among commodities in major groups, such as those listed in Tables 5 and 6, particularly when a pre-war base is used in measuring changes. Thus, in constructing the index numbers given in Table 5, we have omitted automobiles from the three groups, manufactured goods, consumers' goods and non-foods. It is difficult to measure with any high degree of accuracy changes in the prices of automobiles over such a period as that from 1913 to 1930. Important quality changes have occurred, on the one hand. On the other, there have been striking shifts in the proportion of cars of different price classes that have been marketed. Taking the figures as they stand, they show a material reduction (amounting to about 25 per cent) in the average price of automobiles between 1913 and 1929. The omission of this commodity tends to make the general index higher, with reference to the 1913 base, and to increase the index numbers of prices of manufactured goods, consumers' goods, non-foods, and all other groups into which automobiles would go.

There is another important reason for omitting automobiles from the present index numbers. This is the thoroughly exceptional character of automobile price movements since 1913. No other commodity of like importance declined 25 per cent in average price between 1913 and 1929, when the general price level was advancing by some 40 per cent or more. The inclusion with heavy weights of this exceptional commodity distorts the index number, particularly the index number of a sub-group in which automobiles would be of predominant importance. The prices of other manufactured goods and of other consumers' goods, did not follow the course of automobile prices. It is, of course, of great economic significance that automobile prices were reduced so drastically, but it does not seem proper to allow such an exceptional movement to dominate the various group index numbers computed in the present investigation. Automobiles, then, are to be considered a class apart, and do not enter into the present analysis.

The inclusion of a considerable number of finished steel products has tended to raise the index numbers of the groups into which these fall. Although these commodities are marked by fairly fixed prices, it seems desirable that they should be included as representative of the not unimportant group of tools and hardware.

Three Research Associates Join Staff; New Competition Opened

Three research associates selected in a competition held last spring have joined the staff on the National Bureau. They are: Dr. Dorothy C. Bacon, of Smith College, who is working on a study of the relation of common stock prices to earnings per share, Mr. Arthur F. Burns, of Rutgers University, who is working on a study of production trends, and Dr. Arthur D. Gayer, formerly of Lincoln College, Oxford University, who is working on a study of public works and unemployment.

In Dr. Bacon's study the twenty corporations which make up the Index of Industrial Stock Prices of the Harvard Economic Service will first be considered, the period covered being 1902-1930; later many additional corporations will be considered, some for shorter periods.

Mr. Burns plans to study secular changes in general production in the United States, beginning with 1870 where possible, with the object of developing a theory of secular change in general production.

Dr. Gayer plans to supplement Dr. Leo Wolman's report on *Planning and Control of Public Works* with additional material and to analyze the working of the public works plan during the depression which began last year.

The Directors of Research announce that three research associates will be appointed for the academic year 1931-32. Applications should be submitted not later than February 1, 1931.

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To Find Facts Divested of Propaganda

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Some Aspects of the Price Recession of 1929-1930

By FREDERICK C. MILLS

THE current recession of commodity prices in the United States may be dated from July, 1929. Between that month and October, 1930, average prices at wholesale dropped approximately 16 per cent. During this drop there have developed striking inequalities among different classes of commodities, in the degree to which they have reflected the change in the general level of prices. These inequalities have a profound bearing on the immediate economic situation, and on the probable course and character of economic recovery.

While there is as yet no evidence that the bottom of the decline has been reached, the rate of recession has been retarded in recent months. Taking the situation as it stands we may review some general aspects of the current drop in prices and may investigate certain of the shifts in purchasing power that inequalities of recent price movements have entailed.

Comparison of Three Periods of Recession

The price declines occurring in 1907-08, 1920-21 and 1929-30 have been the most severe recorded in this country during the last thirty years. These declines are compared in the following table.

TABLE 1

Comparison of Price Changes during Three Periods of Recession, with Respect to Degree, Duration and Intensity of Decline[1]

Period	Degree of decline (per cent)	Duration of decline (months)	Intensity of decline (average monthly rate of decline) (per cent)
1907-08	8.2	4	2.1
1920-21	45.3	20	3.0
1929-30	15.7	15 (to October)	1.1

1—The measurements in this table are based upon the wholesale price index numbers of the United States Bureau of Labor Statistics. The figure for October, 1930, however, has been secured by splicing an average of weekly index numbers for that month (the index of the National Fertilizer Association) to the September index of the Bureau of Labor Statistics. This is subject to some modification when the October index of the Bureau becomes available.

