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Changes in Physical Production, Industrial Productivity and Manufacturing Costs, 1927-1932

FREDERICK C. MILLS

THE decline in productive activity in the United States during the current depression started early—prior to the stock market break of October, 1929—and has continued steadily. All elements of the national economic system have felt the impact of the world-wide recession, but the course of the decline is perhaps most clearly traced in the records of physical production.

THE DROP IN TOTAL PRODUCTION

That the recent decline in volume of production has been of exceptional magnitude is a fact of common knowledge. If we measure production changes by years, combining agricultural, mineral and manufacturing production and volume of construction, we find that total production declined between 1929 and 1932 by about 38 per cent. This compares with declines of approximately 9 per cent between 1906 and 1908 and of 14 per cent between 1920 and 1921. The mechanism of production has been slowed down during the current depression to a greater degree than at any other time within the last half-century.

PRODUCTION CHANGES IN MAJOR INDUSTRIAL FIELDS

The decline in volume of output has not been the same for all elements of production. These elements differ materially in their sensitivity to fluctuating conditions of demand, in the degree of conscious control to which they are subject, and in the degree to which production, rather than price, reflects the forces of depression.

Changes occurring over the last six years in the aggregate output of physical goods and in the output of certain major classes of goods are defined by the index numbers in Table 1. These are shown graphically in the accompanying chart.

A comparison of the 1932 relatives for these several groups reveals how greatly relations among producing groups have been altered in recent years. The standard of comparison (the base of the relatives) is taken as 1927, a year of mild depression, rather than 1929, the year of maximum expansion in most lines. If the relative volumes of physical output in 1927 reflect approximately normal requirements of a stable economic structure, the wide disparities of 1932 indicate a condition of marked disequilibrium. Construction 71 per cent below the 1927 standard, production of manufactured goods 40 per cent below, of raw minerals 34 per cent below, and of raw agricultural products 3 per cent below that level—here is a curious combination of productive activities.

Contrasting the measurements for total raw materials and those for manufactured goods, the difference in degree of decline from the 1929 peak is notable. For raw materials the drop to 1932 amounted to but 14 per cent, for manufactured goods to 46 per cent. An explanation of the difference involves several factors. In the first place, exports of finished manufactures (including manufactured foodstuffs) have declined much more, by volume, than

TABLE 1

CHANGES IN THE PHYSICAL VOLUME OF PRODUCTION IN THE UNITED STATES, 1927-1932[a]

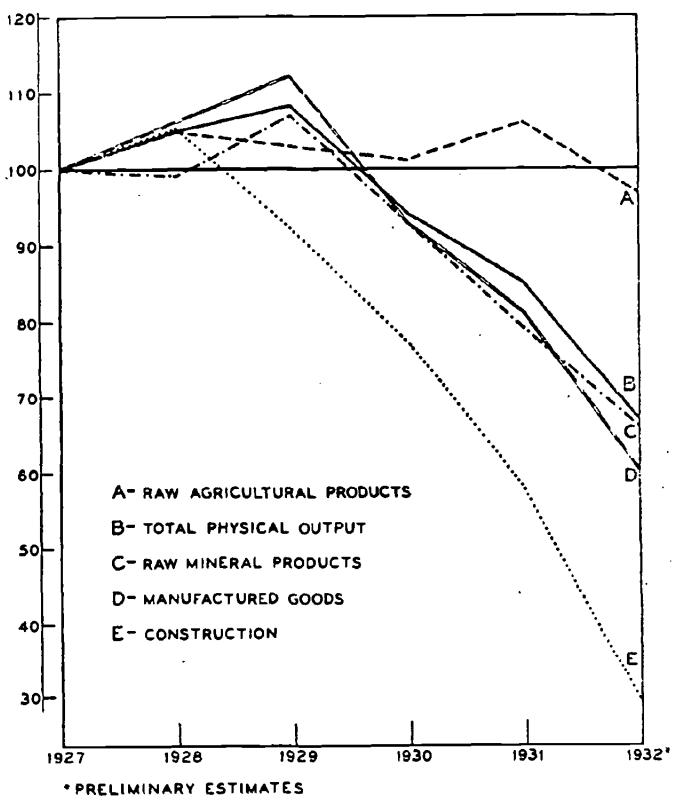
Year	Raw agricultural products	Raw mineral products	All raw materials	Manufactured goods	Construction	Total physical output
1927	100	100	100	100	100	100
1928	105	99	103	106	105	105
1929	103	107	104	112	92	108
1930	101	93	99	93	77	94
1931	106	79	99	81	58	85
1932[b]	97	66	89	60	29	67

a. These index numbers are described in the *Note* on p. 6.
b. Preliminary estimates.

