

not clear. Because of the intimate way in which the building trades are associated on the job, joint action among agents on a given building has frequently led to a development of power greater than that of any other group in the construction industry. The absence of any fixed price for the finished product has also contributed to this result. Occasionally the union members, aroused by exposures such as that of Sam Parks in 1903, have attempted to establish more effective controls over the business agent; but since this would entail actual visits to the job such efforts have been almost uniformly unsuccessful. Even when in 1920 it was shown that Robert P. Brindell, president of the New York Building Trades Council and business agent extraordinary, had built up a fortune of a million dollars largely through extortion, the unions involved made only slight changes in their methods of control.

In other industries where such abuses are comparatively infrequent methods of control are likely to develop through the supervisory and veto power of district and national officials; the lively interest of the rank and file unionists in shop committees, executive boards and local meetings provides another check. In larger unions, moreover, the business agent's position may be limited to job inspection and adjustment of complaints. In addition, the regulation of employment, the spread of standardization, the decrease of cut-throat competition in industry may be expected to raise the level of local union leadership.

HORACE B. DAVIS

See: TRADE UNIONS; COLLECTIVE BARGAINING; LABOR DISPUTES; INDUSTRIAL RELATIONS; CONSTRUCTION INDUSTRY.

Consult: Hoxie, R. F., *Trade Unionism in the United States* (2nd ed. New York 1923); Blum, Solomon, *Labor Economics* (New York 1925); *American Labor Dynamics*, ed. by J. B. S. Hardman (New York 1928) p. 159-68, 192-96; Bernstein, E., *Die Arbeiterbewegung* (Frankfurt 1910) p. 141-55; Michels, R., *Zur Soziologie des Parteiseins in der modernen Demokratie* (2nd ed. Leipzig 1925), 1st ed. tr. by Eden and Cedar Paul as *Political Parties* (London 1915) pt. iv, ch. v; Foster, W. Z., *Misleaders of Labor* (Chicago 1927); Montgomery, R. E., *Industrial Relations in the Chicago Building Trades* (Chicago 1927).

**BUSINESS CYCLES** are a type of fluctuation characteristic of economic activities organized in the form of "business economy" or "high capitalism," to use the German term. They have a wavelike pattern—each cycle includes a phase of revival, expansion, recession and contraction.

These successive changes in activity spread more or less promptly over a large part, seldom over all, of the economic processes of a country. The cycles are recurrent, but not periodic. Their average duration varies in communities at different stages of economic development from about three to about six or seven years.

This list of features makes a thumb print which is useful in identifying business cycles amidst the welter of changes to which economic activities are subject. But a vivid impression of the part they play in modern life and the problems they present to economics can best be had from a historical approach.

*The Development and the Discovery of Business Cycles.* Trade crises must be as old as trade itself and must have affected the fortunes of increasing numbers as trading grew in social importance. The early crises of record were commonly attributed to what would now be classed as random causes, such as governmental aggressions, riots, wars or "acts of God." As economic activities became more highly organized, random factors continued to make business troubles; but new sources of difficulties appeared within business itself. For example the outstanding feature of the Mississippi bubble and the South Sea scheme, which ran their parallel courses to disaster in 1720, was a mania for speculation. In the later crises of the eighteenth century commercial miscalculations were held responsible in increasing degree. By the close of the Napoleonic wars it was realized that "commercial crises" are recurrent, and economists began to devise explanations which applied not merely to a particular case but to crises at large.

Gradually the problem of accounting for "periodic crises" expanded in scope. In 1833 John Wade suggested 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." This idea occurred to others and spread rapidly. Economists who still wrote under the caption "crises" came to deal with the full round of cyclical changes. Thus the term "business cycles," or "trade cycles" as the English say, is a twentieth century rechristening of a nineteenth century discovery.

*Sources of Information.* Commercial crises were dramatic departures from the ordinary course of affairs which could scarcely be overlooked by the least skilful of observers. Hardly

less striking were periods of boom and depression. The earlier investigators of these phenomena harbored no doubts about their genuineness. Descriptive materials such as merchants, bankers and newspapers provided sufficed to show the facts which required explanation. What statistical data were available concerning bankruptcies, imports, exports, discount rates and the like seemed merely to make this common knowledge more definite.

As statistical data grew more abundant it became possible to attempt more penetrating inquiries. Yet efforts in this direction led to difficulties and doubts, for time series show several distinct types of fluctuations in combination. To pick out the cyclical fluctuations for intensive study was a difficult task. Indeed the question as to what constitutes a business cycle, a question which seemed simple when few but descriptive materials were used and those in a broad way, now became complicated. The statistical investigator had to develop a sharper concept of the cyclical component in the changes of a given series; he had also to discover what sort of whole the cyclical fluctuations of different series make up. These are problems on which investigators are actively working, spurred on by critics who hold that "the so-called business cycle" is a myth.

While reliance is now placed largely on analysis of the increasingly abundant statistical data the older type of descriptive material has not dropped out of use. On the contrary such materials have been collected more systematically than before and condensed into "business annals," showing the changes from year to year in the state of trade. Collections of this sort extend our knowledge of cyclical fluctuations over countries and periods for which the statistical record is scanty. And where the statistical record is fullest business annals are a useful adjunct to the analysis of time series.

*Analysis of Time Series.* Most economic time series show four distinct types of changes: secular trends, cycles, seasonal variations and random perturbations. Less definitely established are certain other fluctuations called by their discoverers "long waves" and "secondary trends."

The secular movements are ascribed to factors which influence an economic variable in some uniform or regularly changing fashion over periods of time which for present purposes may be defined as long in proportion to business cycles. Examples are the gradual decline in American canal traffic which accompanied the

development of transportation by rail, and the growth of the latter—a growth very rapid at first, then moderating its pace.

Swerving about a line of secular movements there may be several sets of wavelike fluctuations differing from each other in duration and presumably arising from complexes of causes which contain different elements. Thus Kondratieff, on analyzing a considerable number of the longest European and American time series, concludes that the capitalistic world experienced two and a half "long waves" between 1785-95 and 1914-20. The duration of these waves he gives as 40 to 60 years. Kuznets, using a larger number of series, finds waves which he calls "secondary movements" averaging not quite 25 years from trough to trough. Both of these results have still to pass through the process of critical testing by other investigators.

Seasonal variations arise partly from climatic and partly from conventional or institutional factors. Examples are the increase in coal consumption during the winter, holiday shopping in December and large dividend disbursements at the beginning of each quarter. In some series the seasonal variations are so prominent as to obscure all other fluctuations. When no regular seasonal change can be detected in a series the activity represented is presumably influenced by so many independent seasonal factors that they cancel one another's effects.

Random perturbations are as universal in their incidence as seasonal factors. Every economic process is affected at all times by a host of influences which cannot be classified under any other recognized head. When these many influences are not markedly unequal in magnitude and not closely connected by causal bonds they may be expected to offset each other so as to leave few detectable traces in a statistical record. At any moment, however, one or more factors having similar effects may rise to dominance in the constellation of random influences and produce marked perturbations in the net resultants of all the forces operating. Violent aberrations from the expected course of affairs are often plausibly attributed to a particular random cause such as a strike, a new law or a war. But the "expected course of affairs" is a vague concept. Analysis of a given time series over a period when no violent aberrations appear cannot determine what role the constellation of random factors is playing. And when some sudden break can be attributed to a definite cause it is impossible to say just how much of the ob-

served effect that particular cause accounts for.

