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# BUSINESS CYCLES

## CHAPTER I.

### THE PROCESSES INVOLVED IN BUSINESS CYCLES.

#### I. The Plan of Attack.

As knowledge of business cycles grows, more effort is required to master it. Formerly, an attack upon the problem required no special preparations. Early writers upon "commercial crises" could assume that they and their readers were familiar with the phenomena to be explained and the methods to be used. They felt no need of collecting statistics, of compiling business annals, of comparing the amplitude and the timing of cyclical fluctuations in different activities, of developing and defining technical concepts. After the briefest of introductions, they plunged into a discussion of the cause of crises, and worked such evidence as they cited into their argumentation. In consequence, their discussions had an agreeable directness, which our generation may envy, but cannot wisely imitate.

Elaborate preparations have become necessary, not because the direct attacks upon the problem proved futile, but because they won so many and such different results. Every investigator of the cause of commercial crises seemed to make out a case for the hypothesis he favored. In trying to prove their divergent explanations correct, successive theorists did prove that business cycles were more intricate phenomena than any of them had surmised. These cycles turned out to be complexes, made up of divergent fluctuations in many processes. Familiarity with the phenomena to be explained came to mean familiarity with the interrelations among cyclical fluctuations in the production of raw materials, industrial equipment and consumers' goods; in the volume of savings and investments; in the promotion of new enterprises, in banking, in the disbursement of incomes to individuals and the spending of incomes, in prices, costs, profits and the emotional aberrations of business judgments. However

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conversant he may be with practical affairs and economic theory, no competent investigator now supposes that he can explain the fluctuations of these interrelated factors on the basis of his general knowledge.

This lesson from experience in making theories of business cycles has been confirmed in recent years by work with statistics. Serried tables of figures, and charts drawn from them, have made our knowledge of cyclical fluctuations much more definite. Year by year the range covered by statistical compilations has grown wider, the accuracy of reporting has improved, and the technical methods of analysis have become more refined and more powerful. But we have no statistical evidence of business cycles as wholes. What the data show us are the fluctuations of particular processes—producing pig iron, transporting freight, clearing bank checks, selling goods by mail, declaring dividends, and so on. And these fluctuations differ widely. In certain cases we assemble or average the data for various processes, and say that we have "indexes" of cyclical fluctuations in wholesale prices, physical production, the volume of trade, or even "general business conditions." Yet the most inclusive indexes we can make fall far short of showing all that we mean by business cycles. The more intensively we work, the more we realize that this term is a synthetic product of the imagination—a product whose history is characteristic of our ways of learning. Overtaken by a series of strange experiences our predecessors leaped to a broad conception, gave it a name, and began to invent explanations, as if they knew what their words meant. But in the process of explaining they demonstrated how inadequate their knowledge was. From their work we can learn much; the first lesson is that we must find out more about the facts before we can choose among the old explanations, or improve upon them.

An inquiry into business cycles, then, cannot wisely begin by defining the general concept, and proceed systematically to take up one part of the whole after another. It should begin rather with the individual processes which can be studied objectively, seeking to find what these processes are, how they affect each other, and what sort of whole they make up.

The best way to learn what processes are involved in business cycles is to profit by the discoveries of earlier workers. Most of these men found the clue to business cycles in the recurrent fluctuations of some single economic process. All together they may not have

covered the whole field. But in no other way can we get so comprehensive a view of business cycles, or such vivid insight into their complexities, as by following a series of persuasive demonstrations that each one of a dozen different processes reveals the factor of crucial importance.

It is not advisable to attack the statistical data until we have made this survey of theories. For while the statistics will come to seem scanty as our demands develop, they are sufficiently abundant and diverse, susceptible of enough transformations and combinations, to make hopeless a purely empirical investigation. At every turn, we shall need working hypotheses to guide our selection of data, and to suggest ways of analyzing and combining them. Our survey of theories will provide us with the most promising hypotheses which have been invented. Not until we are thus equipped can we begin constructive work upon the problem of business cycles, confident that we are not overlooking elements already proved to be important.

## II. The Discovery of the Problem.

Serious efforts to explain business crises and depressions began amid the violent fluctuations in trade which followed the Napoleonic Wars. For a century or more Western Europe had been experiencing at intervals speculative manias, glutted markets, and epidemics of bankruptcy. The Mississippi Bubble and the South Sea Scheme which had burst in France and England in 1720, and the commercial crises of 1763, 1772, 1783 and 1793, not to mention less notable cases, had excited much discussion.<sup>1</sup> But the eighteenth-century writers dealt mainly with the dramatic surface events; concerning the underlying causes they developed no arresting ideas. By 1815 progressive changes in economic organization were forcing the problem to the fore, and men were better equipped to attack it. The Physiocrats and Adam Smith had made political economy a branch of philosophy, if not of science, and when the wars ended Ricardo was recasting the theory into the form which is still dominant.

It was not the orthodox economists, however, who gave the problem of crises and depressions its place in economics, but sceptics who had profited by and then reacted against their teachings. From Adam Smith to Mill, and even to Alfred Marshall, the classical mas-

<sup>1</sup>See Mentor Bouniatian, *Studien zur Theorie und Geschichte der Wirtschaftskrisen. II Geschichte der Handelskrisen in England, 1640-1840.* Munich, 1908.

ters have paid but incidental attention to the rhythmical oscillations of trade in their systematic treatises. They have been concerned primarily to elucidate principles which hold "in the long run," or apply to the "normal state." To them crises and depressions have been of secondary interest—proper subjects for special study or occasional reference, but not among the central problems of economic theory.<sup>2</sup> To force into prominence the fact that economic activities are subject to recurring phases of contraction and expansion was the work primarily of men who were critics, not merely of orthodox economics, but also of modern society—men such as Sismondi and Rodbertus.

J. C. L. Simonde de Sismondi was an Italian Swiss who had early become enamored of Adam Smith's doctrines and expounded them for continental readers in a treatise *De la Richesse Commerciale*. After publishing this book in 1803, Sismondi had turned to medieval research and won European celebrity as the historian of the Italian Republics. Then an invitation from the Scotch physicist, Sir David Brewster, to write an article on "Political Economy" for the new *Edinburgh Encyclopædia*, recalled him to his first theme in 1818.

The time was one of widespread distress. As Napoleon's fall drew near, English manufacturers and merchants, anticipating the reopening of hungry continental markets, accumulated large stores of goods for export. Waterloo was fought in June, 1815. There followed several months of brisk trade and optimistic speculation. But before the year was out it became clear that European consumers lacked the means to buy freely. Heavy consignments of British goods overstocked the markets and many of the consignors went bankrupt. The year after Waterloo was one of distress from beginning to end. Recovery began in the spring of 1817 and made rapid progress, so that 1818 showed great industrial activity. But in 1819 fresh difficulties occurred, and depression returned to last through 1820. Not

<sup>2</sup>Thus Adam Smith mentions the "knavery and extravagance" of the South Sea Company's "stock-jobbing projects," (*Wealth of Nations*, Cannan's ed., vol. ii, p. 236); Ricardo speaks of "revulsions in trade" accompanying the outbreaks or the ending of great wars (*Principles of Political Economy*, Gonner's ed., pp. 250, 251); Mill discusses "commercial crises" in his chapters on the Rate of Interest and on the Tendency of Profits to a Minimum, besides mentioning them incidentally in several other passages (*Principles of Political Economy*, Ashley's ed., pp. 561, 641, 644, 651, 709, 734-735, 845); Marshall puts a book on "Fluctuations of Industry, Trade and Credit," not into his *Principles of Economics*, but into his volume on *Money, Credit and Commerce*, London, 1923, pp. 234-263.

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until 1821 did a sustained revival begin,—and the prosperity which presently reigned ended in the panic of December, 1825.<sup>3</sup>

Sismondi had accepted Brewster's invitation readily, thinking he had merely to write a brief exposition of "principles universally admitted." But as he studied current developments he was assailed by doubts concerning the theories he had accepted from Adam Smith.

I was deeply affected, (he wrote), by the commercial crisis which Europe had experienced of late, by the cruel sufferings of the industrial workers which I had witnessed in Italy, Switzerland and France, and which all reports showed to have been at least as severe in England, in Germany and in Belgium.

The case of England was to him particularly significant—that "surprising country which seemed to be undergoing a great experiment for the instruction of the rest of the world." If the land of the economists, the land where the doctrine of economic liberty had freest sway in government, the land where the new methods of machine production had scored their greatest triumphs—if that land was plunged in want by the return of peace, must there not be something wrong in the philosophy of *laissez faire*? When everyone was free to produce as much as he could, it seemed that no one could buy what he needed to consume. How could this be? Sismondi set himself to solve the problem. The result was his *Nouveaux Principes d'Économie Politique*, published in 1819.<sup>4</sup>

We should not expect the first efforts to explain so complicated a phenomenon as a business crisis to be free from crudities. Nor was Sismondi fully equipped to solve the problem he had posed; though an excellent observer, he lacked analytic finesse. Yet he made several suggestions, ill coördinated with each other, which were developed and combated by later writers, and which continue to play rôles of importance in theories now current.

One of these suggestions is that commercial organization is at fault. The business man, as Sismondi phrases it, caters to a "metaphysical public"—customers whose numbers, tastes, consumption and purchasing power are all unknown to him, and all variable. The only guide he has in planning how much to produce is prices. By

<sup>3</sup>See the conspectus of English business annals in Chapter IV below, or better the chapter on England in *Business Annals*, by Willard L. Thorp, National Bureau of Economic Research, 1926.

<sup>4</sup>See the prefaces to the first and second editions. The latter appeared in 1827.

comparing present prices with costs, he decides whether to increase or restrict his output in the near future.

Unfortunately this comparison is made by all the producers at the same time . . . and all of them together, ignorant of how much their competitors will undertake, nearly always exceed the limit which they had in view.<sup>5</sup>

A second suggestion is that in periods of industrial activity the income available for buying consumers' goods falls short of the value of the goods sent to market. This idea sounds modern, but Sismondi's supporting analysis offered a broad target to his detractors. The purchasing power available to absorb the produce of any year, he stoutly contended, is the aggregate income of the preceding year—a notion probably suggested by his life among the peasants of Italy. When capacity to produce is increasing rapidly through the introduction of machinery, the markets must become glutted frequently. For the faster the increase in production, the wider will be the gap between last year's income and this year's output.<sup>6</sup>

Still a third suggestion embodies in quaint form the "over-saving" theory of crises. In opulent nations, production often goes astray because its volume is determined by the abundance of capital seeking investment rather than by the demand of consumers. Of course the latter demand is the only safe guide; the fact that merchants and manufacturers have money to invest in new ventures does not guarantee a market for their wares.<sup>7</sup>

Sismondi laid most stress, however, upon an idea often repeated but never clearly worked out in his book: the fundamental cause of crises is inequality in the distribution of incomes.

It is a serious error into which most of the modern economists have fallen to represent consumption as a power without limits, always ready to devour an infinite output. . . . The needs of the laboring man are narrowly limited of necessity.

The masses do not wish luxuries so much as they wish respite from toil. But when methods of production are improved, our economic institutions, instead of giving the workers leisure, keep them busy as long as ever and increase the volume of products offered for sale.

<sup>5</sup> *Nouveaux Principes*, 2d ed., I, 325-330.

<sup>6</sup> The same, I, 106, 121-124.

<sup>7</sup> The same, I, 367-368.

Who is to buy? After food, clothing and housing on a meager scale have been provided for the wage-earners, the chief market for further goods is the market for luxuries. The desire for such goods is indeed without limit. But the increase of trade in luxuries puts a nation's industry in a precarious position. Domestic consumers of luxuries prefer foreign wares, and domestic producers must seek foreign outlets. Recent experience of unsalable consignments all over the globe has shown the English how undependable is the export trade. Everyone would be better off if the workers had incomes sufficient to give the home demand a broad base.<sup>8</sup>

### III. The Multiplying Solutions.

In a generation addicted to economic speculation, events which affected so many fortunes as did the vicissitudes of trade were certain to be explained in different ways. Sismondi was but the most suggestive among a numerous company of writers, most of whom had their own explanations to offer and their own remedies to urge. Nor did the differences of opinion grow less with the passing of time. On the contrary, as later crises brought new men and new materials into the discussion, the explanations multiplied. Gradually the plausible views became standardized into several types of theory, each represented in the growing literature by a number of variants. Before the end of the nineteenth century there had accumulated a body of observations and speculations sufficient to justify the writing of histories of the theories of crises.<sup>1</sup>

A simple form of the "over-production" or "under-consumption" theory was widely held. Through the adoption of modern machinery, it was said, the power of society to produce has outgrown its power to consume. Hence the periodical occurrence of "general gluts"—paradoxical episodes in which superabundance causes want. Unable to

<sup>8</sup> The same, I, 75-78, 357-372. The best modern account of Sismondi's views is given by Albert Aftalion, *L'Oeuvre Économique de Simonde de Sismondi*, Paris, 1899.

<sup>1</sup> The most elaborate of these histories is Eugen von Bergmann's *Die Wirtschaftskrisen: Geschichte der nationalökonomischen Krisentheorien*, Stuttgart, 1895. The best accounts in English and French are Edward D. Jones' *Economic Crises*, New York, 1900, and Jean Lescure's *Des Crises Générales et Périodiques de Surproduction*, 3rd ed., Paris, 1923, pp. 313-412.

See also Harry E. Miller's paper on "Earlier Theories of Crises and Cycles in the United States." *Quarterly Journal of Economics*, February, 1924 (xxxviii, pp. 294-329), and Adolf Löwe's review of recent German contributions, "Der gegenwärtige Stand der Konjunkturforschung in Deutschland," in *Festgabe für Lujo Brentano*, Munich and Leipzig, 1925, vol. ii, pp. 329-377.

sell their increasing output of goods at remunerative prices, employers are forced to close their factories and turn away their hands—a remedy which aggravates the disease by reducing yet further the community's power to purchase for consumption.

To most of the classical economists, the theory of general over-production was a heresy, which they sought to extirpate by demonstrating that the supply of goods of one sort necessarily constitutes demand for goods of other sorts.<sup>2</sup> But maladjusted production they allowed to be possible, and their brief references to crises usually aimed to show how production becomes maladjusted through the sinking of capital in unremunerative investments. They often held that such misuse of capital was one result of "the tendency of profits to a minimum." When the current rate of profits has fallen to an unaccustomed level, the less sagacious capitalists become dissatisfied and embark on ill-considered schemes. There result the production of goods for which no market can be found, business failures, and loss of confidence—in short, a crisis which extends over all lines of trade.

Another group of writers, among whom Schäffle was prominent, accepted ill-adjusted production as the cause of crises; but accounted for it by the complexity of modern business organization—the first of Sismondi's suggestions. Not only are manufacturers compelled to produce goods months in advance for markets whose changes they cannot forecast, but investors are compelled years in advance to put their funds into enterprises the need of which is uncertain. A close adjustment of supply to demand cannot be maintained. Mistakes are inevitable, and should be ascribed less to bad judgment than to the planlessness of capitalistic production.

