

Changes In Pittsburgh's Business Conditions

Some Barometers



Bureau of Business Research
School of Business Administration
University of Pittsburgh
PITTSBURGH


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Foreword

HE SIGNIFICANCE of a scientific approach to the various problems of business is too much appreciated to need additional emphasis. In the light of the value of an analysis of business situations, it is the expectation of the School of Business Administration that the present bulletin, prepared by the Bureau of Business Research, will be useful to individual businesses of the community and will assist in determining the actual status of economic conditions in the Pittsburgh region, a first step toward a constructive plan for future development.

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Changes in Pittsburgh's Business Conditions

Some Barometers

Changes in business conditions in a city or district may be measured successfully through discovery of appropriate barometers in various fields of activity. Comparison of the behavior of local and of corresponding national indexes gives a significant picture of the relation of regional to national welfare.

When local economic conditions vary from national, the cause is usually to be found either in the nature of local business enterprise, such as industrial specialization, or in fortuitous circumstances, such as a natural catastrophe or an embezzlement.

The purpose of the present study is to offer certain barometers of value in gauging the business welfare of the Pittsburgh district. Individual series have been analyzed in many different fields. A selection has been made for presentation here. Finally, two composite barometers are derived to represent general business and the construction and real estate industry. The fields touched in the present analysis are as follows:

Department Store Trade
Ordinary Life Insurance
Commercial Electricity Consumption

Building and Real Estate
Bank Clearings and Debits
New Incorporations

Relative Value of Price Quotations

As prices rise, the dollar purchasing power decreases and more dollars are required to buy the same quantity of goods. When total values, or prices, are quoted as of different dates, it is important to compare changes in the general level of prices occurring between those dates. For instance, we should expect to pay about \$1.70 now for something that cost only a dollar in 1913. The 1913 dollar is now worth only about 59 cents. Similarly, a house built for \$10,000 in 1913 would have cost more than \$20,000 in 1920. Therefore, values of building permits in 1920 would have been twice as great as in 1913 if the same

number and kinds of buildings had been erected.

To eliminate the discrepancy of dollar fluctuations, all value series in the present study were submitted to analysis for changes in the general level of prices or for changing costs of construction. In the non-construction series, the index of the general level of prices of Carl Snyder, Federal Reserve Bank of New York, was used. In the building series, a composite of building costs was employed.

The process of correction for changing dollar values is called "deflation." The effect may be observed by reference to charts 6, 8, and 17.