have exports of raw materials.[1] Again, the character of production during the preceding expansion has a bearing on the nature of subsequent movements. This expansion was characterized to an exceptional degree by the production of diversified, highly-fabricated products. During depression there is always a concentration on necessities, a reduction of expenditures on the more elaborately fabricated products which have a ready market during prosperity. This condition might be expected to lead to a greater decline in the output of manufactured goods than in the production of raw materials in general. The production of particular classes of raw materials, notably metals, may decline materially, bur the output of materials entering into the more perishable necessities of life tends to be maintained.

CHART 1

CHANGES IN THE PHYSICAL VOLUME OF PRODUCTION IN THE UNITED STATES, 1927-1932



Probably of major importance is the difference in degree of control exerted over productive processes by producers of manufactured goods and of raw materials, and the difference in the degree to which prices in these two fields, rather than production, feel the impact of depression. In most industrial fields the manufacturer's first reaction to a decline in demand is to reduce output and maintain prices. This is the more readily accomplished since output is controllable, week by week, and since a reduction of output makes possible a corresponding reduction of direct production costs. The raw marerial producer, the agriculturist in particular, is in no such position. Productive commitments are made for a longer period. Again, since farm operating costs are much the same whether acreage be reduced or not, and since reduction of output on one farm will have little effect on the general market situation, it appears, in general, to be to the interest of the individual farmer to sow for maximum aggregate yields, regardless of the state of demand. As a result, the influence of industrial fluctuations on raw material producers is immediately reflected in price changes, rather than in variations in output, while among manufacturers the reverse is true.

The record of price and production changes during the current depression accords with this analysis. As against production declines of 14 and 46 per cent for raw materials and manufactured goods, respectively, price declines from the 1929 peak to 1932 (measured in terms of annual averages) amounted to approximately 43 per cent and 27 per cent for the same two groups. The one group has maintained volume at the expense of price, the other has sacrificed less in per-unit price than it has in volume. One accompaniment of these disparate conditions is serious disturbance of the terms on which goods are interchanged among different producing classes.

CHANGES IN THE OUTPUT OF CAPITAL EQUIPMENT AND CONSUMPTION GOODS AND OF DURABLE AND PERISHABLE GOODS

We shall throw some light on the industrial incidence of the depression by tracing the changes in output among certain other industrial categories. Striking features of the prerecession period were the rapid advances in the output of durable goods and, in particular, of those durable goods which enter into capital equipment.[2] On the one hand, the American consumer was devoting a larger portion of his purchasing power to goods of relatively long life. On the other, conditions in money markets, and the nature of our system for the distribution of the product of industry, were facilitating the production of capital equipment on a relatively large scale. Between 1922 and 1929, when the total volume of production (of finished goods) was increasing by some 37 per cent, the annual output of goods intended for use in capital equipment increased by no less than 70 per cent. Over the same period the production of durable goods of all classes advanced by 59 per cent. Changes between 1927 and 1932 in the production of goods of these two classes, and related categories, are shown in Table 2.

[1] Roughly deflating the value figures in terms of which exports are defined, we may estimate the decline in volume of exports of finished manufactures (including manufactured foodstuffs) between 1929 and 1932 to have amounted to 65 per cent. For crude materials and crude foodstuffs, combined, the decline was approximately 23 per cent.

[2] See pp. 273-86, *Economic Tendencies in the United States*, recently published by the National Bureau of Economic Research with the cooperation of the Committee on Recent Economic Changes.