The most vigorous attempt to prove that crises are a chronic disease of capitalism, however, was that made by Rodbertus and elaborated by Karl Marx. The germ of this theory also is found in Sismondi and Robert Owen. Wages form but a fraction of the value of the product and increase less rapidly than power to produce. Since the masses dependent upon wages constitute the bulk of the population, it follows that consumers' demand cannot keep pace

<sup>2</sup> Upon this point, as upon many others, Malthus dissented from the "orthodox" opinion. See his *Principles of Political Economy*, 1st ed., London, 1820, 351-375; 2d ed., London, 1838, 314-330. Mill admitted that "there may really be, though only while the crisis lasts, an extreme depression of general prices, from what may be indiscriminately called a glut of commodities or a dearth of money. But (he added) it is a great error to suppose, with Sismondi, that a commercial crisis is the effect of a general excess of production. It is simply the consequence of an excess of speculative purchases." *Principles of Political Economy*, Ashley's ed., p. 561.

with current supply in seasons when factories are running at full blast. Meanwhile the capitalist-employers are investing their current savings in new productive enterprises, which presently add their quotas to the goods seeking sale. This process of over-stocking the market runs cumulatively until the time comes when the patent impossibility of selling goods at a profit, or even at cost, brings on a crisis.<sup>3</sup>

A wider acceptance was accorded to the "inflation" theory. An increase in gold, in irredeemable paper money, in bank notes, or in deposit currency was held to start an advance in prices. The latter in turn stimulates business to great activity, which runs to extremes in reckless investments and foolish speculation, and ends in a crash of credit and widespread bankruptcy.

The "psychological" type of explanation was elaborated in John Mills' paper "On Credit Cycles and the Origin of Commercial Panics," published in 1867.<sup>4</sup> On this view the fundamental cause of crises lies less in the character or abuse of economic institutions, than in the emotional aberrations to which business judgments are subject. Fair trade breeds optimism, optimism breeds recklessness, recklessness breeds disaster. In their turn, the disasters of a crisis breed pessimism and pessimism breeds stagnation. From depression business picks up only when men's spirits recover on finding that matters have gone less badly than they had feared.

As John Mills sought the fundamental cause of commercial fluctuations in psychology, so W. Stanley Jevons sought it in physics. His theory that the activity of solar radiation controls mundane weather, weather controls crops, and crops control business conditions, was first announced in 1875.

Finally, some economists, for example Wilhelm Roscher, despaired of finding any theory which would account for all crises in the same way. To these men a crisis is an "abnormal" event produced by some "disturbing cause," such as the introduction of revolutionary inventions, the development of new transportation lines, wars, the return of peace, tariff revisions, monetary changes, crop failures, changes in fashion, and the like. This view assumes that the equilibrium of economic processes has become so delicate that it may be upset by untoward conjunctures of the most dissimilar kinds, and

<sup>3</sup> For a recent statement of the Marxian theory of crises by a sympathetic interpreter, see Otto Leichter, "Zur Analyse der Weltwirtschaftskrise," in *Der lebendige Marxismus, Festgabe zum 70. Geburtstage von Karl Kautsky*, Jena, 1924, pp. 45-100.

<sup>4</sup> *Transactions of the Manchester Statistical Society*, 1867-68, pp. 5-40.

points to the conclusion that each crisis has its own special cause which must be sought among the events of the preceding year or two.

While all these speculations and others unmentioned concerning the cause of crises and depressions were being debated, some progress was made toward more exact observation and description of the phenomena. The most distinguished pioneer in work of this sort was Clement Juglar, whose elaborate treatise *Des Crises Commerciales et de leur Retour Périodique* was published in 1860 and again in 1889. Max Wirth emphasized the international character of the major crises in his *Geschichte der Handelskrisen* (Frankfort a. M. 1858; 4th ed., 1890), Tugan-Baranovski made an intensive study of English crises in the nineteenth century,<sup>5</sup> and numerous observers wrote pamphlets or books on single crises.

In this descriptive work, much freer use was generally made of statistical materials than in the theoretical essays. As the century wore on, the data available concerning prices, currency, banking, interest rates, foreign trade, production and employment grew wider in range, more reliable, and more precise. Meanwhile statisticians like Jevons and Edgeworth were developing a better technique for wresting significant conclusions from masses of seemingly chaotic data. But the use of these methods in theoretical inquiries was slow to develop.

The most fundamental change to which the use of statistics contributed was a change in the conception of the problem to be solved. The earlier writers had sought for the cause merely of crises, or of crises and depressions. It is true that a wider view had been suggested occasionally. In 1833, an English journalist, John Wade, remarked casually that

The commercial cycle is ordinarily completed in five or seven years, within which terms it will be found, by reference to our commercial history during the last seventy years, alternate periods of prosperity and depression have been experienced.<sup>6</sup>

Presently this idea of cyclical oscillations was amplified by more influential writers—Lord Overstone, Hyde Clark, William Langton.

<sup>5</sup> Published first in Russian (1894), then in German (1901) and finally in French under the title *Les Crises Industrielles en Angleterre* (Paris, 1913).

<sup>6</sup> John Wade, *History of the Middle and Working Classes*, 2d ed., London, 1834, p. 211.

John Mills, Condy Raguet and Amasa Walker: "it was indeed implied in the numerous discussions of the "periodicity of crises." One could talk about credit cycles and "periodic" crises, however, without devoting much attention to business revivals after depression, or the process by which revivals grow into prosperity. But one could scarcely use time series, showing the fluctuations of activity year after year, without seeing that the developments in the non-crisis periods offered quite as much a problem as did the crises themselves. Thus the use of statistics hastened the time when economists passed on from the theory of crises to the theory of business cycles. Clement Juglar's great "book of facts" made clear the need of the step.<sup>8</sup>

So bald a statement as the preceding falls far short of doing justice to the nineteenth century writers; but it suffices to indicate the foundations upon which our contemporaries have built their more elaborate theories. The latter conserve all of permanent value which the older economists achieved, and contain in addition certain fresh contributions to the subject. Accordingly, a more detailed account of the leading explanations which have been offered recently will put us in possession of the ideas most likely to prove useful in further work.

#### IV. The Theories Now Current.

Recent writers upon business cycles differ from one another less in principle than in emphasis. Everyone who studies the problem with care must realize that many processes are involved in the alternations of prosperity and depression. But each investigator decides for himself the question: What among these many processes is the prime mover in producing cyclical oscillations, and what processes merely adapt themselves as best may be to changes produced elsewhere?

<sup>7</sup>Lord Overstone's statement may be quoted:

"The history of what we are in the habit of calling the 'state of trade' is an instructive lesson. We find it subject to various conditions which are periodically returning; it revolves apparently in an established cycle. First, we find it in a state of quiescence,—next improvement,—growing confidence,—prosperity,—excitement,—overtrading,—convulsion,—pressure,—stagnation,—distress,—ending again in quiescence." *Reflections suggested by a perusal of Mr. J. Horsley Palmer's pamphlet on the Causes and Consequences of the Pressure on the Money Market.* By Samuel Jones Loyd, London, 1837.

On the American observations, see Harry E. Miller, "Earlier Theories of Crises and Cycles in the United States," *Quarterly Journal of Economics*, February, 1924, vol. xxxviii, p. 300.

<sup>8</sup>*Des Crises Commerciales*, 2d ed., Paris, 1889, chapter i and *passim*.

Each gives chief attention to the one or more factors which he believes to play the chief causal rôle; but many writers also show how the changes produced by their chosen causes affect other processes, and in so doing they are likely to find use for the work of men whose distribution of emphasis differs from their own.

Among the factors to which the leading rôle in causing business cycles has been assigned by competent inquirers within the past decade are the weather, the uncertainty which beclouds all plans that stretch into the future, the emotional aberrations to which business decisions are subject, the innovations characteristic of modern society, the "progressive" character of our age, the magnitude of savings, the construction of industrial equipment, "generalized over-production," the operations of banks, the flow of money incomes, and the conduct of business for profits. Each of these explanations merits attention from those who seek to understand business cycles; for each should throw light upon some feature or aspect of these complex phenomena.

We need not, however, review the full analysis of the writers by whose ideas we seek to profit. That would be the task of a treatise upon theories of business cycles. This book deals with the cycles themselves, and to it the theories are tools to be used in constructive work. The following pages, therefore, aim merely to borrow from the recent books and articles upon business cycles those suggestions which promise to enlarge our understanding of the problem as a whole.

### 1. THE WEATHER.

Most elegant among current explanations of business cycles are the meteorological theories.

In 1801 Sir William Herschel suggested that changes in sun-spots may affect the weather, hence crops, and hence prices.<sup>1</sup> This idea, coupled with Schwabe's discovery (recognized by the Royal Astronomical Society in 1857) that sun-spots are cyclical, fascinated the speculative mind of W. Stanley Jevons, and led him to the hypothesis that business cycles are caused by solar cycles. To test this notion, Jevons studied the records of English trade from 1721 to

<sup>1</sup> Observations tending to investigate the nature of the Sun in order to find the Causes or Symptoms of its variable Emission of Light and Heat; with Remarks on the Use that may possibly be drawn from Solar Observations. *Philosophical Transactions of the Royal Society of London*, 1801, vol. xci, pp. 265-318.

1878 to see how closely the two cycles agreed with each other. He concluded that there had been 16 crises in this period of 157 years. Thus he obtained an average length of 10.466 years for the commercial cycle, which agreed almost exactly with the length then assigned to the sun-spot cycle, 10.45 years. Jevons declared himself

perfectly convinced that these decennial crises do depend upon meteorological variations of like period, which again depend, in all probability upon cosmical variations of which we have evidence in the frequency of sunspots, auroras, and magnetic perturbations.<sup>2</sup>

Unfortunately for this theory, since 1878 astronomers have revised their computations of the sun-spot cycle (the average now commonly accepted is 11 + years),<sup>3</sup> and commercial cycles have departed still further from the decennial norm. Hence in 1909, Jevons' son, Professor Herbert Stanley Jevons, suggested a modification of the solar hypothesis. He believed that meteorologists had demonstrated the existence of a 3½ year period in solar radiation and in barometric pressure. By analyzing agricultural data he found evidence of a 3½ year periodicity in crop yields also. Trade cycles, he held, are either 7 or 10½ years in length. He tied these two results together by observing that a single period of good crops does not suffice to produce an unhealthy boom in business, but that two or at most three such periods following each other will do so. In this revised form, he concluded that his father's meteorological theory of the business cycle remains valid.<sup>4</sup>

Since Professor Jevons had relied largely upon American data to establish his weather cycle of 3½ years, surprise was felt when Professor Henry L. Moore announced in 1914 that harmonic analysis of rainfall data from the grain areas of Ohio and Illinois shows the existence of a 33-year and an 8-year cycle. His supplemental computations showed high coefficients of correlation between crop yields per acre and other indices of business conditions, such as wholesale

<sup>2</sup> Jevons' leading papers on this topic, dating from 1875 to 1882, are reprinted in his *Investigations in Currency and Finance*, edited by H. S. Foxwell, London, 1884, pp. 194-243. The passage quoted is on pp. 235, 236. Jevons' first investigation, by a different method, will be referred to in Chapter IV, section iv, 1, below.

<sup>3</sup> Sir William H. Beveridge, "Wheat Prices and Rainfall in Western Europe," *Journal of the Royal Statistical Society*, May, 1922, vol. lxxxv, pp. 434-437.

<sup>4</sup> See "The Causes of Unemployment: III, Trade Fluctuations and Solar Activity," *Contemporary Review*, August, 1909, vol. xcvi, pp. 165 ff. Reprinted with added preface and summary, as *The Sun's Heat and Trade Activity*, London, 1910.

prices and pig-iron production. Professor Moore formulated his conclusions in the following "law":

The weather conditions represented by the rainfall in the central part of the United States, and probably in other continental areas, pass through cycles of approximately thirty-three years and eight years in duration, causing like cycles in the yield per acre of the crops; these cycles of crops constitute the natural, material current which drags upon its surface the lagging, rhythmically changing values and prices with which the economist is more immediately concerned.<sup>5</sup>

Later, Professor Moore extended his investigations to other parts of the United States, to England and to France, finding confirmation for his 8-year, but seemingly not for his 33-year cycle. He also suggested an astronomical cause for this dominant weather cycle more daring than the sunspot theory. At intervals of 8 years Venus comes directly into the path of solar radiations to the earth. Its magnetic field, thinks Professor Moore, may affect the stream of electrons flowing from the sun and so produce an effect on earthly magnetism and weather.<sup>6</sup>

To complete the record of divergencies among the economists who have utilized meteorological data, it must be added that Sir William H. Beveridge has applied harmonic analysis to European wheat prices for the three centuries from 1545 to 1844, and found evidence that there are, not one or two, but many cycles in the weather. Of these cycles a few of the best accredited have lengths (1) of 5.1 and 35.5 years (shown by harmonic analysis and confirmed by independent meteorological data), and (2) of 5.671, 9.750, 12.840, 19.900, 54.000 and possibly 68.000 years (clearly shown by harmonic analysis, but not yet confirmed by meteorological observations). There is no 8-year period in the cycles for which Sir William Beveridge finds the strongest evidence. But a period of 8.050 years occurs in his third group, for which there is "some, but not first-rate, evidence both in wheat prices and in meteorology."

Sir William's conclusion is that,

Somewhere or other in the solar system there are periodic movements affecting our weather and crops, 10 or 20 or more

<sup>5</sup> *Economic Cycles: Their Law and Cause.* New York, 1914, p. 149.

<sup>6</sup> These later investigations are summed up in Professor Moore's volume, *Generating Economic Cycles*, New York, 1923.

in number, far more regular than had ever been believed, possibly approaching in some cases the regularity and persistence of free orbital motion, subject in other cases to sudden birth and death. These movements may be of one type, or of several types; they may be in the sun or the planets or the moon; in the earth or in the air or water upon its surface.<sup>7</sup>

A novel variant of the weather theories was propounded by Professor Ellsworth Huntington in 1919. Starting to collect statistical evidence of the effect of business conditions upon health, Huntington convinced himself that "Health is a *cause* far more than an *effect*" of economic conditions.

The statistics from 1870 to the Great War show that a high death rate regularly *precedes* hard times, while a low death rate precedes prosperity.

He also found that his death-rate curve, when inverted, agreed well with the fluctuations of school attendance one year later, New York bank clearings three years later, wholesale prices and National Bank deposits four years later, and immigration five years later.

Business cycles (Professor Huntington concluded) appear to depend largely on the mental attitude of the community, . . . the mental attitude depends on health . . . and health depends largely upon the weather.<sup>8</sup>

Professor Werner Sombart's theory of the dissimilarity in the rhythm of production of organic and inorganic goods may be regarded as a view intermediate between the preceding group of theories which trace business cycles to physical causes and the following groups which trace them to economic factors. He points out that the inorganic industries, typified by the steel trade, can expand enormously within a brief period without being seriously hampered by scarcity of raw materials. The organic industries, typified by cotton-spinning, on the contrary are always in precarious dependence upon the year's harvests. In the organic industries, one may say, the condition of business is determined largely by the yield of raw materials; in the inorganic industries, the condition of business itself determines how

<sup>7</sup> Sir William H. Beveridge, "Wheat Prices and Rainfall in Western Europe," *Journal of the Royal Statistical Society*, May, 1922, vol. lxxxv, pp. 412-459. The quotation is from p. 452.