Interwoven with the preceding types of fluctuations are wavelike movements which recur more or less regularly, with a time span longer than a season and shorter than that of the problematical secondary trends. In numerous series such fluctuations stand out boldly. In other series they can be traced by one on the lookout for such phenomena. In still other series they seem to be lacking. All recurrent fluctuations in individual time series with an average duration of more than a year may be called "specific cycles" to differentiate them from the general movements called "business cycles."

Even when cyclical fluctuations are readily discernible they are always shrouded by a veil of other changes—a mixed fabric woven in varying proportions of secular, seasonal and random changes, perhaps also long waves and secondary secular movements.

One of the obvious tasks of research is to draw aside this veil of other changes in order to see the cyclical fluctuations more clearly. The technique developed for this purpose consists in measuring and then eliminating such types of fluctuations as can be seized by statistical methods.

Current efforts toward isolating business cycles seldom go beyond computing and eliminating the secular and seasonal movements by methods which are described in the articles on these topics. Combined, trends and seasonals produce a curve which is usually characterized by regular wavy movements of a year's span superimposed upon smooth sweeps covering considerable periods. If long waves or secondary secular movements are found in a series and measured, an investigator may combine them with the secular-seasonal curve. But this is a stage of refinement not yet methodically attempted, although many empirical trend determinations presumably include secondary secular movements without the investigator's knowledge. Whatever the fluctuations independently measured, their values, in combination or by successive operations, are divided point by point into the corresponding values of the original data. The quotients, multiplied by 100 or treated as deviations from zero, are taken to show the cyclical-random fluctuations of the series.

Of course this stage represents but a partial segregation of cyclical fluctuations. How to press the segregation further by eliminating the random variations is one of the current problems.

Perhaps the most promising suggestion is the following: (1) After eliminating the secular trend of a series, its seasonal variations and any other type of fluctuation susceptible of direct measurement, break up the residual cyclical-random fluctuations into segments on the basis of the cyclical turning points, which can usually be located with some confidence on a chart. (2) Find the average value of the first segment, take this value as 100 and turn the series into relatives. This procedure applied to each segment in turn yields comparable figures showing cyclical-random fluctuations in as many cycles as the series covers. (3) From the relatives for successive revival dates, or for a few months centered on these dates, derive whatever average best represents the central tendency of the array. Make similar averages for the reference dates for successive recessions. In these averages the distorting influence of random perturbations will be attenuated generally in proportion to the number of cycles represented. (4) Elaborate the observations as far as desired by breaking the intervals between revival and recession and between recession and the next revival into fractions, computing averages of the relatives for each fraction and drawing representative averages from the array for each fraction, just as averages were drawn for revivals and recessions.

The number of cycles which a series must cover to yield fairly representative cyclical patterns depends on the character of the series and the character of the period covered. Frequently half a dozen cases or even fewer suffice to establish the general character of the special cycles found in a series; but of course an investigator likes to have more evidence at his disposal.

*Specific Cycles and Business Cycles.* Not all the specific cycles found in time series are systematically related in time to business cycles. For many economic activities have a rough rhythm peculiar to themselves, arising from technical circumstances not closely connected with the condition of general business. For example Warren and Pearson find a fifteen-year cycle in the purchasing power of farm prices for beef cattle in the United States. Pigou holds that in England "ten years seem to be, not merely the average, but also the markedly predominant" working life of machinery. Hence any period of active machine buying gives rise to subsequent cycles of a ten-year span in machine buying, although these cycles may run down gradually with the lapse of time.

To determine in what economic activities the specific cycles conform to business cycles is an additional task. One may proceed empirically, sorting the series into groups based on the timing of their cyclical turning points and then studying the interrelations among the cycles of the several groups. A more systematic and in the end a quicker method is to begin by drawing up a set of "reference dates" marking off successive revivals and recessions in "general business." Such reference dates may be taken from some time series believed to reflect changes in business tides. An index number of prices at wholesale might serve, or an employment index, or bank clearings in Anglo-Saxon countries. But uncertainty regarding the role played by random factors in any single series and the difficulty of finding fit series which have been maintained in trustworthy form for long periods of time favor the choice of a broader base. Business annals when carefully compiled seem to offer the safest guide, and they can be carried as far back in time as is required. The indications they give regarding the timing of revivals and recessions can be made more definite and checked by supplementary use of such time series as are available.

There is an element of unreality in giving precise dates for revivals and recessions in gen-

eral business; for these changes really take place during transition periods rather than at turning "points." But some set of bench marks is needed from which to measure the various turning points of individual series. The lack of uniformity in the materials on which decisions must be based makes it impossible to fix reference dates over long periods and in different countries in strictly consistent fashion; but if the dates are used merely as points from which to measure the leads and lags of different series this defect is not vital. The order in which the various series turn up or down is the important matter and it does not depend upon the dates chosen.

Equipped with a schedule of reference dates showing the time when each cycle in general business began, culminated and ended, an investigator can determine in what series the specific cycles conform in number and timing to business cycles. Further, he can make a second set of measurements showing the cyclical behavior of different series within the standard periods marked off by revivals and recessions; that is, he can take the turning points in general business, instead of the low-high-low points in each series, as the chronological basis for deriving cyclical patterns in the way described above. For many purposes this second set of measure-

STANDARD REFERENCE DATES FOR BUSINESS CYCLES, UNITED STATES, 1855-1927

EXPANSION		CONTRACTION		DURATION IN MONTHS		
REVIVAL	PEAK	RECESSION	TROUGH	EXPANSION	CONTRACTION	FULL CYCLE
Jan. 1855 to June 1857	July 1857 to Dec. 1858	July 1857 to Dec. 1858	July 1857 to Dec. 1858	30	18	48
Jan. 1859 to Oct. 1860	Nov. 1860 to June 1861	Nov. 1860 to June 1861	Nov. 1860 to June 1861	22	8	30
July 1861 to April 1865	May 1865 to Dec. 1867	May 1865 to Dec. 1867	May 1865 to Dec. 1867	46	32	78
Jan. 1868 to June 1869	July 1869 to Dec. 1870	July 1869 to Dec. 1870	July 1869 to Dec. 1870	18	18	36
Jan. 1871 to Oct. 1873	Nov. 1873 to March 1879	Nov. 1873 to March 1879	Nov. 1873 to March 1879	34	65	99
April 1879 to March 1882	April 1882 to May 1885	April 1882 to May 1885	April 1882 to May 1885	36	38	74
June 1885 to March 1887	April 1887 to April 1888	April 1887 to April 1888	April 1887 to April 1888	22	13	35
May 1888 to July 1890	Aug. 1890 to May 1891	Aug. 1890 to May 1891	Aug. 1890 to May 1891	27	10	37
June 1891 to Jan. 1893	Feb. 1893 to June 1894	Feb. 1893 to June 1894	Feb. 1893 to June 1894	20	17	37
July 1894 to Dec. 1895	Jan. 1896 to June 1897	Jan. 1896 to June 1897	Jan. 1896 to June 1897	18	18	36
July 1897 to June 1899	July 1899 to Dec. 1900	July 1899 to Dec. 1900	July 1899 to Dec. 1900	24	18	42
Jan. 1901 to Sept. 1902	Oct. 1902 to Aug. 1904	Oct. 1902 to Aug. 1904	Oct. 1902 to Aug. 1904	21	23	44
Sept. 1904 to May 1907	June 1907 to June 1908	June 1907 to June 1908	June 1907 to June 1908	33	13	46
July 1908 to Jan. 1910	Feb. 1910 to Jan. 1912	Feb. 1910 to Jan. 1912	Feb. 1910 to Jan. 1912	19	24	43
Feb. 1912 to Jan. 1913	Feb. 1913 to Dec. 1914	Feb. 1913 to Dec. 1914	Feb. 1913 to Dec. 1914	12	23	35
Jan. 1915 to Aug. 1918	Sept. 1918 to April 1919	Sept. 1918 to April 1919	Sept. 1918 to April 1919	44	8	52
May 1919 to Jan. 1920	Feb. 1920 to Sept. 1921	Feb. 1920 to Sept. 1921	Feb. 1920 to Sept. 1921	9	20	29
Oct. 1921 to May 1923	June 1923 to July 1924	June 1923 to July 1924	June 1923 to July 1924	20	14	34
Aug. 1924 to Oct. 1926	Nov. 1926 to Dec. 1927	Nov. 1926 to Dec. 1927	Nov. 1926 to Dec. 1927	27	14	41
AVERAGE DURATION						
19 cycles 1855 to 1927				25.4	20.7	46.1
13 cycles 1885 to 1927				22.8	16.5	39.3