CHANGES IN PITTSBURGH'S BUSINESS CONDITIONS

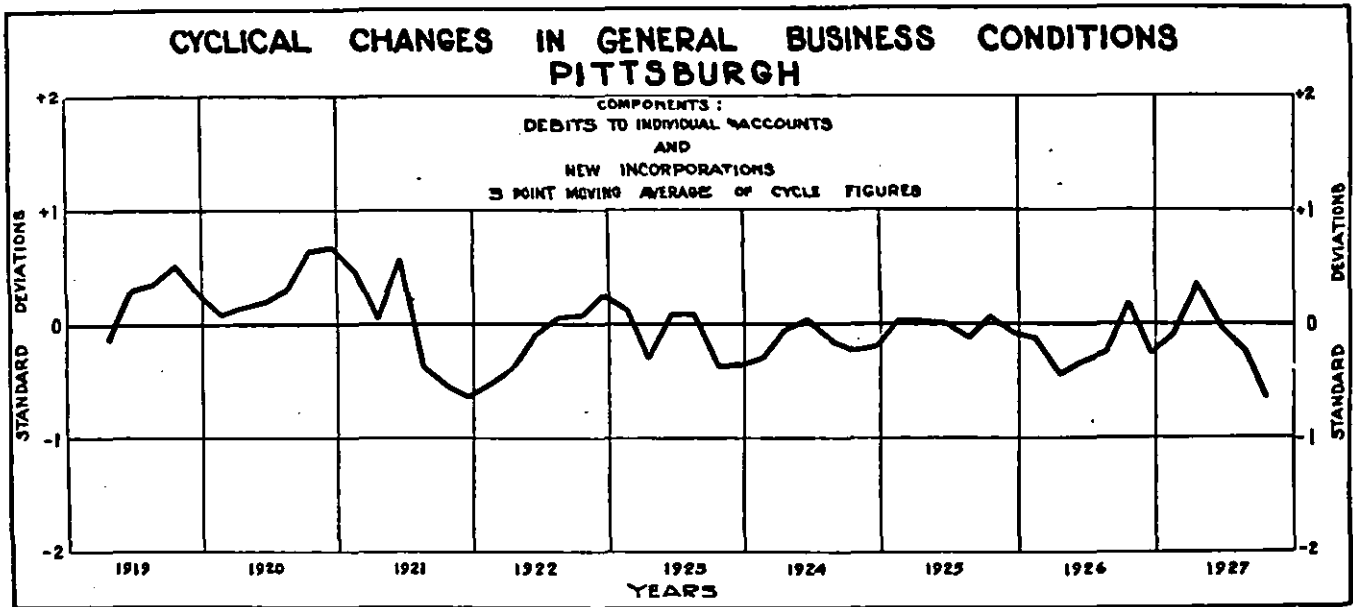


CHART 1

Pittsburgh Composite Barometers

It is so obvious that each industrial or business field has its own peculiarities, that it is unwise to accept as typical the cyclical fluctuations of any one field. Consequently, in order to obtain a picture of changes in general business conditions in Pittsburgh over a period of time, it is advisable to construct a composite of individual series. This has been done to represent general business tendencies and building and real estate activity.

In presenting the composite of general business conditions pictured in Chart 1, debits to individual accounts and new incorporations recorded in Allegheny County were chosen as constituent series. The tendency of the resulting curve to remain close to the zero line is typical of post war business conditions. Since the depression of 1921, short oscillations across the zero line recurred frequently until the break of 1927, when a new low point was reached. Since records of debits are available for only a decade, bank

clearings were used experimentally as a substitute for the period 1900 to date. Results were closely similar for the recent period. Prior to 1919 the composite of new incorporations and bank clearings showed much more violent rises and declines than since that date. This contrast tallies with the findings in other series detailed later in this study.

As components of the building and real estate picture, two series were chosen: the total value of all building and the number of deeds recorded. The result is graphed in Chart 2. It is apparent from this picture that the major swings, downward and upward, cover long periods and small vertical distances, or amplitudes. From 1910 to 1914 there is a slight suggestion of the trough of a wave, but the general tendency is horizontal; then the curve swings downward through 1919 and upward through 1924. A gradual decline has been in evidence since that time.

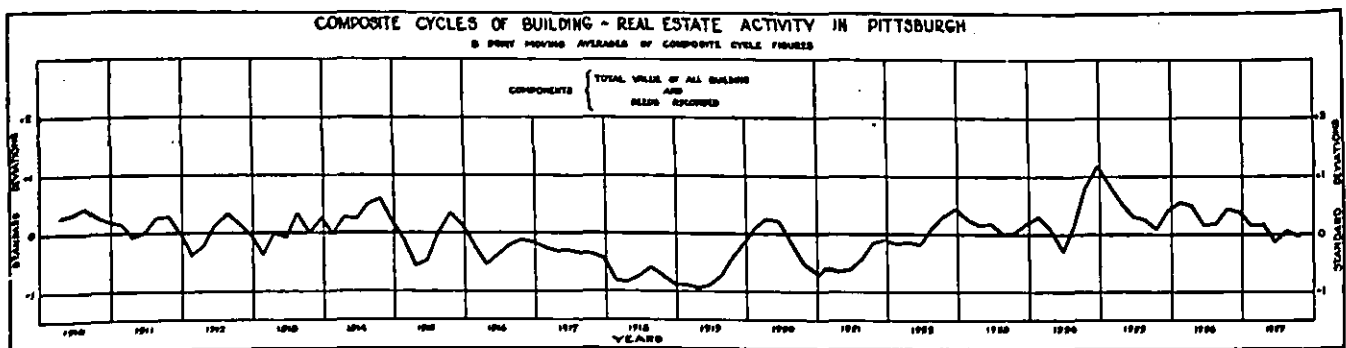


CHART 2

Department Store Sales

Indexes of department store sales for important cities, reserve districts and the United States as a whole, have been reported by Federal Reserve banks since 1919. As the basis for comparative studies of Pittsburgh tendencies with trends elsewhere, analyses have been made of the reports of the United States as a whole, the city of Cleveland, the Third and Fourth Federal Reserve districts, and Pittsburgh.