The measurements given relate to the decline from the high point preceding recession to the low point preceding the following revival, for each of the periods 1907-08 and 1920-21. The figures for the current recession relate to the period July, 1929—October, 1930. The level of prices in September, 1928, was slightly higher than in July, 1929, but it seems proper to date the current recession from the latter month.

In computing the rate of decline, the recession has been looked upon as a cumulative process. The average monthly rate is therefore a compound interest rate.

The degree of price decline up to October, 1930, has exceeded materially the drop occurring in 1907-08, but falls far short of the great drop of 1920-21. With respect to duration, also, the current price recession stands between the two earlier drops. It exceeds by eleven months the sharp drop that accompanied the panic of 1907, but thus far is five months shorter than the decline of 1920-21. Most intense of the three price declines, as well as the longest, was the drop that followed the brief post-war boom. For twenty months the monthly rate of fall was 3.0 per cent. In 1907-08 the monthly decline averaged 2.1 per cent. The current drop has been least severe, in respect to this characteristic; the monthly rate of fall has averaged 1.1 per cent.

These changes appear in greater detail in Figure I, which shows the movements of the Bureau of Labor Statistics index numbers of wholesale prices during each of these periods. In each case the index numbers are expressed as relatives of the value prevailing ten months before the recession began.

There are marked differences between these periods, with respect to the behavior of general prices. Prior to

FIGURE I

MOVEMENTS OF INDEX NUMBERS OF WHOLESALE PRICES DURING THREE PERIODS OF RECESSION

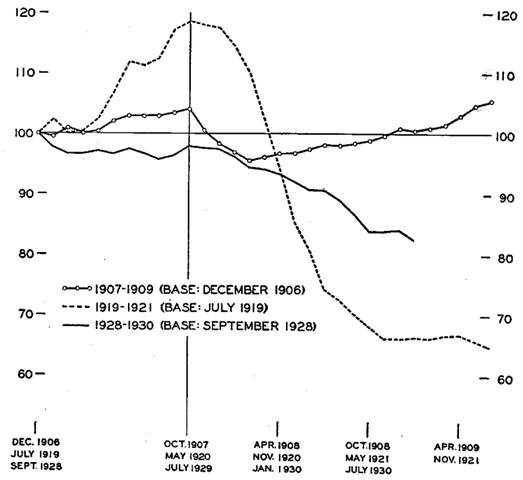


TABLE 2

Changes in Purchasing Power, per unit, between July, 1929, and September, 1930 Selected Commodity Groups[3]

Number of Price Quotations	COMMODITY GROUP	Degree of change in purchasing power (per cent)	Number of Price Quotations	COMMODITY GROUP	Degree of change in purchasing power (per cent)
142	Raw materials	— 7.2	349	Manufactured goods	+ 3.1
293	Producers' goods	— 1.8	200	Consumers' goods	+ 3.0
167	Foods	— 4.0	324	Non-foods	+ 2.1

3—These measurements are based upon index numbers constructed by the National Bureau of Economic Research, from price quotations compiled by the United States Bureau of Labor Statistics. The index numbers are unweighted geometric means of relative prices.

the beginning of the actual decline of 1907-08 the price level moved upward slowly; prior to the recession of 1920-21 the price level rose sharply. Before the beginning of the current recession the price level sagged slightly. It is noteworthy that 15 months after the beginning of the decline the price level was moving steadily upward in 1908, was in 1921 practically constant at a point very close to the ultimate low level, and was in 1930 receding slightly after two months of approximate stability.

We have a picture here of a short, sharp liquidation in the commodity markets in 1907-08, a protracted and violent liquidation in 1920-21 and, to date, a process of liquidation which has been less intense, in respect to rate of decline, than either of the other two, and which falls between them in duration and in degree of recession.

Current Price Inequalities

It is not movements of the general level of prices but changes in the prices of individual commodities and, more particularly, the inequalities of price changes which follow in the wake of such general movements that affect the business world directly. A commodity that rises in price less rapidly than the general average during a period of rising prices or falls more rapidly during a period of declining prices loses in purchasing power, per unit, and unless the loss is compensated by increases in the number of units produced, the economic group engaged in producing and selling that commodity will suffer a loss of aggregate purchasing power. The stream of other goods flowing to such producers in exchange for their wares will decline in volume. The reverse is true of a commodity that rises in price more rapidly than the general average, during a period of price advance, or falls in price less rapidly during a period of price decline. It is through such changes in aggregate purchasing power that the economic center of gravity shifts from time to time, as economic power passes from group to group. Per unit purchasing power is, of course, just one element in the aggregate; changes in volume may play an even more important part in the shifts of economic power. But during periods of rapid price movement changes in the price factor may dominate.