ments, made on a common time schedule, is even more significant than the first set. Finally, an investigator can express degrees of conformity between specific cycles and business cycles in numerical terms, and classify all the series he uses according to "indexes of conformity" which run in practise from +100, indicating perfect positive conformity, through zero, indicating no conformity, to -100, indicating perfect inverse conformity. Of course, in a theoretical inquiry, series which conform irregularly or not at all to business cycles require quite as careful attention as series which conform perfectly.

Half a dozen illustrations of special cycles and their relations to business cycles are provided by the annexed chart. In each graph a comparison is made between the average behavior of the variable within the periods marked off by its own cyclical turning points and within the periods marked off by the cyclical turning points of general business (standard reference dates). Seasonal variations have been eliminated from all these series except the wholesale price index, which has no regular seasonals. Secular trends also are eliminated from the "index of general business activity" compiled by the American Telephone and Telegraph Company; in the other series they are eliminated in part and in part retained. The process of turning a time series into relatives on the bases of successive cycle segments leaves undisturbed whatever trend is present within the time span of an average cycle, but excludes the trend from one cycle to the next.

All six series show well marked specific cycles. In three cases the specific cycles agree perfectly in number and closely in timing with business cycles. Bank clearings outside of New York City skipped the recession at the close of the late war, and the lawful-money holdings of New York City national banks skipped the revival of 1897. Yet the chart shows a close correspondence between the average cyclical movements of these series and those of general business. Quite different is the case of the one agricultural series. Flour shipments from Minneapolis have clearly marked specific cycles, a little longer on the average than business cycles. However, the relation in time between these specific cycles and business cycles is so irregular that when this series is chopped into segments on the basis of the standard reference dates the specific cycles almost cancel each other. Crop series commonly yield this result when similarly analyzed.

One example is given of an "inverted" pat-

tern. The lawful-money holdings of New York banks before the war declined in periods of expansion and rose in periods of contraction. Other examples of inversion are unemployment, bankruptcies and many records of commodity stocks, though by no means all.

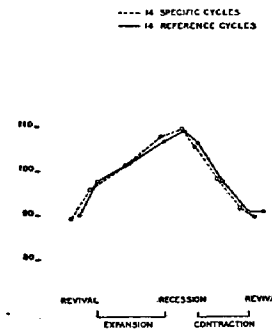
In amplitude of cyclical rise and decline there is a marked difference between the wide fluctuations of pig iron output and the narrow movements of wholesale prices. More extreme contrasts would be provided by taking series of discount rates, stocks of commodities or net earnings on the one hand and retail prices on the other.

Finally, the present sample illustrates the variety of time relations between specific cycles and reference cycles. The specific cycles of bank clearings outside New York City, partly because of their marked intra-cycle trend, lead the reference cycles by 3.3 months at revival and lag behind the latter 2.2 months at recession. The specific cycles of pig iron production lead the reference cycles by 3.5 months at revival and are virtually synchronous with them at recession. Wholesale prices, on the other hand, lead a bit at revivals and at recessions. In lawful-money holdings of New York banks the inverted specific cycles lag some four months at revivals, decline for a short while and then have an uncommonly long advance. As for flour shipments from Minneapolis, the irregular time relations between the specific cycles and the reference cycles make it impossible to establish significant leads or lags. On the chart the two curves are arbitrarily started at the same vertical line.

*Business Cycles as Wholes.* All the statistical analysis so far spoken of applies to individual time series taken one by one. To the theorist the finished results are merely raw materials useful in his effort to understand business cycles as wholes.

This effort has been likened to that of ascertaining changes in the general level of wholesale prices from quotations for individual commodities. The analogy is suggestive but there is a vital difference between the two problems. Price quotations for different commodities can be made into index numbers by some process of summation. But a mere summation of the cyclical fluctuations of time series representing different types of economic activities has no meaning. To understand business cycles it is necessary to understand the relations among the cyclical fluctuations characteristic of different

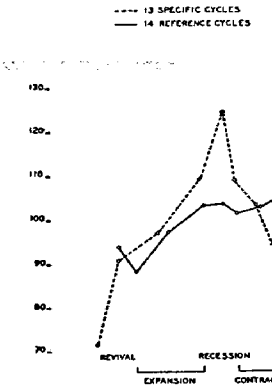
INDEX OF GENERAL BUSINESS ACTIVITY  
AMERICAN TELEPHONE AND TELEGRAPH CO.  
UNITED STATES-BY MONTHS:1879-1927



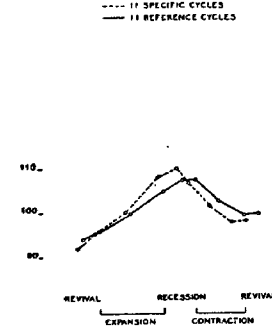
LAWFUL MONEY-NEW YORK CITY  
UNITED STATES-BY CALL DATES-1879-1914



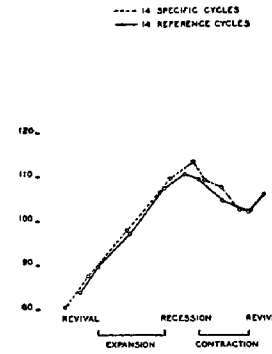
FLOUR SHIPMENTS-MINNEAPOLIS  
UNITED STATES-BY MONTHS:1878-1927



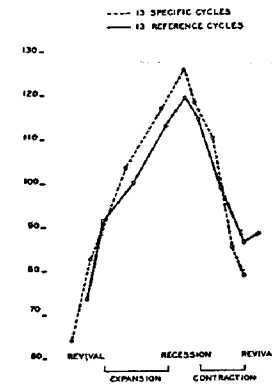
INDEX NUMBER OF WHOLESALE PRICES  
U.S. BUREAU OF LABOR STATISTICS  
UNITED STATES-BY MONTHS:1897-1927



BANK CLEARINGS OUTSIDE OF NEW YORK CITY  
UNITED STATES-BY MONTHS:1878-1927



PIG IRON PRODUCTION  
UNITED STATES-BY MONTHS:1885-1927



processes. Working hypotheses concerning these relations should determine what cyclical measurements shall be combined to get significant indexes and how the individual series or indexes representing different types of activities shall be used.

At this point the quantitative study of business cycles connects with earlier work. We have noted that efforts to explain the frequent recurrence of "commercial crises" began before any but the most meager statistics were available. Hence numerous "theories of crises and depressions" were developed by men in no position to test their validity by appeal to measurements. When the accumulation of data and the development of statistical technique had made a more searching type of work possible those who took advantage of the new materials and methods could avail themselves also of the old hypotheses, as well as of any fresh ideas they got while working with time series.

