the average of the three great advances in price was \$12.70 per ton) is a fair average of the proportion of boom advances realized by the producers of construction material in the United States during a boom, then it is perfectly clear

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that the great majority of all the constructive work of the country, executed during a boom, must be contracted for before the advance has reached one tenth of its maximum. In other words, *there must have been enough contracted, under 10 per cent. advance, to offset all taken above 10 per cent., because the average advance obtained was less than 10 per cent.*

In the writer's experience of forty years in the iron business, he has never known a boom period in which the furnace companies of the country, as a rule, had not contracted their anticipated product for six, nine, or twelve months in advance before the abnormal advance in prices occurred. For additional evidence see Appendix Q, and note that the United States Steel Corporation, during the low-priced period from September 30th, 1904, to December 31st, 1905, increased their unfilled orders from 3,027,436 tons to 7,605,086 tons, while after the great advance in prices which followed, the increase was small in comparison.

Analyze this matter from any standpoint you choose and the result always points in one direction, namely, that the contracts for the extra constructive work which make up what we call a boom are almost entirely at or near the low prices current during the one, two, or three years just before the boom manifests itself, and if this is true, then an industrial boom is chiefly the execution of the abnormally large amount of construction contracted for in the low-priced periods which precede a boom.

PREMIUMS PAID FOR IMMEDIATE-DELIVERY MATERIALS, WHILE DISCOUNTS ARE OFFERED ON FUTURE-DELIVERY MATERIALS

Another peculiar feature which develops in prices of construction materials towards the latter part of a boom is that large reductions in prices are offered on materials for future delivery, with few sales; while there is at the same time a famine in materials for immediate delivery, and everything which can be so delivered commands quick sale.

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at large premiums. This is because the volume of future-delivery orders on the books of manufacturers, which at the commencement of a boom probably amount to an average of nine to twelve months' product, have gradually dwindled down to probably four or five months' product, and this condition has commenced to alarm individual manufacturers; and well they may be alarmed, for a large part of construction materials, such as steel, stone, etc., must be made to fit exactly the places they are to fill in the structures of which they are to become a part, and for such work four or five months may be a short time in which to complete all the detail connected with their preparation. Now, although individual manufacturers always know when this is their own condition, they have no means of knowing the fact that it is also the condition of other manufacturers all over the country. The premium paid for materials which can be delivered immediately is usually for small lots, the lack of which is holding back the completion of large contracts, which have already been delayed long beyond the time specified in contracts, and which were made many months or perhaps a year or more before. There is no time when the demand for labor and materials for prompt delivery is so intense as just before the general slump in actual construction which ushers in a depression.

CAUSE OF THE ABNORMAL ADVANCE IN PRICES

When prices get so low that the desire for gain stimulates investment construction to such an extent that it, and necessity construction combined, ultimately carry prices to abnormally high figures, it is because the amount of construction to be executed and construction materials *contracted to be delivered within a given time is in excess of the country's capacity to supply within that time.*

The whole volume of construction contracted for in the fifteen years from 1896 to 1910, *and the years and months when these contracts were closed*, is supposed to be represented on diagram, Appendix L, by the whole space

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included within the base line *BB*, the line *DD*, and the side lines *K* and *Z*.

The years and months when the above volume of construction was executed, are supposed to be represented by the whole space included within the base line *BB*, the line *FF*, and the side lines *K* and *Z*.

In each case, both the necessity construction and investment construction are included.

The percentage of construction which was contracted for during the three low priced periods, *in excess of the capacity of the country to execute on contract time*, is supposed to be represented by the three spaces marked *G*, *G*, *G* (between the lines *D* and *A*).

The time when these excesses over current capacity *were actually executed*, is supposed to be represented by the three spaces marked *H* (between the lines *F* and *D*).

As will be observed, the volume of excessive construction represented by the three spaces *G*, *G*, *G*, is absurdly small, when compared with the whole volume of construction of the fifteen years, represented by the space between the lines *D*, *B*, *K*, and *Z*, and yet it is this small excess of construction, over and above the capacity of the country to supply the labor and materials to execute within contract time, which carries the prices of labor and materials to such abnormally high figures.

Is it not perfectly obvious that, if the labor and materials had been known to be sufficient to meet the demand for them all through the fifteen years, the abnormally high prices for such important staples as iron, lumber, etc., would not have occurred?

Whether the three spaces marked *G*, *G*, *G*, are too large to correspond to actual conditions, or too small, in no way affects the argument. We know full well that it is the excess of demand over supply which carries prices up, and, as the prices did go up, the excess of demand must have existed, and had it not existed to a very pronounced

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degree, there would have been no such pronounced advance in all the materials of construction in the five great industrial nations.

REMARKS

Adam Smith told the world more than a hundred years ago, in that magnificent work, entitled "The Wealth of Nations," that low prices stimulated consumption, and that high prices retarded consumption, and the world has believed it, theoretically, ever since; but the people have not believed it practically, except to the extent they have seen and realized its verification, and that has been confined to such things as were sold for immediate delivery. In these the advance in prices, and the falling off in demand and in delivery, were seen and recognized, because they all came at the same time. Now, in construction, it is very different. In all the industrial booms which have taken place, the people have seen the volume of actual construction and delivery of materials not only increase as prices advanced, but have seen it keep on increasing for many months, even after prices had advanced from 50 to 100 per cent., and so they have believed that high prices did not retard construction. The people have simply taken appearances for facts, and have failed to realize that high prices have their retarding effect on each thing at the time the high price is fixed on that thing, whether it is fixed by a verbal purchase of an article for immediate delivery, or by a written contract of purchase for an article for future delivery; and so they have not believed that high prices retarded the consumption of iron, lumber, brick, stone, cement, and all the other great staples which are consumed in the construction of buildings, railroads, ships, and the other great construction projects which make up the bulk of all the manufacturing and mechanical industries of a nation. But what are the industries of a nation? What is this powerful force which raised the manufactured products of the United States to the value of thirteen thousand millions of dollars in 1900?

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WHAT ARE THE INDUSTRIES OF A NATION?

There seems to be an undefined impression that the industries of a nation are the result of some gigantic force that nothing but a great external calamity, such as war, pestilence, or a financial panic can check, and so, when depressions come without a recognized cause, the public looks for some great or mysterious thing to account for them. A careful analysis shows that the industries of a nation are nothing more than an aggregation of the acts of individuals. An individual's act may be of as little importance to the whole industries of a nation as a drop of water to the ocean, but the ocean is made up of nothing but drops of water. When an individual acting for himself, or for the business which he directs, contemplates an expenditure for a permanent improvement, he first secures plans and specifications, and on these asks for bids on the work. When the bids are received, and he has determined upon what he considers for his best interest, or the best interest of the company he directs, he acts, and if that action is the acceptance of one of the bids, then the ocean of industrial *prosperity* has received one more drop to swell its volume. If that action is to curtail or abandon some existing business, then the ocean of industrial *depression* has received one more drop to add to its gloom.

This individual act may not be known outside of a few people, and may attract no more notice at the time than the drop of water which falls into the ocean, but it is the aggregation of just such acts that makes up the mighty force which turns the tide of prosperity. No one seems to realize at the time that tens of thousands, aye, hundreds of thousands, of others, all over the land, are acting in the same manner and from the same motive.

WHERE THE RESPONSIBILITY RESTS

Let there be no mistake as to exactly where the real responsibility for the postponement or abandonment of these construction enterprises rests. It is not with the manufacturer: it matters not to him whether he pays

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high prices for labor and materials, or low prices. As long as he can continue to sell his products at a satisfactory profit, he will push his output to the limit of his factory. It is not with the architect, designer, laborer, or mechanic: they work, not because they love labor necessarily, but in order that they may earn, and thus be able to buy. It is not with the constructor or contractor: they are stimulated by the profits which they hope to realize. All these individuals, as a rule, are as anxious to do their part in construction at high prices as they are to do it at low prices. *The actual responsibility for each of the checks to the industries, which come from high prices, rests solely with the individual who "holds the purse-strings" — the individual who is to pay for and own the contemplated improvement. He it is who decides to go ahead when prices are low, and he thinks they will go higher; he it is who holds on to his money, and decides to postpone or abandon the contemplated improvement when prices are high and he thinks they will go lower.*

This individual, when he makes his decision, is not impelled by "an organic defect of human nature," nor by "celestial influences," nor by "mental waves," nor by "sun spots." He is governed solely by plain, simple, unadorned business considerations, and on these he acts. Probably not one individual in the land, as he makes his decisions to postpone his expected construction, realizes that the motive which impels his decision is rife in the whole land, and that his decision is but one of the hundreds of thousands of similar acts, the aggregation of which will, within a few months, culminate in an industrial depression.

In searching for the cause of these mysterious industrial depressions, therefore, it is only necessary to discover the motive and conditions which control the acts of one class of individuals — "the purse-string holders." When this is determined, we shall have, in a nutshell, the solution of the cause of both booms and depressions.

CHAPTER XII

THE MOTIVE WHICH UNDERLIES THE INDUSTRIES, AND THE REAL CAUSE OF INDUSTRIAL DEPRESSIONS

IF the motive which gives origin to any system can be identified, it will most likely be found to embody the cause of the prominent features which attend that system. Now, what is the motive which gives origin to the industries? What is the stimulus which is responsible for the great constructive enterprises which are the chief industries of the five nations which have suffered most severely from industrial depressions? Analyze this question from whatever point one may, and in each case one is led to the same conclusion, namely, that the predominating motive which stimulates man's acts in originating, operating, and enlarging the constructive enterprises is *the instinctive desire for gain*.

It is this motive which prompts the erection of the great blocks of residences and the apartment and tenement houses in the large cities; the stores, factories, furnaces, and mills in the cities, towns, and villages; the railroads, pipe-lines, telegraph-lines, ships, and submarine cables wherever they are constructed. There are some other motives which contribute to these industrial productions, it is true. Charity, public spirit, love of home or something of like nature, are usually the motives which prompt the erection of churches, libraries, hospitals, and a portion of the private residences, but these exceptions are only a minor portion of the products of construction; moreover, official statistics show that of the 16,187,715 families in the United States in 1900, but 7,259,362 had houses owned by them. Then again, a large percentage of the residences in cities, which are occupied by their owners, were orig-

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inally planned and built in large blocks and in great numbers by capitalists or professional builders for the purpose of renting, or selling them at a profit; but even in the cases of the houses built by their owners, and of the churches, hospitals, etc., it is the instinctive desire for gain which stimulates the production of the iron, lumber, brick, stone, cement, etc., which enter into their construction. It is this motive, also, which prompts the manufacture of all the various furnishings, fixtures, conveniences, and luxuries purchased to equip stock and operate these things. In fact, a thorough analysis shows that this motive is present and in active operation throughout the entire chain of events attending the great increase in the volume of industries which constitutes a boom, and, being a natural and unceasing motive, it must be just as certainly present and equally active and in full operation throughout the entire chain of events which decrease the volume of the industries and thus bring on an industrial depression. Furthermore, there is nothing mysterious or hidden in its action; on the contrary, it manifests its presence in a perfectly simple and open manner.

For instance, in the low-priced period, the far-seeing investors of the country, as soon as they become satisfied that prices are at as low a level as they will reach, and that an advance in prices is imminent (each wishing to acquire as large an amount of revenue-yielding wealth as possible with the money he has to command), hasten to contract for a large amount of revenue-yielding construction. This is a great and important movement; it grows with cumulative force, and is checked only by some equally powerful force.

On the other hand, in the high-priced period, the far-seeing investors, as soon as they become satisfied that prices of construction have advanced to a plane which makes such investments less desirable than some other investment might be (each wishing to acquire as large an amount of revenue-yielding wealth as possible with the money he has to command), decide to stop making

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contracts for construction, and to invest their money in other ways, until prices shall drop back to low figures again.

As the industries of a nation are nothing more than an aggregation of the acts of individuals (page 125), and as individual acts are controlled by the instinctive desire for gain, it follows that the entire business of the nation is controlled by this ever-present motive.

THE REAL CAUSE

The instinctive desire to get all one can for the money one has to invest is no more active in the crowd which surrounds the bargain-counter in a retail store than it is in the mind of the multimillionaire, who sits at his desk and quietly decides whether to accept or reject bids which involve millions in expenditures for construction. Either the motive, which is so strong and effective in little things, becomes less strong and less effective in big things, or else this motive is the germ which stimulates the great increases in construction, generated when prices are low, and the great decreases in construction, generated when prices are high. What Adam Smith told the world more than a hundred years ago about the effects of high and low prices upon the volume of consumption is as true of great enterprises as it is of small things; and it is even more pronounced in investment construction than it is in the necessities of life.

Prosperity does not depend upon the producer's ability to manufacture and his desire to sell, but upon his ability and willingness to sell at a price that will induce the purse-string holders to purchase.

The whole experience of the past shows that as long as prices are low, and the people who have money believe they are gaining by purchasing, they will continue to purchase, and prosperity will continue; but just to the extent that prices go so high that people believe they will lose by buying, just to that extent they will stop buying.

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If these things are true, then High Price of Construction is the real, original, and underlying cause of the mysterious industrial depressions which have occurred in the industrial nations when these depressions have come in the absence of external and recognized causes.

It is recognized that there are thousands of more or less influential contributory causes of both depression and prosperity at work at all times, and that all these things must have their due effect. If anything adds but the smallest particle to the volume of business, it is a drop added to the ocean of prosperity, or if anything reduces the volume of business by the least amount, it is a drop added to the ocean of depression, and if either one of these contending forces predominate, it will move the industries more or less in that direction. But no flood of drops has ever swelled into a boom except when prices were low enough to stimulate the making of contracts for a large amount of new construction; that is the foundation and stimulant on which every boom develops.

Low prices, however, are not everything, and may not at once bring a boom. The industries are an aggregation of individual business acts, performed by men who have in view the problem of adding to their wealth. They move cautiously as long as the future looks uncertain, but when the business outlook is clear, and they see prospects of making construction investments which promise steady profits as well as security to their capital, they act promptly and with vigor.* Then, too, a boom with its abnormal demand stimulates many to enlarge their facilities and producing capacity, even at high cost, believing that high prices have come to stay, and that the capital they thus invested will be secure and their profits large. Some of these venturesome ones, through some fortunate circumstance, may be justified by the results, but that a

* In Chapter XIV will be found a remarkable illustration of how an industrial boom was repeatedly delayed by financial derangements, and how promptly and vigorously the far-seeing investors repeatedly took hold again, as soon as financial derangement was removed or alleviated.

great number of them are not, we may know by the large number that meet disaster when the depressed period comes. Perhaps these disasters account for the oft-heard remark, that "fools build houses and wise men live in them." Perhaps the wise ones are those who hold on to their money when prices of construction are abnormally high, and buy these unwisely built structures when they are sold from necessity.

There are many ways, besides those named, in which contributory causes may delay or hasten a boom or a depression, but sooner or later the effect of high or low prices brings its logical result. All these conditions and results only show more conclusively how entirely these business revolutions are finally swayed by this one silent but powerful business force — *the desire for gain*.

In the hundreds of cases we have investigated, we have found the motive just as ever-present and active when bids for great enterprises were rejected, as it was when they were accepted. We have in mind two illustrations. The first is of two gentlemen who, during a period of low prices, had each contracted for the erection of two or three hundred residences. When most of the residences were completed by one party, and the majority of them sold or rented at profitable prices, new bids were asked, on old plans and specifications, for a block of twenty additional houses, and, when received, he found them to be nearly 100 per cent. above the bids made in the low-priced period. Sometime afterwards, in giving his reason for not going on with this building operation, he remarked that he stopped because he thought it would be better business to loan his surplus money on other people's real estate until prices fell back to old figures, as he could then build forty residences for the same amount of money that was now asked for twenty. The reason given by the other gentleman for stopping construction was equally sound, if not so forcible. It was that it would be as hard to get 3 per cent. revenue out of double-cost houses as it was to get 6 per cent. out of low-cost houses, and

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he did not "hanker after 3 per cent. real estate investments."

The building of these hundreds of residences involved the purchase of furniture, carpets, curtains, ornaments, etc., to equip them. The construction and equipment were so many drops in the ocean of prosperity. When these two gentlemen stopped building, it was typical of what tens of thousands of the far-seeing ones were doing all over the country, but no one seemed to suspect it, and when, a few months later, industrial depression developed, the great mass of the people seemed to be greatly surprised. But these instances only illustrate how high and low prices affect individuals. We will give one which illustrates how they affect a whole nation of individuals.

In the spring of 1900, two gentlemen sat at lunch in one of the New York clubs. One of them, whom we will call Mr. A., was president of one of the large steel combinations, which was afterwards merged into the United States Steel Corporation. The other, whom we will call Mr. B., was a firm believer in the theory that it was high prices which checked industrial prosperity. Mr. A. had stated that his company produced nine tenths of the country's steel product in its particular line; that the amount of product it had been asked to bid on was more than enough to keep his mills and the mills of his competitors full of work for more than a year; that he intended to hold prices up, and, when the capacity outside of his mills was filled, the people would be obliged to come to him and pay the prices he had decided to exact. Mr. B. said: "Yes, you certainly have wonderful power. You can without doubt put your prices as high as you please, and the people must pay your prices or forego their contemplated construction; but there is one power before which all your power and calculations will go down like a house of cards, that is, the decisions of the individuals who hold the purse-strings and are to own and pay for these contemplated enterprises. You cannot compel

these people to build, and, if they decide not to build, you will not sell them your goods. Your product is not one of the necessities of life. A man cannot stop eating, but he can stop building. Your prices are more than 100 per cent. above the prices of 1897 and 1898. Every similar advance in the cost of construction materials which has occurred in the last seventy years has checked construction, and, if you and the other manufacturers persist in holding your prices at present figures, it will do so now."

Mr. A. had laid down his knife and fork during this reply, and, after it was finished, sat so long in silence that Mr. B., to break the spell, was compelled to ask him what he was thinking of so intently. Bringing his fist down upon the table with great force, he said: "By George, I am thinking that you are right! The fact is, that most of the bids we made as far back as November and December have not been answered; and when they have been answered and declined, if the parties have given any reason for their action, it has almost invariably been, in substance, that they have decided to wait until prices come down to more reasonable figures." Before the lunch was finished, Mr. A. said he was going to his office to instruct his people to win back business at any price, within reason, which they might be obliged to make to accomplish it. At the time this conversation occurred, the price of construction materials had been abnormally high for many months, and the orders for future delivery material on the books of manufacturers were getting very low.

These gentlemen did not meet again for several months. When they did, prices had gone down tremendously. Mr. A. followed his hand-shake by saying, "I wish to tell you that I carried out the plan of putting down prices which I told you I had decided upon, and it has been a success. I was obliged to put them down enormously, but am getting all my plants filled with work for a long time ahead."

In this last illustration, we have an indication of what

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apparently influenced nine tenths of the trade of a great nation in one important product.

The motive which underlies the industries of a nation is a plain, simple, uncomplicated business consideration. It is natural, and in its cumulative force is all-powerful. It stimulates production at one period and retards production at another, with equal consistency. It is just as certainly in existence and in full action when it quietly and relentlessly reduces industrial production below the normal, as it is when all the power, money, and energy of the country are driving it above the normal.

Why should there be any mystery in a large falling off in contracts for construction after a large advance in the price of construction? When the Bank of England makes a large advance in its rate of interest, the large falling off in borrowing is not regarded as a mystery. In each case it is simply the natural effect of an inexorable law.

Is it not unreasonable to believe that an advance of 1 per cent. per annum in the interest rate will cause a falling off of millions in volume of borrowings, and that an advance of 10 to 100 per cent. in the cost of construction will not cause a falling off of millions in the volume of construction? If it were not for the deceptive appearance of a large increase in actual construction, contemporaneously with a large increase in cost of construction, no such absurdity would ever have gained lodgment in the human mind.

REMARKS

When we reflect that construction is 77 per cent. of the product of man's industrial work outside of what we have grown to consider the necessities of life, and that this construction involves and carries with it a large share of the remaining 23 per cent. of the products of the industries, is there any room to doubt that it is the instinctive desire for gain that causes industrial booms and industrial depressions? In all the affairs of civilized nations, can any one name anything affecting the volume of the

industries which compares to this? Do not all the other alleged causes pale into insignificance or vanish, in comparison with this one alleged cause?

Does the reader believe that any one ever paid out his money to build a factory, or ship, or railroad because of "sun spots," "mental waves," or any other mysterious influence which he did not understand? Does the reader not believe that when people pay out their savings in such things, they do it after careful consideration and because they wish to get a revenue from it; and when prices of construction get so high that they think such an investment will not pay a fair revenue or a fair profit, does he not believe that the making of contracts for such investments then experiences a check?

It must be remembered that we have been searching for a solution of something which nine government commissions in seven different countries have for twenty years or more been endeavoring to solve, and which they still declare to be a mystery. Does this not indicate that they have not searched in the right places? Is it not reasonable to suspect that we may find the real cause in something these commissions have not suspected, something which does not attract general attention and inquiry?

Now in all these government investigations we have failed to find any real effort to analyze the industries, or any real effort to find out what was the chief thing which increased during a boom and decreased during a depression, or what was the motive which stimulated those events. In brief, we find no effort to trace the matter from the bare result back step by step in an analytical manner to the cause.

In all these government investigations, no one has touched upon the simple fact that the great constructive interest of the country is not only the branch of industry of the greatest volume and importance, but that it is the only branch in which the great expansion and contraction in volume can possibly occur, and that construction in-

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vestments are chiefly entered into for revenue and profit, and that the revenue and profit from them must be reduced one half, if they are created at double price; hence that their enlargement or curtailment, naturally and rationally, depends upon prices.

Every one admits that it was the production of iron in Great Britain, the United States, Germany, France, and Belgium, which made these nations the industrial nations of the world. If iron made these the industrial nations, what is more likely than that any great upheaval in iron should influence an upheaval in the things which go with it and are dependent upon it? And when the advance has influenced all the elements of construction to such an extent as to advance its general cost 100 per cent., is it not reasonable to expect the far-seeing investors of the country to be influenced by it?

There is a large amount of construction which is a current necessity, and must go on whether prices are high or low; but the great bulk of the wonderful increase in construction, which makes up a boom, is not a current necessity. It is entered into for the sole purpose of gain, and when the prospect of gain in such construction ceases, man ceases to will preparations for its continuance and in due time that portion of construction ceases. Then production of the thousands of smaller things, which go with and depend upon it, ceases, and industrial depression becomes an existing fact.

For half a century, the world has been trying to identify the mysterious cause of the great increases and the great decreases which come to the industries of the manufacturing nations. In this effort they have held up to view everything from the plausible to the absurd, on the earth and in the heavens, and yet only one of these hundreds of alleged causes will stand the test of analysis. That one is the natural effect of a universally recognized law, the working of which responds with unerring certainty to a universally recognized motive. That motive is ever present, in every nation, whether it be of white

men, yellow men, or black men. It has been present in every country, and on every day; it is present in the smallest business transaction, and in the greatest; it is *the instinctive desire for gain*. Of all the influences which sway men, it is the one which is always active. Of the thousands of alleged causes of the ups and downs of business, it is, broadly speaking, the one motive which controls all men, at all times and in all places. What man doubts that it is this motive which controls each individual business transaction? *How can it control each individual business transaction, and not be the controlling force of the aggregation of all business transactions?*

But if the high price of construction is the cause of these mysterious industrial depressions, *then an analysis of the history of each depression which has taken place in the industrial nations should show clearly, that it was either the direct result of an external and recognized cause, or that it was preceded by an abnormal advance in the cost of construction; and it should also show clearly, that no such advance in prices has ever taken place in these nations which was not followed by an industrial depression.*

To test these requirements, an analysis has been made of all the industrial depressions, and of all the abnormal advances in the prices of construction materials, that have occurred since 1832. Some of these depressions were caused by financial derangement, and some by industrial derangement, but the time and conditions of each are so well marked, that analysis leaves no doubt as to which kind of derangement was the cause of each depression.

PART III

**ANALYSIS OF ALL THE INDUSTRIAL DEPRESSIONS
OF MODERN TIMES, WITH THE EVIDENCE
SHOWING FROM WHAT CAUSE THEY EACH
RESULTED**

CHAPTER XIII

ANALYSIS OF THE INDUSTRIAL DEPRESSIONS FROM 1833 TO 1887

THE six depressions which occurred during this period were each the result of an internal malady. They were brought about by a derangement within the industries themselves. Each of them prostrated the industries of the country for several years. Some of them were attended by financial panics, and some were not. Those depressions which were attended by panics commenced one or two years before the panics occurred, and continued from one to three years after the panic conditions had ceased to exist; and yet these depressions have gone down to history as having been caused by the financial panics which occurred during their continuance, although the panics commenced long after the industrial depressions were in full force, and the depressions had in each case been recognized as an existing condition by the entire community.*

THE FOUR YEARS' DEPRESSION FROM 1836 TO 1839 AND THE ACCOMPANYING PANIC OF 1837

The years 1834 and 1835 constituted a period of low prices in the United States.† The period was characterized by an abundance of money and credit, and a rapid increase in construction and all other branches of business. This was particularly the case in Great Britain,‡ the United States,§ and in France,|| the countries which

* Evidence establishing these facts will be given with the separate treatment of each period.

† Appendix Z.

‡ First Annual Report of the Commissioner of Labor, page 16.

§ *Ibid.*, page 55. || *Ibid.*, page 35.

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suffered most severely from the industrial depression. The increase in railroad building, which took place in these years, accurately reflects the general prosperity which obtained.* From a construction of 151 miles in 1833, there was an increase to 253 miles in 1834, and to 465 miles in 1835,† thus more than trebling the rate of construction within two years and exceeding in amount anything ever experienced up to that time. The industrial revival reached its apex in the high-water mark of prosperity, in 1835. Towards the end of that year, the demand for delivery of materials so greatly exceeded the possible supply, that prices commenced to advance rapidly.

During 1836 the price of No. 1 Foundry iron advanced, in Philadelphia, from \$32.00 to \$50.25 per ton, and Scotch pig iron, in New York, advanced from \$38.00 to \$65.00 (see Appendix A). The blighting effect of the advance commenced to reveal itself early in 1836, before it had advanced as much as 10 per cent. Railroad building fell from 465 miles in 1835 to 175 miles in 1836,‡ which was a year before the panic. As manufacturing and construction fell off in volume, the materials ordinarily consumed in these industries commenced to accumulate. During the latter part of 1836, the accumulation of unsold goods became alarming, and in the spring and summer of 1837 prices of all commodities dropped enormously, spreading loss and disaster on all sides. Iron fell off in price during the first seven months of 1837 nearly the full amount of the gain it had made in price the year before (see Appendices A & Z). The industries fell to their lowest point in the latter part of 1836, which was a year before the financial panic occurred. The panic must of necessity have intensified the gloom and added to the losses which the depressions had caused, but it does not appear to have lessened the volume of the industries, which had already been reduced to their lowest ebb. This is well

* Appendix O.

† Statistical Abstract of the United States, 1908, page 248. ‡ *Ibid.*

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illustrated by railroad building, which dropped from 465 miles in 1835 to 175 miles in 1836, increased to 224 miles in 1837, and to 416 miles in 1838.*

As the actual construction of this period commenced to fall off early in 1836 (see Appendix O), it is plain that the contracts for it must have commenced to fall off as long before this time as the time of contracting antedated the time of completion of the construction. This would have undoubtedly thrown the contracting period for large enterprises back into 1834 and 1835, at which time, as will be seen by referring to Appendix Z, the advance in prices of iron had not amounted to as much as 10 per cent. Thus it is seen that the instinctive desire for gain was as much in evidence early in the century as at the present time. Mark also the significant fact, that the depression was at its worst in 1836, a year before the financial panic. Even as high an authority as the late Hon. Carroll D. Wright claims that this depression was caused by financial trouble,† but he gave no evidence to support this claim. Without doubt he simply accepted the same error that the rest of the world had accepted. Had the Commissioner proceeded by analysis, and through that method realized the opposite character of the causes of panics and depressions, he would undoubtedly have excluded all financial measures from the search, and thus have been led to discover the truth.

Industrial conditions in Great Britain, France, and Belgium, from 1832 to 1835, bore a marked resemblance to those in the United States.‡ Each experienced great increase in the volume of the industries, easy money, great prosperity, and great advance in the price of labor and construction materials. Germany at that time was not a united empire, but Prussia and some of the other German states had made considerable progress in manufacturing. The depression in the industries appears to

* Statistical Abstract of the United States, 1908, page 248.

† First Annual Report of the Commissioner of Labor, page 55.

‡ *Ibid.*, pp. 15-35-44.

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have commenced much earlier, and to have been most severe in Great Britain and France and least so in the German States. This was entirely logical. England and France were the leading manufacturing nations, and had been the largest iron-producers of the world for centuries, while Germany was far behind them in the extent of her manufacturing industries.

History shows that where iron is most largely produced it is most largely consumed, and where iron is most largely consumed, there the use of machinery and product of manufacturing is greatest. Of the two countries, Great Britain was threefold the largest producer of iron, and much the greatest in the manufacturing and mechanical industries. She commenced to experience the revival of her industries one or two years before it came to the other countries; she experienced the effect of high prices first, and in consequence her industries were on the down grade one or two years in advance of the other countries.

Compared with to-day, the industries in these nations were small at the period under discussion; but such as they were, the great advance in price of construction materials seems to have had a disastrous effect upon them, and with a degree of severity directly proportioned to its magnitude.

All five of the countries named experienced a financial panic, Great Britain near the close of 1836 and the United States near the close of 1837.

THE THREE YEARS' DEPRESSION FROM 1846 TO 1848

The years 1843 and 1844 constituted another period of low prices.* The industries commenced to revive in 1844, but did not gain full headway, as they were checked by a sudden and enormous advance in prices in the spring of 1845 (see Appendix Z). The volume of contracts made during the low-priced period helped business moderately for a time. During the next eighteen months,

* See Appendix Z.

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prices declined steadily. By August, 1846, they had settled back nearly to the low level of two years before, after which contracts for construction revived rapidly, and the latter part of that year and the year 1847 was a period of marked prosperity, surpassing anything ever before experienced. In the latter part of 1847, prices again advanced, contracting for construction was again checked, actual construction fell off in 1849, and did not again revive until stimulated by the low-priced period of 1850 to 1852.

This depression was one of great severity. No financial disturbance of sufficient severity to be designated as a panic occurred during its continuance, yet the depression was much more severe upon the industries than the depression of 1857, which was attended by a panic. The public to-day hardly remembers this depression, simply because it was not accentuated by a panic.

THE THREE TO FOUR YEARS' DEPRESSION FROM 1855 TO 1858 AND THE PANIC OF 1857

The years 1850, 1851, and part of 1852 constituted a third period of low prices,* during which all the industries revived. The volume of actual construction during the latter half of 1852 carried the demand for construction materials beyond the capacity of the country to supply, and prices advanced rapidly. Between the summers of 1852 and 1854, No. 1 Foundry pig iron advanced 87 per cent. in Philadelphia, and 163 per cent. in Cincinnati. Scotch pig iron advanced 123 per cent. in New York.†

This period of two years was a remarkable demonstration of how perfectly prices regulated the volume of contracts for construction, and how perfectly the supply of materials regulated prices.‡ As far as the United States was concerned, the famine in the iron supply was most severe in the west. Prices there advanced more rapidly and to a greater degree than in the east, and the check to

* See Appendix Z. † See Appendices A and Z. ‡ See Appendix Z.

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construction with its resultant depression was much more severe. In Great Britain, the supply of iron was so ample in 1853 that prices declined enormously. The apex of prosperity in the industries was reached in some sections of the United States in 1853, and in others in 1854. The decline in the price of Scotch iron helped business in Great Britain and the eastern States, and in these places the height of prosperity came in 1854. The severity of the depression which followed was, in some places, greatest in 1854, and in others in 1855, which was from two to three years before the panic.

Business revived somewhat in 1856, following the great decline in prices in 1855,* but this revival occurred when stocks of iron and other construction materials were almost exhausted, and prices advanced again almost immediately. This again brought a check to construction. The panic of 1857 occurred while the industries were already down to a depression basis. In fact they were at a much lower ebb in 1855 than during or after the panic.

This period of depression has gone down to history as one of the most severe on record. On the contrary, the facts show that it was simply the short-lived panic and its financial results which were so severe. The industries were not as much affected as they were in the two periods of depression, in and about 1847 and in and about 1867, which were not attended by any financial disturbance of sufficient severity to be called a panic.