The wide fluctuations in department store sales are readily visualized in Chart 3. Running through the irregular plotted data is a broken line indicating an average upward tendency for the whole period. The data are plotted as percentages of the average value of sales for the years 1919-1923. With this in mind the broken line indicates a gradual healthy growth for the period. The increase for the Cleveland district is relatively greater, approximating the same increment as the Third Federal Reserve district. The rate of growth for the Fourth Federal Reserve district is still larger, while that for the United States averages the greatest of the five.

In Chart 4 are plotted indexes for the three most recent complete years. Percentages are computed with the average for 1919-1923 selected as 100 per cent. It will be noted that, with the exception of

August, the year 1927 remained relatively lower than 1925 and 1926. In general, changes in direction are synchronous. With this experience in mind, it is logical to forecast a similar relationship for subsequent years.

More accurate seasonal relationships, however, are presented in Chart 5, where the collective experience of Pittsburgh and the Third and Fourth Federal Reserve districts are presented. In all cases December is the highest month, but the Third Federal Reserve district shows greater relative emphasis upon December than does the Fourth district or the city of Pittsburgh. October is the second highest month for Pittsburgh and the Fourth district, of which Pittsburgh is a member, while in the Third district November is second. In the spring the Third and Fourth districts emphasize April, while Pittsburgh rates May high. The lowest month in all cases is July. Pittsburgh has the smallest range of the three, the Third district the largest. It is interesting to note that while the lowest month bears a rating of 70, the range for Pittsburgh is 78. For the city of Cleveland, December has the high position, closely approximating Pittsburgh, but April is the second highest month, agreeing with the Third district.