TABLE 2

CHANGES IN THE VOLUME OF MANUFACTURING PRODUCTION IN THE UNITED STATES, 1927-1932

CAPITAL EQUIPMENT AND CONSUMPTION GOODS, DURABLE AND NON-DURABLE GOODS[a]

Year	Goods entering into Capital Equipment	Consumption Goods	Durable Goods	Semi-Durable Goods	Non-Durable Goods
1927	100	100	100	100	100
1928	111	104	110	101	105
1929	119	111	119	106	111
1930	88	94	85	86	107
1931	63	86	60	85	100
1932[b]	36	69	34	75	89

a. See *Note* on p. 6 for description.
b. Preliminary estimates.

Here again there are notable differences among the groups represented. The check to investment and accompanying retrenchment in expenditures for new capital equipment are reflected in the exceedingly low figures for the production of new capital equipment. In 1932 this was 64 per cent below the 1927 standard, and no less than 70 per cent below that of 1929. The output of goods for human consumption dropped substantially, but by no such extreme amount. The elasticity of demand for durable goods, an elasticity which played its part in the preceding expansion, is shown by a 1932 figure 66 per cent below that of 1927, 71 per cent below that of 1929. Perishable goods, the output of which had not advanced notably during the pre-recession period, were produced in 1932 in volume only 11 per cent below that of 1927, and some 20 per cent below that of 1929. The more sensitive elements in our productive mechanism are found where the less pressing needs of producers and consumers make possible deferment of demand.

CONSTRUCTION DURING THE DEPRESSION

One of the major forces in the post-war industrial expansion was the growth of construction. The accumulated building shortage left by the World War stimulated an exceptionally heavy volume of construction of all sorts, and the lifting force of this activity was felt throughout the industrial system. But here, as in the case of capital equipment and of durable goods in general, demand is elastic. Every rapid advance contains the seeds of potential contraction. Some of the details of the recent contraction are indicated by the figures in Table 3.

Here we have those productive elements which have been most seriously affected by the economic depression. The aggregate value of total construction in 1932 amounted to about one-fifth of the value at the peak of activity, while the volume amounted to approximately one-quarter of the peak volume.[3] The sharpest contraction occurred in residential buildings. Activity in this field in 1932 constituted only 15 per cent of that in 1927, and a still smaller fraction of the peak year volume. Public works, cut to about one-half of the peak volume, stood in the most favorable position among construction activities. But the drop here, deferred until after the 1930 season, was sharp between 1931 and 1932.

[3]Since it is probable that actual construction costs have fallen more than is indicated by the deflating indexes used in deriving the above estimates, it is likely that these figures overstate somewhat the decline in general construction activity.

TABLE 3

ESTIMATED CHANGES IN THE VOLUME OF CONSTRUCTION IN THE UNITED STATES, 1927-1932

A. INDEX NUMBERS OF CONTRACTS AWARDED, 37 STATES,[a] DEFLATED BY INDEX NUMBERS OF CONSTRUCTION COSTS

Year	Total Construction All Types	Residential Buildings	Non-residential Buildings	Public Works and Utilities
1927	100	100	100	100
1928	105	109	102	105
1929	92	74	101	104
1930	77	44	77	119
1931	58	38	53	90
1932[b]	29	15	25	52

B. INDEX NUMBERS OF FLOOR SPACE, CONTRACTS AWARDED, AND OF SHIPMENTS OF BUILDING MATERIALS

Year	*Building Contracts, Floor Space* All Buildings	Residential Buildings	Non-residential Buildings	Shipments of Building Materials
1927	100	100	100	100
1928	114	115	113	105
1929	93	78	114	105
1930	60	46	77	88
1931	43	38	49	60
1932[b]	18	15	23	—

a. Data collected by the F. W. Dodge Corporation. See *Note*, p. 6, for description.
b. Preliminary estimates.

PRODUCTIVITY OF LABOR IN MANUFACTURING INDUSTRIES

The steady advance in the productivity of labor during the decade preceding the recession of 1929 was one of the outstanding features of that period.[4] There is clear evidence that the pace of technical and organizational improvement was speeded up during the years following the World War. A particularly pronounced spurt occurred during and immediately following the depression of 1921. The spur of adversity always stimulates productive efficiency. The social and economic consequences of such advances may be so far-reaching that exceptional interest attaches to the record of changing productivity during the current depression. The records for Census years, through 1931, are fairly complete. The margin of error is greater for the 1932 index, which is based upon less adequate data. But the general trend is clearly indicated by the materials at hand.