All of the pronounced features of a typical period of boom and depression, namely, the revival in the volume of business on low prices, the abnormal advance in prices, the decline in the volume of the industries, followed by an accumulation of unsold goods and a fall in prices, had taken place at least two years before the financial panic.† This was conclusive evidence that the depression was entirely independent of the panic.

This period is particularly interesting, as it illustrates

* See Appendix Z.

† See Appendices O and Z.

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the hopeless jumble of cause and effect, arrived at and accepted by the public mind, through synthetic reasoning. No matter how separate and distinct may be the conditions of depressions from the conditions of panics, and no matter how much earlier the depression may occur than the panic, yet, in after years, the panic will invariably be accepted as having been the cause of the depression, simply because a panic, being vivid and startling, is the only thing remembered after a few years have elapsed.

This mistake is not peculiar to the United States. It is the same in the other four industrial nations. The depression occurred in England in the latter part of 1854 and in 1855, in Germany and Belgium in 1855, and in France in 1856. In England the panic occurred in 1857, which was two years after the depression commenced, and yet there, as well as here, the public now believe the panic to have been the cause. In France they had no financial disturbance of sufficient severity to be called a panic, and there, strange to say, they attribute the depression to "the panic in the United States," *although the panic in the United States occurred nearly a year later than the depression in France.*

THE FIVE YEARS' DEPRESSION FROM 1865 TO 1870

The years 1860, 1861, and the first part of 1862 constituted the fourth low-priced period.* In 1862 commenced what we have in later years learned to call a boom. The demand for iron doubled within a few months, and, as it was impossible to supply such a demand, the price advanced enormously. The war, which had helped to depress business in 1861 and 1862, helped to increase it in 1863 and 1864. For several months during 1864 there was an iron famine. On several occasions the price of iron was advanced \$5.00 per ton, between the afternoon of one day and the morning of the next. Many factories were time after time obliged to close their works because

* See Appendix Z.

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of the lack of iron, although they had demand enough to have kept them running night and day. Consumers fairly pleaded with the iron merchants for even a little to tide them over the stringency. As a special inducement, some consumers deposited money with the iron merchants, weeks in advance, simply with the idea of establishing a prior claim on the first iron that could be spared. Some consumers promised their entire future trade to certain merchants, if they would give them the preference on the first iron they received. Others threatened never to deal with iron houses who would not keep them supplied with iron. Scotch pig iron, by 1864, had advanced 300 per cent. in New York, No. 1 Foundry 295 per cent. in Philadelphia, and 344 per cent. in Cincinnati.* For a time, all that could be produced or imported was taken, but during the latter part of the advance, which ranged from \$35.00 in August, 1863, to \$80.00 in August, 1864, the situation changed. Construction and manufacturing for war purposes continued, but for other purposes investment construction came almost to a standstill. The consumption of iron, which had advanced from 725,000 tons in 1862 to 1,116,000 tons in 1864, dropped to 882,000 tons in 1865. Construction fell off tremendously. Stocks of construction materials accumulated rapidly on all sides, and the price of iron fell 50 per cent. within the next ten months.

The public attributed all these remarkable occurrences to the great Civil War. There is no doubt that the war had a great influence, but there was no war in England, France, Germany, and Belgium, yet, with the exception of Germany, they all suffered severely from an industrial depression. Germany suffered less, because her industries were less extensive. Iron was not so powerful a factor with her in those days, and prices did not realize so large an advance. The industrial depression was very severe in three of these countries, and lasted for several years in all four of them. In 1866, during the depression,

* See Appendix A.

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there was a financial panic in England and in France, but this did not take place until the depression had been felt for more than a year; moreover, there was no panic in either the United States, Germany, or Belgium, although a depression existed in all three. This would seem to indicate that some depression cause, common to them all, and entirely outside of the panics, was simultaneously at work in each of these five countries.

THE FOUR TO FIVE YEARS' DEPRESSION FROM 1872 TO 1876 AND THE PANIC OF 1873

The years 1870 and 1871 constituted the fifth period of low prices,* during which all the mechanical industries revived. The consumption of pig iron rose from 1,665,000 tons in 1870 to 2,548,000 tons in 1872.† Railroad building in 1871 reached the enormous proportion of 7,379 miles,‡ the largest railroad construction ever known up to that time. The advance in the price of Scotch pig iron in New York from January, 1871, to September, 1872, amounted to 103 per cent., and the prices of all other construction materials advanced in its wake, while advances in the price of labor and strikes for higher wages were of frequent occurrence.

Reflecting these advances in labor and materials, the cost of finished construction advanced from 50 to 100 per cent., from the spring of 1871 to the summer of 1872. The effect of the advances in price, in checking the volume of contracts for new constructive enterprises, was not only early, but rapid and pronounced. Contracts had almost ceased at the beginning of 1872. Railroad construction dropped from 7,379 miles in 1871, to 5,878 miles in 1872, to 4,097 miles in 1873.§ The imports of iron and steel and the manufacture thereof, dropped from 1,325,034 tons in 1872 to 707,661 tons in 1873. The production of rails commenced to fall off in January, 1872, twenty-

* See Appendix Z. † See Appendices Z and A.

‡ United States Statistical Abstract.

§ United States Statistical Abstract, also Appendix O.

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one month before the panic, and declined steadily from that time.* Thus for twelve to twenty-one months before the panic of 1873 took place, the microbe of industrial depression was shown to be at work. Within the twelve months immediately preceding the panic, the mechanical industries had fallen off largely. The price of pig iron had dropped \$10.00 per ton, bar iron \$39.00 per ton, and iron rails \$19.00 per ton.

None of these calamities was the effect of a panic. No panic conditions showed themselves until the industrial conditions had already brought the mechanical industries to a very low ebb, but not to its lowest ebb, as construction in this case continued to fall off in volume for about two years after the panic.

This is another illustration of how certainly every long-lived and mysterious depression which is accompanied by a panic goes down to history as the effect of the panic, no matter what overwhelming proofs may be given to the contrary. The public in after years only remembers the startling and spectacular panic.

In Great Britain it was the same. The panic came in November, 1873, while the depression commenced from one to two years before. From the following quotation, it can be seen how exactly the conditions surrounding the mechanical industries in England during 1872 corresponded to those in the United States. "The Engineer," of London, in February, 1873, says:

"The progress of events during 1872 will not soon be forgotten by engineers. The position assumed by the working classes, and the unprecedented demand for iron and machinery, combined to raise the cost of all the principal materials of construction to a point absolutely without parallel."

"The Economist," of London, in March, 1873, said:

"Of all the events of the year (1872) the profound economic changes generated by the rise of prices and wages in this country, in Central and Western Europe, and in the United States, has been the most full of moment."

* Failure of Jay Cooke & Co., September 18, 1873. — Stock Exchange closed September 20, 1873.

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CONDITIONS IN THE OTHER INDUSTRIAL NATIONS AT THIS PERIOD

The business conditions in Great Britain, which at this time produced about one half of the pig iron consumed in the world, and was the greatest industrial nation at that period, are very instructive. The panic precipitated by the failure of Overend, Gurney & Co., on May 12, 1867, had about spent its force by the end of the year. During the greater part of 1868-1869 and 1870 prices ruled low, and the industries revived rapidly. The years 1870, 1871, and 1872 comprised a period of wonderful activity in the industries and prices of labor, and construction materials advanced enormously. The Franco-Prussian war, which broke out so suddenly in July, 1870, had but little depressing effect. The interest rate was $3\frac{1}{2}$ per cent. on July 21, 6 per cent. August 4, and $2\frac{1}{2}$ per cent. September 29. A tremendous amount of construction was undertaken in 1871 and the first part of 1872. The unnoticed and mysterious down-turn in the industrial tide came early in 1872, and although prices made their final and greatest advance in 1873, the actual volume of the industries was much less in 1873 than in 1872, and less in 1872 than in 1871. A reduction in wages, considered imperative before the close of 1872, brought on a serious strike. The Bank of England's rate was advanced from 3 per cent. August 21, to 4 per cent. September 25, and 9 per cent. November 1, which was contemporaneous with the financial panic. Thus that country experienced the premonitory symptoms of a down grade in the industries a year before the symptoms of a down grade in the finances, and realized the actual and visible effect of the down grade in the industries a year before the visible effect of the down grade in finances became apparent; yet the industrial depression in Great Britain has erroneously gone down in history as the result of the financial panic.

This universal error is the result of failure to recognize

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that finances and industries are two separate and distinct forces, that each can be affected by the other, but that each has such different qualities that it may for a time move entirely independently of the other.

Turn now to the relative conditions of France and Germany (then a united empire). France had recently paid Germany the enormous war indemnity of 5,500,000,000 francs. With this, Germany paid her national debt, making money abnormally abundant in Germany and correspondingly scarce in France. As a result, the industries in Germany were keenly stimulated; bankers actually had their agents out, soliciting manufacturers to take loans for the enlargement of their industrial enterprises at 1 per cent. per annum, and even as low as $\frac{3}{4}$ of 1 per cent. The demand for labor and materials rose to unheard-of figures. The microbe of industrial depression (high prices of construction) was at work with great vigor. The down-turn in the tide of industrial prosperity came and grew rapidly, while money was so plentiful that it was begging for borrowers. The motive which controls the volume of the industries in all lands and at all times—"the instinctive desire for gain"—stimulated the industries to an enormous extent while prices were low, but it checked them to an enormous extent soon after prices commenced to advance, in spite of the great abundance of idle money and the abnormally low interest rates.

The check to the production of factories, stores, and other enterprises resulted in an enormous accumulation of the materials ordinarily consumed in these enterprises. The accumulation of unsold goods resulted in a continued great fall in prices, and many failures followed. As Germany's industries had by this time grown to great proportions, so she suffered greatly from the industrial depression which followed. For years, all her industries remained in a badly crippled condition, and did not show signs of recovery until 1879.

Now turn to the relative condition of France during

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this same period. Her finances were crippled by the stupendous war indemnity she paid to Germany. Her whole population made haste to pour their savings into the treasury of the nation. The war indemnity was paid more quickly than any one supposed possible. It left the people cramped for means, and in consequence there was no great revival in the industries. Prices rose moderately, it is true, but it was largely in consequence of the demand for materials from the prosperous nations about her. The moderate advances in prices had their due effect, but this effect was commensurately small, as the revival of the industries had been small. The result was that the industries of France, during this period, suffered less than the industries of any one of the great industrial nations. In fact, statistics show very little change in the volume of her industries at any time during this period. She suffered from a financial panic in 1873, but this was to be expected in her crippled financial condition.

Now turn to Belgium, small in size but proportionately great in her industries. She was the only one of the five industrial nations that did not experience a financial panic during this period. On the contrary, she suffered from a plethora of capital. Interest on deposits fell to $\frac{1}{4}$ of 1 per cent. per annum, and good commercial paper was taken eagerly at $\frac{3}{4}$ of 1 per cent. and 1 per cent., and yet she suffered very seriously from an industrial depression, which lasted from 1873 to 1879. She experienced the same condition of extraordinary prosperity to her industries in 1870, 1871, and 1872, with consequent abnormally high prices, but notwithstanding the great congestion of money in her bank vaults, her captains of industry showed the same inclination to pour their money into all kinds of industrial enterprises when prices were low, and to hold on to their money when prices were high. They possessed the same "instinctive desire for gain" that other people have, and "that ever-present motive" worked with them in the same way that it did with other people, but they

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did not suspect it, nor recognize it as the cause of the depression.

The citizens of Belgium who wrote upon economic questions at that time appear to have been very much embarrassed in their efforts to account for this industrial depression. In the United States, Great Britain, France, and Germany it was apparently a simple matter, for when the financial panics, which occurred in each of those four countries, had subsided, they had simply to attribute the industrial depression which continued to the financial panic. The great mass of the people accepted this explanation, and it has so gone down in history.

In Belgium, however, people were driven to account for it in some other way. Georges de Laveleye, editor of the *Moniteur des Intérêts Matériels*, of Brussels, declared that the long-depressed period and the accumulation of money was the consequence of a definite stage of industry having arrived, which was never before reached, namely, that "the industrial activity of the last half-century had resulted in fully equipping the civilized countries of the world with economic tools, and that the work of the future must necessarily be repair rather than construction." What would M. de Laveleye have thought if he could have imagined the industrial growth which occurred in all the industrial nations thirty years later, represented by a volume of construction, in some of the nations, from 500 to 1000 per cent. greater than the construction which he predicted would never again be equalled?

It would be hard to find a period in modern times when general and financial conditions were so radically different in these five nations. Many of the contributory causes of prosperity and depression were pulling in opposite directions in these nations, but there was one condition, *high prices of construction*, which existed in all of them, and in the degree which this existed in each it checked construction in each. In the exact degree that construction was checked, each suffered from industrial depressions. This was a rare opportunity to have discovered

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the true cause of these mysterious industrial depressions. If any one had taken the time to analyze all the business conditions in each of these five nations, he must necessarily have discovered the one cause which existed in all of them and brought industrial depression to all.

THE FOUR YEARS' DEPRESSION FROM 1882 TO 1885

The years 1877, 1878, and the first half of 1879 constituted the sixth period of low prices.* In 1878 the industries commenced to revive. The consumption of iron rose from 2,500,000 tons in 1878 to 4,900,000 tons in 1881. The stock of iron was soon exhausted; prices commenced to advance, in the spring of 1879, and within twelve months Scotch pig iron had advanced 84 per cent. in New York, No. 1 Foundry 148 per cent. in Philadelphia, and 125 per cent. in Cincinnati.†

The unprecedented amount of manufacturing and construction contracts, placed while the low prices continued in 1878 and 1879, kept the mechanical industries at high tide well into the year 1882. The subsequent depression revealed itself gradually, and was not attended by a financial panic,‡ although there were many important failures, several minor money flurries, and some Clearing House certificates issued in 1884. Railroad building, which was 11,568 miles in 1882, the largest ever known up to that date, fell back to 6,741 miles in 1883.

The down grade continued steadily, from 1882 to 1885, when railroad building had fallen to 2,866 miles, and the consumption of iron had fallen to 4,348,844 tons. This depression lasted from three to four years. The industries did not commence to recover until 1886.

This depression was experienced by all the five industrial nations, and was purely industrial in character, if we except the minor money flurries in the United States and France, which can hardly be called panics. The depression is on record as having commenced in England

* See Appendix Z. † See Appendix A.

‡ First Annual Report of the Commissioner of Labor, page 64.

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a few months later than in the other four countries. It continued about four years in all five countries, and was so severe and long-continued that several government commissions were appointed to investigate its cause, yet, like the depressions of 1847 and 1867, because there was no great and general financial panic attending it to make it impressive, it is to-day hardly remembered in any of these countries.

REMARKS ON THE WHOLE PERIOD, 1832 TO 1886

Up to this point we have considered three industrial depressions, known as the depressions of 1847, 1867, and 1882, during which there were in the United States no severe accompanying panics, and three, known as the depressions of 1837, 1857, and 1873, during which very severe financial panics occurred; but chronological history shows that in the three last named periods their prominent events, namely, the revival in the volume of the industries, the abnormal advance in prices, the decline in the volume of the industries, the accumulation of unsold stocks, the fall in prices, and the recognized condition of industrial depression, had taken place from one to two years before the panics took place.

Among the characteristics common to all of these six depressions was a radical shrinking in the volume of the industries, without any universally recognized cause, and the shrinkage in each case commencing when both financial and industrial conditions appeared to be so prosperous that the public were almost unanimously predicting a long continuance of prosperity.

In the case of the three depressions which were accompanied by severe panics, the shrinkage in the volume of the industries commenced a long time before panic conditions appeared. In the 1837 period, the shrinkage amounted to more than 50 per cent. in 1836, a year before the panic. In the 1857 period, the shrinkage was greatest in 1854 and 1855, two and three years before the panic. In the 1873 period, the shrinkage commenced

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twenty-one months before the panic. The industrial depressions were existing facts before any sign of panic, in each of these three cases. The depressions were something distinct and apart from the panics, and would have occurred and run their course even if there had been no accompanying panic. The depressions which culminated in 1847, 1867, and 1882, although not attended by severe financial panics, lasted as long as the three depressions cited above, which *were* attended by severe financial panics.

While it is true that industrial depressions do at times result from financial panics, just as they do at times result from war, pestilence, famine, or some other great calamity outside of the industries themselves, yet when this is the case, the cause is apparent to all. There is no mystery about such depressions.

But depressions which originate from panics are not the subject of this investigation. What the industrial nations are seeking to know is, what causes the depressions which take place in the absence of any recognized cause—the depressions which come in the midst of “great prosperity and bright prospect for its continuance.” What is the mysterious and powerful force which is so overmastering and irresistible that it overrides and submerges all the visible and powerful causes of prosperity? What is this cause, which is so obscure and mysterious as to escape notice, and which is so hidden and perplexing that it has baffled all the searchers, both national and individual, who have for years endeavored to discover and expose it? What brings about these stupendous national calamities, which develop so mysteriously, which creep over and become fastened upon a country before they are even suspected, which transform industrial exhilaration into industrial gloom, and which result in a reduction of thousands of millions per annum in the earnings of the people? This is the kind of depression which the world has learned most to dread, and which so many of the nations have appointed government commissions to investigate in the hope of discovering their cause.

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No one can make a careful analysis of this period of fifty-five years, between 1832 and 1887, without being profoundly impressed by the fact of how completely the price of iron and presumably of all other construction materials controlled the volume of construction. Wars, financial panics, etc., undoubtedly had their effect in accelerating or retarding the existing trend of business, just as everything else had its effect, but the combined effect of all these external things does not in a single instance appear to have changed the inexorable trend of investment construction. In this period, as well as all periods, large construction depends upon whether or not it can be produced at a cost which promises to pay a satisfactory revenue.

The six depressions we have just reviewed are six object lessons. They extend over a period greater than half a century, during which the industries of the country grew from an iron consumption of about 200,000 tons to a consumption of over 6,000,000 tons. This period was long enough to have insured the occurrence of almost everything which influenced the increase or decrease in the volume of business. During this period the country was under the control of two different political parties. Tariff was part of the time high, and part of the time low; paper money was during long periods at par with gold, and at one time gold was worth two and one half times as much as paper money. The period covered time of war and time of peace; the fluctuations in the price of the necessities of life, of labor, and of construction materials, were enormous, and in the latter occurred no less than ten times (see page 204). Many panics occurred; some of them were very severe, while some were so slight as to be now almost forgotten. *It would be difficult to name any kind of occurrence or condition which affects business, that did not take place during that period. But in all these numerous and varying conditions it cannot be discovered by the most careful analysis that the six depressions occurred in any one of these five nations with, or*

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following, any one of these conditions, except high prices of construction, while this condition preceded each one of the six depressions contemporaneously in all of the five industrial nations, with the same certainty that sunrise precedes sunset.

CHAPTER XIV

ANALYSIS OF THE INDUSTRIAL DEPRESSIONS FROM 1887 TO 1897

THE five depressions which occurred during this period were each the result of an external malady. They were caused by some derangement in the financial system. The industrial system was entirely free from any internal malady during this whole period. The volume of the industries declined quickly and largely when each of these financial disturbances occurred, and commenced to revive rapidly as soon as they were alleviated or removed.*

THE DEPRESSION CAUSED BY THE PANIC OF 1890

The year 1890 opened under highly favorable industrial conditions. The effect of the depression of 1882 to 1885 had passed away. The business of the country had experienced four years of recuperation (1886 to 1889) during which the consumption of iron had steadily rise from 4,300,000 tons in the year 1885 to 7,700,000 tons in the year 1889, and from a 6,900,000 tons-per-annum rate in September, 1889, to a 9,400,000 rate in March, 1890.

* In reviewing this chapter, and those which come after it, we have had the advantage of statistics, from which we could calculate and portray in Appendix Z the *monthly* fluctuations in the rate of production and consumption of iron, which so correctly reflect the fluctuations in construction. Such statistics for earlier years are unfortunately not attainable. If one would appreciate their value, compare the *annual* production and consumption of iron in 1896 and 1897 with the *annual rate of monthly* production and consumption as shown in Appendix Z. Had such statistics been obtainable for 1833 to 1837, the prompt and inexorable effect of high and low prices during that period might have been made more vivid. As the annual rate of each month's production is given from 1890 on, we will not hereafter refer so constantly by footnote to Appendices L and M, but suggest that the reader refer to them frequently, as they give a vivid picture of the changing conditions.

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A financial panic occurred in Great Britain in November, 1890, precipitated by the Baring troubles. It had a severe effect upon the industries of the United States, reducing them more than 35 per cent. within five months, as evidenced by the rate of iron consumption, which fell from a 9,200,000 tons-per-annum rate in November, 1890, to a 5,900,000 rate in April, 1891. The industries themselves, being free from any internal depression cause, commenced to recuperate almost immediately after panic conditions ceased. Within two months the consumption of iron had risen to a 7,600,000 tons-per-annum rate, four months later had fully recovered, reaching the 9,400,000 tons-per-annum rate, and five months later was larger than ever before in the history of the country, having risen to a 10,000,000 tons-per-annum rate in March, 1892.

THE DEPRESSION CAUSED BY THE PANIC OF 1893

In June, 1893, a financial panic was precipitated in the United States by the unfavorable working of the Silver Coinage Law. This panic paralyzed everything for a time. The industries fell off 60 per cent. within five months, as evidenced by the rate of iron consumption, which fell from a 9,400,000 tons-per-annum rate to a 3,800,000 rate within five months. This was one of the most severe financial disturbances the country had experienced for many years. It necessitated a call for a special session of Congress. The House of Representatives promptly passed a bill repealing the Silver Coinage Law, but the Senate's bill to the same effect was not passed until October. Immediately after the passage of the bill, the industries commenced to revive. The consumption of iron increased from a 3,800,000 tons-per-annum rate in October, 1893, to a 6,500,000 tons-per-annum rate within six months, thus regaining more than half the loss caused by the panic, at which juncture the industries were again affected by the financial condition.

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DEPRESSION CAUSED BY FINANCIAL DERANGEMENT OF APRIL, 1894

During April, 1894, it became apparent that the repeal of the Silver Coinage Law and the sale of United States bonds was not sufficient to protect the \$100,000,000 gold reserve, and finances were again disturbed. Within two months a decline of more than 50 per cent. in the volume of the industries had taken place, iron consumption having fallen from a 6,500,000 tons-per-annum rate in April, 1894, to a 3,200,000 rate in June, 1894. At this juncture a sale of bonds replenished the gold reserve. The decline in the industries was more than recovered within the next three months. Although the large deficiency in the government revenues continued, and the legislation which caused the frequent depletion of the gold reserve, popularly known as "The Endless Chain," remained upon the statute books, the contending causes and conditions of prosperity were so overwhelmingly powerful that by September, 1895, industrial activity was greater than ever before in the history of the country, iron consumption having reached a 10,200,000 tons-per-annum rate.

DEPRESSION CAUSED BY THE "VENEZUELA PROCLAMATION" OF DECEMBER, 1895

The industrial activity, noted in the last paragraph, continued to increase rapidly until December, 1895, when iron consumption had reached an 11,200,000 tons-per-annum rate, at which period the President's Venezuela message was sent to Congress, and another panic was precipitated in Wall Street. The industries fell off 24 per cent. in seven months. Iron consumption fell to an 8,500,000 tons-per-annum rate.

DEPRESSION CAUSED BY THREATENED ABOLITION OF THE GOLD STANDARD IN JULY, 1896

The financial system had not recovered from this last blow, when the gold standard was threatened by the

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presidential campaign of 1896. Financial affairs were still more seriously disturbed. Call money on the New York Stock Exchange advanced to 100 per cent., and the volume of industries, already depressed in July, declined in volume 29 per cent. within two months after the nominating convention which threatened the gold basis, iron consumption falling to a 6,000,000 tons-per-annum rate in September, 1896. The industries revived rapidly after the election in November, 1896, regaining their last decline within two months, and by November, 1897, were again larger than ever before in the history of the country, iron consumption reaching an 11,600,000 tons-per-annum rate.

REVIEW OF THE FIVE DEPRESSIONS BETWEEN 1890 AND 1897

Here we have five cases, November, 1890, June, 1893, April, 1894, December, 1895, and July, 1896, each showing unmistakably all the conditions necessary to class them as depressions caused by external derangements. In each of these cases a serious financial disturbance caused an immediate and enormous depression in the industries; in each case the external cause was known and recognized, and in each case the industries revived as soon as the financial disorder was alleviated or removed. The great increases and decreases which took place in the volume of the industries during this period are correctly reflected in the fluctuating rate of iron consumption which took place during the different months.* Throughout this entire period the industries were not only free from any potent depression causes within themselves, but the incentive of abnormally low prices for construction materials was so powerful that the industries bounded forward rapidly whenever there was the least sign that the financial trouble was over.† The turn in the tide which grew to the boom of 1899 occurred while the unfavorable redemption law, popularly known as "The Endless

* See Appendix Z.

† *Ibid.*

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Chain," was still in existence, and within a period when the Government's annual revenues changed from \$105,000,000 surplus to \$89,000,000 deficiency. "The Endless Chain" brought the country to the verge of bankruptcy, a short time before, but counted for nothing when the elements of industrial prosperity obtained the mastery.

STRUGGLE BETWEEN FAVORABLE INDUSTRIAL CONDITIONS AND UNFAVORABLE FINANCIAL CONDITIONS

Many people speak of this period as the panic of 1893, while others more correctly speak of it as the financial difficulties of 1890 to 1896. As a matter of fact, this entire period was a struggle between favorable industrial conditions and unfavorable financial conditions. At no time between 1889 and 1898 was there anything within the industries themselves to prevent their revival and a subsequent period of maximum prosperity, or what we call a boom. The depression of 1882 had spent its force, and a long period of six years had followed during which the country had time to recuperate, liquidate, and get into a settled and sound condition. Everything indicated that the country was in such a condition during the greater part of the year 1889. The consumption of iron had risen from 4,300,000 tons in 1885 to 8,800,000 tons in 1890. A period of low prices had occurred in 1885 and 1886, and again in 1888 and 1889, and everything in the industries was promising, when the panic of 1890 occurred. Previous to this, the country, having passed through all the conditions of convalescence and full recovery, was not only industrially ready for a revival in 1889, but continued industrially ready during all the time between 1889 and 1899; but the series of financial disturbances checked each effort until towards the close of 1896, at which time the industrial conditions finally obtained the mastery.

That the depressions in each case were the effect of the external cause was clearly shown by the fact that the industries declined largely and quickly after each panic,

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and revived largely and quickly as soon as panic effects abated or disappeared.*

The most severe financial panics are disorders which last but a few months at most, often but a few weeks or days, sometimes but a few hours. Notably, the panic of May 9, 1901, when one of the most astonishing panics in history commenced on the New York Stock Exchange, reached its height, and ended within five hours. It is impossible for a financial panic, no matter how severe, to cause a prolonged industrial depression when the conditions which produce industrial depressions do not themselves exist. A severe financial panic may bring a severe temporary check to the industries, as shown in above cited cases, but such checks will be short-lived.

* See Appendix Z.

CHAPTER XV

ANALYSIS OF THE INDUSTRIAL DEPRESSIONS FROM 1897 TO 1908

THE three periods of recovery, boom, and decline in the industries, during the above twelve years, present a vivid and instructive object lesson. The fact that the first period was not accompanied by any financial disturbance, while the last one was, gives another illustration of how soon the public forgets depressions which are not accentuated by a panic. The sequence of pertinent events which followed the three advances in prices and the three declines in prices, in this twelve-year period, were substantially the same as in the six periods described in Chapter XIII. This being the case, a detailed description of one will be sufficient to give a clear idea of all of them. We shall, therefore, describe in detail the one from 1897 to 1900.* The decline in the industries in 1907 was unquestionably precipitated by the panic in October, as construction was at its height when the panic occurred; but the microbe of depression had already

* On referring to Appendix E, it will be observed that the average price of the four principal grades of iron in five of the chief iron markets of the country in July, 1897, was \$9 per ton, and on referring to Appendix Z it will be observed that this was the lowest average price reached in this country during the nineteenth century. For the purpose of conveying a clearer impression of the changes in prices, this lowest price will hereafter, be spoken of in this book as *zero*, and the fluctuations in prices as such and such a percentage above zero. For the purpose of conveying a clearer impression of the changes in production and consumption, the volume of each will be spoken of, not as so much per week or so much per month, but as the *per annum rate of each month*. For instance, the weekly production of iron during January, 1896, was 203,946 tons, equivalent to an annual production of 10,605,192 tons; therefore, the production of iron in January, 1896, will be spoken of as at "a 10,600,000 tons-per-annum

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done its fatal work during the high-priced period in 1906, and the disease would have broken out upon the surface in 1903 even if there had been no panic. This will be fully demonstrated later on in this book.

THE REVIVAL, BOOM, AND DECLINE, FROM 1897 TO 1900.

THE REVIVAL IN 1898 AND 1899

The years 1897 and 1898 constituted a low-priced period.* In January, 1897, pig-iron was 13 per cent. above zero. In July it was at zero, and in December, 1898, it was 11 per cent. above zero. The average price for the twenty-four months was but 8 per cent. above zero. The visible revival of the industries from October, 1896, to May, 1897, although rapid and large, was not more in amount than a natural recovery from the disastrous effect of the threatened overthrow of the gold basis in the summer of 1896.† Those who watched conditions closely, however, knew that future-delivery contracts for structural materials had increased enormously, before the zero point was reached in July, 1897, that stocks of construction materials, particularly of iron, had been decreasing since April, and that iron prices commenced to advance in the West and South in August.

The far-seeing ones, referred to on page 128, were making large contracts for investment construction as early as the first half of 1897, and it was this investment construction which carried the consumption of iron up to a 12,000,000 tons-per-annum rate during the latter half of that year. This exceeded anything the country had ever experienced, but the movement did not halt

rate." Monthly consumption will be spoken of in the same manner. The stock of iron on hand, when mentioned, will be the total of the stocks in yards of the furnace companies and in the yards of the Warrant Company. The statistics of production, consumption, and prices of iron used in preparing Appendices L and Z are from the Annual Reports of the American Iron & Steel Association of Philadelphia; the Monthly Reports of the Western Pig Iron Association of Pittsburg; the Annual Reports of the Cincinnati Chamber of Commerce, and the weekly issues of "The Iron Age" of New York.

* See Appendix Z.

† *Ibid.*

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here. The low-priced period continued all through the year 1898; as long as the low prices continued the contracts for important investment construction continued, and by the end of 1899 the consumption of iron had risen to a 15,800,000 tons-per-annum rate.

That this was chiefly new construction is evident from the fact that it raised the capacity of the country to a new and higher plane. That it was chiefly contracts for large enterprises is evident from the fact that during these few months it brought into existence factories, mills, etc., which raised the country from a plane of industrial production which consumed 9,000,000 tons of iron per annum to a plane which consumed 13,000,000 tons. There are no statistics gathered from which we can determine precisely when the contracts were signed for this large volume of extra construction, but we know that the work in producing it was practically finished by April, 1900, from the fact that iron consumption fell from a 15,800,000 tons-per-annum rate to a 10,800,000 tons-per-annum rate within four months from that time. Now, if the average time which elapsed between the signing of the contracts for this construction and the actual completion of the construction was as much as fifteen months—and the table on page 114 as well as Appendix L indicate that it was even more than this—then the contracts must have been made before the end of 1898, and before iron advanced as much as 10 per cent. above zero. Is it not evident, therefore, that the contracts for investment construction were substantially checked soon after the opening of 1899? The current necessity construction with ordinary repairs and replacements, much of which is made from week to week and without written contracts, was amply sufficient to account for all the materials that were sold at the higher prices.

These are the conditions which explain why the manufacturers of iron and other construction materials realized, during this industrial boom, so small an advance on the materials they manufactured and delivered, notwith-

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standing the price of iron was advancing rapidly all the way from zero to 147 per cent. above zero.*

THE SPECTACULAR ADVANCE IN THE PRICE OF IRON IN 1899

It was the large volume of investment construction thus put under contract so gradually and quietly that no one realized its magnitude, which finally swelled the demand for construction materials so far beyond the capacity of the country to supply, and which ultimately carried prices to such abnormally high figures. Previous to this period, the largest year's production was 9,600,000 tons. In May, 1897, the furnaces of the country were producing it at a 9,100,000 tons-per-annum rate and had on hand 1,102,000 tons. This with the 216,000 tons in the storage yards of the Warrant Company amounted to a visible stock of 1,318,000 tons. This was the largest ever accumulated in the United States up to this date. In December, 1898, production was at a 13,000,000 tons-per-annum rate and there was still a surplus stock of 705,000 tons. Evidently no one yet realized the large amount of construction which was under contract, for prices were still but 11 per cent. above zero. After this date, however, the demand for materials to supply actual construction increased so enormously that within four months the surplus stock was down to less than seven days' production. Iron advanced to 16 per cent. above zero, in January; to 27 per cent. above, in February; to 52 per cent. above, in March; to 99 per cent. above, in July, and to 147 per cent. above, in December.