In tracing changes in purchasing power[2] during the present recession of prices we may first take as the standard of reference the situation prevailing at the peak of prices in July, 1929. The figures in Table 2 indicate the magnitude of certain of the changes in purchasing power, per unit, that occurred during the fourteen months between July, 1929, and September, 1930.

The current price recession has involved a loss of 7.2 per cent in the average real value, per unit, of raw materials. The real value (i.e., the purchasing power in terms of goods in general, at wholesale) of manufactured goods has increased by 3.1 per cent.[4] Producers' goods (i.e., raw materials or other goods which are intended for use in the construction of capital equipment, or which must undergo further changes in form before being ready for consumption) have been somewhat cheapened, while goods in shape for consumption have advanced in real value. Foods, finally, have lost in purchasing power by 4.0 per cent per unit, while non-foods have gained 2.1 per cent in real value per unit. Liquidation in wholesale markets, it is clear, has been most severe for raw materials, for producers' goods and for foods. Sellers of these commodities have suffered while buyers have gained, in so far as the price factor is concerned.

Recent Changes among Producers' and Consumers' Goods

These broad categories conceal important changes among the prices of subordinate commodity groups. The classification relating to producers' goods and consumers' goods, which is of major economic significance, may be investigated further.

Although producers' goods as a general class have suffered a loss in real value, certain commodities in this group have gained in purchasing power during the current recession. Producers' goods destined for use in the construction of capital equipment gained 3.8 per cent in purchasing power. (The classes referred to in this and other statements are not necessarily mutually exclusive.) Liquidation has been severe among raw producers' goods, among producers' goods destined for human consumption[5] and in the sub-group of the latter class which includes foods subject to further processing. Among goods in shape for consumption, which as a class gained in real value, raw materials declined, while processed goods advanced 3.9 per cent in purchasing power during the fourteen-month period.

A suggestive comparison may be drawn between price changes of goods bought by manufacturers for further processing, but intended for ultimate consumption, and price changes among fabricated goods in shape for consumption. There is not exact identity among the goods in these two classes, but the two groups are representative of commodities at successive stages of fabrication and distribution. In the first stage, as represented by prices paid by manufacturers for goods intended for consumption, after fabrication, there has been a sharp decline in prices and in real values—a decline of 8.5 per cent in purchasing power in fourteen months. Commodities representing the final stage—processed consumers' goods—have dropped somewhat in price, but since this drop has been less than the decline in general prices, they have gained 3.9 per cent in real value during the same period.

Among the 133 commodities intended for ultimate consumption but still in the producers' goods stage, 54 are foods and 79 are non-foods. The former dropped 10.7 per cent in purchasing power during the present price decline, the latter 6.8 per cent. Of the 166 processed consumers' goods, 86 are foods, and 80 non-foods. The food group gained slightly in real value (0.9 per cent) during the recent drop, while the non-food group advanced in real value, or in real cost,[6] per unit by 7.3 per cent. The commodities in this group, processed non-foods in shape for use by the final consumer, have been most inflexible in price during the current recession. They have failed to reflect the general decline in commodity prices and, accordingly, their value, in terms of other goods, has increased substantially.

Price Obstructions to the Flow of Goods

The margin which has thus developed during a period of only fourteen months between the prices at which goods intended for ultimate consumption are bought by manufacturers for fabrication and the prices at which manufactured goods are bought by merchants for sale to final consumers does not necessarily represent profits to fabricators. Volume of output has declined, various elements of fabricating cost and of overhead cost have advanced (in terms of constant dollars), partly as a result of the decline in volume, partly because of inherent inflexibility. The situation illustrates perfectly the log-jam that develops during such recessions. The drop in the prices of the goods bought by producers for fabrication lessens the income and curtails the purchasing power of the sellers of these goods. The drop in the incomes of final consumers, and the failure of the prices of the goods bought by such consumers to decline correspondingly, check the free flow of goods to ultimate consumers. The disparity between buying prices and selling prices of manufacturers, a disparity which might be interpreted as a condition conducive to high profits, is in part due to the time lag between the purchase of materials for production and the sale of final product; in part it reflects the difficulty of reducing selling prices when volume of sales is declining and when important elements of cost resist liquidation. The jam may be broken by the gradual re-establishment of earlier price relations, or recovery may be effected through the gradual adaptation to new conditions of the different economic elements involved. Until readjustment of either type takes place economic strain and stress persist, and the free flow of goods is impeded.