[4]Cf. *Economic Tendencies in the United States*, pp. 289-99.

TABLE 4

ESTIMATES OF CHANGES IN THE PRODUCTIVITY OF LABOR, MANUFACTURING INDUSTRIES OF THE UNITED STATES, 1927-1932[a]

(1) Year	(2) Index of Physical Output of Manufactures	(3) Factory Employment	(4) Output per Wage-earner Employed (2)÷(3)	(5) Index of Hours per Wage-earner	(6) Man-hours (3)×(5)	(7) Output per Man-hour (2)÷(6)
1927	100	100	100	100	100	100
1928	106	99	107	101	99	107
1929	112	104	109	101	105	107
1930	93	91	102	92	84	111
1931	81	77	106	89	68	119
1932[b]	60	64	94	78	50	120

a. See *Note*, p. 6, for a description of these index numbers.
b. Preliminary estimates.

Two sets of measurements relating to the productivity of manufacturing industries are summarized in Table 4.

Physical output per wage-earner employed has not, during the depression, been maintained at the level of 1929. The drop was not great up to 1931; 1932 brought a decline to a level 14 per cent below that of 1929. But, as an account of the actual productivity of labor, this story is far from accurate. Probably to a greater degree than in any earlier recession, part-time employment has been resorted to as a means of equalizing burdens and sharing work among wage-earners. From an average slightly greater than 48 hours per week in 1929 the actual working week of wage-earners declined to something in the neighborhood of 37 hours a week in 1932, a drop of approximately 23 per cent. That output per worker carried on payrolls declined only 14 per cent in the face of this shortening of the average working week is remarkable.

A more accurate picture of variations in productivity is secured by taking account of these changes in the length of the working week. Multiplying the index of factory employment by an index of weekly hours worked per wage-earner we secure a series indicating changes in total man-hours expended in manufacturing production. From this, and the index of total physical output, a measure of output per man-hour may be derived. This index, as given in the last column of Table 4, shows a continuous advance in productivity since 1927, except for a pause between 1928 and 1929. The most striking changes have occurred in the last two years. In 1932 output per man-hour in manufacturing plants appears to have been 20 per cent greater than in 1927 and 12 per cent greater than in 1929.[5] With the laying-off of less efficient men, the retirement of less efficient equipment, the closing of less efficient plants, and the concentration of efficient men—working short hours—on the best equipment (including, of course, improved equipment installed since 1929),[6] a notable advance in average productivity has taken place. It may well be that more comprehensive data, when available, will yield lower figures for the recent period, but it is certain that a striking gain will still be shown. The present depression, like those which have preceded it, has brought a tightening of belts and a lessening of waste in individual plants. The most efficient elements of our working force have been concentrated on the most efficient equipment. Productive efficiency has been correspondingly enhanced.

The forces which have contributed in varying degree to the great increase in manufacturing productivity during the last three years may, in the main, be expected to persist. If the volume of manufacturing production were suddenly to be raised some 60 or 70 per cent, to the pre-recession level, it is not likely that productivity per man-hour could be maintained at its 1932 level. Machines and men less efficient than those now in service would be called upon, and average productivity would decline. But with a slow recovery much of the present efficiency would be maintained. Records of manufacturing production reveal no decline of consequence in the productivity of labor at any time within the last 40 years. The increase has been somewhat irregular, but continuous. The gains brought by adversity are maintained in subsequent periods. So we may expect that the problems of occupational adjustment and of distribution which have always arisen out of increasing industrial productivity will remain with us.[7]

[5] The records of hours per week here utilized are based upon compilations of the National Industrial Conference Board. (See note to Table 4, p. 6.) Their general accuracy is confirmed by figures derived from data recently published by the Bureau of Labor Statistics for the months of October and November, 1932.

[6] There is no evidence that the installation of new equipment has been a dominant factor in this advance. Indeed, the decline in the production of new machinery between 1929 and 1931 exceeded the decline in all manufacturing production. The aggregate value of machinery produced in the United States dropped 57 per cent from 1929 to 1931. If these values be roughly deflated by the prices of all metals and metal products, the drop in physical production for this two-year period is about 50 per cent.