THE BOOM IN 1899

During this period of advancing prices, practically every old furnace stack that could be repaired was put in blast. Iron production was increased to a 15,800,000 tons-per-annum rate by November, and the iron stocks were practically exhausted. Old cast and wrought scrap iron, which had for years collected in out-of-the-way places,

* See Chapter XI and particularly pages 118 and 119.

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where in depressed times it did not pay to collect and transport it, was gathered up, transported, and consumed, to the extent of hundreds of thousands of tons. Almost anything asked for iron which could be delivered promptly was accepted. High as the quotations were for iron, large premiums above quotations were paid for any that could be delivered immediately.

The boom was at its height, and the indications of its continuance were most pronounced just before the downturn. People who had waited twelve months to get products which were promised in six, or who had waited two years and sometimes longer to get possession of houses, stores, factories, etc., which were contracted to be completed in one year, were frantic to get possession of them. Builders were urging manufacturers for products, and manufacturers were urging producers of raw materials, who in turn were behind with them. Very little work of magnitude was completed on time. It was simply impossible to procure labor and materials to accomplish it.

All through the last half of 1899 and the first quarter of 1900, the demand for labor and materials was intense. Money was actually paid to corrupt labor leaders to call a strike on one job and turn the workers upon the job of the party who paid the money. People hooted at the prediction that high prices would stop this prosperity. If high prices could stop prosperity, they said, it would have been stopped long ago. "Had not all branches of actual business increased as prices had increased?"

All this time the volume of unfinished work on the existing contracts for investment construction was growing less and less. Not so with actual construction, which up to November, 1899, absorbed everything which could be produced.

THE DECLINE IN 1900

All through the high-priced period of 1899, the microbe of industrial depression was doing its deadly work. When the year 1900 opened, the disease permeated the

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whole foundation of the industrial system; it only remained to eat its way through and break out upon the surface. All through the last three quarters of 1899, when bids were handed in on the plans and specifications for the immense amount of construction contemplated, the prices asked were so enormously above what the same work would have cost in 1897 and 1898, that one after another of the purse-string holders decided not to make contracts for anything but necessary construction until prices dropped back to normal figures.

DISEASE BREAKS OUT UPON THE SURFACE IN 1900

By May the disease commenced to break out upon the surface and soon became startlingly visible. Contractors who had bought materials for months ahead had little or no work to put them into; construction materials commenced to accumulate upon every side; consumption of iron fell from a 15,000,000 tons-per-annum rate in April to a 10,800,000 tons-per-annum rate in August. Sixty-two furnaces went out of blast in June and July, and forty more by the end of October; yet even with this large curtailment in production, 780,000 tons of iron had accumulated by October, and contracting for new construction, outside of actual necessities, was almost at a standstill.

It was these simple individual acts of the far-seeing investors which were quietly taking place during 1899, unnoticed and unheralded, that turned the tide of visible prosperity in May, 1900. This falling off in the making of new contracts took place so gradually and quietly that contracts had almost ceased being made, months before the country realized it. The sufferers looked for the cause in every place but the right one, probably because the right one was too simple, too commonplace, and was present so long before its effect was visible that it was not recognized and identified. Human nature demanded some great or mysterious cause for so great and mysterious a change.

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There was nothing new in this falling off in contracting during the height of prosperity, nor in this mysterious falling off in actual construction about thirteen months afterward. Eight times in the last eighty years the same thing has happened, and always from the same cause, yet the public has each time failed to realize the falling off in contracting when it occurred, or to suspect the real cause of the falling off in actual construction when that occurred.

Will any one question the assertion that this great check to investment construction was on account of high prices? Business anticipations were at the highest point; money was in the greatest abundance; the total amount in circulation, the amount per capita, the total deposits, the total cash in banks, and the loans and discounts had never been so great. Crops were tremendous.* There was not a cloud on the horizon. The demand upon architects for plans and specifications for new construction work was greater than they could possibly supply, notwithstanding the fact that their office forces had been largely augmented. In all our search during the first part of 1900 we were able to find but one man who did not expect a continuance of the tremendous rate of construction throughout the entire year of 1900, yet in the face of all these favourable conditions, and in the total absence of any recognized unfavorable condition, the industries suddenly fell off in the summer of 1900 to an extent that carried iron consumption down from a 15,000,000 tons-per-annum rate to a 10,800,000 tons-per-annum rate. This was substantially from a boom to a depression basis.

The whole course of events was perfectly simple. The extraordinary amount of investment construction contracted for in the low-priced period, which terminated about June, 1899, kept the business of the country up to its maximum capacity until about July, 1900, at which

* Comparative data in this paragraph taken from the United States Statistical Abstract of 1908.

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time the delayed investment construction was substantially completed, and the volume of actual construction dropped back to a depression basis.*

It is hardly likely that any generation will furnish a more vivid illustration of the effect of prices upon construction, and the effect of construction upon general prosperity, than was crowded into the four-year period between the beginning of 1897 and the end of 1900. If any reader doubts the power of prices over the volume of construction, let him examine carefully Appendix L in connection with the table on page 114. The interpretation we put upon this showing is: that the contracts for construction, made chiefly in 1897 and 1898, so greatly exceeded the capacity of the country to execute that it carried prices up to 147 per cent. above zero by December, 1899; that the making of such contracts for purely investment purposes was checked by these high prices, and had about ceased in June, 1899, but that the volume already made was so far in excess of the country's capacity to execute that it required thirteen months after that date to complete them. Immediately after this the volume of construction dropped to a necessity basis, until it was again increased by low prices.

THE REVIVAL, BOOM, AND DECLINE FROM 1901 TO 1903

During the decline in the industries in 1900, the price of iron fell within four months from 139 per cent. above zero to 86 per cent. above, and in September, one month later, to 52 per cent. above. The whole decline of the period was from 147 per cent. above zero to 46 per cent. above.

This sudden and great fall in prices changed the whole industrial aspect as if by magic. Consumption revived immediately, and by March, 1901, had not only fully recovered, but was greater than ever before.† The recovery was much quicker than in any previous revival in the nation's history. A great many individuals, firms,

* See Appendix L, and Table, page 114.

† See Diagram L.

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and corporations all over the country had plans and specifications of constructive work which had been prepared for them in 1899 and 1900, and which they had abandoned or postponed on account of the high prices then asked. Between these people and the building contractors, who had made the bids which had been declined, there were naturally negotiations and many efforts made by the contractors to get these enterprises revived, and most of them were revived during the low-priced period of 1901.

ILLUSTRATION

In the case of a little community in which the writer spent much time at this period and took the opportunity to investigate, there were twenty-three residences erected from 1898 to 1900, all contracted for during the low-priced period of 1897 to 1898. In the high-priced period, from 1899 to the first half of 1900, plans had been prepared and bids made on sixteen additional residences, all of which were declined solely on account of the high prices. In the latter part of 1900 and in 1901, after prices had dropped, these sixteen residences were put under contract and built in 1901 to 1903. This is a typical picture of what was going on all over the country at this time.

It was the high prices of construction in 1899 and the first part of 1900 which stopped the building of these sixteen residences. It was the low prices of construction in the last part of 1900 and 1901 which caused the owners to put the work under contract.

The great construction of 1901 and 1902 and the spring of 1903 would not have taken place but for the great fall in prices in 1900.

SEQUENCE OF EVENTS

It is not necessary to repeat here in detail the sequence of events which attended the revival, boom, and decline in the industries between the autumn of 1900 and the autumn of 1903. In all their main features they were

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the same as between the summer of 1897 and the summer of 1900, which have just been described in detail.

First came the low-priced period, then the great increase in construction contracts, then the great increase in demand for labor and materials, then the short supply of both and the spectacular advance in the price of iron, followed by all other construction materials; then the quiet and unnoticed falling off in contracts for investment construction; then the height of visible prosperity, money in abundance, intense demand for everything in the shape of construction materials which could be produced, and unbounded confidence in the future; then the high premiums for articles which could be delivered immediately, in the face of a decline in prices for future delivery; then the completion of the low-priced contracts, followed by the sudden decline in volume of construction.

In the period under consideration, prices of iron advanced from October, 1901, to October, 1902, from 54 per cent. above zero to 165 per cent. above zero. When the contracts for investment construction which were made during the low-priced period were completed, the consumption of iron dropped from a 20,200,000 tons-per-annum rate in June, 1903, to a 10,100,000 tons-per-annum rate within six months.

TWO OBJECT LESSONS

Here we have within six years two remarkable object lessons. During this period, there was no financial panic or other external event of sufficient importance to bring any check to the constructive industries. On the contrary, both of these checks commenced when the people saw nothing but bright prospects ahead and were predicting a continuance of maximum prosperity. There was absolutely nothing outside of the industries to give warning of these two sudden declines in the volume of the industries. The internal cause, on the other hand, was distinct and prominent, and the effects were direct and emphatic. When the demand for delivery of mate-

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rials exceeded the supply, prices advanced enormously. When prices advanced, contracts for construction fell off largely. When the volume of unfinished work on contracts grew alarmingly small, prices for future delivery of materials commenced to decline. When the extra volume of construction was completed, actual construction fell enormously. Then followed the flood of alleged causes, which included almost everything but the real cause.

THE REVIVAL, BOOM, AND DECLINE FROM 1904 TO 1907

The revival, boom, and decline which took place within the four years from 1904 to 1907 made up a period which was so different in some ways from the two periods just preceding it, or in fact from any former period, that it cannot be passed over by simply referring to it as a repetition of any previous period. The United States had but recently made great strides in the accumulation of wealth, which had increased from eighty-eight and one half billions in 1900 to one hundred and seven billions in 1904. This was an increase of eighteen and one half billions in four years, which, in amount, was greater than the entire accumulated wealth of the country in 1860, which was but sixteen and one sixth billions. The bank deposits of the country had increased in this four years from seven billions to ten billions, as against five billions in 1897.*

The country had never before faced such conditions. The revival which followed was not like a revival after a financial panic, nor like a revival after many years of depression. It was a revival after two nearby booms, in which the increase in business and wealth had been unprecedented in this country, or in any other country, and it developed features which were peculiar to itself. The two recent booms had both been brought to a sudden end, not by financial panics, nor any other great external calamity, nor by any aggregation of small contributory

* Statistical Abstract of the United States.

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causes, but solely by the abnormally high prices of construction. Whenever this cause has existed in any of the industrial nations during the last century, it has in due time and with inexorable certainty brought a sudden check to the industries of that nation. After each of the two booms referred to, the abnormally high prices dropped quickly, and the industries revived quickly, showing plainly that the declines in the volume of the industries had not been caused by an external disorder, and pointing clearly to what the internal disorder was.

There was absolutely nothing to cause these two sudden checks to the industries of the nation in 1900 and 1903, except the abnormally high prices of construction. That was all that was necessary to bring the depressions about. That was the one cause, and, when prices dropped at the beginning of 1904, the one cause which checked and held back the vigorous growth of the nation's business was removed, and immediately the industries again bounded forward.

THE REVIVAL

By referring to Appendix L, it will be observed that during the last boom actual construction increased in volume up to June, 1903, but that prices commenced to fall in October, 1902, eight months before. Between the last-named date and November, 1903, prices had fallen from 163 per cent. above zero to 49 per cent. above zero. Following this there was a period of eleven months (November, 1903, to October, 1904) during which prices of iron held between 49 per cent. above zero and 42 per cent. above. This constituted a period of low prices. The country so recognized it, and during this period the architects, designers, and engineers of the country were flooded with work. What they had experienced in the low-priced periods of 1898 and 1901 was small in comparison. At no time in the country's history had so many great enterprises been projected. The volume of contracts for new construction during this eleven months

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was not only greater than ever before, but greater than the public had any conception of at the time. It was greater, because the wealth and available capital were greater. The magnitude of the volume of construction contracted for was reflected in the vastness of many of the new enterprises. Some of them required many months in which to complete the plans and specifications, and many more months in which to do the preliminary work, before delivery of materials commenced to be required for their erection. Some of them did not require delivery of the majority of materials until 1905 and 1906, and even as late as 1907.

During the high-priced period of 1902 and 1903, many plans and specifications for new construction had been made which were held back or abandoned at that time on account of the abnormally high prices. Many of these projects were revived and put under contract late in 1903, after prices had fallen, and work was commenced upon them at the beginning of 1904. This started work on an unusually large number of contracts within an unusually short time. The volume of demand for materials for the smaller contracts swelled the early demand enormously, and consumption of iron increased from an 11,400,000 tons-per-annum rate in January, 1904, to a 19,500,000 tons-per-annum rate in April; then, within three months, consumption dropped back to a 12,900,000 tons-per-annum rate (see Appendices L and Z). During all this time the projectors of the larger enterprises were maturing their plans, making contracts for construction, and excavating for huge structures, etc., but the demand for delivery of materials for these greater enterprises did not meet expectations. This was because of the long time it required to complete the plans and do the preliminary work. Of this class of enterprise, the new Pennsylvania Railroad Terminal in New York City is a notable example.

The public did not understand the tremendous contracting for new construction and the large falling off in

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actual construction which took place in the summer of 1904 (see diagram, Appendix L). The demand for materials was very satisfactory during the first quarter of 1904, but not so satisfactory during the second quarter. By August the demand for labor and materials commenced to grow. The consumption of iron increased to a 14,100,000 tons-per-annum rate during that month. By April, 1905, it had increased to a 23,500,000 tons-per-annum rate. The price of iron advanced to 80 per cent. above zero, and the next month consumption commenced to fall off. By July it was down to a 20,000,000 tons-per-annum rate. Prices dropped to 61 per cent. above zero, and by December, 1905, consumption had risen to a 25,000,000 tons-per-annum rate (estimated),* and the prices to 93 per cent. above zero. By August, 1906, consumption was down to a 22,700,000 tons-per-annum rate (estimated), and prices were 92 per cent. above zero and advancing. From this date, both consumption and prices advanced until May, 1907, when consumption was at a 27,000,000 tons-per-annum rate (estimated), and prices 173 per cent. above zero. When the panic came in October, consumption was at a 27,500,000 tons-per-annum rate (estimated), and prices had dropped to 128 per cent. above zero.

* As will be noticed, all rates of consumption after November, 1905, are given as estimated. This is because statistics covering stocks of iron and consumption of iron ceased to be made public at that time. The American Iron & Steel Association ceased publishing stocks at the end of 1904, the cessation being explained by the following paragraph, which appeared in their annual Statistical Report for 1905:

"By request of leading manufacturers of pig iron, we have this year omitted, for the first time in more than thirty years, the collection of the statistics of unsold stocks of pig iron."

The Western Pig Iron Association continued to publish stocks until November, 1905, after which that association ceased publishing. "The Iron Age" also ceased publishing them about that time; the two authorities last named, in answer to inquiries, explained their action by saying, in substance, that so many producers had refused to continue to furnish statistics of stocks on hand, that they found it impossible to gather the necessary information. All these parties continue to give the production; but without a record of the increases and decreases in stock it is impossible to arrive at the rate of consumption.

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From the above, or more clearly from diagram, Appendix L, it will be seen that the advance in prices during the last quarter of 1904 was followed by a falling off in consumption in the second quarter of 1905, and that the advance in prices in the last quarter of 1905 was followed by a falling off in consumption in the second quarter of 1906. This was while there were still some reserve stocks on hand, and before the heavy demand for materials for the large enterprises referred to on page 178 had outstripped the capacity of the country to supply; but after the reserve stocks were practically exhausted, prices advanced rapidly, and by December, 1906, they had reached 172 per cent. above zero, in which neighborhood they remained until May, 1907.

THE BOOM

With every large increase in investment construction comes a large increase in necessity construction. The increase in necessity construction does not lead, but it follows surely. When the abnormal demand for delivery of the materials contracted for to erect the investment construction comes, with its resultant high prices, it stimulates the increase of capacity to produce these materials. This brings about the building of new factories, furnaces, mills, etc., as well as the enlargement of old ones. This increases the contracts for necessity construction, even in the face of high prices and a falling off in investment construction. High prices do not have as much influence on necessity construction as they do on investment, for the former must be carried forward whether prices are high or low. The demand for materials for necessity construction grows and feeds upon itself when it comes, and may be even larger in volume than investment construction for a time, but it is of shorter duration. It swells the demand for labor and materials, however, and must pay the high prices while it exists.

The investment demand, which is controlled almost

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entirely by prices, is, however, the governor of the volume of all, for when that is completed and experiences its sudden decline in volume, the stimulus for the large increase in necessity construction ceases, and that, too, experiences a large decline in volume. The consumption of iron during this revival rose from a 12,900,000 tons-per-annum rate in July, 1904, to a 27,500,000 tons-per-annum rate in October, 1907.

THE DECLINE

When the financial panic of October, 1907, occurred, consumption of iron dropped from a 27,500,000 tons-per-annum rate to a 12,500,000 tons-per-annum rate, within three months. Factories, furnaces, mills, and industrial machinery generally all over the country received a sudden check, and a great army of breadwinners was again thrown out of employment.

There was no flood of untenable alleged causes in the United States to account for this sudden depression of the industries, as it was perfectly evident to every one that it was the result of the panic; but the industrial nations of Europe soon after suffered from a sudden decline in their industries, and those nations experienced no panic; therefore, the flood of untenable alleged causes had full sway in those countries. This is good evidence that the people were at a loss to account for the depression in those countries, and that it was not, in those countries, the effect of an external, known, or acknowledged cause.

Now the United States, as well as the four industrial nations of Europe, had experienced a period of abnormally high prices in the first half of 1907, similar to the periods of 1899 and 1902 (*see* diagram, Appendix L); therefore, if the theory on which this treatise is founded is correct, the industries of all these other countries as well as of our own country must have been in a condition of impending depression from purely industrial causes, when the panic of October, 1907, occurred in the United

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States. The events of 1907 in the United States should therefore be analyzed to find out if the facts confirm this theory.

Analysis of this period shows that contracts for investment construction commenced to fall off during the latter part of 1904, but that contracts for necessity construction continued in large volume through 1905 and 1906. The whole volume of contracts for construction, as far as actual cubic quantity is concerned, however, was less in 1906 than in 1905, and less in 1907 than in 1906. The amount of construction contracted for in 1907 was surprisingly small in comparison with 1904, *when actual quantity is considered*. In fact, analysis shows that the volume of contracts for unfinished construction in the United States by September, 1907, the month before the panic, had fallen so low that it had almost reached the necessity basis; while as noted above, *actual* construction was at that time just the reverse, that is, at the highest point for the entire four years.

The microbe of industrial depression commenced its work in this boom as early as December, 1904, when the contracting for investment construction first commenced to fall off. This class of contracting revived somewhat in the spring and summer of 1905, but fell off rapidly after that time. Long before the beginning of 1907, the far-seeing ones had ceased making such contracts. The contracts for construction made in 1907 were confined almost entirely to necessity construction, and a small amount of investment construction indulged in by investors who were less prudent than the far-seeing ones. Month after month, in 1907, the unfinished work on existing contracts was growing less and less, while month after month the actual construction was growing greater and greater.

Construction contracts, as we have shown, are necessarily made months and years before the actual work they involve is completed, hence it follows that the making of construction contracts must shrink to a minimum

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months and years before the work they involve shrinks to a minimum.

This shrinkage in the volume of contracts for investment construction in 1906 and 1907, and shrinking in the volume of contracts for necessity construction, was apparently not even dreamed of by the public. They only saw the immense and constant increase in actual construction.

The country should know every month the amount of unfinished construction on the whole volume of existing contracts for construction, just as the builders of battle-ships and other large structures know from month to month just what percentage of their respective constructions is completed, and what percentage is still to be executed.

CONDITION OF THE INDUSTRIES IN 1907 AS SHOWN BY THE BUILDING PERMITS OF SIXTY CITIES

Unfortunately we have no system of gathering statistics to warn the public of the silent, rapid, and inexorable lessening of the amount of unfinished work on existing contracts, and no reliable statistics of the great falling off in the making of new ones. Everything upon the surface seems to indicate just the reverse of what is actually taking place. The only statistics we have at the present time which give any basis for even an approximate estimate of these conditions are the quarterly reports of the United States Steel Corporation, giving the "Unfilled Orders on Hand" of its subsidiary companies (see Appendix Q), and the monthly and annual statements of "The American Contractor," of Chicago, giving the building permits of some sixty cities (see Appendix P).^{*} As will be observed, the building permits issued by these sixty cities in 1906 amount to a total of \$667,032,499, and in 1907 to a total of \$580,492,196, showing an apparent loss of but \$86,540,300 for the year.

^{*} Since the above was written, the Department of Commerce and Labor has commenced to gather and publish statistics of the Building Permits.

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The probability is that most people who saw and read this report of building permits were impressed with the idea that these statistics indicated that there was more than enough business in prospect to employ the whole capacity of the country as soon as the effect of the panic was over. They probably knew that the amount of construction contracted to be executed in 1906 and 1907 proved to be greatly in excess of the capacity of the country to execute in those years, and, as the figures in the above paragraph showed a loss of but 13 per cent. between the two years, the natural inference must have been that there was as much in prospect for 1908 as the country would be able to execute. Let us analyze this report, and find out what it really did indicate.

ANALYSIS OF BUILDING PERMITS

Now it is the quantity of construction and not its cost in dollars and cents which gauges the amount of labor employed and the amount of materials consumed. If a given structure were built in 1898 at a cost of \$10,000, and the exact duplicate of that structure were built in 1907 at a cost of \$20,000, it increased the building permit list, in the last year, 100 per cent. in the city where it was taken out, but it did not provide one hour more employment to the breadwinners who were connected with its erection, or consume one particle more of construction materials. If, therefore, we would know the true significance of the relative amount of building permits of these sixty cities for the years 1906 and 1907, we must reduce both years to the same level of prices, as these building permits are supposed to represent the cost of the proposed construction at the time the permits are applied for, and the cost of construction was much higher in 1907 than in 1906.

By reference to Appendix E, it will be observed that the average price of iron per ton for the years in question was \$18.34 in 1906 as against \$22.40 in 1907, an advance of $21\frac{6}{100}$ per cent. Taking this as the gauge of the

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cost of construction, and reducing the two years to the same basis, on this percentage we find that the loss of 1907 over 1906, on a quantity basis, was equivalent to \$231,019,542, or something over 34 per cent. Now, as a rule, the largest amount of building permits for each year are taken out from March to July, inclusive. In the reports we have before us, of one of the largest American cities,* the sum total of those taken out in these five months is 58 per cent. of the amount taken out in the whole twelve months. If, therefore, the usual custom prevailed, and as much as 58 per cent. of the permits for each year were taken out in March to July, during which period the average price of iron was \$16.75 per ton in 1906, as against \$23.99 per ton in 1907, then the amount covered by the permits taken out in the year 1907, on a quantity basis, was equivalent to a loss of \$286,823,974, which was 43 per cent. less than in 1906.†

By reference to the diagram in Appendix L, it will be observed that the necessity construction for 1907, represented by the space between the line *C*, the line *B*, and the side lines *V* and *W*, was equal to about two thirds of the whole construction of the country for that year, and that as the building permits taken out in 1907 showed a falling off of from 34 per cent. to 43 per cent. below the permits taken out in 1906, construction *contracts* were actually down to, or below, the necessity basis in 1907; hence the actual construction of 1908 would have been down to a necessity basis, even if there had been no panic.

From this analysis, it seems to be clear that what appeared upon the surface of the statistics of building

* Philadelphia.

† Any estimate made on these figures must necessarily be merely an approximate estimate, as there is no data giving the exact percentage of difference in the average cost of general construction between the two years. If the average advance in all things entering into construction was the same as the advance in iron, and the permits were taken out in the usual monthly proportions, then the falling off in quantity between 1906 and 1907 would be forty-three per cent.

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permits to be good evidence that the business of 1908 would have been up to the full capacity of the country had there been no panic, was in fact conclusive evidence that the year 1908 would, in any case, have recorded the beginning of another period of industrial depression in the United States.

CONDITION OF THE INDUSTRIES IN 1907 AS SHOWN BY THE UNFILLED ORDERS OF THE UNITED STATES STEEL CORPORATION

The quarterly reports of the United States Steel Corporation of the "Unfilled Orders on Hand" referred to on page 183, are on some accounts more satisfactory to make estimates from than the building permits of the sixty cities, as the Steel Corporation's output represents about 50 per cent. of the entire business of the country in its particular line of production, and therefore reflects the volume of the country's entire business. Then, too, the figures are given in quantities, instead of market values, hence they are free from any uncertainties as to the volume of business they indicate. On reference to Appendix Q, it will be observed that on December 31, 1906, the unfilled orders of that corporation amounted to 8,489,718 tons, while on September 30, 1907, which was before the financial panic, they had decreased to 6,425,000 tons. This shows a falling off of 24 per cent. in nine months.

If there had been no panic and this rate of decrease had been kept up during the next three months—and there is no reason to believe that it would not have been—it is quite clear that the country would have entered the year 1908 with a reduction of 32 per cent. within twelve months in *contracts* for construction materials. By referring again to the diagram in Appendix L, it will be observed that this would have brought the country's *contracts* for construction down to a necessity basis in January, 1908. This being the case, it is clear that the country would have been in a condition of industrial

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depression soon after January, 1908, even if there had been no panic.

REMARKS

From these facts it is clear that the theory referred to on page 181, to the effect that an industrial depression from purely industrial causes was pending in this country when the panic of October, 1907, occurred, was abundantly confirmed by the evidences given of the reduced amount of unfinished construction work remaining when the panic came, and by the continuance of the depression after the panic effects had passed away.

The condition of a large decrease in the contracts for construction over a long period, at the same time that there is a large increase in actual construction, was not peculiar to this last boom nor to this country. It has existed in all of the industrial booms of the last century, in all of the industrial nations. This is the condition which so invariably deceives the public towards the end of each boom period, and causes it to be confident that there is a long period of assured prosperity ahead, whereas, if the true conditions were recognized, it would be known that the microbe of industrial depression had already done its deadly work, that the whole industrial system was saturated with the malady, and that the malady itself would soon make its presence known by breaking out upon the surface.

This was the condition of the industries during the height of visible prosperity in 1899, again in the height of visible prosperity in 1902, and again during the height of visible prosperity in 1907, and this condition has always been followed by an industrial depression. An industrial depression solely from industrial causes was impending in all the industrial nations during the latter part of 1907, and it soon made its appearance in all of them, although a financial panic occurred in but one of them. The panic undoubtedly precipitated the depression in this country, but only by a very short time.

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Adam Smith maintained, more than a hundred years ago, that low prices stimulated consumption and high prices checked consumption. He did not mean that this applied to small things and necessities only. He meant that it was true of all things in which people invest their money. All men see from day to day that it is true of small things, but of construction, appearances seem to indicate that the reverse of the rule is true. Our analysis satisfies us that it is not only true of all things, but that construction is even more sensitive to this motive than are necessities or small things. We believe that small fluctuations in price are as certain to influence the volume of what we call investment construction, as are small fluctuations in the Bank of England's discount rates certain to influence the volume of the Bank's loans.

PART IV
DEDUCTIONS DRAWN FROM THE RESULTS
OF ANALYSIS

CHAPTER XVI

DEDUCTIONS DRAWN FROM THE RESULTS OF ANALYSIS

IF the ups and downs of the business of the industrial nations were still controlled by large and small crops, or were controlled by some celestial or terrestrial force, or by some cause which occurred with simple or compound cycles of periodicity, it would be possible to make some predictions as to how long any depression would last. The most exhaustive analysis, however, does not show the least evidence of any uniformity as to the length of time which has elapsed during any stage of these ups and downs.

The following table gives the approximate length of time between the different stages of the ups and downs in the nine booms and depressions between 1835 and 1907 in the United States:

Years of largest construction	Number of years occupied in the down grade	Number of years of low prices	Number of years occupied in the up grade	Special features
1835	7½	3	4½	Panic in fall of 1837.
1847	4½	2½	4½	*
1856	5	2½	3	Panic in 1857.
1864	5	2	3	*
1872	6	2½	3	Panic in fall of 1873.
1881	15	3	3	Five financial disturbances between 1890 and 1896.
1899	1½	1½	3½	
1903	1	2	3½	*
1907	—	—	—	Panic in fall of 1907.

* Only minor financial flurries.

As will be observed, this table shows no uniformity in the length of time which has elapsed during any stage of the ups and downs. The periods of depression vary from

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one to fifteen years, the periods of recovery from three to four and one half years. Among the several noticeable features shown by this table, is the fact that in the depression periods, which were accompanied by one or more financial panics, the time occupied by the down grade, or depression, has usually been much longer than when such periods were not accompanied by a panic. The longest period (1881 to 1899) was accompanied by five financial disturbances. This would seem to be a quite logical result,¹ but it cannot be claimed as a rule or a necessary consequence, as the period following 1864 was an exception. That period of depression, though not accompanied by a panic, was as long as the next period before, which was accompanied by a very severe panic.

As there is no uniformity in the length of a boom, so there is none in the length of a depression. Both are simply business movements governed by business conditions; these business conditions are constantly changing, and consequently there are no two booms or depressions found which are alike in the length of time they occupy, nor can any two be found which are exactly alike in all their general features. People pay out their money for food, clothing, fuel, and lights, with a near approach to regularity, but the people who have surplus funds pay these funds out in the construction of buildings, railroads, ships, etc., with great irregularity.

All revivals of construction have been on low prices, but no uniformity can be discovered as to how low prices must go before a revival takes place. On reference to Appendix Z, it will be seen that eight of the eleven revivals have been on prices of iron which were lower than ever before. The three exceptions occurred as follows: one in 1871, when the price was 50 per cent. higher than the lowest previous price, which was in 1861; another occurred in 1901, when the price was 32 per cent. higher than the lowest previous price, which was in 1897, and a third occurred in 1904, when the price was 28 per cent. higher than the lowest previous price in 1897.

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In the face of all this absence of regularity of conditions in the past, it would be a wise man who could at any time predict when, or on what basis of prices, a revival of construction would take place. The only thing that can be calculated upon with certainty, is that a depression caused by high prices of construction will not come to an end until prices of construction again drop to such a low figure that the far-sighted individuals who control the purse-strings of the country believe them to be at or near the bottom and too low to continue.

EFFECTIVE DEMAND

We have seen that, with the entire force of industrial breadwinners continuously at work, producing the largest possible quantity of the objects of permanent wealth, it would be impossible for them to produce more than man would have the means to acquire, or more than he would have the desire to possess (see page 41). In these facts lies the rock of industrial safety, for in these facts we have evidence that a continuous condition of maximum production of the objects of permanent wealth is not only natural but practically possible, and maximum production of the objects of permanent wealth is prosperity.

Maximum production, however, will not long continue, unless it is supported by maximum sale. The experience of the past shows that as long as prices are low, and people believe they are gaining by purchasing, they will continue to purchase, and prosperity will continue; but just to the extent that prices go so high that people believe they will lose by buying, just to that extent they will stop buying, and, if this condition is continued, depression will result.

Prosperity, therefore, does not depend upon the producer's ability to manufacture and his desire to sell, but upon his ability and willingness to sell at a price that will induce the purse-string holders to purchase. Therefore, prosperity depends upon an effective demand. Now *effective demand* is defined as "a desire for an article, and the possession of some equivalent to be given for it."

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This description may seem sufficient to the theorist, but to the practical mind it lacks a most important feature.

For instance, when the depressions of 1900 and 1903 occurred, the ever-present desire for such objects of wealth as constructive products existed to the fullest extent, and the existing means to pay for them was greater than ever before in the history of the country. Notwithstanding these conditions, the demand fell off enormously, simply because the producers were either not able or not willing to sell at a price which the investing purse-string holders were willing to pay. Political economy should have accurate and exact treatment, otherwise the conclusions reached will not be accurate. The desire for an article and the possession of an equivalent to give in exchange for it may exist in the greatest abundance on the part of the purse-string holders, but if it is not met by producers with the article desired, and the ability and willingness to sell it at a price the purse-string holders are willing to pay, maximum production will not long continue, and, if this condition is not changed, depression will certainly result.