Price Changes and Pre-War Purchasing Power

The changes discussed above have been those which occurred during the brief period between July, 1929, and September, 1930. The situation prevailing at the peak of prices preceding recession is in some respects

2—Degree of change in the purchasing power of commodities in a given group is determined by dividing the index of price changes in that group by an index of the change during the same period in the level of wholesale prices.

4—The index numbers of the prices of raw, semi-finished and finished goods constructed by the U.S. Bureau of Labor Statistics represent a somewhat different scheme of classification and different weighting methods. There are also some differences in the lists of commodities included. Automobiles have been excluded from the National Bureau's index numbers, while a number of the commodities classed as "unweighted" by the Bureau of Labor Statistics, and not included in its index, have been included. The index numbers of the Bureau of Labor Statistics show movements in the same direction, but differing in degree from the above results. For raw materials they indicate a decline of 3.6 per cent in real value; for semi-finished goods, a loss of 7.2 per cent; for finished goods, a gain of 3.3 per cent.

TABLE 3

Changes in Purchasing Power, per unit, between July, 1929, and September, 1930, of Different Classes of Producers' and Consumers' Goods

Number of Price Quotations	PRODUCERS' GOODS	Degree of change in purchasing power (per cent)	Number of Price Quotations	CONSUMERS' GOODS	Degree of change in purchasing power (per cent)
293	All producers' goods	— 1.8	200	All consumers' goods	+ 3.0
108	Raw	— 8.9	34	Raw	— 1.8
185	Processed	+ 2.2	166	Processed	+ 3.9
133	Destined for human consumption	— 8.5			
160	Destined for capital equipment	+ 3.8			
133	Producers' goods destined for human consumption	— 8.5	166	Consumers' goods, processed	+ 3.9
54	Foods	— 10.7	86	Foods	+ 0.9
79	Non-foods	— 6.8	80	Non-foods	+ 7.3

5—These are goods such as wheat which, after undergoing a change in form, will be consumers' goods.

6—This is, of course, real cost to merchants purchasing goods for sale to consumers. The term "real cost" means cost in terms of dollars of constant purchasing power in wholesale markets, or in terms of commodities.

an unsatisfactory standard of reference. What has happened during the present and earlier recessions to the relations between major commodity groups which prevailed before the War? The rather drastic movements of the last fifteen months may represent a return to earlier and more stable conditions, rather than a departure from relations which might be considered normal. If so, our interpretation of recent movements, and our opinion as to the probable effect of these movements upon general economic conditions will be altered.

We may first secure a general view of the situation which prevailed before the current price recession set in, and of the conditions existing in recent months, with reference to a pre-war standard.

TABLE 4

Effects of the Current Recession on Prices and Related Elements, with Reference to a Pre-War Standard

Economic Element[7]	1913	July 1929	Sept. 1930
Wholesale price level	100	140	121
Cost of living	100	172	163
Retail food prices	100	158	146
Farm prices	100	140	111
Per capita earnings, manufacturing labor	100	228	211

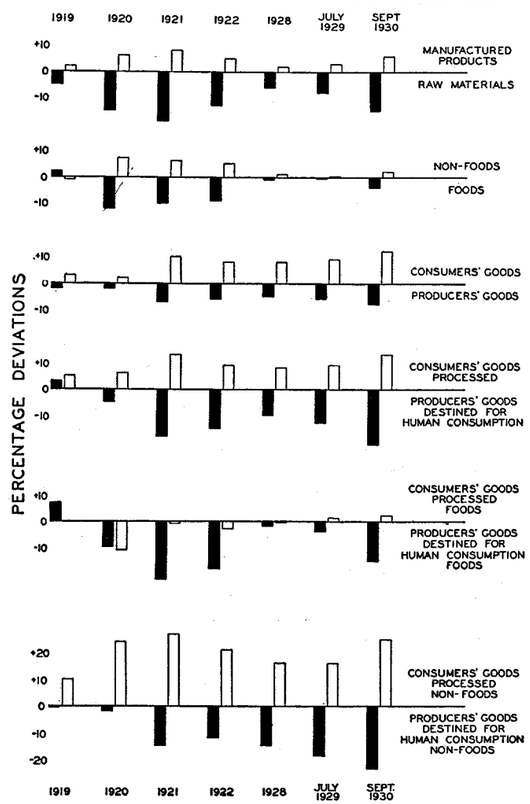
[7]—The index of wholesale prices is that of the Bureau of Labor Statistics, shifted to the 1913 base. The index of cost of living has been secured by splicing the monthly index of the National Industrial Conference Board to the semi-annual index of the U. S. Bureau of Labor Statistics. Retail food prices are also from the Bureau of Labor Statistics, being an average of the retail prices of 42 commodities on the fifteenth of the month, weighted according to the consumption of the average family. The index of farm prices is that compiled by the U. S. Department of Agriculture from the prices received by farmers for their crops and animal products. The index of per capita earnings, manufacturing labor, has been secured by dividing the Federal Reserve Board's Index of Factory Payrolls by their comparable Index of Employment. The resulting index of per capita earnings has been spliced to Douglas' index of average annual earnings of manufacturing wage-earners.