*Leading Explanations of Business Cycles.* These explanations may be summarized in three classes according to the nature of the causes stressed most heavily.

(1) Physical explanations run back to the idea of Jevons announced in 1875 that the activity of solar radiation controls mundane weather, weather dominates crop yields and crop yields dominate business conditions. The leading contemporary explanation of this type is Henry L. Moore's theory of eight-year "generating cycles." Moore holds that generating cycles are "the natural, material current which drags upon its surface the lagging, rhythmically changing values and prices with which the economist is more immediately concerned." As for their origin he suggests that weather cycles are caused by the planet Venus, which at intervals of eight years comes directly into the path of solar radiation to the earth.

(2) John Mills gave a "psychological" explanation of "credit cycles" in 1867. Among present writers perhaps Pigou lays most stress upon the emotional factor in business, although he recognizes that "industrial fluctuations" are probably due to a combination of several factors. When trade is active business men tend to become over-optimistic concerning their prospects. Hence they invest freely in industrial equipment. While this equipment is being constructed the active demand for products makes prices remunerative. But when a large part of the new equipment begins to turn out products prices fall and the error of optimism is revealed.

The new condition breeds an opposite error of over-pessimism which checks investment until the reduction of carried over stocks and the gradual growth of demand develop a profitable market once more and so generate a new wave of over-optimism.

(3) Institutional explanations trace business cycles to the workings of various economic processes: banking, saving and investing, producing and consuming, disbursing and using incomes, profit seeking and economic innovations.

R. G. Hawtrey's analysis of the cyclical impulses arising from banking runs as follows: When banks have large reserves they reduce discount rates and so encourage borrowing and business expansion. Once started an expansion mounts cumulatively until the growing requirements for cash created by active trade and large wage disbursements impair bank reserves. Then the banks raise their discount rates, thereby contracting loans and hence the volume of trade. Thereupon cash requirements become smaller and funds accumulate in the banks once more. Competition for the reduced volume of business leads the banks to reduce their discount rates and a new cycle begins.

John A. Hobson's "savings theory" makes business cycles an indirect result of inequalities in the distribution of income. In a period of prosperity large incomes swell so rapidly that the recipients cannot increase their personal consumption proportionately. An automatic increase in savings results. The investment of these huge sums brings about an increase in the equipment for making goods which exceeds the growth in the capacity to buy. A check comes when many of the new plants are finished and seek to market their products. Prices fall and large incomes are so reduced that over-saving ceases. Consumption then gradually overtakes production, restores profitable prices and starts a new cycle.

The modern theory of general over-production is best represented by Aftalion. Good trade leads to rapid increase of industrial equipment, then to an increase in the output of consumers' goods and finally to a decline in their marginal utilities. Meanwhile money is in active demand—its marginal utility tends to rise. These two changes combine to reduce the demand prices for consumers' goods, thus lessening the profits of business enterprises and checking the growth of industrial equipment. Depression sets in and lasts until the slow growth of consumers' de-

mand has restored a profitable market for the existing plants—whereupon the cycle repeats itself.

Spiethoff denies that consumers' goods or goods in general are over-produced. He attributes recessions to over-production chiefly of industrial equipment and of the materials from which industrial equipment is made. The construction, steel, cement and similar industries depend for their market upon capitalized income. When steel and cement are made into steel and cement plants they increase the production of steel and cement themselves, forcing down prices and profits in the equipment trades. As matters now go it is practically impossible to maintain for long a tolerable balance between the growth of capitalized income on the one hand and the growth of the industries in which such income is chiefly invested. A relative excess of capitalized income leads to expansion; a relative excess of the goods in which capital is invested leads to contraction.

The income theory is associated with the names of Foster, Catchings and P. W. Martin. If the goods sent to market are to be sold at profitable prices the incomes disbursed to buyers must equal the full selling value of the goods turned out, and buyers must use their incomes promptly in taking goods off the market. But in practise business enterprises do not pay out the full selling value of their products. When times are active they retain a considerable part of their receipts to add to working capital, to provide dividends in lean years and the like. Hence a period of brisk business gradually accumulates an excess of goods offered for sale over the purchasing power of the market. This malproportion might be prevented if producers' and consumers' credit could be expanded in just proportion to the deficiency in disbursed income, business and personal; but that is a feat of economic rationality which no banking system can yet perform.

Veblen and Lescure have organized their explanations around the theme of profits. An increase in the physical volume of sales does not produce a corresponding increase in wages or overhead costs. Hence profits rise and business men seek to enlarge their working funds. Their chief resort is to banks, which are as eager to exploit the favorable prospect as any other group of enterprises. Supported by the increasing volume of credit, the business public bids up prices, enters into heavy future commitments and enlarges its plant capacity. These develop-

ments support each other so that business expansion becomes a cumulative process which runs on until one or more of the internal stresses which it accumulates reach the breaking point. Sometimes the first factor to be overtaxed is the banks. Prosperity causes a larger volume of cash to remain suspended in hand-to-hand circulation, and so tends to reduce bank reserves. At the same time demand liabilities grow apace because the expansion of loans increases deposits. If the banks find themselves compelled to restrict the granting of further loans, or even to charge very high discount rates, this check will bring on a recession. Or prospective profits may be undermined by the encroachments of increasing costs of doing business. Though lagging behind wholesale prices, wage rates rise. It is difficult to prevent the efficiency of labor from declining after the élite of the industrial army has already been enlisted, and difficult to prevent an even more menacing decline in the efficiency of management when the rush of business interferes with careful planning. The one way to protect profit margins against increasing unit costs is to raise selling prices. For a considerable time this remedy works; but it has to be applied again and again. And there is an elastic limit beyond which it cannot be carried; for rising prices increase the volume of credit required by business and so add to the strain on the banks. Moreover there are important groups of enterprises which cannot raise their selling prices effectively, such as public utilities, contractors not working on a cost-plus basis, manufacturers who follow a fixed-price policy. And in every period of rapid expansion there are some industries in which the increase of plant capacity so outstrips the growth of demand that selling prices are forced down. Thus expansion itself sets going processes which reduce prospective profits in an increasing number of enterprises. But prospective profits, capitalized at the going rate of interest, are the basic security on which rests the towering structure of credits. The mere rise in the rate of interest, which accompanies the later stages of expansion, forces a downward revision of capitalized values. When to this is added an actual decline in the profits which are capitalized creditors begin to take alarm and call for reduction of outstanding debts. Thus the weakness of a minority of business enterprises sets in operation a new process—liquidation of indebtedness—which leads to recession. In turn, recession leads to contraction. Credit ratings are revised down-

ward; financial obligations are gradually cleared off or readjusted; unit costs are reduced faster than selling prices; and the bulk of enterprises gradually get into a position where their prospects of profits begin to grow brighter—thus laying the basis for a new revival and period of expansion.