[7] These problems are not as acute as might appear from an index of industrial productivity, taken by itself. Such an index never measures the degree to which labor may be displaced within the industries directly concerned, or in all industries. Account must be taken of the state of demand on the one hand, and of the development of subsidiary and service industries on the other, in drawing conclusions as to the consequences of changing industrial productivity.

TABLE 5

CHANGES IN SELLING PRICES AND IN PRODUCTION COSTS, 1927-1931

MANUFACTURING INDUSTRIES OF THE UNITED STATES

(Measurements relate to changes per unit of product)

Year	Average Selling Price	Average Cost of Materials	Average Cost of Fabrication	Average Labor Cost	Average Overhead Costs plus Profits
1927	100	100	100	100	100
1929	98	95	102	93	108
1931	78	72	89	80	95

CHANGING PRICES AND COSTS IN MANUFACTURING INDUSTRIES

The period of economic expansion prior to the current depression was characterized by declining prices of manufactured goods, the result of a considerable drop in material costs and of a much less marked reduction of fabrication costs per unit of goods produced. The latter change, in turn, was the resultant of a substantial drop in labor costs per unit of product and of a slight net advance in overhead costs.[8] The wide fluctuations in output and the advance in industrial productivity during the current depression have been accompanied by notable changes in the selling prices of manufactured goods, and in all elements of production costs. Changes occurring between 1927 and 1931 are defined by the entries in Table 5.[9]

The purchaser of a manufactured product is, in effect, buying a certain quantity of raw materials plus the services of agents of fabrication. These services consist, on the one hand, of the direct labor of wage-earners, and, on the other, of all those elements of management and ownership which supplement labor in manufacturing operations. The index numbers in Table 5, which are based upon the records of the Census of Manufactures, are constructed to measure the changes in the average selling price of manufactured goods and in the costs, per unit of manufactured product, of certain elements of this price.

The bundle of materials and services represented by the final product of manufacture sold in 1931 at an average price 22 per cent lower than in 1927 and 20 per cent lower than in 1929.[10] The two major components of this price differed markedly in degree of decline. Material costs per unit of manufactured goods were 28 per cent lower in 1931 than in 1927, while fabrication costs were but 11 per cent lower. The two elements of fabrication costs, in their turn, differed substantially. In 1931 labor costs per unit of product were some 20 per cent lower than in 1927, while the composite of overhead costs and profits, per unit of product, was but 5 per cent less. In this depression, to a notable degree, the reduction of the fixed elements of manufacturing cost has been difficult to achieve.

The changes occurring in manufacturing costs between 1929 and 1931 were in some respects quite unlike those of the period 1919-21—the last recession of comparable magnitude. The periods are not strictly comparable, it is true, because the phases of the two depressions do not agree. But a comparison of the net changes over these two-year periods is of interest.[11]

	Percentage decline 1919-1921	Percentage decline 1929-1931
Index of prices of all commodities at wholesale	30	23
Average selling prices of manufactured goods	22	20
Average costs of manufacture, per unit of product:		
Materials (including semi-manufactures)	23	24
Fabrication costs	18	13
Labor costs	6	14
Overhead, plus profits	27	12

In these two periods, each of which witnessed a transition from prosperity to depression, average selling prices of manufactured goods declined by approximately the same percentage. The component of selling price representing material costs dropped, similarly, by equal amounts in the two periods. The chief differences between the periods are found in the behavior of fabrication costs and, in particular, in the relative movements of the two elements of fabrication costs. During the earlier recession fabrication costs declined 18 per cent, whereas from 1929 to 1931 the drop amounted to but 13 per cent. The difference is perhaps the more significant in that the recession which initiated the current depression began in the summer of 1929, whereas the peak of production during the first post-war boom was not reached until the early autumn of 1920. Thus 1931 stands two full years removed from the beginning of recession, whereas the entries for 1921 relate to a period but one year later than the beginning of the first post-war decline. Clearly fabrication costs resisted reduction more stubbornly during the current depression than during the earlier decline.

[8] See *Economic Tendencies in the United States*, Chapter VIII.

[9] The measurements for 1931 have been computed from preliminary figures released by the Bureau of the Census. They are subject to correction when final data are available.

For an explanation of the derivation of these measurements see *Economic Tendencies in the United States*, pp. 88-99.