For illustration of the opposite conditions, turn to the low-priced periods of 1897, 1898, 1901, and 1904, when there existed a genuine effective demand, namely, the coming together of purse-string holders and producers. The first had a desire for objects of construction, with the means to give in exchange for them, and the second were able and willing to supply such objects at prices which the first were willing to pay. These are the ideal conditions of prosperity, and whenever and wherever they have existed, unless prevented by external and recognized derangement, they have resulted in prosperity, *and the prosperity has continued as long as these conditions existed.* But as soon as prices advanced to figures which the purse-string holders were not willing to pay, the effective demand ceased to exist.

CHAPTER XVII

MAGNITUDE OF THESE DEPRESSIONS, AND DANGER THAT THE VALUABLE LESSONS THEY SHOULD TEACH WILL BE LOST

AN industrial depression which throws out of employment one out of every five of the breadwinners of this country is a great calamity. It is a loss at the rate of over \$3,000,000,000 in the annual earnings of the people, an amount nearly equal to the value of all the gold and silver taken out of the western continent since it was discovered by Columbus. As the country grows in population and wealth, the magnitude of these calamities grows. As labor becomes specialized, and as the control of the great industries becomes centralized, the helplessness of those who are thrown out of employment becomes greater. What has already grown to be a serious matter may grow to be a dangerous matter.

The United States has experienced eleven of these calamities within eighty years. Is this not enough? Must the country suffer from eleven more before it will make a persistent effort to satisfy itself what the real cause is? Will the opportunity to identify the true cause be any better at the end of another eighty years? It is the magnitude of these disasters which measures the importance to the industrial nations of knowing why they come and how they may be avoided. If it be true that these depressions are caused by the abnormally high prices of construction, can the government or the people afford to spare any expense or trouble to satisfy themselves of this truth, and, if possible, prevent these depressions in the future?

A thorough analysis of any one of the depressions which

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has occurred during the last fifty years would have revealed the truth, but, after each one, the great flood of untenable alleged causes, born of synthetic reasoning, has buried the real cause out of sight. The same danger now threatens to deprive the country of the valuable lessons the last depressions should teach, and, what is still more fatal, every depression, except those caused by or accompanied by panics, has been belittled or ignored, until a large part of the public has come to believe that we can get rid of depressions by simply doing away with panics. This they think we are in a fair way to accomplish, and so little or no effort is now being made, either by governments or by individuals, to study the cause of depressions.

It is reasonable to believe that industrial depressions may be eradicated from the industrial system as many maladies are eradicated from the human system. To accomplish this, the disease must be located, the microbe identified, and an effectual remedy discovered and applied. In the present case, the people do not understand even the nature of the malady, its location, or the character of the microbe. To convince the people is, therefore, the first and most important step in the work of preventing these calamities in the future.

DANGER THAT THE NATION WILL LOSE THE VALUABLE LESSON THE TWELVE-YEAR PERIOD SHOULD TEACH

There will probably never be a period in the future when low prices of construction and high prices of construction will have a clearer or more vivid illustration of their dominating influence over the increases and decreases in the industries of the nation than in the two periods of revival and decline between 1896 and 1903.

During these periods hundreds of the contributory causes of prosperity and depression were in existence, and each had its due influence, but they counted as nothing in the presence of the one great controlling influence of high and low prices of construction. Rigid analysis shows that the connection between the cause and the effect was in

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each case prompt, positive, clean-cut, and inexorable. In each case, when prices were low and stable for any considerable period, contracts for investment construction were made in greater volume than ever before in history. When prices advanced, this class of contracting was reduced to a minimum, and, when the extra construction was completed, there was not enough remaining to absorb the available supply of labor and materials, and the booms quickly came to an end.

The dominating influence of the high and low prices of construction was just as perfect in the period of revival, boom, and depression, between 1904 and 1907, as it was in the two periods just before. The only difference was that the pending falling off in actual construction did not have an opportunity of revealing itself as independent of the panic of October, 1907, in consequence of its having been preceded and overshadowed by the vivid and startling occurrence of the panic.

A glance at the diagram in Appendix L will make it clear that the two short depressions of 1900 and 1903 were as severe while they lasted as the longer one which commenced with the panic of October, 1907. In fact, they carried the rate of construction down to even a lower point, and the newspapers teemed with accounts of the great distress and of the thousands of idle workmen all over the country. "The New York Herald" of October, 12, 1903, states that the falling off in building operations in eight cities amounted to \$42,500,000 in nine months, as compared with 1902, including \$10,000,000 in New York (Manhattan) and \$14,000,000 in Chicago. It also mentions the great number of projected buildings for which permits were obtained, but the projectors "changed their minds," and adds, that in cities where the building permits showed a gain the actual building showed a loss.

In New York there was a great strike in the building trades in progress in 1903, and the large falling off in construction was attributed entirely to this strike. The absurd feature of this claim was that the falling off was

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greater in Chicago, where there was no strike, than it was in New York. In fact, in an article in "The New York Commercial Advertiser" of October 8, 1903, it was stated that Chicago had not been so free from labor troubles for a long time, and that there were probably not 300 building tradesmen on strike, and yet the falling off in Chicago was \$14,000,000 against \$10,000,000 in New York. The fact was that the strike in New York stopped work on many of the structures a few weeks before the large volume of investment contracts were completed, and by that much time delayed the impending falling off in construction in New York. In Chicago and the country generally, the buildings were completed without any interruption, after which workmen were discharged in large numbers, simply because there was not enough construction remaining to keep them employed. It would have been the same in New York, had there been no strike.

The two depressions of 1900 and 1903 are particularly valuable for analysis: first, because of their great severity; second, because of the entire absence of any serious external depression cause to influence the sequence of events, and, third, because of the short time they covered, and hence the number and rapidity of the illustrations of the inexorable sequence of the real cause and its effects.

Among the most noticeable features of these two short depressions was that they occurred in all five of the industrial nations contemporaneously, and that a great number of articles were published in each one of them attributing the depressions to a number of local alleged causes peculiar to the respective nations. They lost sight, apparently, in each nation, of the fact that the four other industrial nations were also suffering from like depressions. This should have at least created the suspicion that the same cause might be responsible for the depressions in all of them. Another noticeable feature was the almost total absence of any hint from any source of what the real cause was.

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There is great danger that the two severe depressions of 1900 and 1903, which were not attended by panics, will be so belittled and ignored that they will in time be practically forgotten, and that history will tell of "the great eight-year boom of 1899 to 1907, which was brought to an end by the panic of October, 1907." Thus the valuable lessons which were so vividly illustrated in the twelve-year period may be totally lost to the world, as were the depressions which were not accompanied by panics from 1832 to 1885. The premonitory symptoms of this tendency are already cropping up in many directions. In the annual review of an important association, published in June, 1902, occurs the following sentence: "The era of unexampled prosperity for the industries of this country, which may be said to have been ushered in at the beginning of 1899, when an active demand for iron and steel was suddenly developed, accompanied by rising prices, *has continued from that day to this*, and at no time has it been more noticeable or more fruitful of good result than when these lines are written in May, 1902." Again, in an annual report at the close of 1907, the same authority writes: "The year 1907, which is drawing to its close as this report is written, has witnessed the sudden culmination of *the period of remarkable and long-continued prosperity which was ushered in early in 1899.*"*

As will be observed, both the periods of depression in 1900 and 1903 are ignored. In fact, the substance of the wording of these clauses is to the effect that they did not take place. In the first of these two ignored depressions, the consumption of iron in the United States fell off from a 15,800,000 tons-per-annum rate to a 10,800,000 tons-per-annum rate. In the second period, consumption of iron fell off from a 20,200,000 tons-per-annum rate to a 10,100,000 tons-per-annum rate, and this meant in each case that construction fell off in proportion. These depressions were not confined to the United States—they visited all the industrial nations. They came from

* The italics are the writer's.

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the abnormally high prices of construction in all those nations. There was no other event of sufficient force to have caused these depressions in any of the industrial nations, and the depression not only ceased soon after the high prices of construction ceased, but throughout the whole period the fluctuation in the volume of contracts for construction kept pace with the fluctuation in the cost of construction. In Germany, iron prices were controlled by a powerful syndicate, which kept prices up in the face of a quick decline in the other nations, and the result was that the depression was more severe and prolonged in Germany than in the other nations.

In both of these ignored depressions, the industries were cut down lower in volume in the United States than they were by the financial panic of October, 1907, as shown by iron consumption, which was reduced to a 10,800,000 tons-per-annum rate in 1900, and to a 10,100,000 rate in 1903, as against a 12,500,000 tons-per-annum rate in 1908. The distress among the breadwinners of the land, while the depressions lasted, must have been greater in the two former periods than it is at present, for the volume of construction was then smaller. The only difference is that in the last instance there was a vivid and startling panic. Then, too, we can see much more clearly what is near at hand than what is far removed. The depressions of 1900 and 1903 are in the past. We do not realize the distress of those periods as sharply as we do the distress of to-day, but the depressions existed, and, as they were of great severity while they continued, belittling or ignoring them cannot alter the facts. The effect this covering up of facts has in blinding the people and preventing their realization of true conditions is, however, most deplorable.

The depressions of 1900 and 1903 were the shortest on record that were caused by purely industrial derangements, yet the backset these two depressions gave to the constructive interests of the country was such that it was fifteen months and eighteen months, respectively,

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before the loss in industrial activity (as indicated by the monthly rate of iron consumption) was fully restored.*

UNHEEDED WARNINGS

For some months before the two sudden declines in the country's construction enterprises in 1900 and 1903, there had been among the news items from many parts of the country several articles giving the names of large railroad corporations which had decided, on account of the high prices, to cut down enlargements and improvements to actual necessities. One railroad president, in a statement made in November, 1902, relating to the curtailment already made by his road, was reported in the daily papers as having stated that the cost of railroad supplies had increased 80 per cent., 150 per cent., and 237 per cent. above the prices of 1897. This curtailment was an indication of what was going on all over the country among individuals, and among small corporations as well as among large ones. But these news items made little impression upon the public mind. What the public saw all about them was much more impressive. What they saw was, that consumption of iron actually increased from a 17,600,000 tons-per-annum rate in January, 1903, to a 20,200,000 tons-per-annum rate in June, though this was many months after these news items were published. *Was what they saw not evidence enough to the public that high prices do not affect construction?* Is it not clear that it will be no easy matter to break down opinions formed upon such plausible evidences as one's own eyesight?

In both 1900 and 1903, when the depression came, there was hardly a suggestion from any source of what the real cause was. On the contrary, the flood-gates of untenable reasoning were thrown wide open. There were almost as many different reasons given for the collapse as there were writers upon the subject. In a review of the 1903 collapse, the editor of one of the great periodicals, which reaches every state and territory in the Union, attributed it

* See Appendices Z and L.

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to a number of causes, viz., "unsuccessful underwriting schemes," "doleful predictions about the crops," "drought in the east," "weakness in iron and steel created apprehension among iron-consumers," "unsatisfactory conditions of market for securities caused railroad companies to postpone projected improvements," etc.; the writer of the article, being apparently totally unmindful of the fact that for many months before, and while money was easy for them to borrow, most of these railroads had not only stopped contracting for everything but necessary improvements, but had publicly and repeatedly given high prices as their reason for so doing. All these warnings were unheeded when they were given, because actual construction was at its height. After the collapse came, these warnings seem to have been totally forgotten.

Perhaps one reason why high prices are not recognized as the cause of these depressions is, that every one who has anything to sell, whether it be commodities, skill, or personal services, wishes high prices, and so are not disposed to disparage a condition which they personally desire to see continued. We notice that in market reports, during depressed periods, current prices are compared to boom figures, and are spoken of as having declined such and such a percentage. No one seems disposed to mention what percentage current figures are above old low prices. This manner of reviewing markets is most soothing to one's feelings, but not calculated to enlighten one as to actual conditions.

CHAPTER XVIII

ANOTHER DANGER TO BE COUNTERACTED

ANOTHER danger, which must be headed off and dissipated, is the tendency to believe that modern methods have so changed conditions that these calamities are not likely to come again. This is perhaps the most serious danger of all, for wherever it gains lodgment, there all forethought and effort to make wise and adequate provisions towards preventing these depressions will cease.

After every depression thus far, people have soon drifted back into the same habit of deluding themselves with the idea that the abnormal conditions which brought on the abnormal advance in prices can never again recur. These delusions have come so often, and they have followed the ups and downs in the country's business with such persistent regularity, that we know of no better name to give them than "Cyclic Delusions." We will describe two of them, which pertain to prices.

CYCLIC DELUSION NO. 1

"VERY HIGH PRICES WILL NEVER COME AGAIN"

Each time that pig iron has experienced several years of low prices, there comes a general belief that the price of iron will never again reach abnormally high figures. This belief becomes almost universal. It is harped upon during the entire period of low prices. If you attempt to combat it, all your arguments and statistics are simply swept aside by the declaration that "conditions now are different from what they ever were before"; but the very high prices come again, notwithstanding, always from the same causes, and following the same train of events. The price of pig iron advanced in this country:

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From	\$38.00	in	1823	to	\$75.00	in	1825
"	35.00	"	1833	"	70.00	"	1837
"	23.00	"	1843	"	52.50	"	1845
"	19.00	"	1852	"	42.50	"	1854
"	20.00	"	1861	"	80.00	"	1864
"	30.00	"	1871	"	61.00	"	1872
"	19.00	"	1879	"	41.00	"	1880
"	9.00	"	1897	"	22.25	"	1899
"	13.15	"	1900	"	23.84	"	1902
"	12.33	"	1904	"	24.50	"	1907

Here are ten distinct refutations of the general belief. Six of these occurred within the recollection of the writer and of many others still in the iron business, and yet, just as soon as the price of iron sinks to very low figures again, the same belief will take possession of the public mind, and will be maintained by the same plausible reason, that "conditions now are different from what they ever were before." Conditions are always different from what they ever were before, and always will be, because the world moves, and changes as it moves, but the law of supply and demand has not changed and never will. *High prices for iron will return with each general revival of industries, just as long as it is impossible to supply a greatly augmented demand, when the demand takes place.*

ILLUSTRATION

Soon after the beginning of the boom of 1899, when iron had advanced only about \$2 per ton, against little or no advance in cost, the Vice-President of one of the largest furnace companies producing iron for the market called upon a friend in New York City. After telling him of the large profit his company was making, he said that its officers had decided to hold prices where they were, and prevent any further advance, by taking orders at current prices as far ahead as their customers wished to contract. "But," said his friend, "what will happen when your company and all the other furnace companies have taken orders for all they can produce for six months or a year ahead, and then it turns out that several million tons

more are needed by the consumers within that time?" This question was as good as a prophecy for iron advanced \$14 per ton instead of \$2 within the year.,

On page 117 an account is given showing how the United States Steel Corporation in 1901 attempted to check the advance in steel, when it was about 65 per cent. above the low price of 1897, yet during the next year prices in the general market advanced to 124 per cent. above the low price of 1897, although the Steel Corporation held to the price agreed upon. The iron-producers not only do not anticipate these abnormal advances, but previous to their occurrence they do not believe them possible. There are many conditions that contribute to this belief. For instance, in 1874, iron-producers pointed to the fact that an iron-furnace then made 50 tons per day, while, ten years earlier, furnaces made but 8 to 18 tons per day. This increased capacity, they argued, would prevent any abnormal advance in the future, but the 50-ton furnaces were as inadequate for their time as the 8 to 18-ton furnaces were for their time. In 1886 they reminded you that furnaces were then producing 200 tons per day, instead of 50. In 1897 they reminded you that iron-furnaces were then producing as much as 700 tons per day, and in each case they contended that this wonderful improvement would prevent iron ever again reaching abnormally high figures. *But the abnormal prices have continued to recur, and will continue to recur, just as long as the conditions which produce them continue to exist, and so will the great booms and depressions. Remove the cause, and the results will disappear.*

As stated on page 204, we have had ten refutations of the oft-recurring convictions that abnormally high prices will never again occur. We may calculate, with substantial certainty, that this fallacious conviction will come again, unless the business men of the country take the necessary time to analyze the facts and realize the truth. Can you find any one to-day who will say he believes we will ever again have an advance of from 100 per cent. to

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300 per cent. in the price of iron? Could you have found such a person in 1897? What is to prevent another such advance? The last advance was the greatest in history; it occurred when we were on a gold basis. The only other advance which compared with it was during the civil war, when gold was at an enormous premium. The causes which produce these advances are increasing in power, not decreasing. Look at the facts. From 1890 to 1897 the annual production of iron in this country was on a plane of about 9,000,000 tons; within the next decade it jumped to a plane of about 25,000,000 tons. Have we any reason to believe that the next jump will not be as great? Attention has been called elsewhere to the fact that the rate of increase in iron production in this country was equal to 143 per cent. in the decade from 1895 to 1905, as against 114 per cent. per decade in the forty-one years from 1864 to 1905. There is nothing in these facts nor in any of our surroundings to indicate that the industries have reached their culminating point. Just the reverse. Dr. Wm. Kent, in "The Iron Trade Review" of January 10, 1907, states that, if the future rate of increase should be but 100 per cent. per decade, the production in this country will amount to 66,000,000 tons per annum by 1920.

We know that the capacity to produce iron at the present time (April, 1911) is in excess of the demand, and in all probability we will rest content with that knowledge, and when the next boom comes the demand will undoubtedly quickly outstrip the supply, as heretofore. Of course, no one now looks for any such occurrence to take place, nor did they ever look for it in the past. But it has occurred already nine times.

Then, too, there are the delusive figures of the "furnace capacity" of the United States. These figures undoubtedly tend greatly to mislead the iron-producers as well as the public. In April, 1898, the furnace capacity of the country was officially reported at 19,081,000 tons per annum, and yet when the boom came the following

year, and prices advanced to 147 per cent. above zero, the furnaces were able to produce only 13,620,000 tons. Now, if at the time of the next boom the claimed capacity to produce iron falls as far short of the actual capacity as it did in 1899, and the usual increase in demand takes place, it is perfectly apparent that we will then have another famine in supply and another enormous advance in the price of iron.

The *average* stock of pig iron carried in the United States during the last twenty-five years has been less than twenty-three days' production, and it takes practically a year to build a new furnace. Furnaces in this country, which run regularly, usually have their product contracted for several months ahead, and in ordinary times the tonnage thus contracted for supplies the wants of the consumers for an equal length of time; but it is when active times come, when the consumers have business enough to double their output, which it is impossible for the producers to do, that the trouble comes. No alarm is felt as long as the consumers can buy for future delivery, but when it becomes apparent to them that they have bought all the furnaces can make for a given period, and that this amount is not as much as will be needed in that period, then the trouble commences. Then comes a sudden awakening. Each consumer tries to secure enough to supply his individual needs, and, in the wild scramble which results, prices are carried up 100 per cent. or more. It has never been in the power of any man, or any set of men, to prevent these abnormal advances.

CYCLIC DELUSION NO. 2

"PRICES WILL NEVER GO SO LOW AGAIN"

Each time the price of pig iron reaches a very high point, there comes a general conviction that it will never again fall to very low prices. The reason usually assigned for this belief is that *the actual cost of production has increased so greatly that this enhanced cost will necessarily sustain future prices on a higher level*; but the very low prices

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come again, notwithstanding this oft-repeated argument. The price of iron dropped:

From \$70.00 in 1837 to \$22.00 in 1843
" 52.50 " 1847 " 19.00 " 1852
" 42.50 " 1854 " 20.00 " 1861
" 80.00 " 1864 " 30.00 " 1871
" 61.00 " 1872 " 19.00 " 1879
" 41.00 " 1880 " 17.75 " 1885
" 21.00 " 1887 " 9.00 " 1897*
" 22.25 " 1899 " 13.15 " 1900
" 23.84 " 1902 " 12.33 " 1904
" 24.50 " 1907 "

Here are nine distinct refutations of this periodic delusion, six of which occurred within the recollection of the writer and many others still in the iron business. Before the next boom comes, we may witness the tenth refutation of this delusion. In the past, iron has not only usually gone as low as before, but in most cases even lower.

The reason prices usually go as low as before is that boom costs, like boom prices, are ephemeral. When the cost follows the price of iron up, it is apt to follow the price of iron down. Enhanced cost is simply the sympathetic advance in the prices of labor, ore, limestone, fuel, freights, royalties, etc. The same conditions which carry iron down carry these down. All go abnormally low, as a result of their having gone abnormally high. Extremes beget each other. "The farther the pendulum swings to the right, the farther it will swing to the left."

The reason prices usually go lower than before is that the economies and constant improvements in the manufacture of iron in the United States have thus far put the normal cost of iron, in hours of labor, on a lower level each decade, and on the down grade of an industrial depression there is usually no permanent halt until this lower level is reached. Iron was produced in Alabama in 1889 at a cost of about \$9 per ton, in furnaces which then turned

* Bessemer pig iron.

out from ninety to a hundred tons per day. This was the record of low cost up to that date. Through improved methods the same furnaces, nine years later, were producing 175 to 225 tons per day, at a cost of about \$6 per ton. There is no reason to believe that the limit of this tendency to a larger yield per capita each decade has been reached in the United States. In other words, it is difficult to believe that improvements in manufacture have stopped. As to the supply of raw materials, we have only to say, that to the writer's personal knowledge the cry of limited minerals has been raised for more than forty years, yet, through new discoveries, each decade shows a larger known supply. Thus far, we have merely "scratched the surface." We know little of what is within a thousand feet of the surface.

During the long years of depression which follow a boom, the market price of iron is almost continuously made by the weak furnace companies, not by the rich ones. If the producers were all rich, and all able to hold their product until the consumers needed it, it might be different; but there are always some weak furnace companies, and they force sales when they need money, whether the consumers are ready to buy or not. To do this, they must reduce prices until they are so low as to be inducement for some one to buy in advance of his needs. These forced sales make the market, very largely, all through the dull years. The rich furnace companies must meet these prices, or hold what they make. What they usually do is to meet them, and comfort themselves with the theory that, when the needy ones are driven to the wall, the strong ones will be able to control prices; but this theory of "the survival of the fittest" develops more weak ones each year, for some that were strong at the start gradually become weak, and so, in long periods of depression, there have always been enough weak ones to keep prices down during the entire dull period. Sometimes, conditions become so desperate that various means are devised for restricting production. Nothing avails, however, and

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the distress continues, while furnace after furnace drops out of the race until there comes another general revival of business. Then the furnace capacity is found to be so far short of the new rate of demand that another abnormal advance cannot possibly be prevented.

The existence of the great consolidations is another condition often cited in late years as a reason that prices will not again go as low as in the past. The great corporations may postpone the decline in prices for a time, but, sooner or later, natural laws will assert themselves. The power of the great corporations is as nothing when it comes in conflict with natural conditions. The price went down in Germany, in 1891, although prices and sales were entirely controlled by a powerful syndicate *and the entire production was sold for two years in advance*. Syndicates and consolidations may put the price of articles up, and hold them up, but they cannot compel individuals to consume these articles, and, if not consumed in sufficient quantities to keep all the breadwinners employed, prices will go down. There is no human force on earth so powerful as a spontaneous thought which gains lodgment in the minds of a great aggregation of individuals. Before such a force, the power of syndicates and great corporations is as nothing, and must succumb, just as the power of empires and kingdoms has gone down before this great force.

On page 117 we have given an account of how the United States Steel Corporation made a heroic effort to stop the advance in the prices of steel products, when they had reached about 65 per cent. above the low prices of 1897, and yet, although it had effect for a time, they ultimately reached 124 per cent. above the 1897 prices. Then again, in 1908, after prices had fallen greatly, we saw how the principal steel-producers endeavored to prevent prices going lower; in this, too, they succeeded for a time, but later on gave it up as a hopeless task. The great corporations have wonderful power in many ways, but they are, at the most, but a part of the "manufacturers" of whom we spoke on page 125. The final

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power is not with them. They may, at times, by their acts, accelerate or retard prosperity or depression, but at other times, even this power may be beyond their control. *The final power which creates maximum prosperity, or checks it, rests with the purse-string holders.*

CHAPTER XIX

RÉSUMÉ

THE object of this book is to disclose, and make recognizable, what analysis has revealed as the manifest cause of that class of industrial depressions which, in late years, have come to the manufacturing nations in the absence of any universally recognized cause.

Having had this one object in view, we may have given so much space to some special subjects, and so little to others, as to have given some wrong impressions. For instance, from the commencement to the end of this book, iron has been made very prominent. This was partly because iron is the acknowledged basis of the industrial system, and partly because it is the acknowledged "barometer of trade"; and having been recognized as such for so long a time, the statistics concerning it are so reliable, and the records so complete, that it is practically the one preeminently trustworthy gauge of everything connected with the industries. Indeed, without the available facts in relation to iron, it is hard to conceive how we could have arrived at the unknown cause of these mysterious industrial depressions, for we have had its fluctuations in price and in volume of consumption as a witness, not only of industrial conditions at different periods, but of the comparative conditions and progress of the industries in different nations. It has, in fact, been to our analysis what the magnetic force is to the mariner. It must not be inferred, however, that iron is given any undue weight when it is considered in other ways—for instance, as affecting the cost of construction. Its effect in each particular structure under consideration is only in the proportion that the enhanced cost of the amount of iron used in that

structure bears to the total enhanced cost of all the other materials and forces used and employed, such as labor, all kinds of construction materials, architects' fees, contractors' profits, freight, and a host of smaller things.

A term we have used all through the latter part of this book, and which we explained at the start was used tentatively, is "Investment Construction." This is simply a name we selected to convey an idea. We might have said "extra construction," or "optional construction"; either term would have answered the purpose, but investment construction seemed more nearly to describe the particular class of construction we referred to. "Far-seeing investors," too, seemed to be a most appropriate name for the class of shrewd individuals who always make contracts for large amounts of construction when prices are very low, and who stop making such contracts as soon as prices make any material advance. There is no more question that such a class exists than there is that rich and poor exist. In fact, the very rich class is probably largely the result of the acts of this class of far-seeing, shrewd investors. We do not claim that this class is responsible for the entire volume of the constructive contracts which bring booms; far from it, for the largest part of construction (as we have clearly demonstrated) goes on in the most depressed times, as well as the most prosperous. We claim, however, and think we have fairly demonstrated, that enough additional construction is contracted for by this class in the low-priced period to carry the resultant demand for labor and materials far beyond the capacity of the country to fill on contract time, and that the making of this class of contracts falls off largely in volume as soon as prices make any considerable advance. To such an extent is this true that, when the construction they provide for is completed, there is not sufficient demand left to absorb the labor and materials available, and depression follows. We do not claim that all investment construction is made

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at low prices, nor during the low-priced period: there are particular cases of legitimate investment construction that are planned and carried out at boom prices, which are profitable at the very start, because of special conditions. For example, a new invention, a discovery of any kind, a sudden and widespread demand for a particular product, or other reasons, may justify construction, at times, which may result in so great a margin of profit that even the doubling of the price of construction would be a mere trifle. We saw an example of this in the plants constructed for the tremendous output of bicycles a few years ago; we have evidence of it now in the huge output of automobiles, and may see evidence of it soon in a surprising output of aeroplanes. One can imagine also that some new labor-saving device, on which there was a very large margin of profit, might be put through regardless of cost. But these are exceptions that can easily be explained, even when large contracts are made for them during periods when there are no contracts made for the class of construction that we include in this book under the term *investment construction*. What we include under the tentative term *investment construction* is that for which contracts are *not* entered into at all times. It is the class of construction which is entered into with the view of earning a moderate rate of interest for long periods of time, and a very small difference in the prospective rate of interest to be derived has a wonderful influence in loosening or tightening the strings to the long purses affected. It includes, chiefly, the great enterprises owned and paid for by the far-seeing ones who hold the strings to the great majority of the long purses of the country. That this class is a very large and powerful one, is not only evidenced by the boom itself, but by the further fact that, each time it takes hold, the industries of the country are lifted permanently to a higher plane. On page 108 will be found a table that demonstrates that this class has distinctly emphasized its existence on seven different occasions within the last sixty years. Let there be no

doubt in the minds of any one about the existence of this class or of its great power. It exists as certainly as the spendthrift class exists. There is never a panic, when large amounts of valuable securities are sold for "any price they will bring," that this class of far-seeing ones is not found to have purses long enough to absorb all that is offered. It is wonderful how inexhaustible these purses are. No panic has ever discovered their size, and the strings to them loosen to low-priced securities and low-priced construction with equal facility.

Let it be understood, also, that it has not been claimed in this book that all industrial depressions are the effect of high prices of construction. On the contrary, we have given descriptions of many that came from financial causes, and recognized the fact that some have come from war, pestilence, famine, bad legislation, political upheavals, and other great calamities; but when they came from such external causes, their origin is universally recognized and acknowledged. Many of these other causes, however, have been conspicuously before the public for centuries, and remedies have been applied which have mitigated their severity. Industrial depressions, caused by a derangement within the industries themselves, are a new malady, and no remedies have been discovered for them. This is not to be wondered at, for the industries, after an existence of secondary importance and magnitude for thousands of years, have suddenly increased to stupendous proportions, and the industrial maladies that have developed with this sudden growth are many. Finance and commerce, which necessarily increased to keep pace with the industries, have also suffered from new maladies that have developed within these systems. Some of the maladies which have affected commerce have been exposed and measures taken to correct or alleviate their harmful effects — the work of the Interstate Commerce Commission is an instance of this. The government has also made extensive investigations to determine the most effectual way to correct or alleviate the maladies that

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have developed in the financial system. But the industrial system has developed a malady that is particularly its own and direful in its effects. The reason nothing has been done to correct or alleviate its severity is simply because the disease has not been correctly diagnosed and understood. Government commissions, economic societies, and individuals have sought to determine the cause of this mysterious malady, but all have failed, simply because all have made their investigations, partly or entirely, by the synthetic method, which allows the introduction of any and all fallacies. For instance, in this mysterious class of depressions, which we have shown result from purely industrial causes, a large share of the causes claimed for them have been purely agricultural, commercial, or financial. Of course, every depression that comes to any of the three systems last named must affect the industries secondarily, but to admit any of their causes to consideration in a search for the direct cause of the class of mysterious depressions which resulted from industrial causes only, must necessarily be fatal to the search. Then, too, the particular class of depressions in question always follow a boom, hence everything which occurs during a boom can afterwards be claimed as a cause of the depression, and get an *apparent confirmation* in the depression that follows. Thus the free use of the synthetic method of investigation has defeated all the efforts made to identify the cause of this serious class of depressions, and in consequence nothing has been done by the government, or any other agency, to correct or alleviate their direful effects. This book, as far as possible, deals exclusively with the class of depressions which come as the effect of abnormally high prices of construction, and the fact that as little space as possible is given to all classes of depressions outside of that one must not be understood as an intimation that we claim that other depressions do not exist, nor that we claim that they have not in the past, or may not in the future, continue to bring disastrous seasons of depression to the industries, but that,

when they do, the cause will be known and recognized, as in the past.

We recognize the due influence of everything which tends to increase or decrease the volume of the industries. We claim, however, that after a country has become chiefly manufacturing, no combination of favorable influences has been strong enough to develop a boom, *except on low prices of construction*, and that after abnormally high prices develop, no combination of favorable influences has been strong enough to keep the boom going beyond the time necessary to complete the volume of extra construction made up of old, low-priced contracts. The necessities which come with war have at times prolonged a boom, but only as long as those necessities continued.

CHAPTER XX

HOW CAN THESE MYSTERIOUS DEPRESSIONS BE PREVENTED? THE REMEDY

THE remedy we suggest is the inauguration by the national government of a system for collecting and publishing monthly all pertinent information in relation to the existing volume of construction under contract for future months, and all pertinent information in relation to the capacity of the country to produce construction materials to meet the total demand thus indicated.

As noted in various parts of this volume, particularly on page 122, it is the contracts for future construction in excess of the country's capacity to supply the materials to fill them that later on create the excessive demand for construction materials. It is this demand, which cannot possibly be supplied, that in turn carries prices up to figures which eventually check the volume of contracts for construction; thus bringing into action, unknown to the public, the microbe which in due time results in industrial depression.