Finally, business cycles are held to be a result of the changes in organization which are such a characteristic feature of a business economy. Schumpeter's "innovation theory" may serve as an example. Most business men are "routiners"—systematic people competent to run affairs on customary lines. A few are "innovators"—restless, inventive, daring men whose imaginative minds are ever planning new schemes. Such men produced the "commercial revolution" by reorganizing European methods of production. By exploiting mechanical inventions they made the industrial revolution what it was and still is. Today they are devising ever greater corporate combinations, upsetting selling methods, launching novel products, developing new sources of supply and cultivating new wants. When a wave of innovation mounts, business has a season of hectic activity. Prices of raw materials and of finished products, the kinds of goods demanded by buyers, the competitive position of different enterprises, methods and costs of obtaining capital, financial alliances—indeed most of the elements on which business plans rest, go through a series of changes. These unsettled conditions create difficulties for the mass of routiners. Failures increase, confidence dwindles and there comes a crisis, followed by a period of dull times. Dullness checks innovation because it prevents the disturbers of the business peace from getting the capital necessary for carrying out their hazardous schemes. Dullness also allows the routine business men to work out a passable readjustment of their plans on the new basis. But no sooner is quasi-stability re-attained and confidence restored than the innovators are again able to put some of their schemes into effect. Followed by a host of imitators they set going a new crop of changes, which multiply rapidly and bring on another crisis.

The various explanations sketchily presented here, and the numerous other explanations which might be cited, are not to be thought of as contradicting each other. Even from the viewpoints of the authors the differences consist mainly in emphasis. Each writer selects from the cyclical changes going on in modern society the process which seems to him of greatest im-

portance and analyzes that in detail. But he may also make elaborate use of theories presented with an emphasis other than his own. Thus Pigou, who stresses emotional aberrations of business judgment, can take account also of construction, monetary and crop factors; Schumpeter can utilize Pigou's analysis as a side line; and the profits theorists can comprehend any change which appears to affect prospective profits in a rhythmical manner.

This inclusive use of what were originally offered as independent explanations is especially congenial to statistical workers. The task of a theory of business cycles, seen from their angle, consists in finding out what cyclical fluctuations are characteristic of different processes, searching for explanations of the idiosyncracies revealed and tracing the connections among different processes. In seeking to trace these various connections they need and can consistently make use of working hypotheses concerning the numerous processes which are parts of the whole. So far as their effort succeeds it weaves the elements into a common pattern. The end result aimed at is not eclectic patchwork but a systematic account of all the relevant phenomena.

*The Phases of a Business Cycle.* A systematic account of cyclical fluctuations, taken seriously, becomes an analytic description of the processes by which a given phase of business activity presently turns into another phase. The obvious framework for such a description is provided by the successive phases of the cycle. Historical changes in the character of the phenomena, as well as advances in knowledge, have led to significant modifications in the scheme and names of these phases favored at different periods.

From crises, the first focus of attention, the interest of investigators extended to the subsequent depressions. Prosperity was recognized as a problem when it became clear that the causes of crises are to be sought among the developments of the preceding booms. Somewhat later began definite attempts to find out how business recuperates from depression. Thus the four-phase business cycle of prosperity, crisis, depression, revival, came to be accepted. The suggestion that the transition from prosperity to depression be subdivided into two phases, "financial strain" and "industrial crisis," making a five-phase cycle, encounters two objections. In numerous cycles the phenomenon of financial strain has been conspicuous by its absence; in

other cycles periods of acute financial strain have occurred within the phase of depression instead of during the transition from prosperity to depression.

Moderation in the violence of cyclical changes has led to revision of the old nomenclature. During the 1860's British bankers discovered methods of "panic financing" enabling them greatly to moderate the credit strains which had been a prominent feature of past crises. Arrangements which assured all solvent borrowers of bank accommodation adequate to their needs, though at a high rate of interest, put an end to panic fears. Adaptations and extensions of the peculiar British measures in other countries, in combination with other lessons learned from past experience, have given many of the later transitions from prosperity to depression so mild a character that the word "crisis" seems scarcely fitting. Nowadays the term "recession" is widely used. Only a recession of a severity now uncommon, like that of 1920, is called a crisis.

Corresponding doubts are beginning to be harbored about the terms "prosperity" and "depression." There have been cycles in various countries in which the phase of increasing activity has not reached the pitch which "prosperity" suggests and in which the phase of declining activity seems not to justify the use of so strong a word as "depression." As substitutes the terms "expansion" and "contraction" are used here.

Even the latter pair may prove to have no more than a passing historical fitness. Statistical studies of cyclical behavior reveal not a few cases in which important processes have shown no actual shrinkage during the contraction phase of mild cycles. A stoppage of expansion is observed, or merely a retardation in the rate of growth. If the many sided efforts now under way to control business cycles succeed gradually, this attenuation of cyclical fluctuations will become common. Then the terms "expansion" and "contraction" will be replaced by some other pair such as "acceleration" and "retardation."

*Differences Among Business Cycles and the Task of Explanation.* Business cycles, then, are not a fixed species but an evolving one. To the familiar notion that individual cycles differ from each other because each is influenced by a unique constellation of random influences must be added the notion that business cycles are subject to secular changes. Coming into existence gradually with a certain form of economic

organization, they have changed as this organization has changed. The geographical and the industrial scope of the oscillations has grown wider; their amplitudes have grown narrower. Needless to say this is a checkered development; but the trend is clear if one compares cycles separated by a century. Further, while the modern business world has a common pattern, every country has its own peculiarities of economic organization and development which affect its cyclical fluctuations.

The secular, national and random differences among business cycles have exercised not a little influence upon theoretical inquiries. The peculiarities of the case with which a writer is most familiar are likely to color his impressions of the general character of the phenomena, much as his personal idiosyncracies color his notions about human nature. The best safeguard against such misconceptions is study of objective records covering numerous cycles which occurred in different times and countries. Such study suggests that a complete theory of business cycles would explain not merely the tendency of all business economies to develop rhythmical alternations of expansion and contraction, but also the secular changes in the manifestations of this tendency, the differences among the cycles of different countries and the roles played by random factors. Though so ambitious a scheme may be visionary it is desirable to consider just what part of the full task any given theory essays to perform.

The following analytic description of a business cycle aims merely to sketch the leading features generally found in the recent cycles of such countries as the United States, England and Germany. It does not dwell upon the characteristic differences among the cycles of these countries, upon the secular changes which can be traced in each or upon the effects of random influences. Even the striking perturbations of the late war are passed over.

*The Phase of Expansion.* Since revivals are conceived to grow into periods of expansion, expansions into recessions, recessions into contractions and contractions into new revivals, a description of cyclical fluctuations may start with any phase. But whatever phase is chosen as the starting point, the business conditions out of which that phase arises must be taken for granted. How these conditions develop can be shown only by working forward through the cycle until the starting point is reached again. The present exposition breaks into the round of

events at the point where a revival has gotten well under way. How the revival started is the last question to be answered.

Among the fruits of revival are an increase in the physical volume of production and trade, fuller employment, an upturn in commodity prices, brighter prospects of profits, an advance in the prices of stocks, the prevalence of optimism, a desire to expand business enterprises, larger borrowings, heavier investments in industrial equipment and rising interest rates.

For a time each of these developments supports and stimulates the further progress of all the others. Thus the increase in physical production and trade enlarges the demand for labor and swells the stream of income even before wage rates rise. Large wage disbursements broaden the market for consumers' goods and so support the increase in production not merely of goods which families consume but also of the materials and equipment from which and by which they are made. These swelling demands push up the prices of the goods which are being bought freely and of the materials from which they are made. The greater volume of trade betters business prospects and makes men optimistic; the rise of prices reinforces these factors. Optimistic expectations of profits promote the further expansion of production and trade, the employment of more labor and the advance of prices. All these factors combine to encourage investment, which stimulates construction work, which adds fresh impetus to the demand for goods, the rise of prices, the employment of labor, the disbursement of incomes, the growth of retail trade and the optimistic spirit, thus returning through a spiral of reactions to heighten investment itself.