[10] These index numbers of average selling price, derived from Census data of quantities produced and of aggregate values, agree very closely with index numbers derived directly from price quotations. A comparison follows:

Index Numbers of Selling Prices of Manufactured Goods

Year	National Bureau of Economic Research (Derived from Census data)	U. S. Bureau of Labor Statistics (Average of prices of semi-manufactured and manufactured goods)	National Bureau of Economic Research (Derived from price quotations)
1927	100	100	100
1929	98	99	100
1931	78	80	77

[11] The data for 1919-21 relate to 52 manufacturing industries, while those for 1929-31 relate to 102 industries. They are thus not comparable in detail, but both samples may be accepted as representative of manufacturing industries in general.

Passing to the two elements of fabrication costs, we find still more pronounced differences. Labor costs per unit of product declined but 6 per cent between 1919 and 1921. The greater decline in the recent period, 14 per cent, is probably in part due to the time factor previously noted. Labor costs are usually difficult to reduce; an extended spell of liquidation will bring more drastic cuts than will a briefer depression.

All fabrication costs (including profits) other than wages are lumped, in Census records, in a composite here termed overhead costs plus profits. It would be well if this heterogeneous mixture could be broken into its elements, but that is not possible. The movements of this composite during the two periods of depression were unlike the changes in labor costs. A decline of no less than 27 per cent in overhead costs, plus profits, per unit of product, between 1919 and 1921 stands in sharp contrast to a drop of but 12 per cent from 1929 to 1931. It is among the elements of this composite—which includes such items as salaries, rent, interest, taxes and profits—that the resistance to liquidation has been strongest during the current depression.

It is not within the scope of this brief paper to explore the reasons for these differences. The greater relative importance in the recent period of overhead expenses proper[12] is undoubtedly one factor. More machinery was in use per employee in 1929 than in 1919. Furthermore, all fixed elements in cost were more strongly entrenched in 1929, after eight years of relative price stability, than they were immediately after the sharp price changes of the war years, and thus offered greater resistance to reduction. In addition, the greater magnitude of the decline in volume of manufacturing production after 1929 rendered more difficult the downward adjustment of fixed costs, on a per unit of product basis. Finally, the price drop which began in 1929 was much more gradual than that of 1920, and business men were slower to accept the idea that the pre-recession price level would probably not be restored. So long as men thought of the 1929 price level as "normal" they were reluctant to reduce their fixed charges. Not until 1931 was this conception generally abandoned. Although comprehensive data are not available for the period since 1931, there is evidence that the reduction of fixed elements of cost has been speeded up during the last eighteen months.

A drastic decline in the total volume of physical goods produced, a sharp increase in average industrial productivity per man-hour as less efficient plants and machines were stopped, a drop in the selling prices of manufactured goods which lags behind the general fall of wholesale prices, a reduction of labor costs per unit of manufactured product and a decline in the costs of the services of capital and management in manufacturing industries—these are notable features of the period of business depression which dates from the summer of 1929. They are not features peculiar to this depression, for, in differing degrees, these changes are characteristic of all periods of business contraction. The recent decline as reflected in the records of physical production, industrial productivity and costs, has distinctive characteristics in the magnitude of the changes which have occurred, and in certain of the interrelations among the movements of different economic elements. But these and other features of the current depression may be most readily understood when this depression is viewed in perspective, as the latest of many similar interruptions to the course of economic development.

[12] In 1919 overhead expenses plus profits constituted 18 per cent of the total value of product. In 1929 they made up 25 per cent of the same total.

NOTES ON SOURCES OF DATA AND CONSTRUCTION OF INDEXES

TABLE 1—The index of agricultural production is that of the Bureau of Agricultural Economics. It excludes goods fed to livestock or used for seed. The monthly index numbers of mineral production of the Federal Reserve Board have been averaged to obtain the annual index shown. The index of manufacturing production has been constructed by the National Bureau from data collected by the Census of Manufactures, with interpolations for non-censal years. (This index is based on data relating to from 102 to 105 industries, as compared with the index published in *Economic Tendencies*, p. 290, which included 62 industries.) The F. W. Dodge Corporation figures for value of contracts awarded have been deflated by index numbers of construction costs to obtain measures of the physical volume of construction. In combining agricultural and mineral production into an index of the output of raw materials the values of output were used as weights. "Value added" by manufactures and construction were used as weights to obtain the index of total physical output.