Now it must be admitted that, should the producers of construction materials receive notice from a reliable source that all of the construction materials of a certain description that could be produced within a given time were covered by the volume of construction indicated by existing contracts, they would cease to make further contracts for such materials. It must be admitted, also, that, if they knew that there was a demand for a large additional quantity of such materials, they would increase their capacity in order to secure what they could of this offered business. It must also be admitted that, if the capacity were increased sufficiently promptly

and fully to supply the additional demand, there would be no such abnormal advances in the prices of these materials as have frequently occurred in the past.

What the industries have suffered from most in the past is the lack of knowledge as to the volume of construction under contract for the future, and the capacity of the country to furnish construction materials in the future.

What the industries most need, therefore, is monthly information of the future demand for construction materials as far ahead as construction contracts are entered into, and monthly information of the capacity of the country to produce construction materials as far ahead as the increase or decrease in capacity can be known.

The statistics necessary to carry out the proposed plan should be gathered directly by a department of the national government, whether on the plan now pursued in gathering statistics of the crops, or through the recent act authorizing the government to call for reports from the corporations, is a matter which can be decided when the other details of the plan are determined upon.

Some new laws, or amendment to present laws, might possibly be required to put the system into execution. It would not only be necessary to guard against sham building permits, and to require the initial information at the time building permits are taken out, but to require on each recorded contract monthly reports of the percentage of work completed, and the percentage yet to be executed, in order that any change in the volume of future demand, or any change in the capacity to produce, may be corrected in the monthly reports furnished to the public.

It would be desirable to have the statistics as complete as possible, but it would not be necessary to include small construction enterprises, repairs, etc., nor would it be necessary to include statistics from remote sections; for after some experience an approximate estimate of the volume of the whole construction could be made from the statistics of the major part.

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Among the large manufacturers, a very considerable amount of such information is already collected, in a private way, and is more or less widely disseminated by their salesmen and others. Moreover, for several years there has existed, at least among the iron and steel manufacturers, an attitude of great frankness in furnishing such information to each other. It is probable that nearly every large manufacturer of iron and steel knows, at any time, approximately what tonnages have been contracted for by the other manufacturers, and at approximately what prices. Most of the large construction contracts, both public and private, are made either by public letting, or at least to the lowest bidder, from a selected list of manufacturers, who have been asked to bid and have been furnished the plans and specifications on which to make these bids. Thus the tonnages under contract, and the amounts of construction contemplated each month, are pretty well known to many persons already. Even the prices at which the work has been let are made public, or can be approximated closely by those in the same line of business.

These facts show the existing desire on the part of manufacturers to get what information they can to guide them as to the future, but it also shows how imperfect and useless information gathered by private means, and in such a manner, can be; for if such information had been of real value, the iron- and steel-producers would have run their plants to full capacity in the dull period of 1904, in which case we should not have been able to use the illustration we give on page 226, which illustration shows that even the manufacturers who possessed this information gained no idea from it of what the future had in store for them. If the manufacturers who possessed the information had suspected the truth and acted upon it, it would have benefited these few, but no national benefit would have resulted. To have produced such a result, it would have been necessary that the whole people should know what was coming. What could an army accomplish,

if only a small part of the individuals composing it were organized, officered, and drilled, while the great majority were permitted to act as each individual saw fit! The information needed can no more be gathered by private means than can the United States Census. Such information, to be effective, must be known to the whole people, and they must know that it is compiled from sworn statements made to the government. Anything less reliable and comprehensive than this would be of little value.

The unfilled orders of the United States Steel Corporation comprise about one half of the unfilled steel orders of the country. The volume of these orders is the best indication we now have of what the future business of the country will be. But valuable as it is, it is entirely inadequate. What the country needs for its intelligent guidance is the whole volume of the unfilled orders of *all* the important products that enter into construction. The existing conditions of supply and demand of steel may differ widely from the existing conditions of supply and demand of other construction materials. A short supply in but one product may hold back the whole volume of construction. We need official information of the prospective supply and demand of all construction materials; not only how much of each is needed, but when it is needed; not only how much the signed contracts call for, but an official and expert estimate of what additional percentage will probably be required, for such current business as is usually executed without the preliminary of written contracts, as, for example, the work of repairs, replacements, and necessary enlargements. These, although small in each individual case, make up a large amount in the aggregate. This last-named class can be estimated very closely after a few years of experience.

When the constructive business of the country is thus systematized, its aggregate results for a decade will be as different as the results of a trained and disciplined army are different from the results of a mob. When we attain

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this new basis, we will be on a foundation from which we can contend more successfully for our share of the outside trade of the world. Heretofore, our growth in many branches of the foreign trade has not been permanent. It was only when our prices were low that we could win any large share of trade in such commodities as pig iron, for instance; and when the next boom occurred, our prices advanced so much more than they did in the other manufacturing countries that our gain was entirely lost. This has occurred now repeatedly within the last fifty years.

High prices are of no benefit to a country. The first producers to advance prices may get some benefit for a time, but it is not long. To advance the price of any product is almost certain to advance the price of the raw materials and labor which enter into that product. The wage-earners of the United States enjoy a greater amount of comforts than the wage-earners of other countries, not because of higher wages, but because they produce so much more per capita. On page 25 it was made clear that doubling the pay of producers did not double their comforts. The only way to double their comforts is to double products at the same pay. The shoemaker who could sell a pair of boots for \$600 in confederate days, and was obliged to pay \$20 for a cup of coffee, lived no better and enjoyed no more comforts than when he sold boots at \$10 a pair. What the business of any country should strive to bring about is steady prices, and high prices are never steady. The remedy we have proposed should have a powerful influence in preventing abnormal advances in the price of construction materials. We have had ample experience to prove that it cannot be accomplished without some intelligent preparation. The effort made by the United States Steel Corporation to stop the advance in the prices of steel in 1901 was an evidence of a broad-minded spirit and a commendable purpose on the part of its management, but it was also evidence of how powerless even the greatest of all pro-

ducers is to combat natural tendencies. It was trying to prevent the natural result of an oversold market. The only possible way to prevent such a result is to prevent the cause.

The remedy we propose will probably be only the first step; other improvements and advances will undoubtedly follow. The industries to-day are as much in the dark as medical science was before the microbe of disease was discovered. That discovery simply furnished medical science with a sound basis from which to make real progress. And, as a result, new remedies for physical diseases are now constantly being discovered. The remedy we propose for industrial depressions may be nothing more than a first step from a sound basis. When the system of collecting information of the volume of construction materials involved in signed contracts is established, the way may be opened for acquiring reliable data antedating signed contracts. Many of the constructive enterprises that involve large quantities of materials are fully decided upon a long time before contractors are asked to bid upon them; of these the government could gather and publish information a long time before contracts are executed for them. Already a very successful business of this nature is carried on in New York and Chicago by private enterprise. The United States Department of Agriculture became vastly more valuable to the nation when, in addition to its published statistics of *the past*, it gathered and published information on which reliable forecasts could be made of *the future*. The United States Department of Commerce and Labor is well fitted to gather and publish these reports which are so sorely needed by the industrial workers of the nation. The unfilled orders of the United States Steel Corporation necessarily do not reach the public until some weeks *after* the contracts are signed, while, as noted above, the data of the largest enterprises may be known weeks *before* contracts are signed. Let us analyze this matter, for it gives some idea how comprehensive and

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valuable these proposed government reports might be made.

By referring to Appendix Q, it will be seen that the high point of unfilled orders of the United States Steel Corporation was, on December 31, 1906, 8,489,718 tons. It will be seen, also, that this was an accumulation from September 30, 1904, when it was but 3,027,436 tons; the quarterly gain and loss being as follows:

	<i>Gain</i>	<i>Loss</i>
To Dec. 31, 1904	1,668,767	—
“ Mar. 30, 1905	901,357	—
“ June 30, “	—	767,905
“ Sept. 30, “	1,035,722	—
“ Dec. 31, “	1,739,709	—
“ Mar. 31, 1906	—	586,374
“ June 30, “	—	209,123
“ Sept. 30, “	1,127,295	—
“ Dec. 30, “	552,834	—
	<hr/>	<hr/>
Total Gain	7,025,684	1,563,402
Total Loss	1,563,402	—
Net Gain.....	5,462,282	—

In analyzing this, it must be borne in mind that the making of a contract for any large constructive enterprise takes time for each step. For instance, starting at the point where the plans and specifications are completed and handed to contractors with request for bids on the work, the contractor would first figure out the quantity of material the work would require; this might take from one to several weeks. He would then ask producers for bids on the materials; this would involve more time. When these bids were received, he would figure out what it would cost him to complete the enterprise; this would consume more time. To this he would add the profit he wished to realize, draw up his bid, and present it to the prospective owners, involving another lapse of time. Considerable time would be required by the prospective owner for consideration and comparison of the different bids. When these matters were adjusted, and the contract awarded, the successful bidder would proceed to

close his contracts with the material men. When this was done, the Steel Corporation would enter on its books such portion of the order as was received by it. The aggregate time required by these various negotiations would amount to several weeks. Now the gain of 1,668,767 tons on December 31, 1904, included all increase in the unfilled orders from September 30 to December 31, of that year, and as the Steel Corporation, at that time, published its unfilled orders but once in three months, it was all the way from one day to ninety-one days after the contract was closed before the information reached the public. Now add the time consumed in this last act to whatever time may have been estimated for the five acts first described, and it will be observed that from the time of naming price on materials to the time of publication of the unfilled orders of the Steel Corporation is not a matter of weeks, but a matter of months.*

The commencement of a boom is always marked by the closing of contracts for a large volume of construction; nearly everything under negotiation being affirmatively decided upon on account of the advancing tendency of prices. But mark the fact that they are almost universally on the prices given a long time before. If prices were not thus held open, great confusion would result, for if the manufacturers of material were at liberty to put up their prices before the contract was awarded, each advance in price would require the whole proceeding described above to be set aside and all gone over again.

The system proposed is entirely practicable, and would involve little or no extra trouble or expense to individuals. When, for instance, a contractor bids on constructive work, he must, for his own purposes, necessarily ascertain the amount of iron, steel, lumber, brick, lime, cement, etc., that will be involved in its execution, and in what

* Since above was written the Steel Corporation have commenced to report unfilled orders monthly instead of quarterly, which shortens the time of this one act two months, but still leaves the delay a matter of several months on large enterprises.

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months these materials will be required. Thus an accurate knowledge of the quantities and time of delivery of the materials for each contract could be furnished, at the time the building permit was applied for, without extra trouble or expense. Then, again, it is already customary to keep a record of the percentage of progress on all large constructive works. It is by such records that payments for completed work are made from time to time, or insurance is effected. Thus, this additional information could be furnished from month to month, as the work progresses, without extra trouble or expense. The additional expense to the whole people through their government would be infinitesimal in comparison with the benefit it would be to the whole people.

OBJECTS OF THE PROPOSED REMEDY

The chief objects of the proposed remedy are: first, to prevent contracts for construction being made beyond the capacity of the country to execute; second, to stimulate an increase in the permanent capacity to produce in time to meet and keep pace with any permanent increase in the prospective rate of consumption; third, to keep the producers advised of the future demand in order that they may not be liable to make the mistake of closing down their works and discharging workmen during temporary dull periods when there is a sure demand in the near future which will consume all they can accumulate in the dull period.

ILLUSTRATION

By referring to Appendix Z, it will be seen that there was a falling off in iron production, from a 19,500,000 tons-per-annum rate to a 12,900,000 tons-per-annum rate, in the three months from April to June in 1904. This was at a time when plans and specifications for construction were being matured, and for which contracts were soon closed, which would not only have absorbed all the iron and steel the country could have produced at

the 19,500,000 tons-per-annum rate during the next three and a half years, but would have absorbed a reserve stock of 13,000,000 tons in addition, had such a stock been in existence. This falling off in iron production occurred at a time when it was selling in the United States at an average of \$12.50 per ton, and on the eve of an advance in price which did not stop until it reached \$24.50 per ton.

The iron-producers curtailed production because *they did not know* this large future demand was coming, and because they believed that an accumulation of iron would result in a decline in its price. But it needs no argument to show that, if *it had been known* that there was an assured demand in the near future which would be large enough to absorb all the reserve stock that could be accumulated, there would have been no fear that the temporary accumulation would cause a decline in prices, and the producers, instead of curtailing production, would have pushed production to the full capacity of their plants, which would have been a profit to them and a great relief to the country.

EFFECT OF THE PROPOSED REMEDY

It needs no argument to convince that, if the manufacturers of construction materials knew in advance that they had collectively contracted for all the materials they could collectively produce in any given time, it would result in their ceasing to make further contracts for that time until the capacity to produce was increased. The instinctive aversion to loss is the natural motive relied upon to insure this result.

It needs no argument to convince that, if it were known that all the construction materials the country could produce for any given time were contracted for in advance, and more construction was being offered, this knowledge would stimulate the producers to increase their capacity. The instinctive desire for gain is the natural motive relied upon to insure this result.

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On page 112, attention was called to the fact that contracts for construction are signed anywhere from several months to one or more years in advance of the time when the materials for their erection are required to be delivered. Under the proposed system the knowledge of the future demand would be obtained by the government and given out for publication immediately after, or perhaps before, the contracts were signed, and thus the producers would have from several months to one or more years in which to enlarge their plants to meet and keep pace with the assured demand. The larger the construction covered by the individual contracts, the longer the notice of future demand would probably be. It is quite obvious, therefore, that under the proposed system it would be quite practicable to make known any prospective increase in construction in ample time to build new plants, or enlarge existing ones, to meet any demand that might come.

On the other hand, should the statistics at any time show that the contracts for construction were falling off, they would also reveal at what time in the future the *actual* construction would fall off, and this advance information would enable the producers to avoid an unnecessary enlargement of their plants or an unnecessary accumulation of materials.

As noted in other parts of this volume, it is the demand which comes for delivery of construction materials in excess of the country's capacity to supply it on contract time that causes the abnormal advance in prices. The effect is somewhat similar to a large volume of short sales on an exchange. Under the proposed system, the public would be kept constantly advised of the future monthly capacity to produce, of the total amount of construction materials under contract, and the full amount liable to be called for, as long a time ahead as contracts existed ahead. Consequently there would be no liability of short sales of construction materials for any period.

Under these conditions, there would probably never

again be an extreme instance of abnormal advance in the price of construction materials, nor any further violent checks to a maximum rate of construction, unless they came from war, financial panic, or some other external cause. In other words, the extremes of supply and demand would be neutralized. The nation's supply of construction materials would increase to meet a known future demand almost automatically, and as surely as if the whole matter was under the direction of one supreme head in which there existed a perfect knowledge of the future demand and the power to increase the supply in time to meet it. Up to the present time, the supplies for the industries of the country have depended upon as many heads as there were separate business organizations, all of them almost totally lacking in knowledge of what the future demand, or what the future supply, would be.

The glaring absurdity of the industrial nations expecting to conduct their most important industrial affairs to the best interest of their citizens under such a total want of system is accentuated by their experience in the past, and by contrasting it with the careful system pursued by individuals in conducting enterprises of even moderate magnitude. There is probably not a successful department store in existence that has not an elaborate and carefully conducted system for keeping advised of the prospective demand for goods, and the gathering of a supply to meet this demand when it comes; yet *here is the constructive business of five great nations allowed to drift at random, without one solitary effort being made to ascertain what will be the aggregate demand or the aggregate supply for the great staples on which the regularity and prosperity of their whole industrial systems depend.* The result has been nine great calamities. First came a long period, in which great numbers of idle breadwinners were consuming wealth and producing nothing. They were anxious to work even for minimum wages, and in many cases for barely sufficient to provide their families with the necessities of life. Notwithstanding this, the manu-

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facturers of these countries continued to discharge more workers, or to shorten the hours of those they retained, until the product of their factories was reduced to the small amount they could sell from month to month. These long periods were followed by short periods, in which the business of these countries suffered in consequence of not being able to obtain the materials the idle breadwinners might have produced in the first-described periods. As well might one of these nations attempt to assemble a great army and rely upon the head of each company or regiment to gather its own supplies. What a spectacle—the important manufacturing and mechanical industries of five nations drifting at will for generations, without the first effort being made to inaugurate a system to regulate them! What a rich field of usefulness does this condition open to these governments, and particularly to the Bureau of Commerce and Labor of our own government!

There is nothing forced or unnatural about this proposed remedy. It amounts simply to keeping the country advised of how much construction can be executed with the existing capacity each month in the future, and how much is under contract and liable to be demanded during these months. It leaves the citizen as free as ever to do what he chooses, but self-interest will prevent his taking contracts which cannot be executed, and self-interest will prompt an increase in capacity when the volume of assured construction justifies it.

If some of the contractors or producers should take the risk, and continue to make contracts for any given period after the limit of capacity for that period was reached, the statistics of the following month would reveal it, and, if this overcontracting were done to any considerable extent, it would be followed by an advance in prices, which would stimulate an increase in the capacity to produce until the supply and demand again became adjusted.

If, on the other hand, the contracts for future-delivery

materials for any given period should fall below the capacity to produce in that period, it would be followed by a decline in prices, and this in turn would have a tendency to stimulate the demand until the supply and demand again became adjusted.

These fluctuations in supply and demand for future-delivery materials would be affected under very small fluctuations in prices, because, as noted on pages 118 to 119, a large volume of the contracts for construction is checked before the advance in prices has reached as much as 10 per cent., and under the proposed system the advances in prices would be known as contracts were being signed, instead of several months or one or two years after they were signed.

This advance information regarding the future volume of supply and future volume of demand would result in a natural adjustment of these two important elements to each other. The instinctive desire for gain would be as active under the new system as it is at present, but its operation and effects would be entirely different. Even if prices were abnormally low and the far-seeing ones were disposed to contract for an excessive amount of construction, the builders and manufacturers would know when the capacity of the country was reached, and would refuse to make further contracts for the period already fully covered; whereas, in the past, in the absence of any such knowledge, they have been eager to accept such an excessive amount of contracts as eventually to cause them embarrassment and loss. Thus the instinctive desire for gain would become the check to prevent overcontracting, instead of the incentive which in the past has caused the overcontracting.

The overcontracting which has in the past been the cause of the abnormal advances in price of construction materials would thus be done away with, and, the cause being removed, the abnormally high prices would not again be reached. High prices being done away with, such violent checks to investment construction as have here-

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tofore resulted from this cause would be done away with. We should have no more such excessive fluctuations in the prices of construction materials, and greater uniformity in demand and supply would naturally result.

The conditions which create booms and depressions are the two extremes of three different things, namely: demand, supply, and prices. If the two extremes of each of these three things were brought together, it would be like mixing an acid and an alkali, that is, the active qualities of each would be neutralized, and the six extreme conditions would thus give place to three normal conditions. The abnormal fluctuations in prices would be done away with, because of the advance knowledge of the future; for the same reason the supply would be increased to meet a reasonable demand, and the demand would thus be confined to the possible supply.

It has been the absence of knowledge of the future conditions of supply and demand which has been responsible for the great irregularities in these two conditions. The furnishing of this knowledge of the future should therefore bring about such a perfect adjustment of these two conditions that booms and depressions, as far as they are the results of this particular derangement from within the industries themselves, would be substantially done away with.

To restore prosperity, therefore, the low prices which stimulate investment construction must be reached, whatever those prices may be, and, to continue prosperity, the abnormal demand which causes high prices must be prevented. The proposed remedy will not only show the public to how low a level prices must drop to restore prosperity, but will show when that level has been reached, and thus do away with the danger of prices going so low as again to stimulate an excessive demand. The producers and consumers of the country will simply be working *in the light*, instead of working *in the dark*, and the extremes of demand, supply, and prices will probably never recur to any abnormal extent.

We do not claim that the remedy we have suggested will be a cure-all or panacea; perfection cannot be expected in any of the business systems, but that is no reason we should not strive to gain a near approach to it. Old microbes and new must be expected to keep up their warfare in each of the systems. Fluctuations in the prices of construction materials will not be annihilated, but when the proposed remedy is well established they will undoubtedly be reduced to a minimum. The splendid progress some cities and nations have made in warding off or mitigating the ravages of pestilences has made it possible to build enduring cities. As a vivid object-lesson of how we may benefit by wise and effective efforts, we have the spectacle of the nations which still suffer from famine and pestilence, and the nations which do not. Wise and intelligent efforts bid fair to further the progress already attained in mitigating the evils of panics, wars, bad legislation, political upheavals, and other maladies. A different remedy has been required for each one of them. Improvement has come only as the people have discovered the logical remedies for each, and applied them. Weeds will develop without man's attention, but good crops never. Industrial depressions have grown to be a very great calamity; some of their causes cannot be overcome; but if the analysis described in this book has not led us astray, the most serious and disastrous of them can be very greatly alleviated, if not wholly overcome.

**APPENDICES TO
INDUSTRIAL DEPRESSIONS**

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APPENDIX A (FIRST PART)

AVERAGE PRICES PER GROSS TON OF CHARCOAL PIG IRON AT PHILADELPHIA FROM 1799 TO 1849

FROM REPORTS OF AMERICAN IRON AND STEEL ASSOCIATION

The following table has been compiled from the Statistical Chart of Mr. William G. Nielson, and embraces the prices of charcoal pig iron from the beginning of the century to the time when anthracite pig iron became the standard for comparison. Until May, 1827, the following prices are for best pig iron; from May, 1827, to June, 1833, they are for an average of all grades; from June, 1833, to January, 1840, they are for gray iron; and from January, 1840, to the close of the table they are for No. 1 Foundry. After 1849 the standard of quotations was No. 1 anthracite foundry pig iron, hereafter given.

Years	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1799	36½	36½	36½	36½	36½	36½	36½	36½	36½	36½	36½	36½
1800	36½	36½	36½	36½	36½	36½	36½	36½	36½	36½	36	34½
1801	33½	33½	33½	33½	33½	33½	31	32½	32½	32½	32½	32½
1802	32½	32½	32½	32½	32	31½	30½	29½	29	29	29	28½
1803	28½	28½	28½	28½	29	29	29½	29½	29	30	30	30
1804	30	30	30	30	30	30	30	30	30	29½	29	29
1805	29	29	29	29	29	29½	31	32	32	32½	33	33½
1806	35	35½	35½	35½	35½	35½	35½	35½	35½	36	36½	37
1807	37	37	37	37½	38	40	40	40	40	40	40	40
1808	40	40	40	40	40	40	40	40	40	40	40	40
1809	40	40	40	40	40	40	40	40	40	40	40	40
1810	38	38	38	38	38	38	38	38	38	38	38	39
1811	38	38½	41½	43½	45	45	45	45	45	46	47½	47½
1812	47½	47½	47½	47½	47½	47½	47½	47½	47½	47½	47½	47½
1813	47½	47½	47½	47½	47½	47½	47½	47½	47½	47½	47½	46
1814	45	45	45	45	45	45	45	45	45	46	48½	52½
1815	55	55	55	55	55	55	54	52½	52½	52½	52½	52½
1816	52	50½	50	50	50	50	50	50	50	50	50	50
1817	50	50	50	50	50	49	47	45	44½	43	42½	42½
1818	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42	41
1819	39½	38	38½	37½	35½	35	35	35	35	35	35	35
1820	35	35	35	35	35	35	35	35	35	35	35	35
1821	35	35	35	35	35	35	35	35	35	35	35	35
1822	35	35	35	35	35	35	35	35	35	35	35	35
1823	35	35	35	35	35	35	35	35	35	35	35	36½
1824	37½	37½	37½	39	40	40	40	40	40	41½	42½	42½
1825	43	42½	43½	44	47½	50	50	50	50	49	47	45
1826	45	45	45	45½	46½	47½	47½	47½	47½	47½	47½	47½
1827	47½	47½	47½	46½	36½	35½	35	35	35	35	35	35
1828	35	35	35	35	35	35	35	35	35	35	35	35
1829	35	35	35	35	35	35	35	35	35	35	35	35
1830	35	35	35	35	35	35	35	35	35	35	35	35
1831	35	35	35	35	35	35	35	35	35	35	35	35
1832	35	35	35	35	35	35	35	35	35	35	35	35
1833	35	35	35	35	35	40	40	40	40	40½	41½	40
1834	35	31	30	30	30	30	30	30	30	30	29½	28½
1835	29½	29½	29½	30½	30½	30	30	30	30	30	30	31½
1836	32	32½	35	39½	41	41½	41½	42	45	47	49	50½
1837	51½	52½	52½	51	49	47	42	39	35½	34½	35½	36
1838	35	35½	35½	34	31	31½	32	32	31½	31½	31½	31½
1839	31½	32	33	34	34	34	33½	33½	33½	32½	32	32
1840	32	32	31½	30½	30	30	30	29½	29	29	29	29
1841	29	29	29	29	29	28½	28	28	28	28	28	28
1842	29½	29½	29	28½	28½	28½	28	27½	27½	27½	27½	26
1843	28½	29	29	28	28	26	25	25	25½	25½	25½	26
1844	27	27	26½	26½	28	29½	29½	29½	29½	30	29½	30
1845	30	29	32	35	36½	35	33	32	30	30	31	32½
1846	33	33	32½	32½	32½	31½	31½	30	29	30	29½	30½
1847	30½	30	30	30	30	29½	29½	30	33	33½	34	34
1848	34½	32	30½	29½	29½	29	28	27	26	26	25½	25½
1849	25½	25½	25½	25½	25	24½	23½	23½	23½	24	24	24

APPENDIX A (SECOND PART)

AVERAGE PRICES PER GROSS TON OF NO. 1 ANTHRACITE
 FOUNDRY PIG IRON AT PHILADELPHIA SINCE 1842
 FROM REPORTS OF AMERICAN IRON AND STEEL ASSOCIATION

Years	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1842	—	—	—	—	27	27	26½	24½	25½	25	25	25
1844	24	24	24	24	24	26½	26½	26½	27½	28	27½	26½
1845	26½	26½	27½	33½	34½	33	31	28½	27	26½	28½	28
1846	28	28	28½	28	28½	28	29	26½	27½	27	28½	28½
1847	28½	28½	28½	28	29	29	28½	28	30½	33½	35½	33½
1848	31	28½	27½	26½	26½	26½	25½	25½	25½	25	25	24½
1849	25	24½	24½	24	23	23	22½	22½	21½	21	20	21
1850	21	21	20½	20½	20½	20½	20	20	21	21	21	21
1851	21	22	22	22	21	21	21	21	21	21	21	21
1852	21	21½	20½	20	20	20½	20½	21	23	26½	27	28
1853	32½	36½	35½	35½	35½	36	36	36	36½	37	37	36½
1854	37	36½	37	38	38	38	38	38	37	36	35	32½
1855	31½	29½	27½	26½	26	26½	26½	26½	28	28	28	27½
1856	27	27	27	28	28	28	27	27	27	26	26	26
1857	26½	26½	26½	27½	27½	27½	27½	26½	26½	25½	23½	23½
1858	23	22½	22½	22½	22½	22½	21½	21½	22	21	21	22
1859	23	23	24	23	23	23	23	23	22½	23	23	23
1860	22	23	23	22	22	22	22	22	22	22	22	22
1861	22	21	21	21	21	20	19	18	18	18	19	19
1862	20	20	20	21	21	22	24	24	24	25	30	31
1863	32	33	35	36	34	33	32	31	33	35	41	43
1864	43	48	50	54	57	57	69	73	72	63	61	59
1865	58	53	50	45	39	35	35	40	44	49	51	50
1866	50	49	46	41	41	43	46	47	48	49	49	49
1867	48	46	44	41	42	43	43	44	44	44	43	42
1868	38	36	37	36	37	37	38	39	40	41	42	43
1869	42	40	37	40	39	40	41	41	40	40	39	39
1870	36	34	34	33	33	32	32	33	33	32	31	31
1871	30	30	34	35	35	35	35	36	36	36	37	37
1872	37	40	47	40	49	53	51	52	53	53	51	47
1873	45	48	48	47	46	45	43	43	42	38	33	32
1874	32	32	32	32	31	31	31	31	29	29	26	24
1875	26	26	27	27	26	26	26	26	25	24	23	23
1876	23	23	23	22	22	22	22	22	21	21	21	21
1877	20	20	20	19	19	18	18	18	18	18	18	18
1878	18	18	18	18	18	17	17	17	17	17	16	17
1879	17	17	17	18	18	18	19	20	24	30	28	30
1880	40	41	37	31	25	23	23	25	23	23	24	25
1881	25	25	26	25	25	24	24	24	25	25	26	26
1882	26	26	25	25	25	25	25	25	26	26	26	25
1883	25	24	24	23	22	21	21	22	22	21	21	21
1884	20	20	20	20	20	20	20	19	19	19	18	18
1885	18	18	18	18	17	17	17	17	18	18	18	18
1886	18	18	18	18	18	18	18	18	18	19	19	20
1887	21	21	21	20	20	21	21	21	21	20	20	20
1888	21	20	20	19	18	18	18	18	18	18	18	18
1889	18	18	18	17	17	17	17	17	17	17	18	19
1890	19	19	19	18	18	18	18	18	18	18	18	18
1891	17	17	17	17	17	17	17	17	17	17	17	17
1892	17	16	16	16	16	15	15	15	15	15	15	15
1893	14	14	14	14	14	15	15	14	14	14	13	13
1894	13	13	13	12	12	12	12	12	12	12	12	12
1895	12	12	12	12	12	12	13	13	14	14	14	13
1896	13	13	13	13	12	12	12	12	12	12	12	12
1897	12	12	12	12	11	11	11	11	11	12	12	12
1898	12	11	11	11	11	11	11	11	11	11	11	12
1899	12	13	16	16	16	18	20	21	23	23	25	25
1900	25	24	23	23	22	20	17	17	17	17	16	16
1901	16	16	16	16	16	16	15	15	15	15	15	16
1902	17	18	19	20	21	22	24	24	24	24	24	24
1903	24	23	23	22	21	20	19	18	17	16	16	16
1904	15	15	15	15	15	15	14	15	15	15	16	15
1905	17	17	18	18	18	17	17	17	17	17	18	19
1906	19	19	19	19	19	19	19	19	22	24	25	26
1907	27	27	26	26	26	25	23	22	21	20	19	18
1908	18	18	18	18	17	17	17	17	17	17	17	17
1909	17	17	16	16	16	16	16	17	18	19	19	19
1910	19	19	18	18	17	17	16	16	16	16	16	16

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APPENDIX A (THIRD PART)

LOWEST AND HIGHEST PRICES OF SCOTCH PIG IRON IN THE NEW YORK MARKET

FROM THE AMERICAN ALMANAC, EDITED BY A. R. SPOFFORD, LIBRARIAN OF
CONGRESS, WASHINGTON, D.C.

YEAR	LOWEST	HIGHEST	YEAR	LOWEST	HIGHEST
	TON	TON		TON	TON
1825	\$35.00	\$75.00	1858	\$22.00	\$27.00
1826	50.00	70.00	1859	22.00	31.50
1827	50.00	55.00	1860	20.50	27.00
1828	50.00	55.00	1861	20.00	24.50
1829	40.00	55.00	1862	21.00	33.00
1830	40.00	50.00	1863	32.50	45.00
1831	40.00	47.50	1864	43.00	80.00
1832	40.00	47.50	1865	40.00	55.00
1833	37.50	47.50	1866	42.00	55.00
1834	37.50	48.00	1867	38.00	49.00
1835	38.00	42.50	1868	35.00	45.75
1836	38.00	62.50	1869	34.50	45.00
1837	40.00	70.00	1870	31.00	37.00
1838	37.50	55.00	1871	30.00	39.00
1839	37.50	45.00	1872	33.50	61.00
1840	32.50	40.00	1873	37.00	52.00
1841	32.00	37.50	1874	33.00	45.00
1842	23.50	35.00	1875	29.00	41.00
1843	22.50	32.00	1876	27.50	34.00
1844	30.00	35.00	1877	25.00	28.00
1845	30.00	52.50	1878	21.50	26.50
1846	35.00	42.50	1879	19.00	30.50
1847	30.00	42.50	1880	21.00	35.00
1848	25.00	37.50	1881	22.00	26.00
1849	22.50	27.50	1882	23.00	26.50
1850	21.00	24.00	1883	20.00	25.50
1851	19.00	25.00	1884	18.00	23.00
1852	19.00	31.00	1885	17.00	21.00
1853	28.50	38.00	1886	18.00	21.50
1854	32.00	42.50	1887	19.25	23.50
1855	26.50	37.00	1888	18.50	22.00
1856	29.00	37.00	1889	—	—
1857	28.00	37.50	—	—	—

KEY TO APPENDICES B AND C

REASONS FOR THE ELIMINATIONS MADE, AND LETTERS USED TO IDENTIFY EACH

- A. Occurred in one nation only, or not common to all five nations. (See page 73.)
- B. Exist continuously, or in prosperous times, as well as in depressed times. (See page 74.)
- C. Too unimportant to be responsible for mysterious industrial depressions in five nations contemporaneously. (See page 74.)
- D. Things which make or increase business, hence cannot be cause of depressions, which are a decrease in business. (See page 73.)
- E. Things which affect individuals but do not affect nations, hence not responsible for a great national depression. (See page 74.)
- F. Connected with financial affairs, financial derangements *do* cause industrial depressions, but when they do, it is known. They are not the cause of the mysterious depressions. (See pages 71 and 72.)
- G. Subjects of special treatment. (See page 73.)
- H. Conditions of depressions. They are the sum and substance of depressions, hence not the cause. (See page 76.)