<sup>8</sup> Ellsworth Huntington, *World-Power and Evolution*. New Haven, 1919, chapters ii-iv. The passages cited are on pp. 29 and 42.

much of the raw materials shall be produced. In a period of prosperity, the organic industries dependent upon uncertain harvests for their supplies may be unable to keep pace with the inorganic trades, which are being rapidly expanded by heavy investments of capital. There results a disturbance of the proportion which must be maintained in the production of the two types of goods, if the current supplies of both types are to find a profitable market. The modern crisis, therefore, is at bottom the result of a clash between the workings of physical and economic processes.<sup>9</sup>

## 2. UNCERTAINTY.

Of the theories which trace business cycles to economic rather than physical conditions, the simplest is that which develops Sismondi's indictment of prices as guides to production. A fresh statement of this familiar idea is given by Dr. Charles O. Hardy of the Institute of Economics in his book on *Risk and Risk-Bearing*.

The business man's "principal devices for securing a balanced output," Dr. Hardy points out, "are prices and advance orders." Both are fallible guides.

Prices and orders give information concerning the prospective state of demand compared with the known facts of present and future supply, but they give no clue to the changes in supply which they are themselves likely to cause.

This situation results in "a tendency to alternations of over- and under-production." When prices and orders indicate an expansion of demand,

the tendency is for an increasing number of persons to try to take advantage of the situation, each more or less in ignorance of the other's plans, and no force intervenes to check the continued increase of production till it reflects itself in declining orders and falling prices. By that time, however, investments have been made, contracts let, and operations started which will result in further augmentation of the supply. Time is required to check this increase in the volume of production, and during this time production outruns consumption unless

<sup>9</sup>See Werner Sombart, "Die Störungen im deutschen Wirtschaftsleben während der Jahre 1900 ff." *Schriften des Vereins für Socialpolitik*, September, 1903, vol. cxiii, pp. 130-133.

consumption is stimulated by unprofitably low prices. Moreover, just as was the case on the upswing, the indications that production is being overdone result in curtailment of operations by independent producers in ignorance of each other's intentions, and this tendency continues till output is decreased to a rate below that which is economically justified.

Speculative purchases and sales form a quite independent cause of cyclical fluctuations in business, reënforcing the first cause. For the speculators must base their judgments on substantially the same data as the producers. Hence their operations grow rapidly in prosperity and shrink rapidly in depression.

The effect of this tendency to mass movements of buying and selling is greatly to accentuate the effect of the producers' uncertainty concerning one another's plans. . . . For an increase in middlemen's stocks gives the producers *twice* a false index of the amount of production which is economically justifiable. When the increase in buying takes place it swells the volume of orders and creates a false appearance of expansion in the market, and whenever the excess stock is utilized it again gives a false indication, this time of contraction in the market.

At bottom, then, business cycles result from

*uncertainty*, chiefly uncertainty on the part of producers and middlemen concerning the conditions that will prevail in the market when they are ready to dispose of their goods.<sup>1</sup>

### 3. THE EMOTIONAL FACTOR IN BUSINESS DECISIONS.

Everyone recognizes the uncertainties with which business men must contend in planning their operations; but most writers on business cycles hold that uncertainty merely provides opportunity for the working of other factors to which they attach greater significance. One of these factors is the "psychological," or more accurately, the emotional influences which warp business judgment. The best exposition along this line is that given by Professor A. C. Pigou of Cambridge University. In his opinion "the movement of business confi-

<sup>1</sup> Charles O. Hardy, *Risk and Risk-Bearing*, Chicago, 1923, chapter v. The passages quoted are on pp. 72-75.

Dr. Hardy's exposition may be regarded as an elaborated form of "the competition theory" set forth by Sir William H. Beveridge in *Unemployment, a Problem of Industry*, London, 1908, 2d ed., 1910, chapter iv.

dence" is "the dominant cause of the rhythmic fluctuations that are experienced in industry": "optimistic error and pessimistic error, when discovered, give birth to one another in an endless chain."

After stating the conditions which make it difficult to avoid errors in planning production, Professor Pigou attacks the problem why the majority of these errors run in the same direction, instead of cancelling each other. It is at this point that his explanation diverges from the path that contents Dr. Hardy. While the latter relies upon the similarity of the price and order data used by producers and by speculators to account for the similarity of their errors, Professor Pigou has recourse to waves of elation and discouragement which sweep over the business community.

Let us suppose the business world to be in a neutral position, not suffering from either type of error. On this situation there supervenes some real cause for increase in the demand for business activity.

Then, because business men cannot foresee the results which will be produced by their own and other men's response to the stimulus, errors of the optimistic type will begin to be made. But why should these errors multiply so rapidly and grow so huge?

When an error of optimism has been generated, (Professor Pigou answers) it tends to spread and grow, as a result of reactions between different parts of the business community. This comes about through two principal influences. First, experience suggests that, apart altogether from the financial ties by which different business men are bound together, there exists among them a certain measure of psychological interdependence. A change of tone in one part of the business world diffuses itself, in a quite unreasoning manner, over other and wholly disconnected parts. . . . Secondly . . . an error of optimism on the part of one group of business men itself creates a justification for some improved expectation on the part of other groups.

Thus the optimistic error once born grows in scope and magnitude.

But since the prosperity has been built largely upon error, a day of reckoning must come. This day does not dawn until after a time long enough to construct new industrial equipment on a large scale, to bring the products of the new equipment to market, and to find that they cannot be disposed of promptly at profitable prices. Then

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the past miscalculation becomes patent—patent to creditors as well as to debtors, and the creditors apply pressure for repayment. Thus prosperity ends in a crisis. The error of optimism dies in the crisis, but in dying it

gives birth to an error of pessimism. This new error is born, not an infant, but a giant; for an industrial boom has necessarily been a period of strong emotional excitement, and an excited man passes from one form of excitement to another more rapidly than he passes to quiescence.

Under the influence of the new error, business is unduly depressed. For a time there is relatively slow extension of facilities for production. In consequence,

a general shortage of a number of important commodities gradually makes itself apparent, and those persons who have them to sell are seen to be earning a good real return. Thereupon, certain of the bolder spirits in industry see an opportunity and seize it.

Business begins to pick up slowly and gradually.

The first year or two, say, is taken up with a wholly justified expansion. But, after the first year or two, further expansion represents, not a correction of the past error, but the creation of a new one.

And the new error grows until it has betrayed business men into courses which end in a fresh crisis.<sup>1</sup>

Professor Pigou represents waves of elation and depression as arising from changes in the business situation, changes which are magnified into business cycles by the emotions they excite. Dr. Maurice Beck Hexter, Director of the Federated Jewish Charities of Boston, has thrown out the suggestion that these waves of feeling have an origin independent of the business world.

By an elaborate statistical analysis of vital and economic data, Dr. Hexter has reached the conclusion that

<sup>1</sup> A. C. Pigou, *The Economics of Welfare*, 1st ed., London, 1920, Part vi, chapter vi. The quotations are from pp. 833, 839, 840, 843 and 844. In companion chapters, Professor Pigou shows how the results of the "dominant cause" are modified by other factors, such as harvest fluctuations, and the workings of the monetary system. Professor Pigou has dropped this discussion from his second edition, hoping to incorporate it "in the next year or two" in "a study of industrial fluctuations." See preface of the 2d ed., 1924.

. . . fluctuations in conceptions *precede* fluctuations in wholesale prices by about eight months; fluctuations in the birth-rate *precede* fluctuations in unemployment by about seventeen months . . . fluctuations in the death-rate *precede* fluctuations in wholesale prices about seventeen months; and . . . fluctuations in the death-rate *precede* fluctuations in unemployment by about ten months.

A causal explanation of these relations is suggested by the powerful emotional reactions excited in men by the death of friends and the prospect of having children. Dr. Hexter argues thus:

Business enterprise is the application of mental effort to the transformation of our physical environment. Anything which affects the emotions of men must necessarily affect their ability to make decisions, anticipate decisions, or postpone decisions. If these times of postponed decisions or accelerated judgments or stimulated efforts are not isolated, but, on the contrary, run in wave-like movements, we think that there may be something to (sic) the suggestion that varying birth-rates and fluctuating death-rates can and do affect business cycles. The errors of optimism and the errors of pessimism may be closely connected with these variations in human emotions. It may very well be that these waves of emotion which run through society from time to time are very closely related to these variations in births and deaths.<sup>2</sup>

It will be noticed that Dr. Hexter's hypothesis is related to Professor Huntington's quite as closely as to Professor Pigou's. But Hexter differs from Huntington in that he does not seek to connect fluctuations in vital statistics with fluctuations in the weather.

#### 4. INNOVATIONS, PROMOTION, PROGRESS.

Professor Joseph Schumpeter of Bonn holds that to explain business cycles by errors bred of uncertainty and nourished by mass psychology is superficial. That errors are made, that they wax with prosperity, and that they play a considerable rôle in the cycle he admits; but, he adds, crises and depressions would continue to run their round if miscalculation were eliminated.

The fundamental cause of business fluctuations Schumpeter finds

<sup>2</sup> Maurice B. Hexter, *Social Consequences of Business Cycles*. Boston and New York. 1925, Part ii. The quotations are from pp. 169, 174 and 175.

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in the innovations made from time to time by the relatively small number of exceptionally energetic business men—their practical applications of scientific discoveries and mechanical inventions, their development of new forms of industrial and commercial organization, their introduction of unfamiliar products, their conquests of new markets, exploitation of new resources, shifting of trade routes, and the like. Changes of this sort, when made on a large scale, alter the data on which the mass of routine business men have based their plans. These plans doubtless involve a certain element of error; but business innovations produce a far graver situation.

Somehow, all enterprises must adapt themselves to the novel conditions now confronting them, or go to the wall. Considerable numbers do fail. A far larger number manage to work out new plans based on the new data concerning prices, costs, methods and markets. But this process of feeling out the novel conditions and making adjustments to them takes time. While the readjusting is under way, the making of innovations slows down; even the most restless of enterprisers cannot get the capital and coöperation required to carry out their schemes. This is the period of depression. It lasts until the readjustments have gone far enough to produce a fairly stable condition of affairs, stable enough to let men regain confidence in the future.

But the very restoration of quasi-stability makes it possible for the disturbers of the business peace to resume operations on a large scale. By borrowing for their new projects the innovators raise interest rates; by investing capital they raise the prices of industrial equipment and increase payroll disbursements. There follows an increase of demand and a rise in the prices of consumers' goods. The general activity thus initiated brings prosperity to the mass of enterprises—and stimulates further innovations. Prosperity continues until the unsettling consequences of the business changes begin to appear *en masse* in the shape of large supplies flooding the market, high costs of materials and labor, shifting of demand to new products, the supersession of old sources of production by new sources, and so on. Then comes a new crisis and a new period of readjustments.

To complete this theory it is necessary to show why innovations themselves come in waves. Schumpeter explains that the combination of capacities required for conceiving new undertakings and carrying them through all obstacles and hazards is rare among men; but that when a few highly endowed individuals have achieved success,

their example makes the way easier for a crowd of imitators. The rising prices, the increasing demand, the spread of optimism make borrowers more eager and lenders less cautious. Men who do not have the capacity to originate new schemes may have the wit to profit by and even improve upon the work of the pioneers. So, once started, a wave of innovation gains momentum—until it is checked by the consequences which it produces.<sup>1</sup>

The “promotion theory” of business cycles, developed by Professor Minnie T. England of the University of Nebraska, rests upon the same foundations as Schumpeter’s theory of innovations. While less complete in its formal logic, Mrs. England’s exposition runs in more realistic terms and cites more evidence. It should be studied by those who feel that Schumpeter’s sketch lacks substance.<sup>2</sup>

While Mrs. England represents promoters and Professor Schumpeter represents a less specialized group of innovators as responsible for business crises, Dr. Emanuel H. Vogel, late of Vienna University, lays the responsibility upon “progress” at large.

In his eyes, crises are accidents which are bound to happen every now and then in a growing society based on private enterprise. For when such a society is expanding year after year, prosperity requires the maintenance of an economic equilibrium which is itself moving. The rates at which the important industries are growing must be kept in adjustment to each other; so also must the rates at which the incomes of all classes of the people and their consumption of goods are growing.

Such a consummation of adjustment, Dr. Vogel argues, is thinkable only in a society whose changes are always in the same direction and at the same pace. It is not thinkable in a society whose fortunes are represented by an ascending saw-toothed curve. We know that expansion at a constant rate never continues unbroken long at a

<sup>1</sup> Dr. Schumpeter’s first version of this theory was published in May, 1910: “Ueber das Wesen der Wirtschaftskrisen,” *Zeitschrift für Volkswirtschaft, Sozialpolitik und Verwaltung*, vol. xix, p. 271. Successive revisions appear in his *Theorie der wirtschaftlichen Entwicklung*, Leipzig, 1912, chapter vi; “Die Wellenbewegung des Wirtschaftslebens,” *Archiv für Sozialwissenschaft und Sozialpolitik*, July, 1914, vol. xxxix, pp. 1-32, and in the second edition of his *Theorie der wirtschaftlichen Entwicklung*, Munich and Leipzig, 1926, chapter vi. This latest version includes replies to several critics of the theory, and is written in the most emphatic tone.

<sup>2</sup> See “Fisher’s Theory of Crises,” *Quarterly Journal of Economics*, November, 1912, vol. xxvii, pp. 95-106; “Promotion as the Cause of Crises,” the same, August, 1915, vol. xxix, pp. 631-641; “Economic Crises,” *Journal of Political Economy*, April, 1913, vol. xxi, pp. 345-354; “An Analysis of the Crisis Cycle,” the same, October, 1913, vol. xxi, pp. 712-734.

time; every community experiences setbacks which check its economic progress. Unfavorable political events, mistaken forecasts of the future, the disturbances caused by improvements in technical methods, discoveries of new sources of supply, alterations in consumers' tastes, suggest how various are the factors which are changing the pace of growth and occasionally causing shrinkage.

Irregularities of change, then, are rooted deep in modern economic organization. And to these irregularities it is quite impossible that all the different rates of growth should adjust themselves promptly and in such a way as to maintain among themselves a moving equilibrium. A serious rupture of equilibrium produces an economic crisis followed by a period of declining activity. Gradually men work out a fresh series of adjustments, equilibrium is re-established, and progress resumes its course until something new happens to which the rates of growth cannot adjust themselves without losing adjustment to each other.<sup>3</sup>

### 5. THE PROCESSES OF SAVING AND INVESTING.

One of the explanations of crises most in favor among business men is that they are caused by "scarcity of capital." Investments during prosperity are so heavy that the supply of loan funds is gradually exhausted. When this stage is reached, borrowers are unable to complete their financing and the boom ends in a crisis. This idea has been elaborated by Professor Michel Tugan-Baranovski, whose Russian treatise of 1894 has been repeatedly revised and translated into French and German.

It is necessary to distinguish, Tugan-Baranovski begins, between loan funds and capital invested in production. The loan fund is the aggregate of savings made by individuals belonging to all classes, and by business enterprises. During depressions the savings of business enterprises, business men, stockholders and wage-earners decline. But there is an important class of savers whose incomes are little affected by depression—landlords, bond-holders, salaried officials; indeed their savings are augmented by the lower cost of living. Thus saving continues on a large scale during depression, and (the vital point) if the aggregate declines below the records of prosperity, it certainly declines less than does investing. Hence depression brings

<sup>3</sup> *Die Theorie des volkswirtschaftlichen Entwickelungsprozesses und das Krisenproblem.* By Dr. Emanuel Hugo Vogel. Vienna and Leipzig, 1917.

the gradual accumulation of a huge uninvested fund of loan capital. Evidence of this accumulation appears in the swollen bank reserves and in the low rates of interest and bank discount.