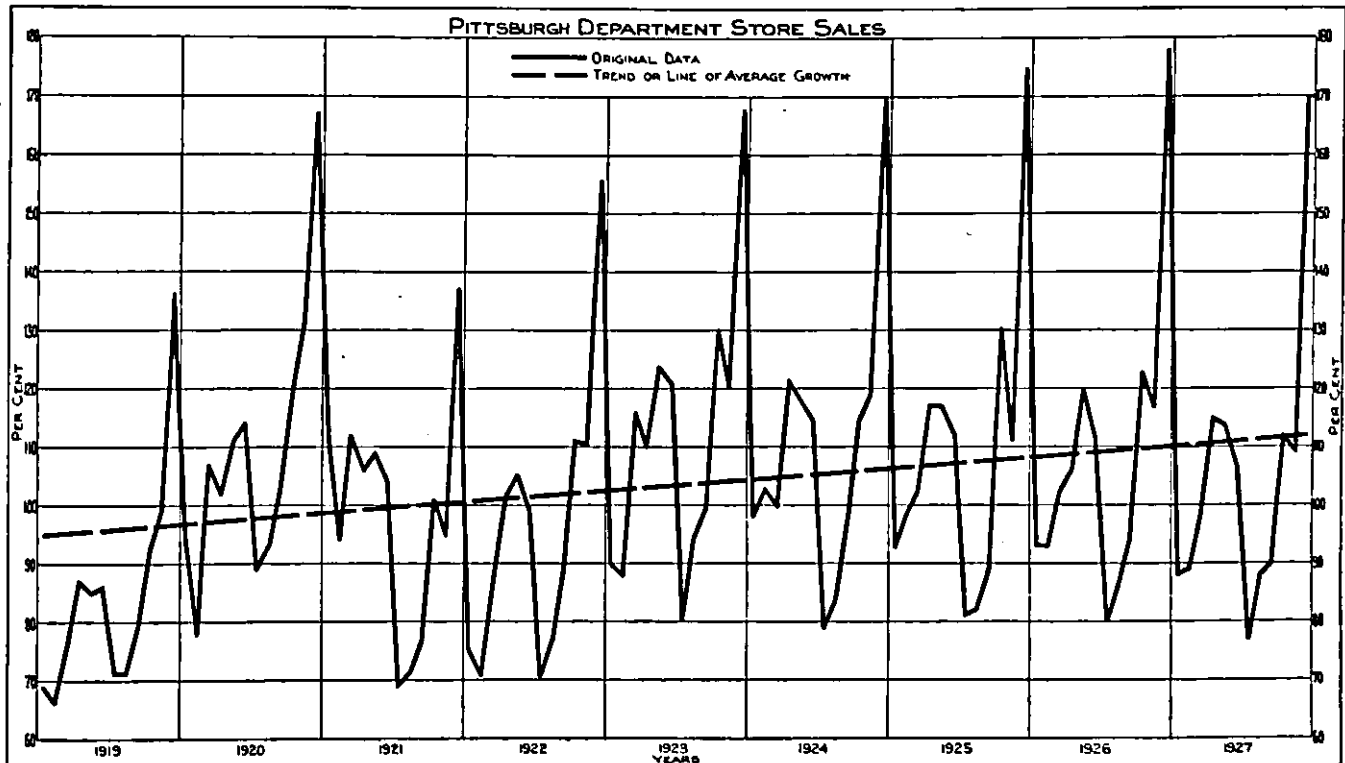


CHART 3

CHANGES IN PITTSBURGH'S BUSINESS CONDITIONS

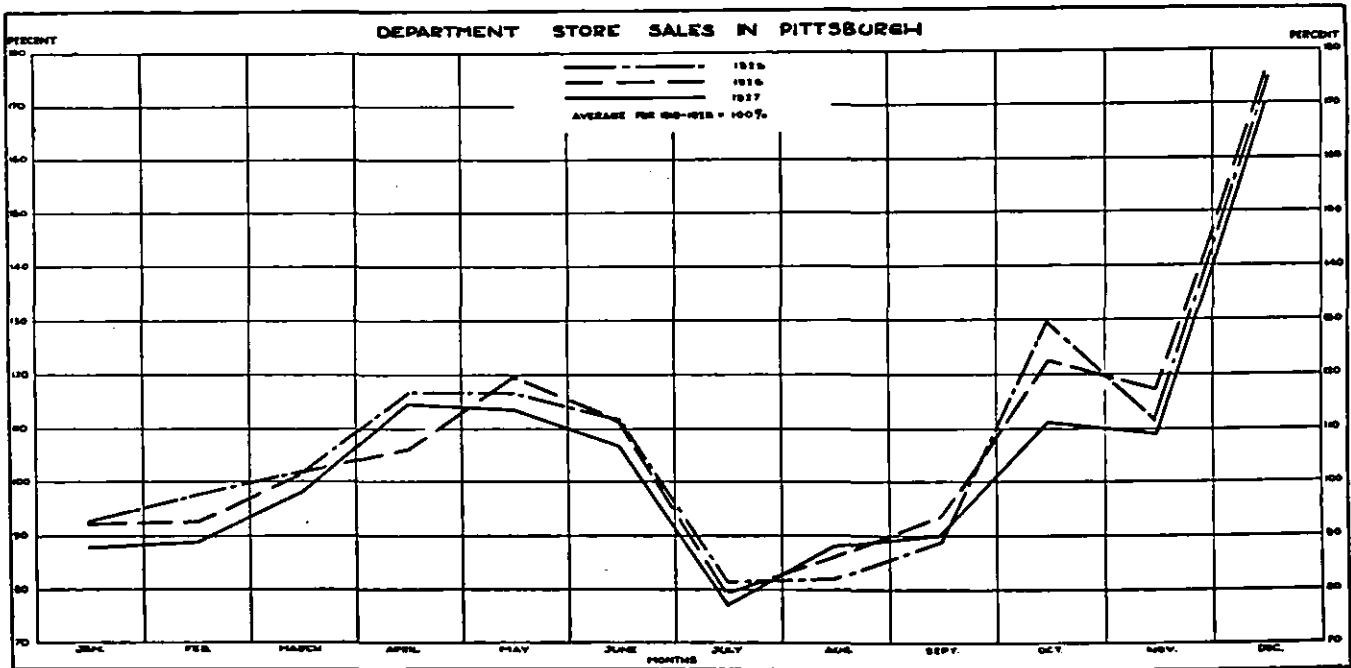


CHART 4

February is the lowest month, dropping several points lower than July, the exceptional case. The total range for Cleveland is 79. This extreme range of variations is very generally recognized in the department store business and presents one of the most difficult problems with which retailers have to deal. Consequently, Pittsburgh business indicates a greater relative advance towards stabilization than Cleveland or either district.

The effect upon the measurement of business

cycles* obtained by correcting value and price series for the changing value of the dollar is disclosed in Chart 6. While the differences are not excessive since 1922, due to the fact that most of the post-war period experienced a rather stable dollar value, still the disagreements recorded for 1927 are largely due to the deflation of the values for 1920. Since department

*The zero line in the cycle charts is the trend, or average growth line, of the original data. For instance, the broken line of Chart 3 becomes the zero line for Pittsburgh in Chart 7.