The figures 1 to 21 used in the second column of Appendices B and C, are referred to on pages 76 and 77.

APPENDIX B

ALLEGED CAUSES OF DEPRESSIONS AS ELICITED BY COMMITTEES OF CONGRESS

FROM FIRST ANNUAL REPORT OF THE COMMISSIONER OF LABOR

C. A.	ADMINISTRATION, change in the policies of
C. B.	AGITATORS, undue influence of
G. F.	BUSINESS ENTERPRISES, stoppage of, by panic
C. F. D. B. A.	CAPITAL, influx of foreign
F. D. B.	aggressive inroads of
G. F. E. D.	excessive conversion of circulating, into fixed
F. E. B.	centralization of
F. E. C. B.	interests of, not identical with those of labor
F. E. D. B.	small capitalists swallowed up by larger ones
F. E. B.	manipulations of the money power
F. E. D. B.	combinations of
F.	undue accumulation of
E. D. C. B.	CIGAR FACTORIES, tenement house
	* (13) CONFIDENCE, want of
H.	(5) CONSUMPTION, under
E. C. B. A.	CORPORATIONS, land grants to
E. B.	CORRUPTION, in municipal governments
F.	CREDITS, expansion of
G.	CRISIS, commercial
F. A.	CURRENCY, contraction of
F. D. A.	inflation of
F. A.	agitation of
F. A.	fluctuations of
F. A.	depreciation of
F. A.	deficient volume of the
F.	withdrawal of, from circulation for speculation
F. A.	inflation of the, followed by contraction
F. A.	destruction of the
F. A.	faulty legislation regarding
F. A.	conversion of the government, into interest-bearing bonds
F. E. A.	losses of creditors during the depreciation of, and of debtors during the appreciation of
F. E.	losses of workingmen by goods rising sooner than their wages during the depreciation of, and wages falling before goods during the appreciation of

* Figures used in this column are referred to on page 76. .

APPENDICES

F. B.	suspension of specie payments
F.	overissue of irredeemable paper money
F. A.	distrust of paper money
F. A.	disturbed value of gold and silver
F. A.	resumption of specie payment
F. A.	changing the measure of the value of money
F. A.	fraud of the finance system
F. A.	borrowing depreciated money by government and individuals
F. A.	demonetization of silver
F. A.	remonetization of silver
F. A.	issue of greenbacks
F. A.	refunding act
F. A.	passage of resumption act in 1875
F. C.	solution of the labor question turns entirely on the circulation of
F.	DEBTS, contraction of
E. A.	contraction of large foreign, prior to 1874
H.	(1) DEMAND, want of
F. A.	DEPRESSION, prolonged by want of fixed policy for return to specie payment
E. C. B.	DESTITUTION, caused by sickness
G. E. C. B. A.	EDUCATION, lack of
E. C. B.	common school, not practical
G. E. C. B.	too exclusively intellectual
E. C. B.	indifference to
E. C. B.	defects of system of
B.	want of technical training
B.	want of industrial schools
B.	economic ignorance
D. B.	ELECTRICITY, great utilization of the power of
H.	(7) EMPLOYMENT, want of
E. D. B.	EXTRAVAGANCE, induced by credit
E. D. B.	of dress
D. B.	in government expenses
G. E. D. B.	FASHIONS, in dress, devotion to
C. B.	FOOD, adulteration of
C. B. A.	FRANCHISES, government not receiving enough for
E. C. B.	GIRLS, want of training of, for future duties
G. D. B. A.	GOODS, importation of
G. D. C. B.	IMMIGRATION, immigration of Chinese
F. E. C. B. A.	INCOME TAX, repeal of the
F. B.	INDEBTEDNESS, national and other
E.	INDOLENCE, instinctive and widespread
E. B.	INDULGENCES, harmful
E. C. B.	INTEMPERANCE
F. E. C. B.	INTEREST, too high rates of
D. B.	INVENTION, the great development of
B.	KNOWLEDGE AND WEALTH, lack of material
C. B.	LABOR, inefficiency of
E. C. B.	thriftlessness of
C. B.	lack of interest of the laborer in his work
C. B.	lack of combining power of
D. A.	too small wages to
C. B.	unadjustment of
E. D. C. B.	competition of

D. C. B.	too many hours of
C. B.	handicapped by legislation
H. C. B.	surplus of, in cities
E. C. B.	unjust taxation of
G. E. C. B.	coolie
G. E. C. B.	convict
E. C. B.	female
E. C. B.	child
E. C. B.	cheap imported
E. C. B.	want of economy of
C. B.	interests of, not identical with those of capital
C. B.	improvident and misdirected efforts of labor- ing classes
E. C. B.	social differences between the laboring classes and capitalists
E. C. B.	neglect of laboring men by the aristocracy
E. C. B. A.	Laws, bankrupt
E. C. B. A.	conspiracy
E. C. B. A.	land
E. C. B. A.	navigation
E. C. B. A.	patent
E. C. B. A.	trustee
E. C. B. A.	relative to the guardianship of children
E. C. B. A.	want of homestead exemption
E. C. B.	LEGISLATION, class
B.	faulty
E. C. B.	privileged
C. B.	withholding franchise from women
B.	MACHINERY, improper use of
D. B.	labor-saving
B.	MISCALCULATION
F. B.	MISMANAGEMENT, financial
C. B. A.	MONOPOLY, land
E. C. B. A.	telegraph
E. C. B. A.	news
E. B. A.	railroad
F. E. C. B.	interest
D. C. B.	invention
F. C. A.	NATIONAL DEBT, paying the, before the develop- ment of the industries of the country
C. B.	NECESSARIES OF LIFE, speculation in the
H.	(8) NON-PRODUCERS, too many
G. F.	PANIC OF 1873
E. C. B.	PASSES, free
E. D. C. B.	PRODUCE EXCHANGE, fluctuations in
E. D. B.	PRODUCTION, planless
D.	over
E. D. C. B.	PRODUCTS, competition of, in market
E. C. B.	PROFITS, unequal division of
F. E. B.	RAILROADS, speculation in
B. A.	pools of
E. C. A.	war rates of
E. C. B.	excessive freight rates of
E. D.	excessive building of
C. B. A.	land grants to

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F. A.	fictitious values in
C. B. A.	reformed system of
G.	REACTION
F. C. B.	REVENUE, faulty collection of
E. C. B.	SANITARY CONDITIONS, bad
F.	SPECULATIVE ERA, collapse from
F. E. D. C. B.	SPECULATION
D. B.	STEAM, great utilization of the power of
D. C. B.	STIMULATION, artificial
F. E.	STOCKS, watered
F. D. B. A.	SYSTEMS, monetary
E. D. C. B.	competitive
E. C. B. A.	educational
E. C. B.	contract
D. C. B.	government contract
E. D. C. B.	truck
F. B.	credit
F. D. B. A.	national banking
B. A.	political, perversion of
B.	wage
F. B. A.	financial, erroneous
E. C. B.	social, erroneous
G. C. B. A.	TARIFF, protective
C. B. A.	restrictive
G. C. B.	agitation of
E. C. B.	improperly adjusted
E. C. B.	unjust discrimination of
G. E. C.	changes of
G. E. C. B.	TAXATION, indirect
E. C. B.	needless
E. C. B.	unequal
E. C. B.	over, of land
E. C. B.	over, of labor
E. C. B.	under, of incomes
E. C. B.	under, of capital
E. C. B.	bonanza farms escaping
E. C. B.	capitalists escaping
E. C. B.	TELEGRAPH, high rates of
E. C. B.	TOBACCO
(15)	VALUES, expanded
G. F.	WAR, absorption of capital by
G. F.	destruction of property during
E. C. B.	WORK, piece

APPENDIX C

ALLEGED CAUSES OF DEPRESSIONS AS GATHERED BY AGENTS OF THE UNITED STATES BUREAU OF LABOR

FROM FIRST ANNUAL REPORT OF THE COMMISSIONER OF LABOR

F.	Acts that startle money-lenders, causing them to withdraw funds and refuse loans
C. B. A.	ADMINISTRATION, change of
G. D. C.	AGRICULTURAL PRODUCTS, low prices for
F. C. B.	APPRENTICE SYSTEM, abolition of the
F.	BANKS, failure of
F. A.	fear of adverse legislation relative to
F. E. D.	too liberal lending by
F. B. A.	BANKING SYSTEM, erroneous
E. B.	BUSINESS, lack of comprehension of details of
E. D. B.	CAPITAL, absorption of, by corporations
E. D. B.	aggressiveness of
E. C. B.	attitude of, versus labor
F. E. B.	concentration of, in banking and discounting centers, instead of geographical ones
F. E. D. B.	concentration of small interests in larger ones
F. E. B.	dead, invested in railroads
F. E. D. C. B.	farming on borrowed
G. F. E. D. B. A.	presence of foreign
F. E. C. B.	relation between, and labor lost
E. C. B.	syndicates and pools formed by capitalists and manufacturers to control labor
F.	timidity of
F. E. D. B.	too much, invested in manufactures
F. E. D. B.	too much, invested in railroads
E. C. B. A.	CASTE, absence of
E. D. C. B.	CHILDREN, employment of
E. D. B.	COMPETITION
	* (13) CONFIDENCE, want of
B. A.	CONGRESS, unfavorable and reckless legislation in
F. E. C.	CORNERS
E. D. C. B.	CORPORATIONS, creation of large
E. C. B.	monopoly of
E. C. B.	natural resources of the country in the hands of
F. E. D.	CREDITS, extended commercial
F. E. D. B.	CREDIT SYSTEM
G. E. C. A.	CROPS, small
F. A.	CURRENCY, agitation of the silver question
F. A.	coinage of the silver dollar
F. A.	contraction of the

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H.	(4)	want of, for home products
E. D. C. B.		MANUFACTURES, efforts of manufacturers to supply the inordinate fancy and demand of the public for splendid articles
D.		increase of
E. C. B.		MONOPOLY, land
G. D.		OVERPRODUCTION
C.		PARTY POLICY, exaggerating the effects of
C.		PAUPERS, importation of
C.		POLITICAL CAMPAIGNS, reaction after
A.		POLITICAL DISTRUST
	(14)	PRICES, inflation of
	(18)	reduction of, to cost of production
	(19)	PRODUCTION, uneven
	(16)	variation in the
	(20)	want of adjustment between, and consumption
G.		PROSPERITY, reaction from
H.	(6)	RAILROADS, decreased building of
D.		overbuilding of
F. D.		too much capital invested in
F. F. E. C.		RENTS, higher
D. C. A.		REPUBLICAN PARTY, extravagance of
F. E. C. B.		SECURITIES, selling valueless
F. E. C. B.		SPECULATION, engaging in, rather than productive industries
D.		STEEL, introduction of Bessemer
G. C.		STRIKES
E. C. B. A.		TARIFF, abuse of system of, among importers
G. C. B.		discussions of the
G. C. B. A.		discussions on the, in Congress
C. B. A.		excessive
G. C. A.		fear of Congressional action relative to the
G. C. A.		high, protective
C. A.		legislation on the
G. C. A.		low rate of
C. A.		mode of collecting duties on imported machinery
C. A.		protective policy of the
G. C. A.		reduction of the
G. C. A.		revision of the
E. C. A.		unequal duties of the
C. A.		unjust
E. C. A.		want of proper construction of the
E. C. A.		want of proper protection
G. E. C. B. A.		TAXATION, enormous
E. C. B. A.		unequal
E. C. B.		TONNAGE DUTIES, manner of determining
E. D.		TRADING, the overdoing of
D. C. B.		TRAFFIC, liquor
H.	(15)	UNDERCONSUMPTION
G. D.	(17)	WAGES, reduction of
		variation in the rates of
E. C. B.		WAGE SYSTEM, failure of the
G.		WAR
E. D. B.		WEALTH, consolidation of

APPENDIX D

STATISTICS OF PIG IRON IN THE UNITED STATES FROM 1896 TO 1910 INCLUSIVE

DATE	Actual Production of Pig Iron for the Month	Total Stocks in Furnace and Warrant Yards on the first of each Month	Annual Rate of the Month's Production	Annual Rate of the Month's Consumption	
1896	January ...	903,189	662,754	10,663,462	9,341,722
	February ..	803,300	772,899	10,193,989	9,659,221
	March	857,681	817,463	10,125,493	9,530,365
	April	825,253	867,057	10,068,085	9,757,699
	May	817,869	892,960	9,656,126	9,336,220
	June	757,701	919,618	9,243,957	8,497,989
	July	729,142	981,782	8,608,580	7,543,208
	August	584,536	1,070,563	6,901,296	6,142,164
	September ..	499,350	1,133,824	6,092,070	5,461,470
	October	523,005	1,186,374	6,174,838	6,547,714
	November ..	563,284	1,155,301	6,872,211	7,408,611
	December ..	694,059	1,110,601	8,194,734	7,821,558
1897	January ...	749,952	1,141,699	8,830,080	7,508,292
	February ..	687,652	1,251,848	8,964,035	8,603,855
	March	784,685	1,281,863	9,239,037	8,913,237
	April	743,409	1,309,013	9,044,804	8,921,265
	May	738,571	1,319,308	8,696,073	9,132,056
	June	712,380	1,282,976	8,667,290	8,978,138
	July	711,299	1,257,072	8,374,977	8,625,261
	August	786,866	1,236,215	9,265,890	9,546,426
	September ..	823,449	1,212,837	10,018,624	11,379,904
	October	922,959	1,099,397	10,867,093	11,862,793
	November ..	962,586	1,016,422	11,711,703	12,018,435
	December ..	1,015,879	990,861	11,961,154	11,336,903
1898	January ...	1,004,568	1,042,882	11,827,981	11,311,766
	February ..	941,716	1,085,900	12,275,941	11,999,280
	March	1,041,950	1,108,955	12,268,120	12,397,768
	April	1,001,486	1,098,151	12,184,743	12,358,299
	May	998,766	1,083,688	11,762,020	11,957,476
	June	928,924	1,067,400	11,301,912	11,774,928
	July	930,868	1,027,982	10,960,220	11,129,792
	August	921,993	1,013,851	10,355,725	11,166,961
	September ..	908,297	946,248	11,050,948	12,254,824
	October	1,009,418	845,925	11,885,078	12,660,180
	November ..	1,009,719	781,334	12,284,910	13,196,454
	December ..	1,064,000	705,372	12,527,738	13,076,750

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DATE	Actual Production of Pig Iron for the Month	Total Stocks in Furnace and Warrant Yards on the first of each Month	Annual Rate of the Month's Production	Annual Rate of the Month's Consumption
1899	January ... 1,068,180	659,621	12,576,962	13,190,870
	February .. 872,200	608,462	11,369,750	12,142,394
	March 1,076,936	544,075	12,680,047	14,259,811
	April 1,075,543	412,428	13,085,772	13,850,424
	May 1,104,158	348,707	13,000,570	13,615,462
	June 1,094,991	297,466	13,322,397	14,119,962
	July 1,115,801	231,003	13,137,510	13,561,206
	August 1,172,810	195,695	13,808,874	14,166,618
	September . 1,185,669	165,883	14,325,635	14,480,159
	October ... 1,283,909	153,006	15,116,997	15,284,733
	November . 1,300,487	139,028	15,822,594	15,888,942
	December .. 1,314,334	133,499	15,475,218	15,363,834
1900	January ... 1,295,149	142,781	15,249,335	14,880,431
	February .. 1,188,320	173,523	15,490,600	15,104,608
	March 1,307,044	205,689	15,389,391	14,982,807
	April 1,291,359	239,571	15,711,529	15,059,149
	May 1,313,071	293,936	15,460,357	14,360,333
	June 1,248,394	385,563	15,188,796	13,664,736
	July 1,109,778	512,568	13,066,739	11,640,875
	August 1,016,902	631,390	11,970,199	10,808,695
	September . 958,959	728,432	11,667,329	11,033,513
	October 959,933	781,250	11,302,434	11,789,286
	November . 969,038	740,679	11,789,969	12,795,077
	December .. 1,089,247	656,920	12,825,005	13,194,941
1901	January ... 1,196,724	626,092	14,090,460	13,827,096
	February .. 1,159,420	648,039	15,113,868	15,578,064
	March 1,291,748	609,356	15,209,289	16,374,681
	April 1,319,227	512,240	16,050,562	16,710,598
	May 1,375,293	457,237	16,192,964	16,553,768
	June 1,307,229	427,170	15,904,614	16,013,382
	July 1,314,666	418,106	15,479,129	15,614,165
	August 1,335,135	406,853	15,720,133	15,969,877
	September . 1,341,066	386,441	15,942,490	16,267,030
	October ... 1,462,150	359,396	17,215,642	17,992,882
	November . 1,390,800	294,626	16,921,400	17,576,204
	December .. 1,322,646	240,059	15,573,090	15,813,522
1902	January ... 1,459,325	220,023	17,182,375	17,888,455
	February .. 1,284,520	161,183	16,744,650	17,122,998
	March 1,487,159	129,654	17,510,093	17,807,609
	April 1,516,789	104,861	18,454,243	18,570,883
	May 1,574,410	95,141	18,537,413	18,654,535
	June 1,484,520	85,381	18,061,660	18,101,008
	July 1,476,707	82,102	17,387,036	17,456,348
	August 1,498,416	76,326	17,642,640	17,582,820

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DATE	Actual Production of Pig Iron for the Month	Total Stocks in Furnace and Warrant Yards on the first of each Month	Annual Rate of the Month's Production	Annual Rate of the Month's Consumption
September	1,442,944	81,311	17,555,822	17,626,634
October	1,510,577	75,410	17,785,824	17,732,040
November	1,469,447	79,892	17,878,274	17,635,070
December	1,561,681	100,159	18,387,605	18,270,233
1903 January	1,518,889	109,940	17,883,696	17,598,588
February	1,420,180	135,699	18,513,061	18,082,069
March	1,637,083	169,615	19,275,337	19,296,133
April	1,650,540	171,348	20,081,570	20,137,010
May	1,751,084	166,728	20,617,599	20,138,031
June	1,721,854	206,692	20,949,227	20,233,439
July	1,611,229	266,341	18,970,927	18,104,119
August	1,612,740	338,575	18,988,608	18,139,008
September	1,599,669	409,375	19,462,634	18,185,402
October	1,474,679	515,811	17,363,154	16,117,434
November	1,092,321	619,621	13,289,911	12,183,571
December	904,779	711,816	10,653,046	10,081,786
1904 January	971,097	759,421	11,465,212	11,465,668
February	1,230,387	759,383	15,528,334	15,821,566
March	1,485,892	734,947	17,543,112	18,202,380
April	1,599,018	680,008	19,508,010	19,513,230
May	1,570,057	679,573	18,536,802	17,444,574
June	1,316,657	770,592	16,063,218	14,918,526
July	1,145,716	865,983	13,526,838	12,921,162
August	1,178,558	916,456	13,914,538	14,181,996
September	1,369,684	894,172	16,710,148	17,617,636
October	1,474,290	818,548	17,406,124	18,013,384
November	1,510,303	767,943	18,425,694	19,221,162
December	1,648,309	701,654	19,460,690	20,633,738
1905 January	1,810,019	603,900	21,311,516	21,703,508
February	1,624,328	571,634	21,174,426	21,517,104
March	1,973,441	543,065	23,235,796	23,530,612
April	1,956,819	518,497	23,807,959	23,526,907
May	1,994,017	541,918	23,477,947	22,648,459
June	1,824,480	611,042	22,197,840	21,198,540
July	1,780,219	694,317	20,960,646	20,089,506
August	1,870,110	766,912	22,019,042	22,356,794
September	1,901,064	738,766	23,129,633	24,124,109
October	2,057,023	655,893	24,219,784	25,471,876
November	2,018,901	551,552	24,563,301	25,656,405
December	2,046,000	460,460	24,090,000	—
1906 January	2,068,893	No official reports made.	24,359,526	No official reports made.
February	1,904,032	(See Footnote page 179)	24,820,417	(See Footnote page 179)
March	2,165,632		25,498,587	

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DATE	Actual Production of Pig Iron for the Month	Total Stocks in Furnace and Warrant Yards on the first of each Month	Annual Rate of the Month's Production	Annual Rate of the Month's Consumption
	April	2,073,222		25,221,354
	May	2,093,740		24,711,021
	June	1,970,733		23,997,267
	July	2,013,402		23,706,176
	August	1,926,736		22,685,741
	September ..	1,970,962		23,979,978
	October	2,196,818		25,865,725
	November	2,187,665		26,616,582
	December ..	2,235,306		26,318,899
1907	January ...	2,205,607		25,969,229
	February ..	2,045,068		26,658,922
	March	2,226,457		26,214,717
	April	2,216,558		27,000,771
	May	2,295,505		27,010,052
	June	2,234,575		27,337,301
	July	2,255,660		26,558,547
	August	2,250,410		26,496,758
	September ..	2,183,487		26,565,743
	October	2,336,972		27,505,942
	November ..	1,828,125		22,242,161
	December ..	1,234,279		14,532,631
1908	January ...	1,045,250		12,295,090
	February ...	1,077,740		12,849,222
	March	1,228,204		13,983,134
	April	1,149,602		13,849,962
	May	1,165,688		14,047,812
	June	1,092,131		13,556,850
	July	1,218,129		13,827,062
	August	1,359,831		14,879,992
	September ..	1,418,998		16,371,284
	October	1,567,198		17,668,650
	November ..	1,577,854		18,863,244
	December ..	1,740,912		19,926,190
1909	January ...	1,797,560		21,160,875
	February ...	1,707,340		22,256,240
	March	1,832,194		21,619,680
	April	1,738,877		21,156,130
	May	1,883,330		22,174,845
	June	1,930,866		23,599,440
	July	2,103,431		24,744,445
	August	2,248,930		26,479,290
	September ..	2,385,206		29,020,055
	October	2,599,541		30,524,585
	November ..	2,547,508		30,952,000
	December ..	2,635,580		31,033,030

No official reports made (See footnote page 179)

No official reports made (See footnote page 179)

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DATE		Actual Production of Pig Iron for the Month	Total Stocks in Furnace and Warrant Yards on the first of each Month	Annual Rates of the Month's Production	Annual Rates of the Month's Consumption
1910	January ...	2,608,605	No official reports made. (See page 179)	30,714,020	No official reports made. (See page 179)
	February ...	2,397,254		31,249,840	
	March	2,617,949		30,827,535	
	April	2,483,763		30,219,080	
	May	2,391,180		28,142,230	
	June	2,265,478		27,563,340	
	July	2,148,442		25,296,325	
	August	2,106,847		24,806,495	
	September .	2,056,275		25,917,830	
	October	2,093,121		24,644,800	
	November .	1,909,780		23,235,535	
	December ..	1,777,817		20,896,980	

APPENDIX E

AVERAGE PRICE OF PIG IRON IN THE UNITED STATES

From 1896 to 1910

1896	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
No. 1 Foundry, Philadelphia	13.50	13.50	13.50	13.25	12.87	12.75	12.75	12.75	12.50	12.50	12.75	12.75
Bessemer, Pittsburg	12.50	12.75	12.00	13.25	12.75	12.50	11.25	11.50	11.25	11.75	12.25	11.25
No. 2 Foundry, Chicago	13.00	12.00	12.00	11.75	11.50	11.25	11.00	10.75	10.50	10.75	11.25	11.25
Gray Forge, Cincinnati	10.25	9.50	9.25	9.00	9.00	9.00	8.75	8.50	8.25	8.90	9.00	9.10
No. 2 Foundry, Birmingham	9.25	8.50	7.50	7.75	7.75	7.75	7.50	6.50	6.75	7.25	7.75	7.75
Totals	58.50	56.25	54.25	55.00	53.87	53.25	51.25	50.00	49.25	51.15	63.00	51.10
Percentage above Zero	30	25	21	22	20	18	14	11	9	14	18	14
Average Price	11.70	11.25	10.85	11.00	10.77	10.65	10.25	10.00	9.85	10.26	10.60	10.22
1897												
No. 1 Foundry, Philadelphia	12.75	12.75	12.62	12.12	11.87	11.75	11.75	11.75	11.87	12.00	12.00	12.00
Bessemer, Pittsburg	10.50	10.75	10.50	9.75	9.25	9.25	9.00	9.00	10.00	10.50	10.50	10.00
No. 2 Foundry, Chicago	11.00	11.00	11.00	10.75	10.50	10.00	10.00	10.25	11.50	10.50	10.25	10.75
Gray Forge, Cincinnati	9.00	8.75	8.50	8.25	7.75	8.00	8.00	8.35	8.50	8.75	9.00	8.50
No. 2 Foundry, Birmingham	7.75	7.00	7.00	7.00	6.50	6.50	6.25	7.00	7.25	7.25	7.46	7.50
Totals	51.10	50.25	49.62	47.87	45.87	45.50	45.00	46.35	49.12	49.00	49.00	48.75
Percentage above Zero	13	12	10	6	2	1	0	3	9	9	9	8
Average Price	10.20	10.05	9.92	9.57	9.17	9.10	9.00	9.27	9.82	9.80	9.80	9.75
1898												
No. 1 Foundry, Philadelphia	12.00	11.87	11.75	11.75	11.66	11.50	11.25	11.33	11.50	11.75	11.75	12.00
Bessemer, Pittsburg	9.90	10.15	10.40	10.40	10.40	10.40	11.35	10.40	10.40	10.30	10.20	10.65
No. 2 Foundry, Chicago	10.50	10.50	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00
Gray Forge, Cincinnati	8.75	8.75	8.75	8.75	8.75	8.60	8.50	8.50	8.75	8.75	8.75	8.90
No. 2 Foundry, Birmingham	7.25	7.25	7.25	7.25	7.25	7.25	7.25	7.25	7.75	7.75	7.50	8.00
Totals	48.40	48.52	49.15	49.25	49.06	48.75	49.35	48.48	49.40	49.55	49.20	50.55
Percentage above Zero	8	8	9	9	9	8	10	8	10	10	9	12
Average Price	9.68	9.70	9.83	9.85	9.81	9.75	9.87	9.69	9.88	9.91	9.84	10.11

AVERAGE PRICE OF PIG IRON IN THE UNITED STATES (Continued)

1899	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
No. 1 Foundry, Philadelphia	12.12	13.25	16.00	16.50	16.62	18.62	20.37	21.75	23.50	23.75	25.00	25.00
Bessemer, Pittsburg	11.00	11.75	14.00	15.15	16.25	19.00	20.75	22.00	23.50	24.00	24.50	25.00
No. 2 Foundry, Chicago	11.25	12.00	14.25	15.00	15.35	17.00	17.00	20.00	22.00	23.00	23.50	24.50
Gray Forge, Cincinnati	9.50	10.50	12.75	13.00	13.25	15.00	16.25	17.00	18.50	19.25	19.25	19.25
No. 2 Foundry, Birmingham	8.25	9.50	11.50	11.75	11.75	13.50	15.00	15.50	17.50	18.50	18.00	17.50
Totals	52.12	57.00	68.50	71.40	73.22	83.12	89.37	96.25	105.00	108.50	110.25	111.25
Percentage above Zero	16	27	52	59	63	85	99	114	133	141	145	147
Average Price	10.42	11.40	13.70	14.28	14.64	16.62	17.87	19.25	21.00	21.70	22.05	22.25
1900												
No. 1 Foundry, Philadelphia	25.00	24.50	23.62	23.25	22.50	20.00	17.75	17.25	17.00	16.00	16.50	16.50
Bessemer, Pittsburg	24.90	24.90	24.90	24.90	24.90	19.75	18.00	16.05	14.00	13.25	13.65	13.55
No. 2 Foundry, Chicago	24.50	24.25	23.75	23.25	22.00	20.25	17.75	15.50	14.50	14.00	14.25	14.80
Gray Forge, Cincinnati	19.25	19.25	18.75	18.40	17.75	16.25	15.25	12.90	12.00	11.75	11.75	12.75
No. 2 Foundry, Birmingham	17.50	17.50	17.50	17.50	17.25	16.50	14.50	12.00	11.00	10.75	10.25	11.25
Totals	111.15	110.40	108.52	107.30	104.40	92.75	83.25	73.70	68.50	65.75	66.40	68.65
Percentage above Zero	147	145	141	139	132	106	85	75	52	46	48	53
Average Price	22.23	22.08	21.70	21.46	20.88	18.55	16.65	14.74	13.70	13.15	13.28	13.73
1901												
No. 1 Foundry, Philadelphia	16.00	16.00	16.00	16.00	16.00	16.00	15.87	15.50	15.50	15.50	15.75	16.25
Bessemer, Pittsburg	13.25	13.60	15.56	16.69	16.65	15.94	16.00	15.90	15.71	15.90	16.10	16.35
No. 2 Foundry, Chicago	14.60	14.12	15.19	15.50	15.50	15.50	15.50	15.20	15.00	15.00	15.00	15.50
Gray Forge, Cincinnati	12.25	11.87	12.56	13.12	12.60	12.25	12.00	12.00	12.00	12.25	12.69	13.00
No. 2 Foundry, Birmingham	11.00	11.00	11.50	11.75	11.75	10.75	10.50	10.50	10.50	10.75	11.25	11.75
Totals	67.10	66.59	70.81	73.06	72.50	70.44	69.87	69.10	68.71	69.40	70.79	72.85
Percentage above Zero	49	48	57	62	61	57	55	54	53	54	57	62
Average Price	13.42	13.32	14.16	14.61	14.50	14.09	13.97	13.82	13.74	13.88	14.16	14.57
1902												
No. 1 Foundry, Philadelphia	17.50	18.37	19.50	20.37	21.00	22.87	24.25	24.50	24.50	24.50	24.87	24.25
Bessemer, Pittsburg	16.70	16.93	17.56	18.37	20.95	21.25	22.00	21.75	21.75	21.95	22.25	22.12
No. 2 Foundry, Chicago	15.80	16.75	18.62	19.75	21.78	22.50	23.40	24.66	23.15	27.15	26.90	25.40
Gray Forge, Cincinnati	13.75	13.75	15.25	16.00	17.05	18.93	20.00	21.50	21.50	20.60	18.87	18.00
No. 2 Foundry, Birmingham	12.00	12.00	12.00	14.50	17.00	18.00	19.00	24.00	24.00	25.00	24.50	21.50
Totals	75.75	77.80	82.93	88.99	97.75	103.55	108.45	116.41	118.90	119.20	117.39	111.27
Percentage above Zero	68	73	84	95	117	130	141	159	164	165	161	147
Average Price	15.15	15.56	16.58	17.80	19.55	20.71	21.70	23.28	23.78	23.84	23.48	22.25