Of course, the reason why these savings are not invested as they are made is found in the disorganized state of business. Few business men wish to borrow on a large scale during depression. But let savers become eager enough to get their funds into profitable use, let the rates of interest which they will accept drop low enough, the dam behind which the loan fund has been accumulating will give way, and money will begin to flow into investment.

When this time comes the huge purchases made with borrowed loan funds bring prosperity. Stimulated by its own effects, investment keeps expanding and presently attains a scale so large as to exceed current savings. Hence the uninvested loan fund is gradually exhausted. When the point of exhaustion is neared, available capital becomes so scarce that pending plans for further business extensions cannot be financed. Interest rates rise to prohibitive levels, bank reserves drop to the danger point, the makers of industrial equipment get no new orders, and prosperity ends in a crisis.<sup>1</sup>

While giving the preceding account of the process by which crises are bred periodically, Tugan-Baranovski holds that the alternate accumulation and exhaustion of the loan fund could not occur were income more evenly distributed.

It is the inadequate remuneration of labor . . . which is the fundamental cause of the rapid accumulation of social capital, which in its turn provokes crises.<sup>2</sup>

This is the idea which an English publicist, Mr. John A. Hobson, has developed into the theory that business cycles are due to "over-saving"—a theory quite different from Tugan-Baranovski's.

Mr. Hobson holds that at any given time

there is an exact proportion of the current income which, in accordance with existing arts of production and existing foresight, is required to set up new capital so as to make provision for the maximum consumption throughout the near future.

<sup>1</sup> The latest exposition known to me is the French edition of Tugan-Baranovski's treatise, *Les Crises Industrielles en Angleterre*, traduit par Joseph Schapiro (Bibliothèque Internationale d'Économie Politique), Paris, 1913. See especially Part II.

<sup>2</sup> The same, p. 279.

If in a period of prosperity, the rate of consumption should rise *pari passu* with the rate of production, there is no inherent reason why the prosperity might not continue indefinitely. But in modern societies, a large portion of the wealth produced belongs to a small class. In active times their incomes rise more rapidly than their consumption, and the surplus income is perforce saved. There results for the community as a whole a slight deficiency of spending and a corresponding excess of saving. The wealthy class seeks to invest its new savings in productive enterprises—thereby increasing the supply of goods and also increasing the incomes from which further savings will be made. This process runs cumulatively during the years of prosperity until finally the markets become congested with goods which cannot be sold at a profit. Then prices fall, liquidation ensues, capital is written down, and the incomes of the wealthy class are so reduced that savings fall below the proper proportion to spending.

During the period of depression, the glut of goods weighing upon the market is gradually worked off and the prospect of profitable investment slowly returns. Savings rise again to the right proportion to spending and good times prevail for a season. But after a while the chronic impulse toward over-saving becomes fully operative once more; soon or late it begets another congestion of the markets, and this congestion begets another depression.

Proximately then, the cause of alternating prosperity and depression is the tendency toward over-saving; ultimately it is the existence of the surplus incomes which lead to over-saving.<sup>1</sup>

<sup>1</sup> Mr. Hobson has presented his theory in several books, but most fully in *The Industrial System*, London, 1909, chapters iii and xviii, and in *Economics of Unemployment*, London, 1922. The passage quoted is from p. 53 of the earlier volume.

Another form of the savings theory is presented by Mr. N. Johannsen. The act of saving by itself, means the withdrawal of purchasing power from the market, and so always tends to produce business depression. But when the sums saved are promptly invested "in the creation of new productive capital," the deficiency of purchasing power is offset, and the community's wealth is increased. No such offsetting occurs, however, when savings are used to buy property from embarrassed owners, or loaned to people in distress. Those who get the money expend it; but their expenditures merely offset their own losses, and the withdrawal of purchasing power caused by the act of saving is not compensated for. Whether saving tends to sustain prosperity or to cause depression thus "depends upon the manner of investment." "Impair savings," as Mr. Johannsen calls savings which are not used to create new capital, "always hurt business, and if sufficiently large, they cause a general depression." See N. Johannsen, *A Neglected Point in Connection with Crises*, New York, 1908, and *Business Depressions: Their Cause. A Discovery in Economics*, Stapleton, New York, 1925.

Dr. Rudolf Stucken of the University of Kiel argues in a somewhat similar vein that, if a period of expansion in business activity is checked for any reason, savings will not be invested in productive enterprises, but used to repay bank loans. The immediate result is to reduce the purchasing power offered for goods below the current supply seeking sale, and so to convert the check upon expansion into a contraction.

## 6. CONSTRUCTION WORK.

Among the numerous theorists who have been influenced by Tugan-Baranovski are writers who have sought to show what his But the reduction of bank loans, and the concomitant reduction of demand liabilities enables the banks to increase their credit advances to business men liberally when a revival begins, and thus to convert revival into prosperity. See Rudolf Stucken, *Theorie der Konjunkturschwankungen*, Jena, 1926.

While Mr. D. H. Robertson cannot be classified with the savings theorists, since he believes that other factors have a leading share in producing cyclical oscillations in trade, the most notable feature of his recent book on *Banking Policy and the Price Level*, (London, 1926), is an analysis of the role played by savings in "trade cycles."

For this analysis he invents a curious terminology.

"The essence of the activity of providing capital" is "Lacking." "A man is lacking if during a given period he consumes less than the value of his current economic output. . . . The amount of Lacking done in a given period may be measured by the volume of consumable goods lacked. . . . The things in the provision of which Lacking eventuates I propose to call Capital. . . . Long Lacking is directed towards providing society with the use . . . of the fixed and durable instruments of production: Short Lacking towards" providing society with the use of circulating capital, which, like fixed capital, consists of commodities. (Pp. 40-42.)

Equipped with these definitions, Mr. Robertson argues:

"From our present point of view, the fundamental feature of the upward swing of a trade cycle is a large and discontinuous increase in the demand for Short Lacking, occurring as the essential preliminary to an expansion of output . . . the supply of (Spontaneous) Short Lacking is not sufficiently elastic to cope with such pronounced and discontinuous increases in demand, and . . . the responsibility for meeting them rests almost entirely upon the banking-system (Pp. 71, 72) . . . Now the banking-system can, of course, only 'provide' . . . Short Lacking . . . by extorting it from the general public through the multiplication of currency." (Pp. 88, 89.)

The meaning seems to be that current output cannot be expanded freely in a period of prosperity unless there has been an increase in the commodities which constitute circulating capital; that these commodities cannot be provided in sufficient quantity unless the general public is prevented from increasing its consumption as fast as output rises, and that the banks put the necessary brake upon consumption by raising prices through an increase of the currency.

Mr. Robertson holds that most periods of prosperity bring also a rapid increase in the demand for fixed capital, and therefore for the Long Lacking which provides it. Part of this demand is met by investors, but part falls on the banks. The latter can provide Long Lacking only by the means which they use to provide Short Lacking, that is, they must extort Long Lacking from the public by expanding the currency and raising prices. (Pp. 84-89).

But the rise of prices through which the banks extort Lacking, Short and Long, from the public increases the money value of the circulating and fixed capital required by business enterprises, and therefore makes necessary a greater rise of prices. Obviously a self-inflating process of this sort cannot be sustained indefinitely. To keep the process under control, the banks raise interest rates, sell government securities, and, at need, limit new money loans. Despite the skill which modern banking-systems have acquired in promoting equilibrium between the demand for and supply of Lacking, many crises are still characterized by what is popularly called "an acute shortage of capital," and what is properly called "a deficiency in the activity Lacking." (Pp. 79, 90).

I offer this interpretation of Mr. Robertson's analysis with a diffidence which readers of his book will understand. It is certainly incomplete; I hope it is not wrong.

analysis of savings means in terms of production. By so doing they have shifted the emphasis from over-saving to over-production of one type of goods in comparison with another type. This variant of business-cycle theory is represented in Germany by Professor Arthur Spiethoff of the University of Berlin;<sup>1</sup> but it will suffice to cite the less technical exposition given by Mr. George H. Hull, an American business man.

High prices of construction, runs Hull's thesis, is the hitherto "unknown cause of the mysterious depressions" from which the industrial nations suffer. The greater part of modern trade fluctuates within relatively narrow limits. Agriculture provides the necessities of life, commerce distributes them, and finance adjusts the bills. The volume of all this business is fairly constant, because the demand for necessities is incapable of sudden expansion or contraction. Industry, on the contrary, may expand or contract indefinitely, especially that part of industry devoted to construction work. For the sources of booms and depressions, therefore, we must look to the enterprises which build and equip houses, stores, factories, railways, docks, and the like.

Of the huge total of construction, which Mr. Hull believes to make "say 77 per cent of all industrial products of the nation" after "deducting land and the necessities of life," about two-thirds, even in the busiest of years, consists of repairs, replacements, and such extensions as are required by the growth of population. This portion of construction is necessary and must be executed every year. But the remaining portion is "optional construction," and is undertaken or not according as investors see a liberal or a meager profit in providing new building and equipment.

When the costs of construction fall low enough to arouse "the bargain-counter instinct," many of the "far-seeing ones who hold the purse-strings of the country" let heavy contracts, and their example is followed by the less shrewd. The addition of this new business to the volume of "necessity construction" and the provision of consumers' goods, creates a boom. But, after a year or two, con-

<sup>1</sup> Professor Spiethoff published his analysis in a series of articles in Schmoller's *Jahrbuch für Gesetzgebung*, 1902, pp. 721-759; 1903, pp. 670-708; 1909, pp. 445-467, 927-951, 1417-1437. See also Spiethoff's article "Krisen" in the 4th edition of the *Handwörterbuch der Staatswissenschaften*, Jena, 1925, vol. vi, pp. 8-91. Mr. Dennis H. Robertson has developed a theory of "constructional relapse" which runs on similar lines. See *A Study of Industrial Fluctuation*, London, 1915, pp. 170-198.

A summary of Spiethoff's theory may be found in the earlier edition of this book, pp. 10, 11.

tractors discover that their order books call for more work than they can get labor and materials to finish within the contract time. When this oversold condition of the contracting trades is realized, the prices of labor and raw materials rise rapidly. The estimated cost of construction on new contracts then becomes excessive. Shrewd investors therefore begin to postpone the execution of their plans for extending permanent equipment, and the letting of fresh contracts declines apace. While the contractors are gradually completing work on their old orders, all the enterprises making iron, steel, lumber, cement, brick, stone, etc., begin to suffer a serious shrinkage of new business. Just as the execution of the large contracts for "optional construction," let in the low-price period, brought on prosperity, so the smallness of such contracts, let in the high-price period, now brings on depression. Then the costs of construction work fall until they arouse "the bargain-counter instinct" of investors once more, and the cycle begins afresh.<sup>2</sup>

Colonel Malcolm C. Rorty has suggested that the over-construction theory should be expanded into an "over-commitment" theory, and strengthened by analysis of financial processes. At an early stage in many periods of prosperity, he points out, simultaneous over-commitments to business extensions and new ventures are made in most, if not in all, branches of industry. Each such commitment involves the creation, through credit extensions, of new purchasing power. Since the additional purchasing power is not offset promptly by a corresponding increase in production, prices rise. This process of extending commitments, expanding credit and raising prices continues until it is checked by shortage of credit facilities, or until prices have reached a level at which experienced business men see danger in making further additions to their stocks of goods. Then comes a contraction of purchases, and a crisis.

Such are the essential features of a typical boom and crisis, arising from causes inherent in the business organization. But Colonel Rorty adds that we have cycles of two other types. The milder periods of prosperity and recession arise from mere current readjustments of production, distribution and consumption. Still other cycles arise primarily from non-business causes, such as wars. Admitting that sometimes it is difficult to decide to which of these three types a

<sup>2</sup> George H. Hull, *Industrial Depressions*, New York, 1911. The passages quoted are from pp. 103-107.

given case belongs, Colonel Rorty holds that this classification clarifies the problem, and explains why no one theory accounts in satisfactory fashion for all cycles.<sup>3</sup>

### 7. GENERALIZED OVER-PRODUCTION.

The emphasis which Spiethoff and Hull put upon the difference between the rôles played by industrial equipment and consumers' goods in business cycles has become a commonplace in later writings. Two theorists in particular have developed this idea, and in developing it have reached results which differ sharply from those of Tugan-Baranovski and Hull. Against the first they contend that there is and can be no accumulation of uninvested loan-capital; against the second they contend that crises result from a general, not a partial over-production of goods, and that the seat of difficulty is in the industries making consumers' goods rather than in those making industrial equipment. Mentor Bouniatian, professor at the Polytechnic Institute of Tiflis was perhaps the earlier to publish; but the clearer exposition has been supplied by Albert Aftalion, professor at the University of Paris.<sup>1</sup>

When the price level rises after a period of depression—why it should rise will appear later—business men see that current demand for consumers' goods is larger than current supply at the old prices. To secure their shares of the good profits in prospect, manufacturers enlarge the volume of their orders for industrial equipment. These orders increase employment, thus stimulate consumers' demand, and so encourage the placing of still larger orders for equipment.

To construct the equipment which is typical of modern industry, however, requires months and often years. Hence a considerable time must pass before notable additions can be made to the current supply

<sup>3</sup> See M. C. Rorty, *Some Problems in Current Economics*, Chicago, 1922, pp. 73-84, and the report of Colonel Rorty's address to the National Founders Association, in *The Iron Age*, November 25, 1926, pp. 1478-1482.

<sup>1</sup> On the relations between the ideas of these two writers see the preface of *Les Crises Économiques*, par Mentor Bouniatian, Traduit du Russe, (Moscow, 1915) par J. Bernard (Bibliothèque Internationale d'Économie Politique), Paris, 1922. Bouniatian's first book on the subject was *Wirtschaftskrisen und Ueberkapitalisation*, Munich, 1908. Aftalion published first a series of articles on "La réalité des surproductions générales" in the *Révue d'Économie Politique*, 1908-09 (vol. xxii, pp. 696-706; vol. xxiii, pp. 81-117, 201-229, 241-259); then an *Essai d'une théorie des crises générales et périodiques*, Paris, 1909, and finally a treatise, *Les Crises périodiques de Surproduction*, 2 vols., Paris, 1913.

of consumers' goods. During this "period of gestation,"<sup>2</sup> the supply of consumers' goods continues inadequate, prices keep advancing, employment grows fuller, large incomes are disbursed and prosperity reigns.

After prosperity has grown at an increasing pace for some time, however, large quantities of new equipment are ready for use and the current supply of consumers' goods is augmented. Then trouble begins. For, according to "the laws of value," these increments added to the supply of consumers' goods cannot be sold at prices such as have recently prevailed. When the supply of any commodity increases, the wants satisfied by consuming new increments are less intense than the marginal wants recently satisfied. The later days of prosperity are therefore characterized by a decline in the marginal utility of consumers' goods. This decline brings with it a reduction in the prices consumers are willing to pay—a fall which is rendered greater by the concomitant rise in the marginal utility of money, caused by the increasing demands upon the circulating medium made by active trade. Presently it becomes clear that general over-production prevails. The fall of prices extends from one field to another and prosperity ends in a crisis.