Once started, then, the expansion of business becomes a cumulative process. In the absence of unfavorable random factors, when well under way even in the face of such factors, the movement seems to generate momentum. Nor is there anything mysterious about this appearance. For in modern nations, where most people get their livings by selling services or goods for money incomes and then spending money for goods, everyone helps to make the market for everyone else. The more one man gets the more he buys of consumers' or of producers' goods, and so the more other people are able to buy of what he has to sell. Hence an increase of activity at any point in the whole organization tends to spread and, through a series of reactions, to intensify the activities with which it started.

*The Phase of Recession.* Because of this interdependence among economic processes, however, expansion in any one process cannot exceed certain limits set by the synchronous expansion in other processes. These limits are neither uniform nor rigid; for economic organization is a rugged affair which does not require precise adjustments among its growing parts. Yet, since there is no adequate provision for keeping a balance, in every period of acceleration the cumulative expansion of different processes is so uneven as to produce a series of minor checks. The difficulties which are overcome reappear or are succeeded by more threatening stresses, and soon or late the cumulation of favorable influences turns into a cumulation of business troubles.

Profits are the focus of economic activities in a business economy. A pervasive but mild check upon the growth of profits comes into operation when expansion reaches the stage at which most enterprises have as much business as they can readily handle with their existing equipment of standard efficiency and with the trained personnel at their disposal. Before this stage was reached every additional order secured at current prices had promised a more than proportionate addition to profits because it distributed overhead costs over more units without raising operating costs per unit. But thereafter unit costs rise. A further expansion of business now requires the use of substandard equipment, the breaking in of new employees, who are likely on the average to be less efficient than the old, and additional overhead commitments. Raw material prices, wage rates and interest charges mount rapidly when business enterprises of many kinds are competing eagerly for supplies, labor and loans. Also it becomes difficult to maintain a high standard of operating efficiency when overtime is common, when discharge is a trifling penalty and when everything must be done in a rush both in the office and in the workshop.

The sovereign remedy for increasing unit costs is to raise selling prices. That remedy can be applied without checking the volume of trade while people expect the rise of prices to continue; but there are enterprises which cannot resort to it readily. Public utilities whose charges are regulated by governmental commissions, contractors who have taken long jobs for fixed sums and makers of goods which are sold at widely advertised prices cannot pass on the mounting costs to their customers promptly and in full. Thus a not insignificant minority of

business enterprises may find their prospective profits shrinking as expansion runs on.

Another way to take business advantage of rising demands and to counteract rising costs is to increase plant capacity and to make the new plants more efficient than the old. That plan contributes to the activity of business for a time, but presently encounters difficulties. A wave of expansion usually brings an increase of contracts for new equipment before the old equipment is all in use; for business men try to anticipate their opportunities. The demand for new business buildings, factories, machinery, rolling stock and the like depends less on the physical volume of production than on changes in this volume. Any check in the rate at which the physical volume of business is growing will bring a positive decline in the contracts for new equipment. Then the equipment trades suffer, and all the more if, as is likely, the plants which themselves make steel, cement, machines, etc. have extended their facilities.

Such a check can scarcely be avoided as business is now conducted; for it is not possible to forecast accurately the growth in consumers' demand for all types of commodities and to adjust to this growth the expansion of industrial equipment, all of which depends in the last resort upon personal consumption for its market. Of course the equipment trades themselves give a powerful impetus to retail demand for commodities while they are disbursing wages for the making of goods which are not sold through retail shops. But when the new equipment is ready for use and begins adding to the supply of consumers' commodities offered for sale, not all the investments will prove profitable. Cases of "over-production" or "under-consumption" occur in every cycle. If they prove numerous they give rise to an impression that industry is "overbuilt" and check new orders for equipment. In any case it is not likely that the growth of physical demand for goods will long maintain the rapid pace characteristic of the early stages of expansion. All the other difficulties accumulating tend to moderate the rate of growth and so to produce acute difficulties in the equipment trades which will augment whatever troubles give rise to the check.

Meanwhile the intricate task of financing the swelling volume of trade at rising prices is becoming a problem. The best available data indicate that Americans spend some 50 to 60 percent of their money incomes at retail shops. Also it appears that individuals and business enterprises

together "save" sums which average some 15 percent of the national income—that is, they spend this proportion of their net receipts for income bearing goods. There remains a considerable slice of income for rents, personal service, taxes and miscellanies. To maintain business activity the flow of incomes to individuals and from individuals to retail shops must expand with the dollar value of the consumers' goods flowing into shops for sale. At the same time the flow of "savings" from individuals and business enterprises must be kept growing at a steady pace, or the enterprises which make industrial equipment will suffer a slump.

It is argued that the whole congeries of business enterprises cannot long disburse as income sums which exceed the value of the goods they produce, and that if they disburse any smaller sum, part of the goods they sent to market must remain unsold or be sold at a loss. Prosperous enterprises do not disburse the full value of what they contribute to national production; they require larger working capitals and they deem it wise policy to accumulate reserves, which may not all be invested promptly in ways which sustain the demand for goods. Hence there is danger that the flow of individual and corporate incomes will lag behind the volume of goods seeking sale.

This deficiency of current income may be made up by bank loans, which put additional purchasing power at the disposal of the public. But that raises a new question of adjustment. If the banks extend their loans too freely the chief effect may be to accelerate the rise of prices and so presently to recreate the difficulty of finding enough purchasing power to buy all the goods sent to market. If the banks do not lend enough, or if they do not distribute their advances among different classes of buyers in the proportions required by business needs, some section of trade will suffer. Economists who stress this line of analysis commonly hold that consumers' incomes require supplementing by bank credit on a larger scale than is practised.

There remains the question as to how far the banks can go in furnishing the community with the additional credit required by expanding trade and rising prices. An increase of loans leads to a more or less equivalent increase of deposits and notes. While reserves are usually high in proportion to demand liabilities at revival, the ratio declines in the course of expansion, not only because deposits and notes grow with loans but also because the public keeps a

greater volume of coin and paper money in its pockets and tills when wages are high and retail trade is active. Banks raise their discount rates; but that does not check promptly the demand for loans. They may get additional gold. But no matter how the banking system is organized there are limits below which it is not safe to let reserve ratios fall. When these elastic limits are approached the banks must discourage new applications for credit by very high discount rates and also set very exacting credit standards for new loans or even for renewals. If many enterprises cannot get loans at rates which leave a margin of profit business expansion will cease and there may be an epidemic of bankruptcies.

Although the preceding list of adjustments which must be maintained among different processes is not complete it suggests that, in the process of expanding, the business system may develop any one of numerous disorders. Neither business history nor business statistics supports the view that the decisive break always comes about in the same way. The sequence in which different time series reach their highest points and turn down varies from recession to recession. Usually several stresses seem to be accumulating during a period of expansion and the only question is which will overtax the factors of safety first. Random influences, such as harvest fluctuations, business conditions in foreign countries, the pet miscalculations of the day and the like, seem to exercise a considerable influence upon that event. And there seem to be secular changes in the character of expansions and recessions. Certain of the wilder excesses which characterized early booms seldom attain prominence today. But the fundamental difficulty remains of keeping all the important processes of a business economy duly adjusted to each other in a period when all are expanding. The more one studies the variety of cyclical patterns characteristic of different processes and the intricate ways in which different processes affect each other the more remarkable it appears that phases of expansion sometimes last several years. Two years is the average term in the United States, though four years was approached during the Civil War and again in the years 1915-18. In European countries the average duration exceeds three years, and periods of expansion outlasting four years are not uncommon.