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1903												
No. 1 Foundry, Philadelphia	24.00	23.75	23.50	22.75	21.87	20.62	19.00	18.00	17.50	16.75	16.00	15.87
Bessemer, Pittsburg	22.35	22.35	22.00	21.60	20.00	19.85	19.00	17.85	16.35	15.85	15.25	14.35
No. 2 Foundry, Chicago	25.00	24.00	24.00	23.00	21.70	20.50	18.50	17.50	16.85	15.90	14.50	14.30
Gray Forge, Cincinnati	20.50	20.75	19.35	19.20	17.70	16.50	14.60	13.50	13.25	12.30	10.95	10.75
No. 2 Foundry, Birmingham	20.00	19.50	18.50	16.75	16.50	14.00	12.25	12.00	12.00	11.25	10.25	9.50
Totals	111.85	110.35	107.35	103.30	97.27	91.47	83.35	78.85	75.95	72.05	66.95	64.77
Percentage above Zero	148	145	139	130	116	103	85	75	69	60	49	44
Average Price	22.37	22.07	21.47	20.66	19.45	18.29	16.67	15.77	15.19	14.40	13.89	12.95
1904												
No. 1 Foundry, Philadelphia	15.50	15.50	15.80	15.75	15.40	15.19	14.94	15.00	15.00	15.12	16.40	17.62
Bessemer, Pittsburg	13.60	13.35	13.85	14.10	13.60	12.60	12.50	12.65	12.75	13.35	15.25	16.60
No. 2 Foundry, Chicago	14.10	13.75	13.55	14.00	13.80	13.40	13.30	13.35	13.40	13.70	15.80	16.60
Gray Forge, Cincinnati	11.00	11.00	11.25	11.75	11.25	10.75	10.75	11.00	11.00	11.75	14.25	15.00
No. 2 Foundry, Birmingham	9.50	9.50	9.25	9.25	9.75	9.75	10.00	10.00	9.50	9.75	13.00	14.25
Totals	63.70	63.10	63.70	64.85	63.80	61.69	61.49	62.00	61.65	63.67	74.50	80.07
Percentage above Zero	42	40	42	44	42	37	37	38	37	42	66	78
Average Price	12.74	12.62	12.74	12.97	12.76	12.34	12.30	12.40	12.33	12.73	14.90	16.01
1905												
No. 1 Foundry, Philadelphia	17.75	17.75	18.00	18.25	18.06	17.60	17.19	17.25	17.25	17.87	18.65	19.00
Bessemer, Pittsburg	16.85	16.45	16.35	16.30	16.20	15.65	15.00	15.40	15.90	16.50	17.70	18.10
No. 2 Foundry, Chicago	17.50	17.50	17.50	17.50	17.25	16.60	16.15	16.35	16.50	17.55	18.90	19.50
Gray Forge, Cincinnati	15.25	15.20	15.00	15.20	14.81	13.35	12.28	13.00	13.00	13.88	15.35	15.75
No. 2 Foundry, Birmingham	14.25	13.50	13.50	13.75	13.25	12.50	11.75	11.75	12.00	13.00	14.50	14.50
Totals	81.60	80.40	80.35	81.00	79.57	75.70	72.37	73.75	74.65	78.80	85.10	86.85
Percentage above Zero	81	79	79	80	77	68	61	64	66	75	89	93
Average Price	16.32	16.08	16.07	16.20	15.91	15.14	14.47	14.71	14.93	15.76	17.02	17.37
1906												
No. 1 Foundry, Philadelphia	19.00	19.00	19.00	19.12	19.25	19.25	19.25	19.80	22.62	24.00	25.00	26.50
Bessemer, Pittsburg	17.32	17.29	17.26	17.25	17.24	17.38	17.57	17.96	18.44	20.06	21.96	22.75
No. 2 Foundry, Chicago	19.25	19.25	19.00	18.75	18.50	18.10	18.30	18.90	19.75	21.50	26.50	27.00
Gray Forge, Cincinnati	15.75	15.05	14.85	14.75	14.75	14.65	14.55	15.40	16.50	17.50	21.70	22.00
No. 2 Foundry, Birmingham	14.50	14.25	14.25	14.25	14.00	14.00	13.50	14.50	15.50	16.75	19.50	24.00
Totals	85.82	84.84	84.36	84.12	83.74	83.38	83.17	86.56	92.81	99.81	114.66	122.25
Percentage above Zero	91	88	87	87	86	85	85	92	106	122	155	172
Average Price	17.16	16.97	16.87	16.82	16.75	16.67	16.63	17.31	18.56	19.96	22.93	24.45

AVERAGE PRICE OF PIG IRON IN THE UNITED STATES (Continued)

1907	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
No. 1 Foundry, Philadelphia	27.50	27.37	26.87	26.56	26.60	25.75	23.62	22.50	21.19	20.40	19.44	18.94
Bessemer, Pittsburg	22.82	22.78	22.85	22.16	24.10	24.10	23.30	22.70	22.90	22.80	20.65	19.90
No. 2 Foundry, Chicago	26.00	26.50	26.75	27.50	27.40	26.50	25.40	24.50	23.60	22.60	20.60	19.00
Gray Forge, Cincinnati	22.60	22.50	22.70	21.50	21.90	21.35	20.55	19.95	18.85	18.45	17.35	15.50
No. 2 Foundry, Birmingham	23.50	22.75	22.75	22.75	22.75	22.50	21.75	20.75	18.50	18.25	16.50	14.00
Totals	122.52	121.90	121.92	120.47	122.75	120.20	114.62	110.40	105.04	102.50	94.54	87.34
Percentage above Zero	172	171	171	168	173	167	155	145	133	128	110	94
Average Price	24.50	24.38	24.38	24.09	24.55	24.04	22.92	22.08	21.00	20.50	18.91	17.47
1908												
No. 1 Foundry, Philadelphia	18.70	18.75	18.60	18.15	17.45	17.00	17.00	17.00	17.15	17.25	17.50	17.75
Bessemer, Pittsburg	19.00	17.90	17.85	17.50	16.90	16.90	16.90	16.20	15.90	15.75	16.50	17.40
No. 2 Foundry, Chicago	18.10	17.80	17.50	17.40	17.30	17.60	17.25	17.00	16.75	16.50	16.75	17.00
Gray Forge, Cincinnati	14.90	14.50	14.25	13.95	13.75	14.00	14.00	14.25	14.50	14.50	14.75	15.00
No. 2 Foundry, Birmingham	13.50	13.50	13.00	12.25	11.50	12.25	12.00	12.50	13.00	13.00	13.00	13.50
Totals	84.20	82.45	81.20	79.25	76.90	77.75	77.15	76.95	77.30	77.00	78.60	80.65
Percentage above Zero	87	83	80	76	71	73	72	71	72	71	75	79
Average Price	16.84	16.49	16.24	15.85	15.38	15.55	15.43	15.37	15.46	15.40	15.72	16.13
1909												
No. 1 Foundry, Philadelphia	17.75	17.50	17.00	16.75	16.50	17.00	17.00	17.50	18.50	19.00	19.50	19.50
Bessemer, Pittsburg	17.40	16.90	16.40	15.90	15.65	15.90	16.40	16.90	18.40	19.40	19.90	19.90
No. 2 Foundry, Chicago	17.35	16.75	16.50	16.50	16.50	16.50	17.00	17.25	18.50	19.00	19.00	19.00
Gray Forge, Cincinnati	14.75	14.50	13.25	13.00	13.75	13.50	14.00	15.00	16.00	16.75	17.00	16.50
No. 2 Foundry, Birmingham	13.00	13.00	12.25	11.50	11.50	11.50	12.50	13.25	14.25	15.00	15.00	14.50
Totals	80.25	78.65	75.40	73.65	73.90	74.40	76.90	79.90	85.65	89.15	90.40	89.40
Percentage above Zero	78	76	68	64	64	65	71	78	90	98	101	110
Average Price	16.05	15.73	15.08	14.73	14.78	14.88	15.38	15.98	17.13	17.83	18.08	17.88
1910												
No. 1 Foundry, Philadelphia	19.50	19.25	18.50	18.25	17.50	17.25	16.75	16.50	16.00	15.00	16.00	16.00
Bessemer, Pittsburg	19.00	19.80	19.65	19.40	17.50	16.65	16.40	16.00	15.50	15.75	15.90	15.75
No. 2 Foundry, Chicago	19.00	19.00	18.25	17.50	17.00	16.75	16.50	16.00	16.00	16.00	15.75	15.50
Gray Forge, Cincinnati	16.25	16.00	15.50	14.50	14.25	14.00	14.00	13.50	13.50	13.50	13.75	13.50
No. 2 Foundry, Birmingham	14.25	14.00	13.50	12.50	12.00	11.75	11.50	11.50	11.00	11.00	11.00	11.00
Totals	88.90	88.05	85.40	81.17	78.25	76.40	75.15	74.00	72.00	71.25	72.20	71.75
Percentage above Zero	98	96	90	80	74	70	67	65	60	58	60	59
Average Price	17.78	17.61	17.08	16.23	15.65	15.28	15.03	14.80	14.40	14.25	14.44	14.35

APPENDIX G

TABLE SHOWING THAT EACH ABNORMAL ADVANCE IN THE PRICE OF PIG IRON HAS BEEN FOLLOWED BY AN INDUSTRIAL DEPRESSION

Lowest and highest prices of Scotch Pig Iron in New York from 1825 to
1882, taken from the American Almanac

Edited by AINSWORTH R. SPOFFORD, Librarian of Congress

Years of Depression up to 1886, taken from the First Annual Report of the
United States Commissioner of Labor, published in 1886, page 290

	Lowest	Highest	Year	
Low, High	\$35.00	\$75.00	1825	114% advance
Depression ..	50.00	70.00	1826	
	50.00	55.00	1827	
	50.00	55.00	1828	
	40.00	55.00	1829	
	40.00	50.00	1830	
	40.00	47.50	1831	
	40.00	47.50	1832	
	37.50	47.50	1833	
Low	37.50	48.00	1834		86% advance
	38.00	42.50	1835	
High	38.00	62.50	1836	
Depression ..	40.00	70.00	1837	
	37.50	55.00	1838	
	37.50	45.00	1839	
	32.50	40.00	1840	
	32.00	37.50	1841	
	23.50	35.00	1842	
Low	22.50	32.00	1843	133% advance
	30.00	35.00	1844	
High	30.00	62.50	1845	
	35.00	42.50	1846	
Depression ..	30.00	42.50	1847	
	25.00	37.50	1848	
	22.50	27.50	1849	
	21.00	24.00	1850	
	19.00	25.00	1851	
Low	19.00	31.00	1852		123% advance
	28.50	38.00	1853	
High	32.00	42.50	1854	
	26.50	37.00	1855	
	29.00	37.00	1856	
Depression ..	28.00	37.50	1857	
	22.00	27.00	1858	
	22.00	31.50	1859	
	20.50	27.00	1860	

APPENDICES

	Lowest	Highest	Year		
Low	\$20.00	\$24.50	1861	300% advance (Depreciated Currency)	
	21.00	33.00	1862		
	32.50	45.00	1863		
High	43.00	80.00	1864		
	40.00	55.00	1865		
	42.00	55.00	1866		
Depression ..	38.00	49.00	1867		
	35.00	45.75	1868		
	34.50	45.00	1869		
	31.00	37.00	1870		
Low	30.00	39.00	1871	103% advance	
High	33.50	61.00	1872		
Depression ..	37.00	52.00	1873		
	33.00	45.00	1874		
	29.00	41.00	1875		
	27.50	34.00	1876		
	25.00	28.00	1877		
	21.50	26.50	1878		
Low	19.00	30.50	1879	84% advance	
High	21.00	35.00	1880		
	22.00	26.00	1881		
Depression ..	23.00	26.50	1882		
	21.00	25.00	1883		
	18.00	20.50	1884		
	17.75	18.25	1885		
	18.25	20.00	1886		
	20.50	21.50	1887		
	18.00	21.00	1888		
	17.00	19.25	1889		
	18.00	19.90	1890		Short Depression caused by Baring Bros. financial diffi- culties of Novem- ber.
	17.50	17.75	1891		Short Depression caused by Silver Coinage panic. (June.)
	15.00	17.50	1892		
	13.75	15.00	1893	Short Depression caused by depletion of Gold Reserve. (April.)	
	12.50	13.37	1894	Short Depression caused by Vene- zuela Proclamation. (December.)	
	12.00	14.50	1895	Short Depression caused by threaten- ing of Gold Basis. (July.)	
	12.50	13.50	1896		
	11.75	12.75	1897		

No
Great
Change
in
Prices
and
consequently
no
Depressions
from
Industrial
Causes

X

APPENDICES

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	Lowest	Highest	Year	
Low	\$11.25	\$12.00	1898	
High	12.12	25.00	1899	
Depression ..	16.00	25.00	1900	122% advance
Low	15.50	16.25	1901	
High	17.50	24.87	1902	
Depression ..	15.87	24.00	1903	60% advance
Low	15.00	17.62	1904	
	17.25	19.00	1905	
	19.00	26.50	1906	
High	18.87	27.50	1907	83% advance
				Depression caused by Financial Panic. (October 1907.)
Depression ..	17.00	18.75	1908	Beginning of Depres- sion caused by High Cost of Construc- tion.
	16.50	19.50	1909	
	16.00	19.50	1910	

APPENDIX H

RELATIVE RANK OF NATIONS IN ALL IMPORTANT AFFAIRS.

	1	2	3	4	5	6	7	8	9	10
WEALTH										
Rank	Order of Severity in Industrial Depressions 1886	Area Square Miles Thousands	Population in Millions 1880	Wealth of Countries Millions £ Sterling 1888	Wealth per Inhabitant £ Sterling 1888	Wealth in Farms Millions £ Sterling 1888	Wealth in Houses Millions £ Sterling 1888	Wealth in Railroads Millions £ Sterling 1888	Wealth in Merchandise Millions £ Sterling 1888	Wealth in Sundries Millions £ Sterling 1888
	1	Great Britain	6179	84	12,820	370	4142	4146	2260	1563	5447
	Siberia		Russia	U. S.	Australia	U. S.	U. S.	U. S.	U. S.	G. B.
2	United States	3925	62	10,800	300	3093	2492	985	805	3939
	China		U. S.	Gt. Britain	Gt. Britain	France	Gt. Britain	G. B.	G. B.	U. S.
3	Germany	3640	45	8900	240	2710	2159	663	677	3174
	U. S.		Germany	France	France	Russia	France	France	Germany	France
4	France	3372	37	7500	240	2508	1755	555	601	2557
	Canada		Austria	Germany	Holland	Germany	Germany	Germany	France	Germany
5	Belgium.....	3288	37	5800	230	2077	1019	371	515	1832
	Brazil		France	Russia	Denmark	Gt. Britain	Russia	Austria	Russia	Russia
6		3104	35	4200	210	1797	719	349	367	1258
	Australia		Gt. Britain	Austria	U. S.	Austria	Austria	Russia	Austria	Austria
7		2262	28	2900	200	1399	503	186	223	851
	Russia		Italy	Italy	Canada	Italy	Italy	Canada	Italy	Italy
8		1095	16	2500	170	1212	280	184	148	632
	Argentina		Spain	Spain	Belgium	Spain	Spain	Italy	Spain	Spain
9		870	8	1370	160	532	221	139	118	372
	India		Turkey	Australia	Germany	Scandi- navia	Scandi- navia	Australia	Belgium	Scandi- navia
10		750	5	1010	150	508	179	108	117	283
	Mexico		Belgium	Belgium	Spain	Danube States	Holland	Spain	Scandi- navia	Australia
Various		11					175	75		266
	Belgium						Belgium	Belgium		Belgium

Data taken from Mulhall's Dictionary of Statistics — Fourth Edition, 1899

RELATIVE RANK OF NATIONS IN ALL IMPORTANT AFFAIRS (Continued)

	11	12	13	14	15	16	17	18	
	EDUCATION				COMMERCE				
Rank	Order of Severity in Industrial Depressions	School Children per 1000 Population	Percentage of Adults who can Write	Expenditure for Education	Expenditure per Inhabitant for Education	Exported Grain	Imported Grain	Imports and Exports	Trade per Inhabitant
				Millions £ Sterling 1896	Pence 1896	Millions Bushels 1886-87	Millions Bushels 1886-87	Millions £ Sterling 1889	Shillings 1889
1	Great Britain	210	99	38	132	215	286	740	900
		Switzerland	Germany	U. S.	Australia	Russia	G. B.	G. B.	Holland
2	United States	170	99	14	130	168	72	369	405
		France	Switzerland	G. B.	U. S.	U. S.	Germany	Germany	Australia
3	Germany	145	99	12	120	56	54	320	400
		Holland	Scandinavia	Germany	Switzerland	Roumania	France	U. S.	Switzerland
4	France	140	95	8	98	30	36	311	390
		Scandinavia	France	France	Canada	Canada	Italy	France	G. B.
5	Belgium	140	94	5	86	27	55	199	370
		Germany	G. B.	Russia	G. B.	India	Holland & Belgium	Holland	Belgium
6		140	90	4.7	80	24	18	131	260
		Australia	Australia	Italy	Holland	Argentina	Scandinavia	India	Denmark
7		135	90	3	54	13	15	130	168
		Belgium	Canada	Austria	Germany	Austria	Switzerland	Australia	Canada
8		130	90	2.7	50	12	11	118	163
		Austria	Holland	Australia	France	Australia	Spain & Portuga	Russia	France
9		130	83	2.7	42			111	156
		U. S.	U. S.	India	Scandinavia			Belgium	Germany
10		123	83	2.7	42			94	126
		G. B.	Belgium	Canada	Argentina			Italy	Sweden
Various				1.7	42				100
				Belgium	Belgium				U. S.

RELATIVE RANK OF NATIONS IN ALL IMPORTANT AFFAIRS (Continued)

		19	20	21	22	23	24	25	26	27	28	29	
		FINANCE						MONEY					
Rank	Order of Severity in Industrial Depressions	Revenues	Expenditures	Revenues from Taxation	Expenditures per Inhabitant	Debt	Ratio of Debt to Wealth	Money in Circulation	Money per Inhabitant	Money in Use	Industries for Comparison with Money	Money Ratio to Industries	
		Millions £ Sterling 1889	Millions £ Sterling 1881-88	Shillings per Inhabitant 1890	Shillings 1881-88	Millions £ Sterling 1888	Percentage 1888	Millions £ Sterling 1890	£ Sterling	Millions £ Sterling 1890	Millions £ Sterling 1890	Per Cent 1890	
1	Great Britain	154 Germany	160 France	150 Australia	188 Australia	1269 France	30.3 Turkey	443 France	11.8 France	359 U. S.	3316 U. S.	25.5 Holland	
2	United States	121 France	127 Germany	65 Germany	100 Cape Colony	756 Russia	15.5 Italy	436 U. S.	10. Cuba	266 France	3600 G. B.	24.5 Portugal	
3	Germany	88 Russia	95 Russia	64 France	84 France	698 G. B.	15. Austria	238 Germany	8.2 Australia	209 Germany	1288 Germany	22.8 France	
4	France	88 G. B.	88 G. B.	48 Italy	70 Turkey	580 Austria	14.8 Russia	192 India	7.7 Holland	207 Russia	1169 France	19.8 Belgium	
5	Belgium	80 U. S.	82 Austria	46 G. B.	54 Germany	460 Italy	14.7 France	176 Russia	7.0 U. S.	170 G. B.	1073 Russia	19.4 Russia	
6		74 Austria	77 India	44 Holland	52 Holland	435 Germany	12.5 Australia	163 G. B.	6.2 Egypt	90 Austria	744 Austria	16.3 Germany	
7		72 Italy	72 Italy	43 Belgium	50 Belgium	260 Spain	10.3 Spain	150 China	6.1 Belgium	64 Italy	433 Italy	14.8 Italy	
8		69 India	55 U. S.	89 Austria	48 G. B.	221 U. S.	7.7 G. B.	103 Austria	6.8 Cape Colony	39 Spain	296 Spain	14.2 Australia	
9		35 Spain	36 Spain	38 Spain	48 Italy	180 Turkey	7.6 Belgium	90 Italy	5.0 Germany	37 Belgium	204 Canada	13.4 Spain	
10		27 Australia	33 Australia	38 Portugal	44 Argentina	171 Australia	6.8 Germany	73 Spain	4.4 G. B.	28 Australia	203 Scandinavia	12.5 G. B.	
Various		12 Belgium	14 Belgium	26 U. S.	20 U. S.	77 Belgium	1.7 U. S.	37 Belgium	— — —	— — —	187 Belgium	10.8 U. S.	

RELATIVE RANK OF NATIONS IN ALL IMPORTANT AFFAIRS (Continued)

		30	31	32	33	34	35
		TAXES			BANKING		
Rank	Order of Severity in Industrial Depressions 1886	Amount Taxes levied	Taxes Percentage of Earnings	Duty on Imports	Banking Capital	Savings Bank Deposits	Depositors per 1000 Inhabitants
		Shillings per Inhabitant 1888-90	1888-90	Percentage 1889	Millions £ Sterling 1888-90	Shillings per Inhabitant 1888-90	
1	Great Britain	74	22. Italy	31.0	1030	209	360
		France		Russia	U. S.	Denmark	Switzerland
2	United States	64	15.1	30.3	910	158	240
		Holland	Holland	U. S.	G. B.	Switzerland	Scandinavia
3	Germany	63	14. Portugal	28.2	268	104	180
		G. B.		Portugal	France	Norway	Germany
4	France	60	13.6	23.8	231	101	170
		Australia	France	Spain	Germany	Prussia	France
5	Belgium	54	12.3	19.6	147	88	165
		Italy	Spain	Canada	Austria	U. S.	Australia
6		54	11.2	18.8	134	84	133
		Argentina	Argentina	Italy	Australia	Australia	G. B.
7		45	10.4	15.7	108	65	120
		Germany	Germany	Egypt	Italy	Austria	Italy
8		41	9.5	13.2	106	60	105
		Spain	Austria	Sweden	Russia	Sweden	Holland
9		40	9.3	12.2	47	59	102
		U. S.	G. B.	Norway	Spain	France	Belgium
10		36	7.4	12.1	40	47	77
		Belgium	Russia	Australia	Canada	G. B.	Austria
Various		—	—	France 9.0	—	—	—
		—	5.4	Germany 6.7	30	40	67
		—	U. S.	G. B. 4.7	Belgium	Belgium	U. S.
		—	—	Belgium 1.8	—	Germany	—

RELATIVE RANK OF NATIONS IN ALL IMPORTANT AFFAIRS (Continued)

		36	37	38	39	40	41	42	43	44
		AGRICULTURE								
Rank	Order of Severity in Industrial Depressions	Agricultural Products Millions £ Sterling	Pounds Grain Produced per Inhabitant	Area under Crops Millions	Agricultural and Pastoral Crops Millions £ Sterling	Agricultural Productions Laborers per Man	Population engaged in Agriculture	Earnings from Agriculture	Wealth in Agriculture	Workers Employed in Agriculture
	1886	1888	1888	1888	1887	1887	Percentage (Average 40) 1891-96	Percentage (Average 20) 1891-96	Percentage (Average 31) 1891-96	Thousands 1887
1	Great Britain	776 U. S.	2220 U. S.	201 U. S.	776 U. S.	100 Uruguay	70 Russia	35 Ireland	60 Ireland	22,700 Russia
2	United States	563 Russia	2005 Denmark	190 Russia	563 Russia	98 Australia	62 Austria	32 Russia	45 Italy	10,680 Austria
3	Germany	480 France	1500 Canada	65 Austria	480 France	98 G. B.	52 Italy	28 Italy	43 Russia	9,000 U. S.
4	France	424 Germany	1200 Russia	61 France	424 Germany	85 U. S.	45 Ireland	27 Austria	39 Austria	8120 Germany
5	Belgium	331 Austria	1150 Roumania	59 Germany	331 Austria	85 Denmark	43 Canada	21 France	36 Australia	6450 France
6		251 G. B.	1100 Spain	35 Italy	251 G. B.	71 France	42 France	20 Germany	36 Belgium	5390 Italy
7		204 Italy	990 France	32 Spain	204 Italy	70 Canada	39 Germany	20 Australia	33 Holland	2900 Turkey
8		173 Spain	985 Sweden	21 G. B.	173 Spain	70 Argentina	35 U. S.	18 Holland	32 France	2720 Spain
9		82 Australia	980 Australia	14 Australia	62 Australia	63 Spain	25 Belgium	18 Canada	31 Germany	2560 G. B.
10		58 Canada	850 Argentina	13 Canada	56 Canada	60 Greece	25 Australia	16 U. S.	31 Canada	980 Belgium
	Various	— Belgium	— Germany	— Belgium	— Belgium	— Belgium	— G. B.	— Belgium 14 G. B. 10	— U. S. 25 G. B. 15	— — —

RELATIVE RANK OF NATIONS IN ALL IMPORTANT AFFAIRS (Continued)

		45	46	47	48	49	50	51	
		MINING		WAGES AND FOOD					
Rank	Order of Severity in Industrial Depressions	Mining Iron raised Yearly Millions	Value of Minerals Millions £ Sterling 1888	Wages Day Labor Pence 1880	Food Tons Produced per 100 Inhabitants 1880	Food of Workman Shillings per Week 1880	Wages of Workman Shillings per Week 1880	Percentage of Food Cost Shillings per Week 1880	
	1886	1888	1888	1880	1880	1880	1880	1880	
1	Great Britain	185 G. B.	107 U. S.	66 U. S.	190 Canada	18 U. S.	48 U. S.	62 Germany	
2	United States	160 U. S.	59 G. B.	25 G. B.	180 Denmark	14 G. B.	40 Australia	62 Spain	
3	Germany	96 Germany	25 Germany	25 France	178 Australia	12 France	31 G. B.	60 Italy	
4	France	26 France	15 Russia	20 Austria	172 U. S.	12 Belgium	21 France	60 Belgium	
5	Belgium	23 Austria	10 France	20 Holland	170 Argentina	11 Australia	20 Belgium	57 France	
6		19 Belgium	8 Australia	20 Belgium	112 Sweden	10 Germany	16 Germany	45 G. B.	
7		12 Russia	7 Belgium	18 Germany	100 Danube States	10 Spain	16 Spain	33 U. S.	
8		8 Australia	5 Austria	16 Spain	99 Norway	9 Italy	15 Italy	28 Australia	
9		7 Spain	4 Spain	16 Portugal	94 Holland	—	—	—	
10		—	2 Italy	14 Scandi- navia	90 Germany	—	—	—	
Various		—	—	—	—	—	—	—	
		—	—	—	—	—	—	—	
		—	—	—	—	—	—	—	
		—	—	—	—	—	—	—	

RELATIVE RANK OF NATIONS IN ALL IMPORTANT AFFAIRS (Continued)

		52	53	54	55	56	57	58	59	60	61
		INDUSTRIES									
Rank	Order of Severity in Industrial Depressions	Value of Manufacture Millions & Sterling 1888	Value of Mfg. per Inhabitant & Sterling 1888	Steam Power Horse Power Thousands 1888	Steam Power Horse Power per 1000 Inhabitants 1888	Textiles M'fd. total Millions & Sterling Various dates 1841-87	Goods M'fd. total Millions & Sterling Various dates 1841-87	Iron Consumption per Inhabitant Pounds 1888	Coal Consumption per Inhabitant Cwts. 1888	Total Amt. of Iron produced in the World from 1800-1900 tons	Value of Total Amt. World's Iron Production & Sterling from 1800-1900
	1886	1888	1888	1888	1888	1841-87	1841-87	1888	1888	1800-1900 tons	1800-1900
1	Great Britain	1443 U. S.	24 U. S.	14,400 U. S.	250 G. B.	170 G. B.	6871 G. B.	400 G. B.	72 G. B.	257,000,000 G. B.	735,000,000 G. B.
2	United States	820 G. B.	21.5 G. B.	9200 G. B.	240 U. S.	112 U. S.	3949 France	310 Belgium	48 Belgium	99,000,000 U. S.	449,300,000 U. S.
3	Germany	583 Germany	17 Belgium	6200 Germany	140 Belgium	108 France	2621 U. S.	290 U. S.	40. U. S.	75,000,000 Germany	226,600,000 Germany
4	France	485 France	13 Denmark	4520 France	130 Germany	82 Germany	2327 Germany	204 Germany	28 Germany	49,700,000 France	189,400,000 France
5	Belgium	363 Russia	12.7 France	2240 Russia	110 France	52 Russia	1743 Russia	170 Sweden	16 France	22,200,000 Belgium	77,500,000 Belgium
6		253 Austria	12.3 Germany	2150 Austria	100 Switzerland	36 Austria	1307 Austria	112 France	16 Holland	18,600,000 Russia	63,300,000 Russia
7		121 Italy	11.5 Australia	830 Italy	90 Norway	21 Italy	611 Spain	45 Austria	11 Austria	17,200,000 Austria	58,600,000 Austria
8		102 Belgium	11 Switzerland	810 Belgium	80 Holland	16 Spain	583 Italy	37 Spain	6 Scandinavia	15,100,000 Sweden	53,300,000 Sweden
9		85 Spain	10.5 Sweden	740 Spain	80 Denmark	16 Belgium	478 Belgium	22 Italy	5 Switzerland	9,100,000 Spain, Italy, etc.	Spain, Italy, etc.
10		50 Sweden	9.5 Norway	340 Holland	70 Sweden	15 Switzerland	178 Scandinavia	19 Russia	2 Spain	Total World 563,400,000	Total World's £1,887,700,000
Various		—	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—

DIAGRAM ILLUSTRATING CONSTRUCTION IN THE UNITED STATES FROM 1896 TO 1910

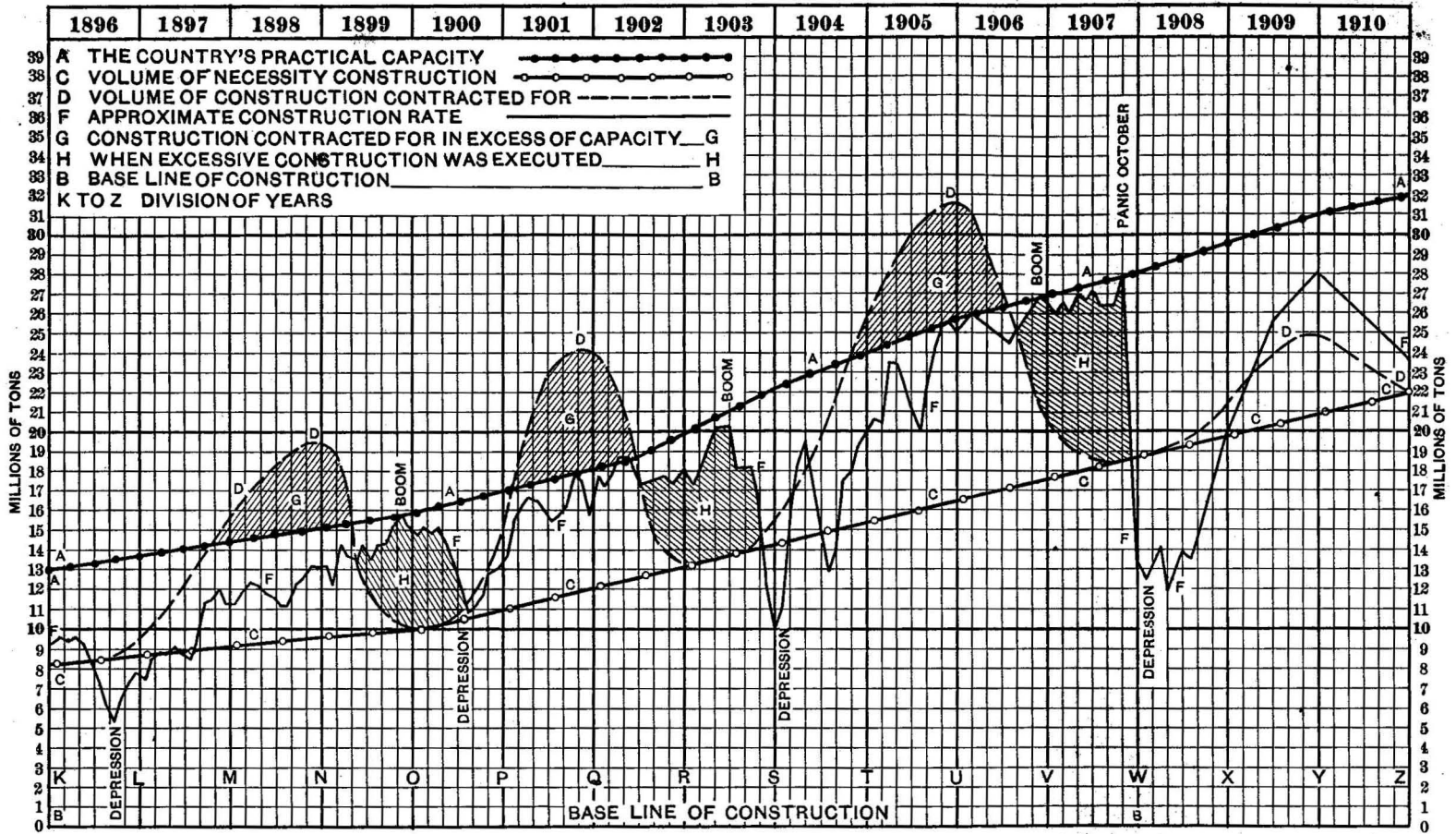
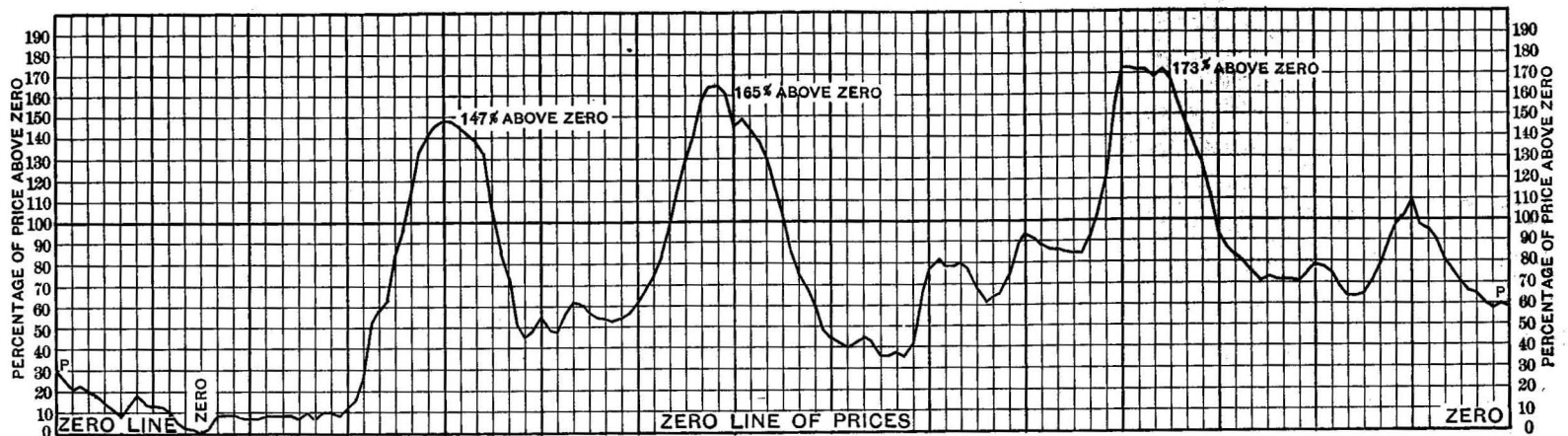


DIAGRAM ILLUSTRATING THE AVERAGE PRICES OF PIG IRON "ABOVE ZERO" IN THE UNITED STATES FROM 1896 TO 1910



APPENDIX L

DESCRIPTION OF DIAGRAMS

Appendix L contains two diagrams. They are placed one above the other for the purpose of illustrating the effect of high and low prices upon the volume of construction. As usual, the quantity of pig iron consumed is used as the gauge of the quantity of construction.