General over-production accompanied by a declining price level lasts for a year or so after the crisis, because the new equipment has cost so much money that it must be kept running, if that is anywise possible. Indeed, over-production increases for a time, since part of the equipment ordered in the latter part of the boom is not finished until after the crisis, and when it is delivered it must be made to give some return upon the capital locked up in it. The fall of prices is now opposed by a decline in the marginal utility of money, which is less needed in depression; but the decline in the marginal utility of consumers' goods more than offsets this factor.

Recovery from depression comes after three or four years, because, while prices are falling, there is little inducement to order new equipment. It is true that some new orders are placed even in the

<sup>2</sup>The phrase is borrowed from Mr. D. H. Robertson, who has developed this point more fully than Aftalion or Bouliatian. In particular Mr. Robertson suggests that the recurrence of business cycles may be due in large part to the more or less simultaneous wearing-out and re-ordering of large masses of equipment made in an earlier period of prosperity. See *A Study of Industrial Fluctuation*, pp. 13-25, London, 1915.

Professor Pigou, who also makes much of the "period of gestation," ventures the statement that "ten years seem to be, not merely the average, but also the markedly predominant" length of life of machinery. *The Economics of Welfare*, 1st ed., pp. 827-830, 841-848.

worst of times; but the volume shrinks greatly in comparison with that of the preceding period of prosperity. Meanwhile the demand for consumers' goods continues to grow, though at a slightly slower pace than in prosperity. Let this situation persist for a few years, and gradually the current demand for consumers' goods at the low prices which depression causes will come to exceed current supply. When this happens, prices turn upward again. Then business men seek to increase their output and begin ordering equipment more freely. But while their orders are being executed, the current supply of consumers' goods becomes scantier in comparison with the growing demand, prices rise further, and another period of prosperity dawns.

#### 8. BANKING OPERATIONS.

All the explanations summarized in the preceding sections take for granted that the processes which they trace run in communities equipped with modern monetary and banking systems. From their viewpoints, however, money and bank credit are simply mechanisms through which the economic forces causing business cycles work their effects. At most these theories admit that the monetary mechanism accentuates the wave movements which are started by more fundamental factors.<sup>1</sup> The explanations which make business cycles a direct consequence of banking operations therefore constitute a distinct variety of cycle theories.

No one has contented himself with a briefer statement of the reason for adopting this type of explanation than Professor Alvin H. Hansen of the University of Minnesota.

Demand, (he argues), is based on purchasing power. The source of purchasing power is income, and the source of income is the production of material goods and services. . . . In short, goods and services are exchanged against goods and services. On this basis one would expect production to run an even course, and not to run in cycles. And indeed in the barter economy there were no business cycles.

But how does the rise of money economy produce cyclical oscillations? Under modern conditions, Professor Hansen answers,

<sup>1</sup> See, for example, Professor Pigou's chapter on "Accentuation of Wave Movements due to the Working of the Monetary System." *The Economics of Welfare*, 1st ed., pp. 849-864, and Mr. Robertson's chapter on "The Wage and Money Systems," *A Study of Industrial Fluctuation*, pp. 206-238.

The nominal purchasing power obtaining in any society at any given moment may be measured substantially by the amount of money in hand-to-hand circulation and the volume of bank credit in the form of deposit currency.

The amount of purchasing power, and therefore of demand, made available by the banks is limited

by two things: first, by the quantity of reserves; second, by the desirability of converting personal credit into bank credit, and this depends upon the discount rate and the profitability of the employment of capital in industry.

Plainly neither these limits themselves nor the closeness with which they are approached is fixed; hence the purchasing power which the banks provide can fluctuate through a wide range.

When the banks increase nominal purchasing power by granting more credit, they add to the circulating media.

The effect is an increase in prices and therefore no increase in real purchasing power. The nominal incomes of people generally are as before, but their real purchasing power is reduced because of the increase in prices. The issuance of bank credit simply redistributes purchasing power, reducing the real purchasing power of income receivers generally, and increasing the purchasing power of entrepreneurs able to secure bank credit. It is this redistribution of purchasing power, accomplished through the instrumentality of banking institutions, that changes demand, upsets prices, affects the profit margin, and therefore production. Here, in short, may be found the fundamental cause of the business cycle.

To complete the theory, it is necessary to follow the round of events:

When accumulated stocks have run out, when costs are falling, when labor is easily obtainable, when loanable funds are plentiful and interest rates run low, then prospects for profit-making are bright and entrepreneurs apply for bank credit. The issuance of bank credit increases the purchasing power of entrepreneurs. The result is increased bidding for raw materials, capital equipment, construction work, etc., with a consequent increase in prices.

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The business men, who profit by the increased demand, in their turn apply for bank loans and so the process runs expansively for a time.

"This upward movement comes to a close only when bank credit can no longer be further extended, for the reason that it has already reached the limit of banking safety." But this limit can hardly be reached without being overrun; for the activity of trade causes more money to be drawn into hand-to-hand circulation, at the expense of bank reserves. "It therefore becomes necessary not merely to stop the expansion of bank credit, but actually to reduce the outstanding volume." The resulting contraction causes prices to fall, the volume of business to shrink, and the demand for bank credit itself to slacken —once more a self-propagating process.

But as the upward movement culminated because of the strain placed upon bank reserves through an undue extension of bank credit, so the downward movement comes to a close because of the great accumulation of bank reserves due to the reduction of outstanding bank credit and the return of money from hand-to-hand circulation following the decline of prices. This continued accumulation of reserves leads bankers progressively to lower discount rates to a point low enough to make the employment of bank credit again profitable. New securities are freely issued, bank loans are readily obtainable, and the purchasing power of business enterprises increases. Thus the upward swing returns and the cycle repeats itself.<sup>2</sup>

Like Professor Hansen, Mr. R. G. Hawtrey of the British Treasury thinks he has "proved that there is an inherent tendency toward fluctuations in the banking institutions which prevail in the world as it is." But Hawtrey lays more stress than Hansen upon the importance of changes in discount rates.

"An expansion of trade occurs," Mr. Hawtrey explains, "when the amount of credit money in existence is less than the bankers think prudent, having regard to their holdings of cash, and they lower the rate of interest in order to encourage borrowing." This reduction in the cost of loans starts a long train of consequences: dealers give larger orders to producers, producers increase output and raise prices, employment becomes fuller and wages rise, the increase of incomes augments retail demand, the prosperous business classes borrow more

<sup>2</sup> *Cycles of Prosperity and Depression in the United States, Great Britain and Germany*, by Alvin H. Hansen (University of Wisconsin Studies in the Social Sciences and History, No. 5). Madison, 1921. The quotations are from pp. 104-108.

freely—and so on progressively, until the banks, having lent all the credit they think prudent,

no longer need to keep down the rate of interest. The rate of interest is then raised to the "profit rate," and the inducement (for dealers) to increase stocks of goods is removed.

Trade expansion is followed by trade depression, because the high rates of interest tempt the banks to lend as much as possible. For a time they can expand loans without losing much cash; but when the lagging rise of wage rates gets under way, bank reserves are reduced. Further, high prices are likely to stimulate imports, check exports and so cause an outflow of gold from the country enjoying prosperity. When their reserves decline appreciably, the banks are forced to contract outstanding loans. For this purpose they raise the rate of interest still further and withdraw funds loaned on the investment market. Then securities fall and dealers in commodities seek to reduce stocks on which the carrying charge has become heavy. They give fewer orders to producers; producers decrease output and cut down their working forces; retail demand falls off; stocks threaten to become redundant again because of fewer sales, and the process starts all over again. During this period of depression business men need less credit and the reduced wage disbursements allow cash to accumulate in the banks. Thus the banks win back to an easy condition, and "no longer need to keep up the rate of interest." By the fall in interest rates the way is prepared for a new expansion of trade.<sup>3</sup>

<sup>3</sup> *Good and Bad Trade. An Inquiry into the Causes of Trade Fluctuations*, by R. G. Hawtrey, London, 1913. The quotations are from pp. 3, 199, 268 and 269.

In a later volume, Mr. Hawtrey seems to have changed his fundamental thesis somewhat. "Far from causing the cyclical fluctuations," he says on p. 425 of *Currency and Credit* (2d ed., London, 1923), "a banking system diminishes their violence and facilitates their control." The "instability of credit" is due "not so much to the banker as to the merchant and the promoter." (p. 423). But he adds, "though credit institutions are not themselves the cause of this phenomenon, yet where such institutions exist it is through them that the fluctuations take effect." (p. 425). For present purposes, it is Mr. Hawtrey's analysis of the process by which cyclical fluctuations come to pass in modern communities, rather than his brief discussion of their causes, which is helpful. To this analysis he adheres in *Currency and Credit* (see p. 130 and chapters ix, x), with minor modifications, of which I have incorporated the most important into my summary made from his *Good and Bad Trade*.

Mr. Hawtrey's theory has much in common with views formerly held by Professor Irving Fisher. But there is a significant difference. Professor Fisher built upon what he believed to be a statistically demonstrated fact that changes in interest rates lag behind price movements. This lag increases the profits of business borrowers when prices are rising and stimulates activity. When prices are falling, the lagging of interest rates reduces profits and augments depression. Mr. Hawtrey, on the other hand, repre-

### 9. PRODUCTION AND THE FLOW OF MONEY INCOMES.

In a sense, all of the theories so far reviewed are ways of explaining why the people of a country sometimes cannot or will not buy at profitable prices all they produce; or, what comes to the same thing, why they produce more than they can sell. But the most direct way of solving the problem when stated in this way has still to be noticed. It consists in giving new reasons for Sismondi's contention that in periods of activity money incomes lag behind the money value of the goods produced.

The suggestion of Mr. R. E. May introduces the subtle recent theories which follow this line. May builds upon two corner stones: (1) in a modern industrial community wages form by far the largest of the income streams, (2) wages increase less rapidly in prosperity than the aggregate value of goods produced. Thus the purchasing power of the most important class of consumers fails to keep pace with the volume of goods seeking sale. Let the resulting excess of dollar supply over dollar demand accumulate for a year or two, and it is inevitable that the market for consumers' goods will be glutted. Then come a crisis and depression which restore the body economic to health, by forcing down prices to the point where the wage-earning consumers can buy what is offered. And Mr. May

sents changes in bank-discount rates as themselves the active force in initiating trade fluctuations, with their concomitant price fluctuations.

For Professor Fisher's theory, see *The Purchasing Power of Money*, New York, 1911, chapters iv and xi, sections 15-17; and "Gold Depreciation and Interest Rates," *Moody's Magazine*, 1909, pp. 110-114 (a summary statement). As late as December, 1923, Fisher still suspected "that the principal force affecting the cycle is the *real* rate of interest, the sum of the *money* rate of interest and the rate of appreciation (positive or negative) of the purchasing power of the dollar." (See "The Business Cycle Largely a 'Dance of the Dollar,'" *Journal of the American Statistical Association*, vol. xviii, p. 1024). Recently, however, Professor Fisher has come to believe that "the" business cycle is a myth. Fluctuations in "trade," (which remain genuine in his eyes), are due primarily to "price-change"; but the next most important influence "is probably that of the rate of interest." See "Our Unstable Dollar and the So-called Business Cycle," *Journal of the American Statistical Association*, June, 1925, vol. xx, pp. 191, 198.

Professor Wilhelm Röpke of Jena has suggested an interesting combination of the savings and the banking theories of business cycles. The "real cyclical bacillus" he finds in periodic variations in the ratio between accumulation and consumption, which cannot be altered much without producing serious disturbances in the process of exchange. But these periodic variations in the ratio between accumulation and consumption are due in large part to periodic changes in the volume of credit—changes which appear in discrepancies between the real and the nominal rates of interest, in the liquidity of the credit-granting banks, and in their operating policies. See his paper on "Kredit und Konjunktur," in *Jahrbücher für Nationalökonomie und Statistik*, March-April, 1926, vol. cxxiv, pp. 243-285.

follows the logic of his diagnosis to the point of recommending a legal limitation of profits, in order that producers may be forced to reduce selling prices as they increase output.<sup>1</sup>

A more adequate development of this theme has been provided by Professor Emil Lederer of Heidelberg.

Depression is characterized, he begins, by a decline in physical production and in prices. Though general, the price decline is not uniform. The prices which constitute the incomes of the propertied and salaried classes shrink but little. Nor do wage cuts and unemployment reduce the money incomes of the working masses so much as the cost of living falls. Farmers, also, as a rule lose less than they gain by the price movements. Thus, the discrepancies characteristic of the decline in prices enable consumers to buy perhaps a larger physical quantity of commodities, certainly a larger quota of the current output. Business profits, on the other hand, fall heavily, just because wages, rent and interest charges lag behind the decline of selling prices. The unprofitableness of business, and the consequent reduction of savings check the expansion of industrial equipment. But the increasing purchasing power of the majority of income receivers gradually absorbs whatever stocks of consumers' goods were carried over from the prosperous phase of the cycle in addition to the reduced current output, and so produces a condition which favors a resumption of activity.

A business revival, as it gets under way, reverses the trend of prices. Rising prices and the growing volume of trade call for larger payments. To a limited extent, the increase in payments can be effected by quickening the circulation of money and credit, which had become sluggish during depression. Further expansion may be provided for by additions to the gold supply. Seldom, however, are these resources adequate to the need. Broadly speaking, periods of prosperity are made possible only by "additional credit"—that is, purchasing power, provided chiefly by banks, which is not based upon previous production.

Supported by "additional credit," the advance of prices gains momentum as activity waxes. But the advance is no less unequal than the decline had been. The prices which make up the incomes of the propertied, the salaried, and the wage-earning classes lag

<sup>1</sup> R. E. May, *Das Grundgesetz der Wirtschaftskrisen und ihr Vorbeugensmittel im Zeitalter des Monopols*, Berlin, 1902.

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behind the prices of commodities. Hence the buying power of these classes is reduced, or, at least, fails to keep pace with the expansion of output. Meanwhile the lagging of those prices which constitute costs to business enterprises behind the prices which constitute receipts is enhancing profits. Larger profits lead to larger savings, larger investments in industrial equipment, and, when this equipment is ready for use, to larger supplies of consumers' goods, for which the demand is growing less rapidly, if not actually shrinking. Under such circumstances a crisis is inevitable, and a crisis reverses the trend of prices once more, starting the processes with which the analysis began.

According to Lederer, then, the most important cause of business cycles lies in the inequalities characteristic of price movements—inequalities which alter the distribution of purchasing power among income classes, the demand for different types of products, the rate at which industrial equipment grows, and the trend of price movements themselves. "Disproportionality of production" is as characteristic of business fluctuations as "disproportionality of income"; but the two developments have quite different effects. Over-production of certain goods in comparison with others leads to price changes, which affect profits, force alterations in production schedules, and so restore proper balance. "Disproportionality of incomes" is not self-rectifying; its consequences cumulate until they reach the critical point at which they convert depression into prosperity, or prosperity into depression.<sup>2</sup>

Like Professor Lederer, Messrs. Catchings, Foster and Hastings of the Pollak Foundation for Economic Research hold that prosperity is checked by the failure of consumers' incomes to keep pace with the output of consumers' goods. But the Pollak group give an explanation of this deficiency of consumer buying which differs from Lederer's theory of the inequalities in the rates at which different prices advance.