Once a recession starts it commonly proceeds faster than does a revival, especially when the expansion has been accompanied by a

marked growth of interlocking credits. A few conspicuous bankruptcies may alarm creditors and set them pressing for the prompt settlement of their claims. Unless the banks are able to reassure every solvent enterprise that it can get whatever accommodation it is entitled to, the recession will degenerate into a crisis or a panic. Granted this assurance, however, there may be little evidence of financial strain. Indeed, if the preceding phase of expansion has not reached the proportions of a boom and if the banking system is well organized and wisely managed, the recession may be as mild in character as are most revivals.

*The Phase of Contraction* is in many respects the reverse of the phase of expansion. Optimism gives way to pessimism, prices fall, production shrinks. In this general decline of activity there are significant differences of degree.

Consumers' demand, particularly for non-essentials, falls off appreciably in consequence of shrinking employment, the gradual spending of individual hoards and balances and the reduction of many non-wage incomes. Merchants require smaller stocks and cut their orders more than sales fall off. A similar policy is followed by other enterprises. Thus the reduction in volume of trade is amplified stage by stage as it travels back through wholesale dealers to manufacturers and producers of raw materials. Particularly severe is the decline of orders for new industrial equipment. Few enterprises care to sink money in extensions and betterments while most existing plants are either operating at but a fraction of their capacity or standing idle. Of course these changes react upon one another. Every reduction in production means less employment, less wage disbursements and thus less ability to buy at retail, still less production and less employment.

Similar differences mark the decline in prices. Wholesale prices fall faster than retail, the prices of producers' goods faster than the prices of consumers' goods and the prices of raw materials faster than the prices of finished commodities. The prices of crops may not follow this course because of harvest conditions; raw metal prices show the market conditions best. Wage rates (not wage disbursements) and interest on long time loans decline less than wholesale prices, while discount rates and common stock prices decline more. The one important class of prices which commonly rise in contraction are the prices of high grade bonds.

These developments reduce the profits of

almost all enterprises and bring deficits to many. The number of bankruptcies usually grows larger in contraction than it was during recession, although the average liabilities decline. Losses must be written off and reorganizations submitted to. With the reduction of inventories, current accounts and payrolls, less working capital is required and bank loans shrink.

As in the phase of expansion, so in that of contraction, there is an early period when every change seems to work in the same direction. One shrinkage forces others and is made more drastic by roundabout reactions from its own effects. But in the later phase as in the earlier the concatenated changes presently begin to raise obstacles to their own continuation.

*The Phase of Revival.* As unemployment increases and retail trade declines men have less money left in their pockets and shops need less in their tills. Idle cash accumulates in the banks and flows from the country districts toward the great financial centers. Combined with the net decline in bank loans, this flow raises reserve ratios. Discount rates fall very low, call rates lower still—sometimes so low that there is a margin of profit in buying gilt edged securities with borrowed funds. Such a condition in the leading money markets presently reinvigorates the demand for stocks and bonds. The stock market often revives in this way while general business is still at low ebb. An increased demand and rising prices of stocks are hailed as an encouraging sign.

Meanwhile the difficulty of making profits has put pressure upon business managements to improve their practise. The wastes, big and little, which often creep in during the rush of prosperity are discovered and eliminated. The reduced volume of business can be handled with the best of existing equipment and the most efficient personnel. There is plenty of time to supervise current operations closely, and also to devise plans for heightening efficiency. Overhead costs are in many cases cut by financial readjustments and operating costs by the fall in the prices of materials as well as by more skilful management. In some cases these changes are sufficient to restore a not unsatisfactory rate of earnings even while selling prices remain low.

An abundance of loan capital to be had at moderate rates has somewhat the same effect upon construction work that it has upon the demand for securities. Building materials can be had cheaply, building labor is eager for jobs, contracting firms will figure closely, prompt

deliveries and prompt construction can be counted on. Even though the current demand for new housing or equipment is slight, investors are found who think it well to anticipate revival and build while work can be done at low costs and long time financing arranged on easy terms.

Even the business in consumers' goods must presently look up. When times are dull retail merchants let their stocks run as low as they can without losing too many sales through broken assortments. This possibility of reducing stock was one of the factors which had enabled them to cut their purchases for a time more than their sales fell off. But once their stocks are reduced to the minimum of safety they must order at least as much as they sell. This means some increase of business for wholesale and manufacturing concerns. Indeed, if the rate at which their sales are shrinking becomes smaller, retailers must order more than they sell. Thus the mercantile demand for consumers' goods may begin to increase at the same time that retail sales are still contracting.

Also there are physical reasons compelling an expansion of consumer demand for certain types of goods. Shoes, clothing, house furnishings of many kinds can be kept in use a longer or shorter time according to the state of peoples' pocket-books. When hard times come many families economize by using these semi-durable goods as long as possible. Hence the demand for such articles falls off more in the early stages of contraction than the demand for staple groceries. But the time comes when an increasing number of the old articles are literally worn out. Then the indispensables at least must be replaced, if money or credit can be had in any wise. And that means another fillip to trade.

A similar observation applies to industrial equipment. Under pressure of hard times repairs, upkeep and renewals may be neglected for a while, not to speak of extensions and betterments. But that can be but a temporary policy. Whatever equipment is used must be kept in running order. The more it is neglected for a time the more work must presently be given to repair shops and equipment houses. Even the hardest pressed and most conservative enterprises are forced into this policy, if they stay in business. The more enterprising in trades which have been growing rapidly sometimes grasp the breathing spell of a slack year to build anew, planning to "junk" their old plants when the more efficient equipment is ready. Thus while

the equipment trades may have an exceedingly long season they are sure of some increase in business after a while.

Nor can prices keep on falling rapidly for an indefinite time. In the face of threatened bankruptcy an embarrassed house may sacrifice accumulated stocks for what can be had. But men will not buy materials and make up new supplies unless they can get back at least their operating costs. These costs in turn are aggregates of prices, including the prices of labor, and it is difficult to beat them all down. Nor can the still more resistant overhead costs be left out of selling prices for long without disastrous consequences. As prices get lower and lower the rate of decline flattens out. Buyers see less gain in holding off for still better bargains, and begin to fear they may wait overlong and get caught on a rising market. The first sign that the low point has been reached in any line is likely to bring out a flood of orders and to encourage other sellers to resist further concessions.

Business sentiment also becomes less pessimistic. As the liquidation wears on the worst becomes known and proves less serious than many had expected. Bankruptcies grow fewer again; everyone realizes that others are being cautious; the majority of enterprises have proved their solvency; outstanding debts have been reduced. Confidence slowly revives, and men begin to remind each other that every past period of depression has been followed by a revival. How soon business will turn the next corner becomes the question of the day.

None of these encouraging developments has great momentum. Though each favorable change reinforces the other elements of strength, unfavorable random or secular factors may check one slight improvement after another. Thus the phase of contraction is sometimes prolonged in a most discouraging fashion, as has been the case in England, for example, since 1921. In the United States the depression of 1873-79 dragged on for nearly five and a half years, whereas the longest period of expansion in times of peace since the 1850's has not exceeded three years. But cyclical developments of a favorable cast keep cropping up. The time comes when they are not offset by "disturbing causes," or when they are reinforced by favorable developments from outside the realm of business. Then a revival makes itself felt and a new cycle begins. On the average in this country from 1855 to 1927 the phases of contraction lasted some twenty or twenty-one months as

compared with twenty-five months for phases of expansion.