TABLE 2—The index numbers in this table were constructed by the method used in computing the index of total manufacturing production. The indexes include partially processed goods as well as finished manufactures, and are therefore not strictly comparable with the indexes based only on finished goods that appear in *Economic Tendencies*. The indexes in Table 2 do not include construction.

TABLE 3—The F. W. Dodge Corporation figures on value of contracts awarded form the bases of these index numbers. The values were deflated by appropriate indexes of costs constructed by the American Appraisal Company, the *Engineering News Record*, the Associated General Contractors of America, the Aberthaw Construction Company, and A. S. Richey. (These index numbers appear in the *Survey of Current Business*.) The figures for floor space are also those of the F. W. Dodge Corporation. Data on shipments of building materials were compiled by the Associated General Contractors of America; this index was discontinued in 1932.

TABLE 4—These index numbers were constructed by the National Bureau from Census data, with interpolations based upon the Federal Reserve Board index numbers of factory payrolls and employment. The index of hours per wage-earner has been computed from data collected by the National Industrial Conference Board. In an effort to make the index of hours comparable with other indexes presented in this table, certain industries have been excluded. These index numbers differ somewhat from those constructed by David Weintraub (*Journal of the American Statistical Association*, December, 1932, pp. 386-7) because, for the present purpose, use was made of data recently released by the Census of Manufactures.

THOMAS S. ADAMS

The National Bureau of Economic Research regrets deeply to record the death of Professor Thomas S. Adams, two days after his reelection to its Board of Directors. Professor Adams was one of the group of men who organized the National Bureau in 1919 and 1920. He has given continuous service as a director and acted as President in 1928 and 1929, then for two years as Chairman of the Board.

NEW SUBSCRIPTIONS

A subscription of $25 or more at this time entitles the maker to advance copies of Dr. Simon Kuznet's *Seasonal Variations in Industry and Trade,* described on the next page, and of all other National Bureau publications (including the *Bulletins*) issued during the next twelve months. A record number of publications is in prospect.

TO OUR SUBSCRIBERS

THE BULLETIN

Dr. Mills' article in this *Bulletin* is the second of a projected series of six dealing with different aspects of the depression. In the first, issued on January 27, Dr. Ralph C. Epstein described the course of Corporation Profits in Prosperity and Depression. In the succeeding numbers, which you will receive at regular intervals during the rest of the year, the tremendous changes in employment, wages, prices and income during recent years will be discussed. The articles will be written by members of our research staff now conducting major investigations in these fields.

Additional copies of *Bulletins* 43 and 44 are available to subscribers upon request.

ANNUAL REPORT

On February 6 our Directors of Research, Edwin F. Gay and Wesley C. Mitchell, presented their report for 1932 at the annual meeting of the Board of Directors. As they state that certain major studies are rapidly approaching completion, we hope that we may reward the subscribers who have stood by us through these lean years by sending them a number of publications during the coming months.

Dr. Kuznets' volume is again delayed but we hope to have it in your hands by the first of March.

Copies of the Annual Report will be ready for distribution before the end of February. Subscribers will be sent their copies as soon as possible, and other people who are interested in the progress of National Bureau investigations may obtain copies upon request. Not only is the work of 1932 reviewed but also the continuing and new projects are described and the status of each given.

The Directors have approved the publication of Dr. J. Maurice Clark's *Strategic Factors in Business Cycles.* This was a report to the Committee on Recent Economic Changes which it requested the National Bureau to publish.

Other manuscripts at various stages on the way to publication treat of such subjects as production trends, demand and supply, corporation profits, business cycles, public works, mechanization, labor and estimates of national income in various countries.

ECONOMIC TENDENCIES IN THE UNITED STATES

Demand for Dr. Mills' volume continues. As yet it has not been reviewed in scientific journals but we may quote from some other comments:

Science News Letter: "As an essential and fundamentally important economic history of the United States from the turn of the century until the beginning of the depression, this volume, replete with figures and graphs, will go far toward answering many questions which are raised by the present furor which surrounds the word 'technocracy'."