To keep business active, the Pollak theory begins, consumers must receive and spend incomes equal to the full value, at current retail prices, of the consumers' goods sent to market. Were industry confined to providing consumers' goods, this requirement would mean (1) that the total selling value of all products must be paid out

<sup>2</sup> Emil Lederer, "Konjunktur und Krisen," *Grundriss der Sozialökonomik*, Part iv, Section i, Tübingen, 1925, pp. 354-413.

promptly by business enterprises as costs (that is, as wages, salaries, rent, interest, taxes, etc.) or as dividends; (2) that all the money received by individuals must be paid back promptly to business enterprises for their products.

In the real world, of course, many business enterprises make goods which are not offered to consumers, and in so doing disburse incomes to individuals. It may seem that these disbursements, plus the incomes disbursed by industries making consumers' goods, must exceed the value of consumers' goods sent to market. But in so far as producers' goods are raw materials or supplies used up currently in contributing toward the making of consumers' goods, their full selling prices must be charged into the prices of the latter products, and the incomes disbursed for making the materials and supplies can do no more than equal this element in the prices of consumers' goods. There remain some things which consumers are not called upon to buy on completion; for example, public works and industrial equipment. Incomes disbursed in making such goods add to consumer purchasing power without adding an equivalent supply of consumers' goods. In periods of active construction, income payments on this account, plus the payment of wages before products are sent to market, for a time provide consumers with incomes exceeding the supplies of consumers' goods then on sale. Such a situation, however, soon produces consequences which end it. Prices of consumers' goods rise, that rise stimulates production at once, and the difficulty reappears of maintaining consumer purchasing power adequate to absorb the larger output at the higher price level. The difficulty is further accentuated as soon as the new industrial equipment on which men have been working begins adding its quota, directly or indirectly, to the consumers' goods flowing to market.

Thus "overproduction—a supply in excess of demand—is a purely monetary phenomenon," and, as such, might be prevented by monetary adjustments.

If corporations went on forever increasing their output, and, in the process, expanding the volume of money in circulation *at a sufficient rate*, and if the flow of the output to the markets sufficiently lagged behind the flow of the new money as wages to consumers, consumers might continue to buy all that the markets actually offered. Such an expansion of money, however, does not long take place. Business men always fear a slump in demand; and when they doubt the capacity of con-

sumers to buy current output, they have no incentive for increasing output—no motive for using bank loans for that purpose.

But why should not business enterprises pay out the full values received for their products, and thus prevent a deficiency of consumer purchasing power? Because under modern conditions, a thriving enterprise must provide for expansion, and the safest way to finance expansion is "to plough part of the profits into the business." Messrs. Foster and Catchings believe that, on the average, American corporations do not disburse as dividends much over half of their profits. Nor would the situation necessarily be better if corporations paid out all their profits as dividends, and financed their extensions by selling stock to their shareholders. For in that case, consumers would divert income which is needed to sustain the demand for consumers' goods into demand for equipment, in order to make still more consumers' goods in the future. Even as matters stand, consumers are continually saving current income, for reasons as sound as those which justify the financial conservatism of corporations. And their savings are as much responsible for the deficient demand for consumers' goods as is the dividend policy of business enterprises.

To sum up:

Progress toward greater total production and resultant higher standards of living is retarded because consumer buying does not keep pace with production. Consumer buying lags behind for two reasons: first, because, on account of corporate savings industry does not disburse to consumers enough money to buy the goods produced, without a fall in the price-level; second, because consumers, under the necessity of saving, cannot spend even as much money as they receive. Partly on account of these savings, there is not an even flow of money from producer to consumer, and from consumer back to producer. Furthermore, the savings of corporations and individuals are not used to purchase the goods already in the markets, but to bring about the production of more goods. The expansion of the volume of money does not fully make up the deficit, for money is expanded mainly to facilitate production, and the product must be sold to consumers for more money than the expansion has provided. Consequently we make progress only while we are filling the shelves with goods which must either remain on the shelves as stock in trade or be sold at a loss,

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and while we are building more industrial equipment than we can use. Inadequacy of consumer income is, therefore, the main reason, though not the only reason, why we do not long continue to produce the wealth which natural resources, capital facilities, improvements in the arts and the self-interest of employers and employees would otherwise enable us to produce. Chiefly because of shortage of consumer demand, both capital and labor restrict output, and nations engage in those struggles for outside markets and spheres of commercial influence which are the chief causes of war.<sup>3</sup>

While the Pollak group were developing their theory of business cycles in this country, Mr. P. W. Martin of the International Labour Office was working on similar lines in Switzerland. Martin holds that the factor which ends phases of prosperity, and, he adds, the factor which keeps production even in prosperous years far below its attainable levels, is the impossibility of selling what we desire to produce. In turn, the lack of markets is due to lack of "buying power." But Martin differs from Foster and Catchings in paying slight attention to the distinction, which they stress, between consumers' and producers' goods. To maintain prosperity, it is quite as necessary to have an adequate market for industrial equipment as for clothing. And Martin ascribes the deficiency of buying power, not to saving by corporations and individuals, but to the need of larger "liquid capital" which prosperity brings. His summary runs:

So long as the community's buying power is used exclusively to pay for goods, the price system works. But from time to time industry must increase its liquid capital. This means that part of the community's buying power, which is needed to pay for goods if equilibrium between the flow of buying power and the flow of prices is to be maintained, goes instead

<sup>3</sup>A brief sketch of this theory was given in 1923 by William T. Foster and Waddill Catchings in chapter xx of *Money* (No. 2 of the Publications of the Pollak Foundation for Economic Research). A more elaborate exposition was worked out by Hudson B. Hastings in *Costs and Profits* (No. 3 of the same series), 1923. A later and somewhat different statement is found in Foster and Catchings, *Profits* (No. 8 of the Pollak series), 1925. The quotations are from p. 320 of *Profits* and pp. 16, 17, 28, and 29 of "The Dilemma of Thrift," a summary of their theory by Foster and Catchings, reprinted from the *Atlantic Monthly*, April, 1926. *Business Without a Buyer*, Foster and Catchings' latest exposition, appeared after this chapter had been set up. (No. 10 of the Pollak series).

The Pollak theory relates to crises rather than to business cycles: it does not explain how activity revives after depression, or how revival grows into prosperity.

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to induce the production of more goods for sale. As a consequence, goods are produced for which no buying power exists.

This "flaw in the price system" can be remedied by supplying buyers with money enough to purchase what is offered for sale.

The first step will be for the Government, acting in agreement with the banks, to increase buying power how, when, where and to what extent the best available information shows to be advisable, until unemployment is reduced to its minimum. From that time on the Government and the banks will endeavour to adjust the additions to the community's buying power so that it shall always be exactly sufficient to provide an adequate market for the goods offered for sale. Their guide in this will be the price level. If the price level falls, the natural indicator of a lack of markets, they will pump in additional buying power until the lack of markets is completely obviated (as shown by the price level regaining its former position). If prices rise, the signal of inflation, additions to buying power will be made more slowly (if necessary buying power will be drained out even), until the price level is brought back to "normal," until, that is to say, all symptoms of inflation have been totally eliminated. These measures will be applied by special offices using the best knowledge and most scientific instruments available. Supporting their efforts at every turn will be the automatic action of the psychological factor in industry, tending to be, not as now, an inflationary agency during prosperity, a depressing agency during depression, but an automatic stabiliser of both prices and markets.<sup>4</sup>

Still another variation upon the income theme has been composed by Dean Arthur B. Adams of the University of Oklahoma. An increase in the buying of consumers' goods may lead to recovery from depression; but it cannot initiate a period of prosperity. For business in consumers' goods cannot give rise to money incomes which exceed the sales value of the current output, and prosperity requires that consumers be able to buy an increasing output at rising prices. Therefore, it is an error to think that "recovery generates a period of

<sup>4</sup>See P. W. Martin, *The Flaw in the Price System*, London, 1924, and *The Limited Market*, London, 1926. The quotations are from the later book, pp. 53, 54, 69, 70.

The theory expounded by Major C. H. Douglas of the Royal Air Force in a series of books seems to be an adumbration of the ideas worked out by the Pollak Foundation group and by Mr. Martin. See, for example, Major Douglas' volumes, *Credit Power and Democracy*, London, 1921, and *Social Credit*, London, 1924.

prosperity," or that "business is always going through some phase of a business cycle." The end of one cycle is sometimes separated from the beginning of the next by a prolonged period of "oscillating equilibrium." A new cycle does not start until something happens to give consumers incomes exceeding the value of the consumers' goods on sale. The factor which most often plays this rôle is "rapid expansion of capital equipment," financed by expansion of bank credit. Periods of prosperity, initiated by such developments, grow more intense for a time, but are finally terminated by the following "forces," working singly or together: (1) the output of consumers' goods eventually overtakes and exceeds the volume of consumers' incomes, (2) costs of production per unit eventually rise faster than selling prices, (3) the banks eventually reach the limit of their ability to increase loans.<sup>5</sup>

#### 10. THE RÔLE PLAYED BY PROFIT-MAKING

There remain the theories which explain business cycles by the fact that the producing, transporting and distributing of goods are conducted mainly by business enterprises which aim at making money. Of course the theories already reviewed take the quest of profits for granted; but they treat business enterprise as an organization through which more fundamental forces operate. The distinguishing characteristic of the theories now to be noticed is that they represent the alternations of prosperity and depression as arising from certain technical exigencies of profit-making itself. This view was developed in 1904 by Dr. Thorstein Veblen, of the New School for Social Research, and in 1906 by Professor Jean Lescure of the University of Bordeaux.<sup>1</sup>

Dr. Veblen begins his discussion of "the theory of modern welfare" by pointing out that prosperity, crisis, and depression

are primarily phenomena of price disturbance, . . . They affect industry because industry is managed on a business footing, in terms of price and for the sake of profits.

A period of prosperity is ushered in by a rise of prices, caused, for example, by an increased supply of gold, or by heavy government

<sup>5</sup> See A. B. Adams, *Economics of Business Cycles*, New York, 1925.

<sup>1</sup> *The Theory of Business Enterprise*, New York, 1904, chapter vii; *Des Crises Générales et Périodiques de Surproduction*, Paris, 1906, 3rd ed., 1923. A summary of Lescure's version is given in the first edition of the present book, p. 13.

purchases. This rise affects first some one industry or line of business, which responds with a burst of activity and increased investment by business men eager to exploit the profitable field. Partly by actual increase of demand, partly by lively anticipation of future increases, aggressive business enterprise extends its ventures and pushes up prices in remoter branches of trade.

Now the growing demand and enhanced prices increase the prospective profits of the business enterprises in each trade as they reach it. Larger prospective profits lead to higher market capitalization of the business enterprises, and, of course, higher market capitalization means an increased value of the properties as collateral security. Thus the way is paved for the marked extension of credit on which the active trade is largely dependent.

This sequence of growing demand, rising prices, increasing expectations of profit, swelling capitalization of business enterprises, and expanding credit keeps repeating itself on an ever growing scale so long as its basis lasts—an anticipated increase in demand or selling prices greater than the anticipated increase in costs. But eventually the process undermines its basis. For the expense of doing business rises with the increasing cost of labor, and with the gradual extension of the advance in prices to all the commodities which business enterprises buy. In the end, these costs gain so much upon prospective selling prices as to narrow the anticipated margins of profit. Then the enhanced market capitalization of the business enterprises begins to seem excessive. Consequently, the security behind the loans which have been granted shrinks in the estimation of the business community, and ceases to be regarded as an adequate guarantee of repayment. The confident tone of business expectations which characterized the period of prosperity yields to nervousness. To bring on a general crisis, it needs but that some considerable creditor should conclude that the present earning capacity of his debtors no longer warrants the capitalization upon which their collateral is appraised. When this happens liquidation begins, extending from one industry to another and converting prosperity into depression.

Veblen differs from most writers in holding that, once begun, business depression tends to perpetuate itself, instead of tending to produce a resumption of activity. The financial reorganization of embarrassed enterprises reduces their fixed charges, and turns the weakest competitors into the most dangerous. Yet more important is the unceasing advance in technical perfection which characterizes

modern machine industry, and which enables the new plants which are built from time to time to start with a marked initial advantage in equipment over their partially antiquated predecessors.<sup>2</sup> The difficulty of earning a fair profit without submitting to a reduction of capitalization is made chronic by these conditions. Hence periods of prosperity are taking on the character of episodes, initiated by some extraordinary increase in the demand for goods, and running out presently into the normal state of depression through the sequence of events which has been recited.

To Veblen, then, the important factor in determining the character of a business period is the relation between current capitalization and anticipated earning capacity. When prospective profits rise, business has a season of prosperity, during which capitalization expands rapidly. But rising costs always undermine the basis for anticipating high profits and then capitalization is left higher than prospective profits warrant. The latter situation characterizes depression.

The "profits theory" of business cycles has been accepted, or independently arrived at, by several writers since the publication of Veblen's and Lescure's books. These recent versions differ from the earlier models and from each other in the emphasis which they put upon various factors affecting profits. Thus Professor Gustav Cassel of the University of Stockholm ascribes especial importance to the fluctuations in both interest rates and construction work.<sup>3</sup> Mr. F. Lavington of the University of Cambridge, following Professor Pigou, emphasizes fluctuations in business confidence.<sup>4</sup> Major J. R. Bellerby of the International Labour Office stresses the expansion of the currency as a factor in breeding booms, and the reduction of surplus stocks of commodities and the artificial support of consumers' demand as factors in starting revivals of activity.<sup>5</sup> Professor John Maurice Clark of Columbia University has fitted into the profits theory his acute analysis of the relation between the orders for new industrial equipment and the rate of growth or shrinkage in the demand for

<sup>2</sup> Dr. Robert Liefmann suggests that this factor, the introduction of technical improvements in production and the consequent "scrapping" of equipment not yet amortized, is the most fundamental cause of crises. See his *Grundsätze der Volkswirtschaftslehre*, 2nd ed., Stuttgart and Berlin, 1922, vol. ii, pp. 840, 841.

<sup>3</sup> *The Theory of Social Economy*, New York, 1924, Fourth Book. (First published in Leipzig, 1918, *Theoretische Sozialökonomie*.)

<sup>4</sup> *The Trade Cycle, an Account of the Causes Producing Rhythmic Changes in the Activity of Business*. London, 1922.

<sup>5</sup> *The Controlling Factor in Trade Cycles*. Reprinted with additions from the *Economic Journal*, September, 1923, vol. xxxiii, pp. 305-331.

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finished products.<sup>6</sup> Finally, Mr. Lawrence K. Frank has given a "behavioristic" interpretation of business cycles which has so definite a bearing upon current statistical work that it must be summarized.

The 'cause' (Mr. Frank remarks), if we wish to use that term, of business cycles . . . is to be found in the habits and customs (institutions) of men which make up the money economy, with its money and credit, prices, private property, buying and selling, and so on, all loaded, so to speak, on the industrial process.