The prices received by farmers dropped severely in the current recession, standing in September only 11 per cent above the 1913 level. (By October they had fallen to 6 per cent above the 1913 figure.) General wholesale prices, which stood in July at the same level as farm prices (40 per cent above the 1913 average), were in September 21 per cent above the 1913 standard. The elements in living costs stood well above these levels—63 per cent above for the general average, 46 per cent above for food prices at retail. In comparison with these we have an index of the average earnings of one important group of income recipients — manufacturing labor. Per capita earnings for this group were in July, 1929, approximately 128 per cent above the 1913 level, and in September, 1930, 111 per cent above the same base.

In some respects the current recession has tended to restore the 1913 situation. Farm prices and the general average of wholesale prices stand closer to the earlier level than at any time since early in 1916. But living costs remain on an entirely different level, and the earnings of factory labor stand on a new plane. Unless further and radical price readjustment takes place, the economic system will be called upon to make new adaptations to changed price relations. Some light on the nature of these changes, and their relation to earlier shifts, is given by the entries in Table 5 defining the changes in the per unit purchasing power of commodities in certain major groups between 1913 and selected recent dates. These index numbers are shown graphically in Figure II.

FIGURE II

GRAPHIC REPRESENTATION OF CHANGES IN THE REAL VALUE, PER UNIT, OF COMMODITIES IN SELECTED GROUPS - 1913 TO SEPTEMBER 1930



(In the above chart changes are measured as percentage deviations from 1913 parity. "Real Value" means purchasing power, or command over commodities in general, at wholesale.

Heavy bars have been used for commodity groups which in September, 1930, were below 1913 parity in purchasing power per unit, while open columns have been used for commodity groups which in that month were above 1913 parity. Although there was a reversal of positions among certain groups in earlier years, the heavy and the open columns have been used throughout to represent the same groups as in September, 1930.)

The shifts attendant upon the sweeping fluctuations of the price level during 1920 and 1921 were similar to those which have occurred during the present recession. In 1921 raw materials were worth, on the average, 19

TABLE 5

Changes in Purchasing Power, per unit, between 1913 *and September,* 1930 *Selected Commodity Groups*

Commodity Group	N[8]	Index Numbers of Purchasing Power 1913	1919	1920	1921	1922	1928	July 1929	Sept. 1930
Raw materials	106	100	95	85	81	87	93	92	85
Manufactured goods	298	100	102	106	108	105	102	103	106
Producers' goods	232	100	98	98	93	94	95	94	93
Consumers' goods	173	100	103	102	110	108	107	108	111
Foods	136	100	102	88	90	91	99	99	95
Non-foods	268	100	99	107	106	105	101	101	103

[8]—The numbers given relate to the years preceding 1928. For the later period the numbers of commodities entering into the index numbers for the different groups are as follows:

	N
Raw Materials	142
Manufactured goods	349
Producers' goods	293
Consumers' goods	200
Foods	167
Non-foods	324

per cent less, per unit, than in 1913, while manufactured goods were worth 8 per cent more in terms of command over commodities in general. The average unit of consumers' goods commanded 10 per cent more of commodities in general than in 1913, while purchasers of goods for use in capital equipment, or for fabrication, had to give 7 per cent less, in terms of commodities, than in 1913. Foods at wholesale lost 10 per cent of their real value between 1913 and 1921, while non-foods gained 6 per cent.