The Review of Reviews and World's Work, under "Recommended Reading," states that it prizes the volume highly, adding: "Where were we headed, in the boom period from 1922 to 1929? The National Bureau of Economic Research has sought out the facts and the conclusions; and it brought to the task a rare combination of vision and experience."

Barron's: "Though not intended to be an explanation of the current depression, the analysis throws light on many of the conditions out of which the depression grew. The new measurements and factual material presented in this volume make it invaluable as a reference work; and their interpretation should prove stimulating to all who are interested in the course of recent economic events."

Seasonal Variations in Industry and Trade

By SIMON KUZNETS

450 pp., 51 tables, 51 charts—$4.00

FROM THE FOREWORD BY WESLEY C. MITCHELL, DIRECTOR OF RESEARCH

Only sporadically have investigators treated secular or seasonal changes as problems possessing interest in their own right. The literature upon these topics is scanty in comparison with the voluminous publications upon business cycles. To random perturbations scarcely any attention has been given except as the most troublesome of all side-issues in cyclical studies.

The time is ripe for more systematic and more thorough work. To promote that understanding of economic fluctuations which the world so sorely needs, the intensive study of business cycles must be supplemented by equally intensive work upon secular trends and seasonal variations. That much seems clear. It is not sure that systematic study of random perturbations will yield valuable results; but the prospects are good enough to justify experiments. Efforts should be made also to determine whether other types of change, in addition to the four familiar types, must be recognized. Only by learning all we can about the several components of economic changes shall we learn all we can about the total situation. But concentration upon one type of change should always include consideration of the way in which the type under scrutiny is related to the others.

For several years the National Bureau of Economic Research has been working upon business cycles. One of its research associates has been studying secular movements. An extension of this program to seasonal variations was a natural development, since the cyclical work required measurements of the seasonal components in some hundreds of statistical series.

Dr. Kuznets was peculiarly fitted by his earlier investigations to direct the seasonal studies. His first book, *Cyclical Fluctuations, Retail and Wholesale Trade,* published in 1926, and the leading part which he had taken in the National Bureau's business-cycle program gave him intimate familiarity with the cyclical component in economic changes. His second book, *Secular Movements in Production and Prices,* published in 1930, made him familiar with another component. With seasonal variations themselves he had an intimate acquaintance gained in the process of eliminating them from some hundreds of time series.

In preparing the present report Dr. Kuznets has supplemented the seasonal by-products of the cyclical work by making many additional measurements. The result is a systematic account, unrivalled in scope and vividness, of the rôle played by seasonal variations in production and prices. The way in which these changes dovetail into one another, the way in which they affect and are affected by changes in industrial equipment and in stocks of commodities; the alterations to which seasonal variations are subject from year to year and over longer periods, and the relations of seasonal to cyclical and secular movements are all set forth. I am sure that economists and statisticians will find the work enlightening; I think that business men will find it of practical value.

CONTENTS

Part I consists of two chapters which discuss The Economic Problems of Seasonal Variations and Their Statistical Measurement.

Part II, Average Seasonal Variations in Selected Groups in Industry and Trade, includes chapters on Food Products: Wheat, Wheat Flour and Their Products, Dairy Products and Fruits and Vegetables; Cotton and Cotton Textiles; Automobiles, Gasoline and Rubber; Construction and Construction Materials; and Economic Elements other than Production and Trade; Prices, Volume of Business Activity, Credit, Currency and Speculation, Disbursement and Flow of Incomes from Property, Employment and Payrolls.

Part III discusses the Variability of Seasonal Movements: Regional Aspects, Similarities and Differences among Industries, and Temporal Changes in Pattern and Amplitude.

The Concluding Notes consider the Burden of Seasonal Variations, the relation of seasonal variations to cyclical fluctuations and the practical implications of the study.

In the Appendices are presented the seasonal indexes for about 700 series included in the study as well as notes on their sources and scope; also bibliographical references to additional seasonal indexes.

NATIONAL BUREAU OF ECONOMIC RESEARCH
51 Madison Avenue, New York, N. Y.

Gentlemen:

Kindly send me, post-paid, *Seasonal Variations in Industry and Trade,* by Simon Kuznets, for which I enclose a check for $4.00.

Name .....

Address .....