This institutional situation gives rise to alternations of "over-buying" and "under-buying" by business men in this way: In a depression retail purchases of consumers' goods do not shrink greatly, certainly not so much as the current production of these goods shrinks. Hence depression sees a gradual dwindling of current stocks of finished goods, and also a dwindling of the stocks of materials carried by producers. Given that situation, it is merely a question of time when retail merchants will find their assortments growing meager and will be forced to increase their current orders for goods, even though their current sales remain constant or contract slowly. When this time does come, production of consumers' goods will pick up a bit. Before long, the producers from whom the retailers or wholesalers bought will exhaust their supplies of materials and must increase the orders they place with other producers. So an increase of buying, started by retail merchants, spreads from group to group, and grows as it spreads.

Each business man, as he sees his sales increasing, thinks it well to acquire a larger stock of the goods he sells or uses. "Moreover, speculator-traders place orders for future delivery and begin to accumulate stocks." The consequence is that rates of production are increased. Statistical evidence seems to show that this acceleration of production becomes more rapid as it travels back from consumers' goods through semi-finished commodities to raw materials and industrial equipment. But just as retail trade did not shrink greatly during the depression, so now it does not expand greatly during prosperity. Presently the rate of production exceeds the rate of

<sup>6</sup> *Studies in the Economics of Overhead Costs*, Chicago, 1923, chapter xix. See also Professor Clark's paper, "Business Acceleration and the Law of Demand: A Technical Factor in Economic Cycles." *Journal of Political Economy*, March, 1917, vol. xxv, pp. 217-235.

consumption, and so produces an accumulation of stocks which grows larger as long as the processes in question continue.

But these accumulations are limited by storage capacity and the willingness of banks to lock up their funds in doubtfully liquid loans. As these limits are approached, purchases decline. Then the stocks of commodities are discovered to be overlarge for the reduced volume of sales. To reduce stocks, men fill their current orders from goods on hand and curtail production or orders from producers. Current production then falls below current consumption. The business groups which have accumulated the largest stocks—those furthest from the retailers—will almost stop buying.

Hence the rates of production in the several stages will decrease progressively faster going backward to raw materials, until the end of the ensuing depression brings a revival again.<sup>7</sup>

To this exposition of Mr. Frank's, Dr. Thomas Warner Mitchell of the Federal Trade Commission has made an important addition by explaining how fluctuations in demand are amplified as they run back through the channels of trade from consumers to producers of raw materials. His explanation runs as follows:

- (1) Because of the length, in time, of the whole production process from the natural resources to the ultimate consumer, and the length of time required for selecting and training personnel in building up a production organization, production rates that have fallen below demand rates cannot quickly be augmented to equal the demand rates, but require many months to be so augmented.
  - (2) There is deception and illusion all along the line as to the real extent of demand, due to over-ordering by customers.
  - (3) The illusion is accentuated under our atomistic competitive system by counting the same demand several times over as it is presented to different atoms in the industrial organization.
- All three operate together to produce a grossly exaggerated measurement of demand in the boom period, followed automatically by a crisis and by a gross under-measurement of demand during the crisis and depres-

<sup>7</sup>"A Theory of Business Cycles," by Lawrence K. Frank, *Quarterly Journal of Economics*, August, 1923, vol. xxxvii, pp. 625-642.

Before Mr. Frank wrote, Mr. Henry S. Dennison had sketched a similar theory. See "Management and the Business Cycle," *Journal of the American Statistical Association*, March, 1922, vol. xviii, pp. 20-31. Dr. Simon S. Kuznets enriches the analysis and shows its statistical support in his volume on *Cyclical Fluctuations, Retail and Wholesale Trade, United States, 1919-1925*, New York, 1926.

sion; and that followed automatically, in turn, by another boom. Consumers' psychology, manifested in the form of resistance to the rising cost of living and a slowing-up of their demand near the end of a boom period, accentuates the effect of the superabundance with which the merchants' orders for goods are eventually filled, and materially assists in precipitating a crisis. The cyclical movement, once started, tends to complete and repeat itself automatically and perpetually.<sup>8</sup>

## V. Plans for Further Work.

### 1. PROBLEMS RAISED BY THE DIVERSITY OF EXPLANATIONS.

We began the preceding survey of current theories to find what economic activities are involved in business cycles, and to get working hypotheses for use in a fresh attack upon the problem. It may seem that we have been too successful: we have found so many processes involved and have collected so many explanations that the materials threaten to be confusing rather than illuminating. What we sought was aid toward solving one problem: we now find on our hands a new puzzle—to determine the relations among a lot of theories. What explanations are incompatible with each other, what are complementary? Each theory taken by itself seems plausible; but how can we work with so many hypotheses? Is it necessary to test each hypothesis in turn? Must we plan an eclectic theory, selecting useful elements from several different writers? Or can we find some way of developing a thoroughly unified explanation of business cycles, and yet incorporate the seemingly diverse hypotheses with which we have become acquainted?<sup>1</sup>

<sup>8</sup> "Competitive Illusion as a Cause of Business Cycles," *Quarterly Journal of Economics*, August, 1924, vol. xxxviii, pp. 631-652.

<sup>1</sup> The humorous reader is invited to observe at this point what care has been taken to economize his effort. In place of ten types of theories in some twenty variant forms, twice or five times that number might have been put forward as having claims on his attention. A look at the table of contents in von Bergman's *Geschichte der Nationalökonomischen Krisentheorien* (Stuttgart, 1895), or at the catalogue of any large library of books on economics will show how much literature has been omitted. The list of theories reviewed above is a most exclusive list, admitting only (with one diverting exception) those explanations which can show the best of credentials.

Among the recent books passed over for one reason or another are the following:  
Ludwig Pohle, *Bevölkerungsbewegung, Kapitalbildung und periodische Wirtschaftskrisen*. Göttingen, 1902.

Pierre Vialles, *La Consommation et les Crises Économiques*. Paris, 1903.  
Hugo Bilgram and Louis E. Levy, *The Cause of Business Depressions*. Philadelphia, 1914.

Daniel Bellet, *Crises Économiques*, Paris, 1918.  
Wilhelm Röpke, *Die Konjunktur*. Jena, 1922.

Embarrassing as the multiplicity of explanations may seem at this stage, it is an embarrassment which must be faced, because it arises from the complexity of the problem itself. Everyone who has had practical experience in business knows that business is affected by numberless factors physical, psychological, political, economic or social in origin; local, national or world-wide in scope; obvious or obscure in character and working; temporary or enduring in effect. And everyone who has studied economics realizes that business activity depends upon the smoothly coördinated functioning of many processes, the extraction or growing of raw materials; the fabricating, distributing, transporting and consuming of goods; the paying and spending of money incomes; the saving and investing of capital; the granting and canceling of credits. Any of these factors or any of these processes can be made to yield a plausible theory of business cycles, provided some investigator can show that it is an independent source of recurrent fluctuations in the activity of trade. And that is what each of our theorists believes himself to have done with reference to the factor of his choice. Nor can we be sure in advance that any one of them is wrong.

An easy affirmation that business cycles are exceedingly complex phenomena is not an adequate preparation for constructive work. To plan this work wisely we need to know what the complexities are. Such knowledge we get in the most convincing way from the conclusions reached by earlier investigators. It is for this reason that study of current theories forms the best introduction to the subject, at its present stage of development. Knowing what we now do, we should be effectually guarded against the besetting sin of theorists in this

Hugh W. Sanford, *The Business of Life*, New York, 1924. Vol. i, pp. 1-222.

Paul Mombert, *Einführung in das Studium der Konjunktur*. Leipzig, 1925.

Moreover, several important contributions have been mentioned but incidentally, because they stress the joint importance of two or more processes which are exploited separately in other writings. Comprehensiveness of view is certainly no defect; but the complexity of business cycles can be exhibited most effectively by following many leaders, each of whom focuses attention upon some single process and represents all other developments as subordinate to, or as contributing to, his chosen chain of cause and effect. If this chapter were intended to evaluate recent studies of business cycles, the following books would have conspicuous places:

Dennis H. Robertson, *A Study of Industrial Fluctuation*, London, 1915; *Banking Policy and the Price Level*, London, 1926.

Gustav Cassel, *The Theory of Social Economy*, Translated by Joseph McCabe, New York, 1924. (First published in German, Leipzig, 1918.)

John Maurice Clark, *The Economics of Overhead Costs*, Chicago, 1923.

Arthur Spiethoff, "Krisen," *Handwörterbuch der Staatswissenschaften*, 4th ed., Jena, 1925. Vol. vi, pp. 8-91.

Simon S. Kuznets, *Cyclical Fluctuations*, New York, 1926.

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field—neglecting phenomena which do not fit neatly into preconceived schemes.

Realizing how many lines of analysis we must be ready to test and perhaps to accept, we cannot regard the planning of our work as an easy, or a brief task. We must provide a place for every line of analysis which may prove important in the sequel, and yet not lose our way in a maze of interactions. How to draw up such a plan is our next concern.

### 2. A CLASSIFICATION OF THEORIES.

As the first step in this systematic planning of our work, we must set our collection of working hypotheses in order. The exposition given above proceeds as far as feasible from the simpler to the more intricate theories. Now we can rearrange the theories on logical lines, according to the processes which they stress.

First, the different theories may be classified as physical, emotional and institutional explanations.<sup>1</sup> The large third class may then be subdivided into (1) theories which find the source of fluctuations in institutional change, and (2) theories which find the source of fluctuations in the functioning of institutions in their present form. Finally, the last named group may be further divided into four or five species according to the economic processes in which fluctuations are held to start: namely, theories concerned with (1) the quest of profits, (2) the flow of incomes from business enterprises to indi-

<sup>1</sup> Compare E. M. Patterson, "The Theories Advanced in Explanation of Economic Crises," *Annals of the American Academy of Political and Social Science*, May, 1915, vol. lix, pp. 133-147.

Since this chapter was written, Professor Warren M. Persons has published a classification of "theories of business fluctuations" which resembles the present classification of theories of business cycles. See *Quarterly Journal of Economics*, November, 1926, vol. xli, pp. 94-128.

Persons' classification is the first stage of a critical examination of "the theories of business fluctuations." My classification is the first stage of a constructive study of business cycles. Persons is interested primarily in the causes of business fluctuations stressed by different writers; I am interested primarily in those parts of a theory which offer working hypotheses which I can use. This difference between our aims leads us at times to classify the same writer under quite different heads. To give a single example: Professor Persons ranks Dr. Veblen among those who emphasize "factors other than economic institutions," because Veblen holds that revivals "are pretty uniformly traceable to specific causes extraneous to the process of industrial business proper." However, Persons notes that Veblen's analysis of prosperity, crisis, and depression runs in terms of economic activities. For my purposes, it is this analysis which is most significant in Veblen's theory. I therefore rank Veblen among the writers who treat business cycles in terms of institutional factors, and merely mention his view that some "disturbing cause" from outside the system of business dealings is necessary to revive activity after a depression. (See above section iv, 10).

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viduals and from individuals back to business enterprises, (3) the balance between rates of production and of consumption at large, (4) the special balance between personal consumption and the production of industrial equipment (the under- and over-savings, as well as the construction theories), and (5) the functioning of the banks in relation to the rest of the community.

For ready reference from time to time, it will be convenient to have this classification, with some elaboration of detail, set out in tabular form.

### A CLASSIFICATION OF CURRENT THEORIES OF BUSINESS CYCLES.

- I. Theories which trace business cycles to *physical* processes
  - 1. Three-and-a-half-year cycles of solar radiation produce similar cycles of crop yields, and so seven- or ten-year cycles of business activity. H. S. Jevons.
  - 2. Eight-year periods in the conjunction of Venus produce similar cycles in mundane weather, crop yields, and business. Henry L. Moore.
  - 3. Weather cycles affect health, health affects mental attitudes, and mental attitudes affect business. Ellsworth Huntington.
- A theory intermediate between the groups stressing physical and institutional processes.  
Industries which depend upon organic, and industries which depend upon inorganic materials have unlike rhythms. The resulting disturbances and restorations of balance produce business cycles. Werner Sombart.
- II. Theories which trace business cycles to *emotional* processes
  - 1. "Optimistic error and pessimistic error, when discovered, give birth to one another in an endless chain." A. C. Pigou.
  - 2. The fluctuations of birth rates and death rates are chiefly responsible for mass alternations of optimism and pessimism, and thus indirectly responsible for alternations of prosperity and depression. M. B. Hexter.
- III. Theories which trace business cycles to *institutional* processes
  - 1. Cycles arise from the change of institutions.
    - (1) Social progress is by nature jerky: changes in its pace and direction produce disturbances from time to time in the moving equilibrium of economic processes. Emanuel H. Vogel.
    - (2) Innovations come in waves, and initiate periods of activity followed by crises and depressions. Joseph Schumpeter, Minnie T. England.

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### 2. Cycles arise from the functioning of existing institutions.

#### (1) From the technical exigencies of money-making:

Fluctuations in prospective profits cause fluctuations in business capitalization and confidence; the latter in turn give rise to new fluctuations in prospective profits. Thorstein Veblen, Jean Lescure.

The money economy leads to fluctuations in mercantile orders, manufacturing and the production of raw materials which are progressively larger than the fluctuations in consumers' purchases, upon which all business depends, directly or indirectly, for its market. Henry S. Dennison, Lawrence K. Frank, Simon S. Kuznets.

The reason why the aforesaid fluctuations grow wide as one passes from consumer demand toward the production of raw materials lies in the competitive illusion to which our business system gives rise. Thomas W. Mitchell.

#### (2) From lack of equilibrium in the processes of disbursing and spending incomes and of producing values:

Incomes paid to wage earners lag behind changes in the money value of goods produced, thus making consumers' demand alternately larger and smaller than current supply. R. E. May.

Inequalities in the rates at which prices rise and fall cause consumers' incomes to lag behind the output of consumers' goods in prosperity, and to exceed that output in depression. Emil Lederer.

Incomes disbursed by business enterprises to individuals are alternately less and more than the full value of the goods produced for sale; the fluctuations thus initiated are enhanced by the savings of individuals. Waddill Catchings, William T. Foster and Hudson B. Hastings.

Prosperity requires an increase of liquid capital, which can be provided only out of funds which must be spent for consumers' goods if prosperity is to continue. Recovery comes because depression checks the growth of liquid capital. P. W. Martin.

Consumers' incomes can be made to exceed the value output of consumers' goods only by expansion of capital equipment, financed by expansion of bank credit. But this condition, which characterizes prosperity, works its own undoing. A. B. Adams.

#### (3) From lack of equilibrium in the process of producing and consuming goods in general:

Waves of general over-production result from "the well-nigh

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universal fact of industrial competition." Sir William H. Beveridge.

The uncertainty involved in all business planning leads to alternate over- and under-production of goods. Charles O. Hardy.

Good trade leads to rapid increase in industrial equipment and later in output, and finally to a decline in the marginal demand prices for consumers' goods. A depression follows in which the growth of industrial equipment and output is checked. The marginal demand prices for consumers' goods finally rise again, and a new period of activity begins. Albert Aftalion, Mentor Bouniatian.

- (4) From lack of equilibrium in the processes of consuming, saving, and investing capital in new construction:

In prosperity the demand for capital exceeds current savings; the resulting scarcity of capital brings on a crisis. In depression, investment falls below current savings; free capital accumulates until investing becomes aggressive once more and starts a new period of activity. Michel Tugan-Baranovski.

Large incomes, which grow rapidly in prosperity, lead to over-saving and over-investment in new plants, so that supply exceeds current demand. Depression follows, in which the large incomes are reduced, and over-saving ceases, so that consumption catches up with output and starts a revival. John A. Hobson.