By 1928 foods and non-foods had been restored to their approximate pre-war parity, but it is of the highest significance that raw materials and producers' goods remained under-valued, in terms of pre-war relations, while manufactured goods and consumers' goods remained over-valued, in relation to the same standard. The current recession has involved only a slight change in the relations prevailing between producers' and consumers' goods in 1929, but these relations were far from pre-war parity. The post-war economic advance was made under conditions in which goods ready for consumption were worth from 7 to 10 per cent more, per unit, in terms of commodities, than in 1913, while producers' goods as a broad class were worth from 5 to 7 per cent less.[9] The flow of goods to consumers and the general state of prosperity of the post-war period do not seem to have required a cheapening of consumption goods, in relation to other commodities.[10] The free movement of goods under these conditions has been maintained through the maintenance of the monetary purchasing power of important consuming classes at higher levels than in pre-war days. The incomes of industrial wage-earners, of important groups of salaried employees and of those drawing dividends from corporate undertakings have been substantially higher than in the years immediately preceding the war.

Raw materials, which have remained consistently low in value since 1921, dropped further down the scale during the recent recession.

The index numbers in the following table permit a more detailed investigation of the price movements of producers' and of consumers' goods.

TABLE 6

Changes in Purchasing Power, per unit, between 1913 *and September,* 1930, *of Different Classes of Producers' and Consumers' Goods*

Commodity Group	N[11]	Index Numbers of Purchasing Power. 1913	1919	1920	1921	1922	1928	July 1929	Sept. 1930
Producers' goods	232	100	98	98	93	94	95	94	93
Raw	84	100	96	87	77	83	90	87	79
Processed	148	100	98	105	103	101	98	99	101
For human consumption	120	100	103	95	82	85	91	87	80
For capital equipment	112	100	92	102	106	105	101	103	107
Consumers' goods	173	100	103	102	110	108	107	108	111
Raw	22	100	91	79	97	104	109	110	108
Processed	151	100	105	106	113	109	107	108	112

[11]—The numbers given relate to the years prior to 1928. For the later years the numbers are as follows:

	N
Producers goods	293
Raw	108
Processed	185
Producers' goods for human consumption	133
" " " capital equipment	160
Consumers' goods	200
Raw	34
Processed	166

Among producers' goods it is raw materials which have kept down the purchasing power index. In 1921 these materials were worth 23 per cent less, in terms of commodities, than in 1913. Part of this loss was regained, but in 1928 such goods remained 10 per cent below their pre-war real value. Such materials were hard hit by the current recession, and in September, 1930, stood 21 per cent below their 1913 parity with other goods.

Dividing producers' goods again into those which are intended for ultimate human consumption and those which are intended for use in the construction of capital equipment, it is seen to be the former which lost in real value in the recession of 1920-21, which remained below their pre-war value standard thereafter, and which declined still further during the current recession. This class of goods possessed in September, 1930, a real value per unit, 20 per cent below that of 1913, a figure which is lower than the average for 1921.

Consumers' goods, both raw and processed, have remained high in value since 1921. During the current recession processed consumers' goods have gained in value, while raw materials ready for consumption have declined somewhat in value.

It is suggestive to compare the changes in value among producers' goods destined for human consumption and among processed consumers' goods, for we have represented here two distinct stages along the path followed

[9]—It might be suspected that these results reflect a temporary condition prevailing in the base year, 1913. The use of an average of the years 1904, 1909 and 1914 as base yields the same general results.

[10]—Automobiles, which are not here included, constitute an important exception to this general statement. See the note at the end of this paper.

by goods in the course of their fabrication and distribution.[12] The index numbers are brought together below. They are shown graphically in Figure II.

	Index Numbers of Purchasing Power.							
N[13]	1913	1919	1920	1921	1922	1928	July 1929	Sept. 1930
Producers' goods destined for human consumption 120	100	103	95	82	85	91	87	80
Consumers' goods processed 151	100	105	106	113	109	107	108	112

13—The numbers given relate to the years prior to 1928. For the later years 133 series were used for producers' goods destined for human consumption, and 166 for consumers' goods.

The recession of 1920-21 brought a sharp drop in the real value of goods awaiting fabrication, and intended for human consumption. At the same time there occurred a material advance in the real values of processed consumers' goods. After this recession there was no restoration of earlier price relations. Processed consumers' goods remained on a level of real values permanently higher than in 1913. Sellers of producers' goods intended for human consumption (primarily, raw farm products) suffered an enduring loss in economic power, while the purchasing power of consumers in general was maintained through higher industrial wages and higher disbursements to certain other groups of income recipients. The economic system moved forward under a materially changed set of price relations. The current recession has accentuated the disparity between these two commodity groups. Price declines among goods purchased by manufacturers for fabrication and sale to consumers have not been accompanied by corresponding declines in the prices of goods in shape for final consumption. Some of the reasons for the disparity have been suggested above, and the significance of such a widening margin has been commented upon.