DIAGRAM OF PRICES

The single line (*P*) in the lower diagram represents the average fluctuation in prices of the four principal grades of iron in the five chief iron markets of the United States, the details of which are shown in Appendix E. The lowest average price ever reached was in July, 1897. For the purposes of description, this price will be called "ZERO," and the line *P* represents the percentage of fluctuations above zero, during this period of fifteen years.

DIAGRAM OF CONSTRUCTION

The space between the irregular line *FF* and the base line *BB* represents the actual monthly consumption of iron up to November, 1905, after which date it represents the estimated consumption. (See footnote, page 179.) This space we call "Approximate Construction Rate."

The space between the lines *CC* and the base line *BB* represents the average volume of construction which goes on all the time, in depressed times as well as in active times, and is what we have designated as "necessity construction."

The space between the line *AA* and the line *CC* represents the highest practical limit of the extra construction which creates the booms; being the highest rate reached during a boom, when all the available labor is employed, the reserve stocks of materials are exhausted and the rate of construction is limited to the rate materials can be produced. This we call "practical capacity."

The line *DD* represents the approximate rate at which contracts for construction are made. The spaces *G,G,G*, represent approximately the amount of construction materials included in these contracts, in excess of the capacity of the country to produce them on contract time, and the spaces *H,H,H*, represent the time in which this excessive construction is carried to completion.

It will be observed that the contracts for construction which resulted in the boom of 1899 were made chiefly during the low-priced periods of 1897 and 1898; that, as soon as prices advanced materially, the contracts for construction fell off rapidly, and that the excess construction contracted for, as per space *G*, kept actual construction up to the maximum height until July, 1900, when actual construction dropped to the necessity basis within three months.

Then during the low-priced period of 1901, the chief volume of contracts was made, which resulted in the boom of 1902 and 1903.

Then during the low-priced period of 1904 and 1905, the chief volume of contracts was made, which brought the boom of 1906 and 1907.

These three illustrations are typical of what has occurred just before each boom in the five industrial nations, ever since these nations became large industrial producers.

APPENDIX M

THE IRON PRODUCTION OF

Year	Long Ton	Long Ton	Metric Ton	Metric Ton	Metric Ton	Metric Ton	Metric Ton
	Great Britain	United States	Germany	France	Belgium	Austria-Hungary	Russia
1500	6,000	.....	5,000	12,000	.....	.....	.....
1700	12,000	.....	10,000	22,000	.....	.....	.....
1740	20,000	1,000	18,000	25,000	.....	.....	.....
1780	68,000	30,000	30,000	40,000	.....	.....	.....
1800	180,000	40,000	40,000	60,000	.....	.....	.....
1806	243,851	.....	.....	.....	.....	.....	.....
1807	.....	.....	.....	.....	.....	.....	.....
1808	.....	.....	.....	.....	.....	.....	.....
1809	.....	.....	.....	.....	.....	.....	.....
1810	250,000	55,000	46,000	85,000	.....	.....	.....
1811	.....	.....	.....	.....	.....	.....	.....
1812	.....	.....	.....	.....	.....	.....	.....
1813	.....	.....	.....	.....	.....	.....	.....
1814	300,000	.....	.....	100,000	.....	.....	.....
1815	.....	.....	.....	.....	.....	.....	.....
1816	.....	.....	.....	.....	.....	.....	.....
1817	.....	.....	.....	.....	.....	.....	.....
1818	325,000	.....	.....	114,000	.....	.....	.....
1819	.....	.....	.....	112,500	.....	.....	.....
1820	400,000	110,000	90,000	140,000	.....	.....	.....
1821	.....	.....	.....	.....	.....	.....	.....
1822	.....	.....	.....	.....	.....	.....	.....
1823	455,166	.....	.....	.....	.....	.....	.....
1824	.....	.....	.....	.....	.....	.....	.....
1825	581,367	.....	.....	195,588	.....	.....	139,642
1826	.....	.....	.....	.....	.....	.....	.....
1827	690,000	.....	.....	.....	.....	.....	.....
1828	703,184	130,000	.....	.....	.....	.....	.....
1829	.....	142,000	.....	217,000	.....	.....	.....
1830	680,000	180,000	120,000	220,000	35,000	80,000	102,952
1831	.....	191,000	.....	224,000	.....	.....	.....
1832	.....	200,000	.....	225,000	.....	.....	.....
1833	700,000	.....	.....	236,000	.....	.....	.....
1834	.....	.....	.....	260,000	.....	.....	.....
1835	.....	.....	.....	294,000	.....	.....	172,009
1836	1,000,000	.....	.....	308,000	.....	.....	.....
1837	.....	.....	.....	331,000	.....	.....	.....
1838	.....	.....	.....	347,000	.....	.....	.....
1839	1,248,781	.....	.....	350,000	.....	.....	.....
1840	1,396,000	290,000	170,000	350,000	73,000	140,000	185,000
1841	.....	.....	.....	377,000	.....	.....	.....
1842	1,099,138	215,000	.....	399,000	.....	.....	.....
1843	1,215,350	.....	.....	422,000	.....	.....	.....
1844	1,999,608	.....	171,000	427,000	.....	.....	.....
1845	1,512,500	.....	.....	438,000	134,563	.....	187,260
1846	.....	765,000	.....	522,000	.....	.....	.....
1847	1,999,508	800,000	.....	591,000	.....	.....	.....
1848	.....	800,000	205,000	472,000	.....	.....	.....
1849	.....	650,000	.....	414,000	.....	.....	.....
1850	2,250,000	563,755	402,000	570,000	144,452	140,000	227,555
1851	.....	.....	.....	445,000	.....	.....	.....
1852	2,701,000	500,000	.....	522,000	.....	.....	.....
1853	.....	.....	.....	660,000	.....	.....	.....
1854	3,218,154	657,337	.....	771,000	.....	.....	.....
1855	3,218,151	700,159	.....	849,000	294,270	.....	268,637
1856	3,586,377	788,515	923,000
1857	3,659,477	712,640	992,000
1858	3,456,064	629,548	871,000

APPENDICES

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APPENDIX M

THE WORLD BY NATIONS

Metric Ton	Metric Ton	Metric Ton	Long Ton	Various		Figured at Long Ton
Sweden	Spain	Italy	Canada			World's Production
					37,000	60,000
					60,000	104,000
					92,000	157,000
					110,000	278,000
					130,000	460,000
					180,000	616,000
65,000						
					270,000	1,010,000
105,000	20,000	10,000			62,000	1,585,000
130,000	40,000					2,774,000
130,000	40,000					4,468,000

APPENDICES

THE IRON PRODUCTION OF

Year	Long Ton	Long Ton	Metric Ton	Metric Ton	Metric Ton	Metric Ton	Metric Ton
	Great Britain	United States	Germany	France	Belgium	Austria-Hungary	Russia
1859	3,712,904	750,560	.....	864,000	.....	.....	.....
1860	3,826,752	821,223	530,000	898,000	319,934	310,000	335,255
1861	3,712,390	653,164	.....	966,000	.....	.....	.....
1862	3,943,469	703,270	.....	1,090,000	356,000	.....	.....
1863	4,510,044	846,075	812,600	1,156,000	392,078	.....	.....
1864	4,767,951	1,014,282	904,700	1,212,000	449,875	.....	.....
1865	4,825,254	831,770	988,200	1,203,000	470,767	.....	299,432
1866	4,523,897	1,205,663	1,046,900	1,260,000	482,404	.....	.....
1867	4,761,023	1,305,023	1,113,600	1,229,000	423,069	.....	.....
1868	4,970,206	1,431,250	1,264,400	1,235,000	435,754	.....	.....
1869	5,445,767	1,711,287	1,413,000	1,390,000	534,319	.....	.....
1870	5,963,515	1,665,179	1,391,100	1,178,000	565,234	400,000	359,531
1871	6,627,179	1,706,793	1,536,700	859,000	609,230	393,352	359,253
1872	6,741,929	2,548,713	1,988,400	1,217,000	655,565	459,657	399,253
1873	6,566,451	2,560,963	2,240,600	1,381,000	607,373	534,508	384,221
1874	5,991,408	2,401,262	1,906,200	1,415,000	532,790	494,055	380,219
1875	6,365,462	2,023,733	2,029,400	1,448,000	540,473	463,163	427,182
1876	6,555,997	2,868,961	1,846,400	1,435,000	490,508	400,426	441,433
1877	6,608,664	2,066,594	1,932,700	1,506,000	470,488	387,630	398,238
1878	6,381,051	2,301,215	2,147,600	1,521,000	518,646	434,250	417,239
1879	5,995,337	2,741,853	2,226,600	1,400,000	389,330	404,162	432,636
1880	7,749,233	3,835,191	2,729,000	1,725,000	608,684	464,234	448,411
1881	8,144,449	4,144,254	2,914,000	1,886,000	624,736	543,640	469,476
1882	8,586,680	4,623,323	3,380,800	2,039,000	726,946	611,739	498,400
1883	8,529,300	4,595,510	3,469,719	2,069,430	783,433	698,856	481,679
1884	7,811,727	4,097,868	3,600,612	1,871,000	750,812	734,346	509,519
1885	7,415,469	4,044,526	3,687,434	1,630,848	712,876	714,784	527,536
1886	7,009,754	5,683,329	3,528,658	1,616,574	697,110	760,000	532,104
1887	7,539,518	6,417,148	3,907,364	1,507,850	755,781	719,980	612,447
1888	7,998,969	6,680,738	4,337,421	1,683,349	826,984	704,530	683,315
1889	8,322,824	7,603,642	4,524,558	1,722,480	847,000	790,227	740,067
1890	7,904,214	9,202,703	4,685,461	1,970,160	781,958	855,822	926,471
1891	7,406,064	8,279,870	4,641,217	1,897,000	684,126	921,846	1,004,661
1892	6,709,255	9,157,000	4,937,461	2,057,258	753,268	940,646	1,070,800
1893	6,976,990	7,124,502	4,986,003	2,032,567	760,296	882,247	1,148,923
1894	7,427,342	6,657,388	5,380,038	2,069,000	818,597	1,072,357	1,332,489
1895	7,703,459	9,446,308	6,464,501	2,003,868	829,234	1,127,673	1,454,325
1896	8,563,209	8,623,127	6,372,575	2,339,537	959,414	.....	1,612,669
1897	8,796,465	9,652,680	6,864,405	2,484,191	1,034,732	.....	1,868,671
1898	8,631,151	11,773,934	7,215,927	2,534,427	979,101	1,427,240	2,222,469
1899	9,305,319	13,020,703	8,142,017	2,567,388	1,036,185	1,467,663	2,710,972
1900	8,959,691	13,789,242	8,351,373	2,669,966	1,001,872	1,472,695	2,889,789
1901	7,928,647	15,378,354	7,860,893	2,888,823	764,180	1,496,347	2,831,680
1902	8,679,535	17,821,307	8,529,810	2,404,974	1,069,050	1,218,500	2,592,918
1903	8,935,083	18,099,252	10,085,634	2,840,517	1,216,500	1,428,158	2,453,958
1904	8,562,658	16,497,033	10,103,941	2,974,042	1,283,190	1,454,803	2,978,352
1905	9,592,737	22,992,380	10,813,979	3,028,089	1,290,400	*1,560,000	2,977,981
1906	10,149,388	25,307,191	12,098,551	3,266,580	1,354,033	*1,575,000	2,618,977
1907	10,114,282	25,781,361	12,839,593	3,532,233	1,405,374	*1,823,761	2,776,327
1908	9,289,840	15,936,018	11,813,511	3,344,145	1,182,311	1,952,750	2,751,000
1909	9,664,287	25,795,471	12,917,653	3,544,638	1,632,350	1,947,300	*2,817,000
1910	10,216,745	27,298,545	14,793,325	4,032,459	1,803,500	1,990,684	*2,956,000

APPENDICES

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THE WORLD BY NATIONS (Continued)

Metric Ton	Metric Ton	Metric Ton	Long Ton	Various				Figured at Long Ton
								World's Production
Sweden	Spain	Italy	Canada					
185,019	50,000	.....	.....	.....	.....	.....	.....	7,300,000
266,620	.....	.....	.....	.....	.....	.....	.....	9,250,000
.....	.....	.....	.....	.....	.....	.....	.....	9,300,000
.....	.....	.....	.....	.....	.....	.....	.....	9,250,000
.....	.....	.....	.....	.....	.....	.....	.....	10,400,000
.....	.....	.....	.....	.....	.....	.....	.....	11,875,000
.....	.....	.....	.....	.....	.....	.....	.....	11,900,000
300,338	70,000	.....	.....	.....	.....	.....	.....	12,500,000
298,761	.....	.....	.....	.....	.....	.....	.....	13,925,000
339,409	.....	.....	.....	.....	.....	.....	.....	14,675,000
345,720	.....	.....	.....	.....	.....	.....	.....	13,500,000
327,852	.....	.....	.....	.....	.....	.....	.....	13,675,000
350,639	.....	.....	.....	.....	.....	.....	.....	13,475,000
352,467	.....	.....	.....	.....	.....	.....	.....	13,675,000
344,636	.....	.....	.....	.....	.....	.....	.....	14,118,000
340,858	.....	.....	.....	.....	.....	.....	.....	13,950,000
342,547	.....	.....	.....	.....	.....	.....	.....	17,950,000
406,713	85,939	21,000	.....	.....	.....	.....	.....	19,400,000
430,042	114,394	27,800	.....	.....	.....	.....	.....	20,750,000
398,945	120,064	24,778	.....	.....	.....	.....	.....	21,000,000
422,647	139,920	24,306	.....	.....	.....	.....	.....	19,475,000
430,534	126,269	24,778	.....	.....	.....	.....	.....	19,300,000
464,737	159,225	15,991	.....	.....	.....	.....	.....	20,386,000
442,457	156,204	12,291	.....	.....	.....	.....	.....	22,171,000
456,625	188,634	12,265	.....	.....	.....	.....	.....	23,575,000
457,052	212,116	12,538	.....	.....	.....	.....	.....	23,345,000
420,665	197,874	13,473	.....	.....	.....	.....	.....	27,157,000
456,103	179,782	14,346	19,439	.....	.....	.....	.....	25,718,000
490,913	278,460	11,930	21,331	.....	.....	.....	.....	26,474,000
485,664	211,436	12,729	37,896	.....	.....	.....	.....	24,813,000
453,421	234,563	8,038	49,953	.....	.....	.....	.....	26,600,000
462,809	223,798	10,329	44,791	.....	.....	.....	.....	28,871,000
462,930	206,452	9,213	37,829	.....	.....	.....	.....	30,500,000
488,400	246,326	.....	60,030	Japan	China	India	Mexico	32,700,000
530,891	146,940	8,393	53,798	.....	.....	.....	.....	35,500,000
531,766	113,492	.....	68,755	23,652	.....	.....	.....	40,841,348
497,727	295,840	19,218	94,077	.....	.....	19,631	.....	40,087,616
518,263	289,315	23,990	86,090	.....	.....	.....	.....	39,968,511
528,375	296,858	15,819	244,976	24,495	28,805	.....	.....	43,495,847
606,825	350,284	43,335	319,557	32,435	15,805	.....	.....	46,368,000
506,825	390,000	75,279	265,418	36,515	38,873	30,756	21,550	45,291,937
528,525	294,000	89,340	270,942	112,328	38,770	40,878	26,554	54,034,508
518,967	315,635	140,818	468,003	190,375	32,314	47,042	4,229	60,179,960
604,789	382,309	133,168	541,957	38,945	50,622	47,000	25,319	48,174,788
615,778	355,240	135,296	581,146	42,919	61,148	40,000	16,238	60,365,780
563,300	430,000	80,000	563,672	147,217	66,409	38,000	16,615	65,607,788
443,000	420,000	147,000	677,090	*161,020	74,000	39,350	58,859	.....
604,300	425,000	343,600	740,210	*162,000	130,000	35,933	45,000	.....

From various sources, including Mulhall's Dictionary of Statistics, American Iron and Steel Association, James Watson & Co., Glasgow, Iron Age, and various foreign authorities.

*Estimated.

APPENDIX O

RAILROAD MILEAGE OF THE UNITED STATES

Years	Miles Built	Miles in Operation	Years	Miles Built	Miles in Operation
1830		23	1871	7,379	60,301
1831	72	95	1872	5,870	66,171
1832	134	229	1873	4,097	70,268
1833	151	330	1874	2,117	72,385
1834	253	633	1875	1,711	74,096
1835	465	1,098	1876	2,712	76,808
1836	175	1,273	1877	2,274	79,082
1837	224	1,497	1878	2,665	81,747
1838	416	1,913	1879	4,809	86,556
1839	389	2,302	1880	6,711	93,262
1840	516	2,818	1881	9,846	103,108
1841	717	3,535	1882	11,569	114,677
1842	491	4,026	1883	6,745	121,422
1843	159	4,185	1884	3,923	125,346
1844	192	4,377	1885	2,975	128,320
1845	256	4,633	1886	3,018	136,338
1846	297	4,930	1887	12,876	149,214
1847	668	5,598	1888	6,900	156,114
1848	398	5,996	1889	5,162	161,276
1849	1,369	7,365	1890	5,915	167,191
1850	1,656	9,021	1891	4,844	172,035
1851	1,961	10,982	1892	3,656	175,691
1852	1,926	12,908	1893	4,143	179,834
1853	2,452	15,360	1894	2,899	182,733
1854	1,360	16,720	1895	1,895	184,628
1855	1,654	18,374	1896	2,053	186,681
1856	3,642	22,016	1897	2,163	188,844
1857	2,487	24,503	1898	2,026	190,870
1858	2,465	26,968	1899	3,466	194,336
1859	1,821	28,789	1900	4,628	198,964
1860	1,837	30,626	1901	3,324	202,288
1861	660	31,286	1902	4,965	207,253
1862	834	32,120	1903	6,169	213,422
1863	1,050	33,170	1904	6,690	220,112
1864	738	33,908	1905	5,084	225,196
1865	1,177	35,085	1906	5,565	230,761
1866	1,716	36,801	1907	6,188	236,949
1867	2,249	39,250	1908	3,654	240,603
1868	2,979	42,229	1909	3,475	244,078
1869	4,615	46,844	1910	3,918	247,996
1870	6,078	52,922			

First Annual Report Com. of Labor, p. 68.
Statistical Abstract U.S. 1908, p. 248.

APPENDIX P

BUILDING PERMITS OF FIFTY-SEVEN CITIES, 1906 AND 1907*

Cities	1906	1907	Percentage of Gain or Loss between 1906 and 1907	
			Gain	Loss
Baltimore	8,611,708	6,439,580		25
Birmingham	2,132,469	1,964,079		7
Bridgeport.....	2,684,399	2,448,598		8
Buffalo	8,686,030	8,411,000		3
Chicago.....	64,822,030	59,093,080		8
Cambridge	1,458,105	2,729,345	87	
Cleveland	12,972,794	15,888,407	22	
Chattanooga.....	2,231,742	1,700,490		23
Cincinnati	6,911,190	7,737,062	11	
Davenport.....	717,187	653,503		8
Denver.....	7,000,996	6,349,604		9
Detroit.....	13,275,250	14,226,300	7	
Duluth.....	2,761,023	2,483,735		10
Evansville	1,048,680	1,077,745	2	
Fall River.....	1,012,790	1,343,125	32	
Grand Rapids... ..	2,181,306	2,053,755		6
Hartford	3,732,915	4,026,970	9	
Indianapolis	5,530,971	5,787,556	5	
Kansas City	10,765,480	9,611,922		10
Little Rock	1,242,138	1,063,055		14
Louisville.....	5,116,917	3,032,548		47
Los Angeles.....	18,158,540	13,304,696		26
Manchester.....	811,828	719,015		11
Milwaukee.....	9,713,284	10,771,244	18	
Minneapolis	9,466,150	10,006,485	6	
Memphis	4,346,767	4,957,999	14	
Mobile	1,121,653	1,295,112	15	
Nashville.....	2,840,212	2,078,044		26
New Haven.....	3,018,890	2,804,882		7
Newark	10,411,328	9,543,520		8
New Orleans.....	5,563,437	4,710,523		15
Manhattan	126,075,565	91,722,799		27
Brooklyn	65,066,325	64,150,107		2
Bronx.....	28,889,090	21,648,874		25
New York	220,030,980	177,521,780		19
Omaha.....	4,273,050	4,536,643	6	
Philadelphia	40,711,510	36,659,655		10
Patterson	1,077,471	1,500,192	39	
Pittsburg.....	15,116,252	13,145,311		13

* From Chicago Contractor.

APPENDICES

Cities	1906	1907	Percentage of Gain or Loss between 1906 and 1907	
			Gain	Loss
Reading	1,631,245	1,499,550		8
Rochester	6,175,499	6,752,615	9	
St. Joseph	1,069,737	1,667,563	55	
St. Louis	29,938,693	21,893,167		27
St. Paul	9,537,449	9,750,000	2	
San Antonio	1,111,550	1,951,471	75	
San Francisco	56,574,844	34,927,396		38
Scranton	2,075,075	2,423,849	16	
Seattle	11,980,488	13,573,270	14	
Spokane	3,710,859	5,778,876	56	
South Bend	1,073,397	1,125,825	5	
Syracuse	3,313,261	4,222,282		27
Salt Lake City ..	2,249,355	4,183,800	86	
Topeka	827,408	1,233,832	49	
Toledo	4,696,970	3,400,665		27
Tacoma	3,032,855	9,985,425	228	
Trenton				
Washington	12,414,457	9,890,464		21
Worcester	2,939,403	3,068,896	4	
Wilkesbarre	2,224,833	2,486,861	11	
Totals	667,032,499	580,492,196		

APPENDIX Q

UNFILED ORDERS OF UNITED STATES STEEL CORPORATION

Year	* Date	* Tonnage	Average Monthly Rate of INCREASE	Average Monthly Rate of DECREASE
1901	December 31	4,497,794		
1902	January		40,553	
	February		40,553	
	March 1		40,553	
	April		40,553	
	May		40,553	
	June		40,553	
	July 1	4,741,993	33,671	
	August		33,671	
	September		33,671	
	October 1	4,843,007	168,082	
	November		168,082	
	December 31	5,347,253	168,082	
1903	January		21,155	
	February		21,155	
	March		21,155	
	April 1	5,410,719		248,047
	May			248,047
	June			248,047
	July 1	4,666,578		312,613
	August			312,613
	September			312,613
	October 1	3,728,742		171,206
	November			171,206
	December 31	3,215,123		171,206
1904	January		307,279	
	February		307,279	
	March 31	4,136,961	307,279	
	April			314,895
	May			314,895
	June 30	3,192,277		314,895
	July			54,947
	August			54,947
	September 30	3,027,436		54,947
	October		556,256	
	November		556,256	
	December 31	4,696,203	556,256	

* From official Reports of the U. S. Steel Corporation.

APPENDICES

Year	Date	Tonnage	Average Monthly Rate of INCREASE	Average Monthly Rate of DECREASE
1905	January.....		300,452	
	February.....		300,452	
	March 31.....	5,597,560	300,452	
	April.....			255,968
	May.....			255,968
	June 30.....	4,829,655		255,968
	July.....		345,241	
	August.....		345,241	
	September 30.....	5,865,377	345,241	
	October.....		579,903	
	November.....		579,903	
	December 31.....	7,605,086	579,903	
1906	January.....			195,458
	February.....			195,458
	March 31.....	7,018,712		195,458
	April.....			69,708
	May.....			69,708
	June 30.....	6,809,589		69,708
	July.....		375,765	
	August.....		375,765	
	September 30.....	7,936,884	375,765	
	October.....		184,279	
	November.....		184,279	
	December 31.....	8,489,718	184,279	
1907	January.....			148,620
	February.....			148,620
	March 31.....	8,043,858		148,620
	April.....			146,660
	May.....			146,660
	June 30.....	7,603,878		146,660
	July.....			392,957
	August.....			392,957
	September 30.....	6,425,008		392,957
	October.....			600,152
	November.....			600,152
	December 31.....	4,624,553		600,152
1908	January.....			286,403
	February.....			286,403
	March 31.....	3,765,343		286,403
	April.....			150,489
	May.....			150,489
	June 30.....	3,313,876		150,489
	July.....		36,033	
	August.....		36,033	
	September 30.....	3,421,977	36,033	
	October.....		60,517	
	November.....		60,517	
	December 31.....	3,603,527	60,517	
1909	January.....			20,310

* From official Reports of the U. S. Steel Corporation.

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Year	Date	Tonnage	Average Monthly Rate of INCREASE	Average Monthly Rate of DECREASE
1910	February			20,310
	March 31	3,542,595		20,310
	April		171,781	
	May		171,781	
	June 30	4,057,939	171,781	
	July		246,298	
	August		246,298	
	September 30	4,796,833	246,298	
	October		376,733	
	November		376,733	
	December 31	5,927,031	376,733	
	January			174,839
	February			174,839
	March 31	5,402,514		174,839
	April			381,573
	May			381,573
	June 30	4,257,794		381,573
	July 31	3,970,931		287,763
	August 31	3,537,128		433,803
	September 30	3,158,106		379,022
	October 31	2,871,949		286,157
	November 30	2,760,413		111,536
	December 31	2,674,757		85,656

* From official Reports of the U. S. Steel Corporation.

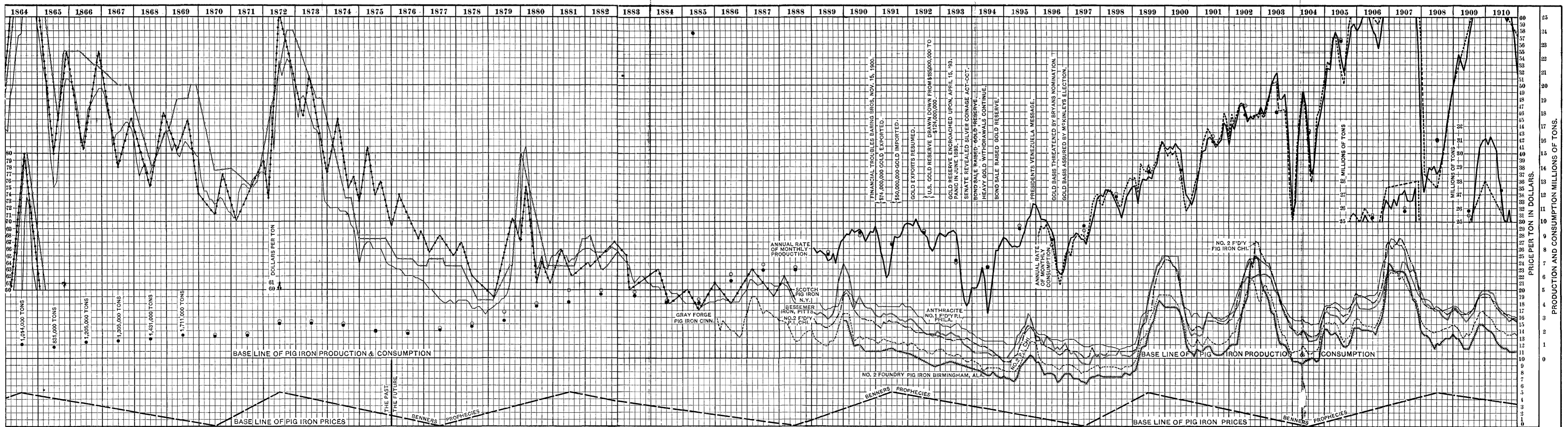
DIAGRAM OF PRODUCTION, CONSUMPTION AND PRICES OF PIG IRON IN THE UNITED STATES FROM 1800 TO 1910

(APPENDIX Z)



FOUNDRY PIG IRON, PHILA. — PRICE NO. 2 FOUNDRY PIG IRON, CHICAGO —
 " " " " " SCOTCH PIG IRON, NEW YORK —
 IRON, CINCINNATI — " GRAY FORGE " " CINCINNATI —
 " BIRMINGHAM — " BESSEMER IRON, PITTSBURG —

TONS OF PIG IRON PRODUCED IN THE YEAR — PRICE CHARCOAL NO. 1 FOUNDRY PIG IRON, PHILA. — PRICE NO. 2 FOUNDRY PIG IRON, CHICAGO —
 " " " " " CONSUMED " " " " " ANTHRACITE " " " " " SCOTCH PIG IRON, NEW YORK —
 ANNUAL RATE OF MONTHLY PRODUCTION — " NO. 1 FOUNDRY PIG IRON, CINCINNATI — " GRAY FORGE " " CINCINNATI —
 " " " " " CONSUMPTION — " 2 " " " BIRMINGHAM — " BESSEMER IRON, PITTSBURG —



NO. 1 FOUNDRY PIG IRON, PHILA. — PRICE NO. 2 FOUNDRY PIG IRON, CHICAGO —
 " " " " " SCOTCH PIG IRON, NEW YORK —
 PIG IRON, CINCINNATI — " GRAY FORGE " " CINCINNATI —
 " " BIRMINGHAM — " BESSEMER " " PITTSBURG —

TONS OF PIG IRON PRODUCED IN THE YEAR — PRICE CHARCOAL NO. 1 FOUNDRY PIG IRON, PHILA. — PRICE NO. 2 FOUNDRY PIG IRON, CHICAGO —
 " " " " " CONSUMED " " " " " ANTHRACITE " " " " " SCOTCH PIG IRON, NEW YORK —
 ANNUAL RATE OF MONTHLY PRODUCTION — " NO. 1 FOUNDRY PIG IRON, CINCINNATI — " GRAY FORGE " " CINCINNATI —
 " " " " " CONSUMPTION — " 2 " " " BIRMINGHAM — " BESSEMER IRON, PITTSBURG —

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