Crises are caused by over-production of industrial equipment and concomitant under-production of the goods necessary to use that equipment. Arthur Spiethoff.

Relatively slight changes in demand for consumers' goods and in costs of construction cause far more violent changes in the volume of construction work: the latter changes react to heighten and propagate changes in the demand for consumers' goods. George H. Hull.

Over-commitments to business extensions of all sorts involve additions to purchasing power not counterbalanced by increased production. Prices rise until they reach a level at which men see danger in adding to their stocks. Then purchasing contracts and a crisis comes. Malcom C. Rorty.

- (5) From the processes of banking:

Banks increase the purchasing power of business men, when prospects are favorable, by lending credit; the activity thus stimulated grows cumulatively until the banks are forced to restrict advances. Then comes a crisis and depression,

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during which idle funds accumulate in the banks and enable them to start a new movement of expansion. Alvin H. Hansen.

When banks have large reserves they reduce discount rates, and thus encourage borrowing and business expansion, which grows cumulatively until the banks find that larger cash requirements are impairing their reserves. Then banks raise discount rates, restrict loans and thus reduce business activity. Funds again accumulate in the banks because cash requirements are now smaller, and the cycle starts afresh. R. G. Hawtrey.

The exceedingly condensed summaries in this table do no more than suggest the central theses maintained by the writers named. One who has not read the books drawn upon, or at least read the preceding section on "Current Theories of Business Cycles," will find the entries scarcely intelligible and may well distrust his own guesses at their meaning. Of course the classification provides no single niche for men like Mr. Robertson, Mr. Lavington, Professor Cassel, Professor J. M. Clark and Major Bellerby who make large use of several different causes of fluctuations. Nor does the table show the effective supplementary use made by many writers of ideas other than their leading theses.

### 3. THE NECESSITY FOR MAKING MEASUREMENTS.

Regarding the technical methods to be used in the investigation one broad conclusion is already clear. The conception of business cycles as congregies of changes in numerous processes running abreast or following each other—a conception made vivid by the review of current theories—shows the need of quantitative knowledge. What is the relative importance of the factors represented as causes of fluctuations? What is the relative amplitude of the fluctuations characteristic of these factors and of the effects which they are said to produce? In what sequence do the fluctuations appear and at what intervals of time? These are but samples of the quantitative problems which become crucial in an effort either to test a given theory or to do constructive work. Such problems can be solved only by appeal to statistics.

Indeed, our best chance of improving upon the work of earlier writers lies in this direction. Because each year as it passes extends

the record for study, because of the widening scope of statistical compilations and the progressive refinement of statistical technique, the latest investigator has a quasi-mechanical advantage over his predecessors, plus the advantage of profiting by his predecessors' ideas. Nor is this advantage of more precise knowledge limited to recent cycles. To-day we have better data concerning the trade fluctuations after the Napoleonic Wars than were available to Sismondi, or Jevons, or Tugan-Baranovski. Obviously we should exploit this advantage to the full, not forgetting that the figures are of little use except as they are illuminated by theory.

#### 4. CAUSAL THEORY AND ANALYTIC DESCRIPTION.

The next step in planning our work is to drag into the light for inspection the tangled problem of cause and effect which most of the theorists have tried to solve.

The usual aim of writers upon business cycles is to show where and how wave movements start—that is, to discover “the cause” of business cycles. A second aim, followed in the full-length discussions, is to show how the original wave movement spreads from its source over all the processes of industry, commerce, and finance. This spread is also treated in terms of cause and effect, but the causal relations grow intricate. The first effects become causes producing new effects, which act as new causes, and so on. Often the analysis moves consciously in a circle or a spiral; the final effects reënforce the first cause, or after a lapse of time start the first cause into activity again, or even produce the first cause afresh.<sup>1</sup>

This broadening of business-cycle theories from the effort to discover causes into an effort to explain the full round of events is demanded by both our scientific and our practical interests. But as our knowledge grows wider and more intimate, our attitude toward the discussion of causes undergoes a subtle change. When we have accounted in casual terms for each stage in a lengthy series of actions and reactions, we find that our analysis deals with many causes, each one of which is logically indispensable to the theory we have elaborated. On reflection, we see the application to our work of the old contention that the idea of causation has pragmatic, rather than

<sup>1</sup>Of course there is nothing “vicious” in a circle of this sort. The argument is not circular in the sense of depending upon itself, but in the sense of following a process which is conceived to be rhythmical.

scientific, warrant. All the conditions which are indispensable to produce a certain result stand on much the same footing from the viewpoint of science. But there may be practical reasons why, from the many conditions indispensable to produce certain results, we should single out some one or more for special attention, and call them "the cause" or "the causes." We stand a better chance of making a wise selection of factors for special attention, however, if we have already gained a scientific understanding of the process as a whole.

In the progress of knowledge, causal explanations are commonly an early stage in the advance toward analytic description. The more complete the theory of any subject becomes in content, the more mathematical in form, the less it invokes causation. In business-cycle theory, the transformation from causal explanations into analytic description is being hastened by free use of statistical materials and methods. What time series can be made to show are functional relationships. We are always reading something into statistics, when we assert that the process represented by one series exercises a causal influence upon the process represented by a second series. Yet a stiff refusal to employ causal expressions in the detail of our investigation might often hamper us. In the present stage of our knowledge, we can probably make more rapid progress toward attaining insight into business cycles, by using the thought-forms of daily life than by trying to express ideas at which we are grasping in the form which may ultimately prevail.

### 5. HISTORY AND THEORY.

A few business-cycle theorists not only work forward from "the cause" of wave movements to its effects, but also work backward from "the cause" to its cause. As already noted, Professor Tugan-Baranovski, after expounding his theory of the alternate accumulation and exhaustion of uninvested loan funds, adds,

. . . it is the inadequate remuneration of labor, and the consequent misery of the working classes, that is the fundamental cause of the rapid accumulation of social capital which provokes crises.<sup>1</sup>

Similarly, Professor Aftalion, after tracing the origin and development of general over-production through two volumes, remarks at the end,

<sup>1</sup> *Les Crises Industrielles en Angleterre*, p. 279.

It is to the conditions established by the capitalist technique of production that we must attribute the great difficulty of avoiding error. It is this technique, after all, which must bear the responsibility for the appearance of over-production.<sup>2</sup>

And Mr. Frank, after exploiting the difference in the rhythms of consumption and production, concludes by saying,

The 'cause,' if we wish to use that term, of business cycles . . . is to be found in the habits and customs (institutions) of men which make up the money economy . . .<sup>3</sup>

Presumably, this contention, that business cycles arise from that peculiar form of economic organization which has come to prevail in England within the last two centuries, and over much of the world in more recent times, would be admitted by most theorists. On this view, of course, the cause of business cycles lies enmeshed among the causes that produced modern money economy, or capitalism.

Needless to say, our theorists have not followed the logical implications of this historical perspective. No one writes an economic history of mankind as a prolegomenon to a theory of business cycles. The current practice is to take the existing scheme of institutions for granted, and to show how cyclical oscillations come to pass under this régime.

Nor do our theorists treat business cycles as episodes each of which is to be fully accounted for on historical grounds. On the contrary, they consciously endeavor to abstract from the peculiarities of particular cycles, in order that they may arrive at a clearer understanding of the generic features. The statistical investigator does the best he can to segregate the cyclical oscillations in his time series from all complicating features, and for this purpose he has developed an elaborate technique.<sup>4</sup> The man of speculative temper does his abstracting in bolder fashion. Surveying the phenomena of concrete experience, he seeks to fasten on the factors of chief moment, and to isolate these factors in his thoughts. By a series of imaginary experiments, he develops a synthetic account of cyclical oscillations which contains enough of reality to be enlightening and not so much as to be confusing.

<sup>2</sup> *Les Crises Périodiques de Surproduction*, vol. ii, pp. 359, 360.

<sup>3</sup> "A Theory of Business Cycles," *Quarterly Journal of Economics*, August, 1923, vol. xxxvii, p. 639.

<sup>4</sup> See Chapter III below.

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Of course, there is no logical opposition between the theoretical and the historical viewpoints, any more than there is opposition between causation and analytic description. On the contrary, history and theory supplement each other. The theorist who wishes to analyze the workings of current economic institutions needs a vivid, objective view of their characteristics. That view he can obtain most effectively by a study of their evolution. Nor is current history less important to him than history of the past. It is only by historical observations that he can determine what features of business cycles are common and what are occasional, a matter upon which he should satisfy himself before he devises his imaginary experiments. So, too, the statistical worker appeals to history for help in performing the most difficult of his technical tasks—separating “irregular” from cyclical fluctuations. And by whatever methods a theorist works, he may—and should—check his explanations by seeing how far they account for the cycles of history.

Several distinguished theorists have prepared themselves for explaining cyclical phenomena by elaborate historical investigations. For example, Tugan-Baranovski wrote the history of English crises from 1825 to 1910; Bouniatian carried the account back to 1640; Lescure begins his treatise with a history of French, German, English, and American crises from 1810 to 1922.<sup>5</sup> Doubtless many theorists, without making first-hand historical researches for themselves, have studied such historical accounts. To follow the precedent is an obvious piece of common sense. Indeed, we should strive to achieve a closer blending than our predecessors have accomplished of the data and the suggestions afforded by history with the hypotheses suggested by economic theory. The statistical series we shall analyze are fragments of the historical record. The business annals summarized in a later chapter are a condensed account of cyclical fluctuations in numerous countries at different stages of development. These collections of historical materials, and economic history in its more elaborate form, we can use to exhibit the general characteristics of modern economic organization, to aid in determining what features are common to business cycles at large, to suggest hypotheses, and to test our conclusions.

<sup>5</sup> See M. Tugan-Baranovski, *Les Crises Industrielles en Angleterre*, Paris, 1913, Part i; M. Bouniatian, *Geschichte der Handelskrisen in England, 1640-1840*, Munich, 1908; J. Lescure, *Des Crises Générales et Périodiques de Surproduction*, 3d ed., Paris, 1923, pp. 3-312.

## 6. THE FRAMEWORK OF THE INVESTIGATION.

Another step in planning our work is to decide whether we shall use a framework provided by the theories we have reviewed, or a framework provided by the subject matter.

It is possible to take up the theories one by one, make a critical examination of the evidence offered in support of each, at need devise new tests, and treat conclusions regarding the validity of each theory as our main objective. It is also possible to take up the successive phases of business cycles one by one, collect facts regarding periods of prosperity, crisis, depression and revival in different countries at different times, use the theories to suggest facts which should be gathered and relations looked for, and make conclusions regarding the fluctuations our main objective, treating verdicts upon the theories as by-products to be turned out when convenient.

Between these two procedures it is easy to choose. What we want is insight into the facts. We care about the theories only as aids toward attaining such insight. The plan of testing theories would indeed lead to work with the facts, but in an artificial order, and one involving much repetition. At best it would turn into a study of one or two processes at a time in successive phases of the cycle, whereas we are concerned primarily with these phases, and wish to discover the relations among different processes which give each phase its character and at the same time transform it into the following phase.<sup>1</sup>

But if we are to use the phases of business cycles as a framework, we run grave risk of getting hopelessly confused in a maze of interacting processes. That danger the review of current theories has made startlingly clear. The physical processes of making and consuming goods of numberless kinds, the business processes of buying and selling, the flow of money incomes to and from individuals, the circulation of money and credit, borrowing and lending, saving and investing must all be watched in relation to each other—and each of these processes is itself a complex of variables.

To guard against losing our way in this tangle, we must get as clear a view as possible of the organic relations among these various

<sup>1</sup>There is the less need for making a critical study of the several theories because Professor Warren M. Persons has promised to perform that arduous task. See the first paper in the series, "Theories of Business Fluctuations," *Quarterly Journal of Economics*, November, 1926, vol. xli, pp. 94-128.

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processes before we begin to study their fluctuations from phase to phase of the cycle. That is, we must survey that form of economic organization which has come to prevail in all "advanced" communities as if it were a curiosity instead of our familiar environment. In particular, we must get what light existing statistics shed upon the relative magnitude of those factors which our survey of current theories has pointed out as playing important rôles in business cycles.<sup>2</sup>

<sup>2</sup> In his recent critique of current German studies of business cycles, Dr. Adolf Löwe makes the following comment upon the treatment of facts and theory in my earlier book upon business cycles:

As in all social-economic work, so in our narrower field, the analysis of facts forms the second chapter of an exposition. It must be preceded by a chapter on the theory of business cycles. Such is always the order in truth, even though the first chapter remains unwritten, and though (worse still) the writer is not conscious that his mind harbors a theory. For it is theory which provides the principles by which the irreproducible fullness of reality can be set in order; it is theory which formulates the questions which the facts must answer. (See "Der gegenwärtige Stand der Konjunkturforschung in Deutschland," in *Die Wirtschaftswissenschaft nach dem Kriege, Festgabe für Lujo Brentano*. Munich and Leipzig, 1925, vol. ii, p. 367. I have translated freely in an effort to preserve the vigor of the original.)

I cannot claim to heed Dr. Löwe's counsel in the present volume, unless my vague impressions concerning what phenomena should be looked into deserve to be called a theory. Of course Chapter I does treat theories of business cycles, but it uses these theories to reveal certain facts—that is, to show how many processes run side by side in cyclical fluctuations. In the light of these results, I pass on in Chapter II to discuss modern economic organization, in Chapter III to treat statistical problems, and in Chapter IV to draw conclusions from business annals, all before I undertake in Chapter V to formulate a definite conception of business cycles. As for a theory of the subject, that is deferred to Volume II. This order seems to me more likely to lead to the discovery of new truth than a treatment which begins with a "theory" and then looks for "facts."

Dr. Löwe's view of the relations between facts and theory in scientific work is a common one. But it seems to me over-schematic. Against the statement, "One cannot set economic facts in order unless one has a theory" (I should prefer to say "hypothesis"), can be put the statement, "One cannot form an economic theory unless one knows some facts." And both these statements overlook the fact that the two categories are not mutually exclusive. The theories with which science works cannot be conceived as existing apart from the facts of human experience, and men can apprehend facts only in terms of the notions with which their minds are furnished. The more thoughtfully one considers the relations between these two phases of knowing, the less separable they become. Even on the basis of the crude usage which contrasts fact and theory, it is futile to debate which of the two comes first in the history of the race, in the life of an individual, in the growth of a science, or in the progress of an investigation. What is clear is that in scientific work these two blends, knowledge of fact and theoretical conceptions, keep stimulating, extending and enriching each other. An investigator who starts with what purports to be an exposition of theory is tacitly using the facts by which the ideas have been molded. And one who starts with what purports to be an exposition of facts, is tacitly using the theoretical conceptions by which facts have been apprehended. Whether it is better to begin a particular task by elaborating upon the theoretical conceptions employed, saying little about the facts for the moment; or to begin by elaborating upon the facts, saying little about theories for the moment, depends upon the problem in hand and upon the contribution which the investigator hopes to make toward its solution. In an investigation of moment, both

This survey is the most important step in preparing for the constructive work we hope to accomplish. To it is devoted the next chapter.

the theory and the facts are elaborated at various stages of the proceedings, each by the aid of the other, and later workers start with a fact-theory blend improved by the new contribution.