We may throw further light on these changes by subdividing each of the above groups into foods and non-foods as in the following table.

	Index Numbers of Purchasing Power.							
N[14]	1913	1919	1920	1921	1922	1928	July 1929	Sept. 1930
Producers' goods destined for human consumption								
Foods 47	100	107	90	78	82	97	95	85
Non-foods 73	100	100	98	85	88	86	82	77
Consumers' goods, processed								
Foods 71	100	100	89	99	97	99	101	102
Non-foods 80	100	110	124	127	121	115	115	123

14—The numbers given relate to the years prior to 1928. For the later years the numbers of quotations are:

	N
Producers' goods destined for consumption	
Foods	54
Non-foods	79
Consumers' goods, processed	
Foods	86
Non-foods	80

12—The quotations relate only in part to identical commodities at different stages of fabrication.

Among producers' goods, foods fell to low levels in 1921 and 1922, but had recovered most of their losses by 1928. The current recession has brought a further decline. Non-foods not yet in shape for consumption have declined steadily in real value since 1919, barring a slight recovery in 1922. This substantial group of commodities (the present sample includes 79 quotations) had an average real value in July, 1929, 18 per cent below the 1913 average. By September of the present year values had declined still further, to a level 23 per cent below that of 1913. In sharp contrast has been the course of real values among manufactured non-foods, ready for use by final consumers. The failure of goods of this class to react to the price drop of 1920-21 left them in 1921 with an average purchasing power, in terms of commodities in general, 27 per cent higher than in 1913. This margin was reduced somewhat during the next eight years, but such goods stood in July, 1929, 15 per cent above their 1913 value. During the present recession these goods have again advanced substantially in real value, as a result of the general price decline. At September prices their average value, in terms of commodities, was 23 per cent higher than in 1913.[15]

Summary

During a period of rapidly declining prices all groups suffer, whether their relative position be strengthened or weakened as a result of the change. Subsequent economic developments, however, are materially affected by the character of the price readjustment occurring during and after such sharp general recessions. The recession of 1920-21 left manufactured goods over-valued, in terms of earlier standards, and raw materials under-valued; it left producers' goods under-valued and consumers' goods over-valued; it left agricultural products with low purchasing power, per unit, and non-agricultural products with high purchasing power. The present recession, like that of 1920-21, has materially cheapened agricultural products, raw materials generally, and producers' goods intended for ultimate human consumption. It has enhanced the real value per unit of non-agricultural products and of manufactured goods. Although the figures are not now available, it has certainly increased important elements of manufacturing costs, per unit of product. Finally, it has increased the real value, in terms of other commodities, of processed consumers' goods, a group which has been consistently high-priced during recent years. (These various groups are not, of course, mutually exclusive.) At present prices goods in shape for consumption and use by individual consumers are worth 11 per cent more, in terms of commodities, than they were in 1913. Among these goods those which are products of manufacture stand 12 per cent above their 1913 purchasing power, and 3.9 per cent above the level of July, 1929. Highest in price among these goods are non-foods, which have been particularly insensitive to the drop in general prices. These stood in September

15—This class of commodities, which includes manufactured cotton, woolen and silk textiles, boots and shoes, dinner sets, cutlery, furniture, glassware, soap, etc., is not sensitive to price changes. For many of these articles it is difficult to secure standardized, reliable and representative quotations. Some of the commodities in this class have doubtless been subject to price-cutting during the present recession which is not reflected in the quotations currently reported.

23 per cent above their 1913 values and 7.3 per cent above their July, 1929, values.

The chief problem posed by these conditions is how the flow of goods to consumers is to be maintained, and stimulated, with consumers' goods thus over-valued in comparison with earlier standards. After the depression of 1921 the economic advance was resumed without a complete restoration of pre-war relations among the different elements of the price system. The solution of that problem was facilitated by an extraordinary and unprecedented increase in industrial productivity — an advance of 16.3 per cent in output per wage-earner between 1921 and 1923, on top of an increase of 4.0 per cent between 1919 and 1921. The aggregate purchasing power of agricultural producers and of producers of certain other raw materials remained low, but this remarkable gain in industrial productivity, a concurrent growth in physical volume of production, and the position of marked price advantage enjoyed by manufacturing producers after 1921 permitted a great advance in the aggregate purchasing power of industrial wage-earners and of other groups drawing their incomes from manufacturing industries. The increased purchasing power of these groups and the opening up of new foreign markets more than atoned for the low purchasing power of agricultural producers. These conditions permitted the free flow of goods to consumers, even though such goods were relatively high-priced.