WESLEY C. MITCHELL

See: BUSINESS; CAPITALISM; INDUSTRIALISM; BOOM; BUBBLES, SPECULATIVE; CRISES; CONJUNCTURE; FORECASTING, BUSINESS; TIME SERIES; ECONOMICS; ECONOMIC POLICY; UNEMPLOYMENT; PUBLIC WORKS; CREDIT CONTROL; PRICE STABILIZATION.

Consult: BIBLIOGRAPHIES: *Books about Business Cycles*, Illinois University College of Commerce and Business Administration, Bureau of Business Research, Bulletin no. 22 (Urbana, Ill. 1928); Schmid, Anton, "Bibliographie der Konjunktur- und Krisenfor-schung" in *Archiv der Fortschritte betriebswirtschaftlicher Forschung und Lehre*, vol. iv (1927) 183-99.

HISTORY OF BUSINESS CYCLES: Sombart, Werner, *Der moderne Kapitalismus*, 3 vols. (vols. i-ii, 3rd ed. Munich 1919; vol. iii, 1927) vol. ii, chs. xvi-xvii, vol. iii, ch. xxxv; Scott, W. R., *Constitution and Finance of English, Scottish and Irish Joint-Stock Companies to 1720*, 3 vols. (Cambridge, Eng. 1910-12) vol. i, ch. xxii; Wirth, Max, *Geschichte der Handelskrisen* (4th ed. Frankfurt 1890); Tugan-Baranovskii, M. I., *Les crises industrielles en Angleterre* (Paris 1913), French translation from and Russian ed. revised and expanded by author; Lescure, Jean, *Des crises générales et périodiques de surproduction* (3rd ed. Paris 1923) p. 3-312; Thorp, W. L., *Business Annals* (New York 1926).

ANALYSIS OF TIME SERIES: Among the recent statistical manuals treating this subject the best discussions are Mills, F. C., *Statistical Methods Applied to Economics and Business* (New York 1924), and Day, E. E., *Statistical Analysis* (New York 1925). Many valuable articles are to be found in the *Journal of the American Statistical Association*, the *Review of Economic Statistics*, and the *Vierteljahrshefte zur Konjunkturforschung* (Berlin). See also Wagemann, Ernst, *Konjunkturlehre* (Berlin 1928); Mitchell, W. C., *Business Cycles, the Problem and its Setting* (New York 1927) ch. iii; Snyder, Carl, *Business Cycles and Business Measurements* (New York 1927); Kuznets, Simon, *Secular Movements in Production and Prices; Their Nature and Bearing upon Cyclical Fluctuations* (New York 1930).

THEORY OF BUSINESS CYCLES: Bergmann, Eugen von, *Die Wirtschaftskrisen: Geschichte der national-ökonomischen Krisentheorien* (Stuttgart 1895); Juglar, Clément, *Des crises commerciales et de leur retour périodique* (2nd ed. Paris 1889); Moore, H. L., *Economic Cycles, their Law and Cause* (New York 1914), and *Generating Economic Cycles* (New York 1923); Pigou, A. C., *Industrial Fluctuations* (London 1927); Hawtrey, R. G., *Good and Bad Trade* (London 1913), and *Currency and Credit* (3rd ed. London 1928), and *Trade and Credit* (New York 1928); Hobson, J. A., *Economics of Unemployment* (London 1922); Spiethoff, Arthur, "Krisen" in *Handwörterbuch der Staatswissenschaften*, vol. vi (4th ed. Jena 1925) p. 8-91; Aftalion, Albert, *Les crises périodiques de surproduction*, 2 vols. (Paris 1913); Martin, P. W., *The Limited Market* (London 1926); Foster, W. T., and Catchings, W., *Profits* (Boston 1925), and *The Road to Plenty* (Boston 1928); Veblen, Thorstein, *Theory of Business Enterprise* (New York 1904) ch. vii; Lescure, Jean, *Des crises générales et périodiques de surproduction*

(3rd ed. Paris 1923); Mitchell, W. C., *Business Cycles* (Berkeley 1913); Adams, A. B., *Economics of Business Cycles* (New York 1925), and *Profits, Progress and Prosperity* (New York 1927); Clark, J. M., *Studies in the Economics of Overhead Costs* (Chicago 1923) ch. xix; Kuznets, Simon, *Cyclical Fluctuations, Retail and Wholesale Trade* (New York 1926); Schumpeter, Joseph, *Theorie der wirtschaftlichen Entwicklung* (2nd ed. Munich 1926) ch. vi.

BUSINESS EDUCATION. A consideration of any form of vocational education commonly proceeds upon the mistaken assumption that such training is a comparatively new social undertaking. It is thought of as instruction in doing, which in recent years has replaced in some measure instruction in culture. The error in such a view lies in an unduly limited conception of a vocation which subordinates it to a secondary place in life, makes it somewhat, if not wholly, antithetical to culture and confuses it with the specialized occupationalism of recent times. Yet a vocation, as John Dewey said, "means nothing but such a direction of life activities as renders them perceptibly significant to a person, because of the consequences they accomplish, and also useful to his associates." It follows that so far in the past as there was training calculated to aid in rendering life activities perceptibly significant and socially useful there was training in the "business" of practical and social affairs. That such a training is old in race history is evidenced by the instruction in tribal traditions, customs, rituals and tabus with reference to such practical matters as work, war and propitiation which is found among all primitive peoples. The folkways, which are the "right ways," of carrying on the arts of life are handed on from generation to generation.

It was when making a living by business became an outstanding part of the business of making a living that business education in a more definite sense became distinguishable from other vocational education. We may look for the beginning of business education in this restricted sense wherever an economic system based on the effecting of profitable transactions is first to be found. The experiences of the ancient Egyptians, Assyrians, Persians and Phoenicians were first paralleled in modern times in Italy. There is evidence that at least as early as the fourteenth century not only was the practise of commercial arithmetic and accounting well developed in several of the Italian cities but that there was also a literature upon each of these subjects.

The characteristic mediaeval form of business training was apprenticeship. Apprenticeship not only trained in technical skill; it was also an institution designed to give candidates for membership in the guilds the ability to carry on business in a difficult economic and social environment. The problems of a business man, multiplied by the expansion of the business system, were already complex for the mediaeval craftsman. Within shop or store customers must be dealt with, materials bought, production skill had or hired, satisfactory relations with employees attained and capital needs met. Moreover the ordinances of the town relative to wages, discipline, conditions of work, quality of wares and many other matters had to be understood and their provisions met. Apprenticeship prepared the novice for the carrying on of business in this complicated environment partly by formal direction, partly by precept and partly by intimate contact with the life of the master. It continued to be the most significant form of education for business until with the application of steam to industry the machine became more important than the artisan.

With the displacement of the guild system new and more restricted forms of business education developed. The earliest commercial schools and the most advanced types of modern business schools are to be found in Europe; but it is in the United States that business education has developed most extensively. The characteristic forms and the widespread adoption of business education in America were conditioned by the rapid expansion of industry in the nineteenth century. Mass production, the new market created by the tremendous westward movement of population and a large volume of business transacted with distant customers made necessary a vast amount of what has been called the "facilitating processes" of business. Letters had to be written, transactions recorded, extensive calculations of many sorts made. Calculation, accounting and communication were called upon to function as they had not been called upon before. This work did not demand the daring, intelligence or initiative needed by the organizers of expanding trade. What was required was accuracy, exactness and care in the performance of specialized clerical tasks. To provide these habits and skills there appeared—at first in a primitive form and later in a highly organized way—the private commercial school often inaptly called the business college.