It is possible that the next two years will see a rebound from the pit of depression similar to that occurring between 1921 and 1923. We cannot be sure, however, that certain of the conditions that stimulated revival after 1921 will prevail in the immediate future. A continuing advance in industrial productivity is to be expected, but it would be remarkable if the rate of gain which prevailed between 1921 and 1923 were to be duplicated. An advance in volume of manufacturing production similar to that which occurred between 1921 and 1923, an advance without precedent in our recent history, cannot be counted on. It does not, therefore, appear probable that we shall see such a sharp gain in the purchasing power of groups drawing their incomes from manufacturing industries as was made between 1921 and 1923. The low purchasing power prevailing among agricultural producers in 1921 is duplicated today. The buying power of important foreign producers of raw materials has been curtailed; for this, and for other reasons, we can hardly expect such an increase in our foreign sales as was scored after the last major depression.

The immediate significance of recent changes in prices and in purchasing power is brought out by the following comparison. Between September, 1929, and September, 1930, aggregate factory payrolls, as measured by the revised index of the Federal Reserve Board, declined 24.5 per cent. The prices of processed consumers' goods, at wholesale, fell 10.3 per cent during the same period. This means that the volume of such goods that could have been sold to industrial wage-earners if they were buying at wholesale (without change in the proportion of their incomes expended for such goods) declined approximately 16 per cent during this 12-month period. If retail prices of these goods in the country at large were used in this comparison, the drop in volume of potential sales would be greater than that indicated, for in this as in other periods of recession retail prices have lagged behind wholesale prices.[16]

The shattering of established price relations is not a necessary barrier to economic recovery. A modern economic system, sensitive as it is to disturbances, possesses the virtue of flexibility. It functions not under one rigorously prescribed set of conditions, but adapts itself to a variety of alternative situations. (Such adaptations are not necessarily either prompt or painless.) After a violent break an economic advance is perhaps more often resumed through adaptation to changed conditions than through a return to pre-existing relations. For this reason it is not possible to define accurately in advance the conditions of economic recovery. The existence of altered price relations which might be adverse to prompt revival could be offset by favorable conditions elsewhere in the economic system, as was the case during the recovery of 1921-22. But unless such favorable conditions develop, price inequalities may be a factor of some importance during economic revival.

We cannot now be sure that the price recession associated with the present business decline has run its course. The figures we have cited, based upon the most recent detailed quotations available, do not by any means represent a final situation. The condition revealed by these figures, a condition marked by relatively high prices to consumers, and by relatively low prices for goods on which the incomes of important consuming groups depend, is probably not conducive to prompt recovery. An equalization of the values of consumers' goods and of other commodities, an equalization which might be accomplished through an advance in the prices of other commodities or through further liquidation in the prices of consumers' goods, would assist in breaking the jam which is at present obstructing the free flow of goods to final consumers. Some approach to equalization may result from the play of economic forces during the months immediately ahead.

16—The price quotations used in this study, those compiled by the United States Bureau of Labor Statistics, are drawn from various parts of the country. In particular cities and for particular commodities there have doubtless been many reductions in the prices of consumers' goods, at retail as well as at wholesale, which exceed the average declines for the country as a whole.

NOTE:—The index numbers from which the above measurements of purchasing power changes have been derived are geometric means of relative prices. No weights have been employed, except through the use of several quotations for such important commodities as wheat, cattle, etc.

The commodities included are those employed by the United States Bureau of Labor of Statistics in the construction of its index numbers of wholesale prices, with two important differences. Automobiles, which are given heavy weight in the index of the Bureau of Labor Statistics, are excluded from the present index, while a selected list from a rather numerous group of commodities for which prices are gathered by the Bureau of Labor Statistics, but which are not used in the construction of that Bureau's index, have been included in the commodities entering into the present calculations. This latter group provides more adequate representation of lumber and of an important class of finished goods, primarily steel products, such as trowels, saws and hammers. Commodities of this class are relatively inflexible in price.

Differences in the formulas employed and in the weights used are responsible for certain differences between the two sets of index numbers. More important, however, are differences in the commodities included. Differences in this respect materially affect the comparison of purchasing power changes