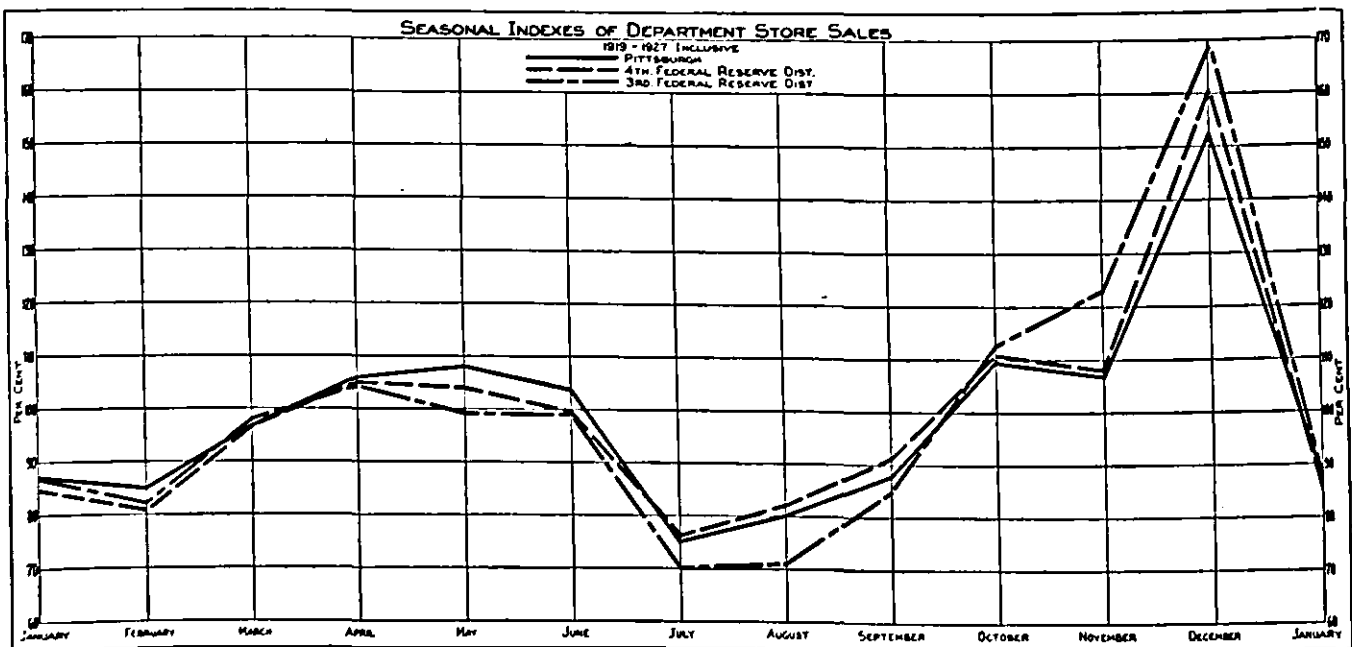


CHART 5

CHANGES IN PITTSBURGH'S BUSINESS CONDITIONS

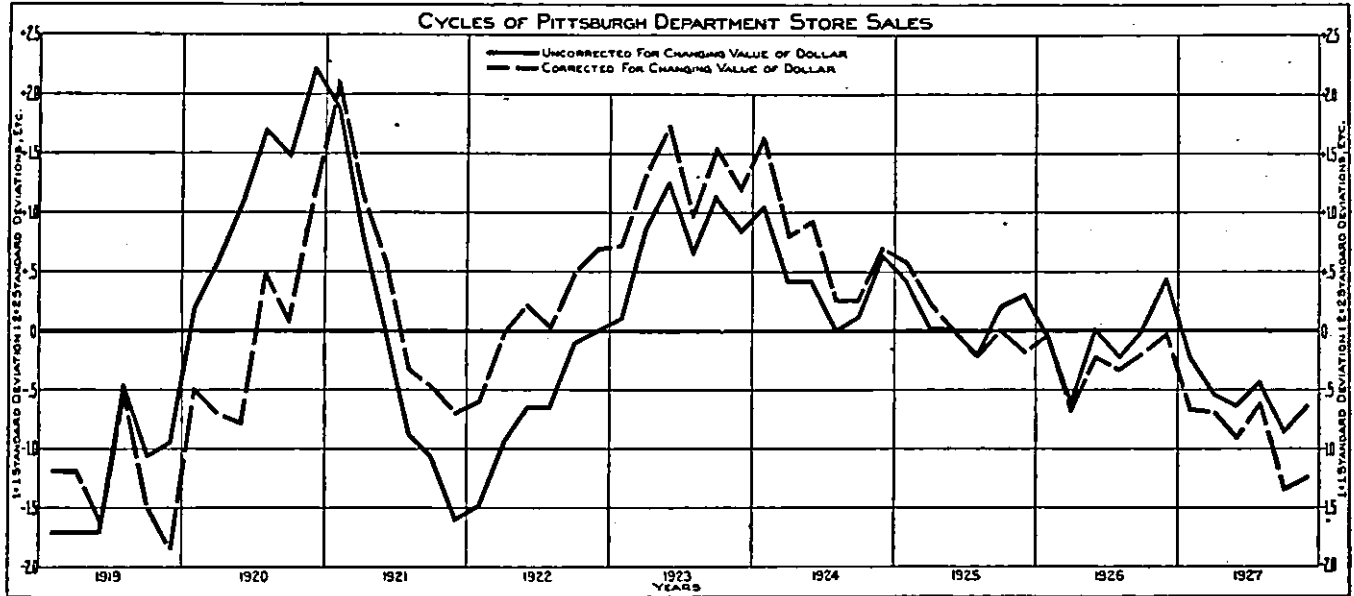


CHART 6

store sales are reported by the Federal Reserve system as percentages, not as actual values, and because of the minor nature of recent changes in the general price level, the undeflated data were chosen for further analysis.

The general contours of cyclical movements correspond closely in the various districts and cities. Evidence of this is presented in Chart 7, where Pittsburgh and Cleveland cycles are recorded. There are, however, individual differences of importance. The 1920 peak of business in Cleveland occurred before

the middle of that year, approximately six months prior to the corresponding peak in Pittsburgh. Similarly, low points, except in 1926, occur in the same sequence, but closer in time. Vertical distances, or amplitudes, also vary. Cleveland's business receded to relatively lower points in 1924 and early 1927, but mounted higher in 1925 and late in 1927. Currently, Cleveland department store sales are in a stronger cyclical position than are Pittsburgh's, though the latter are improving.

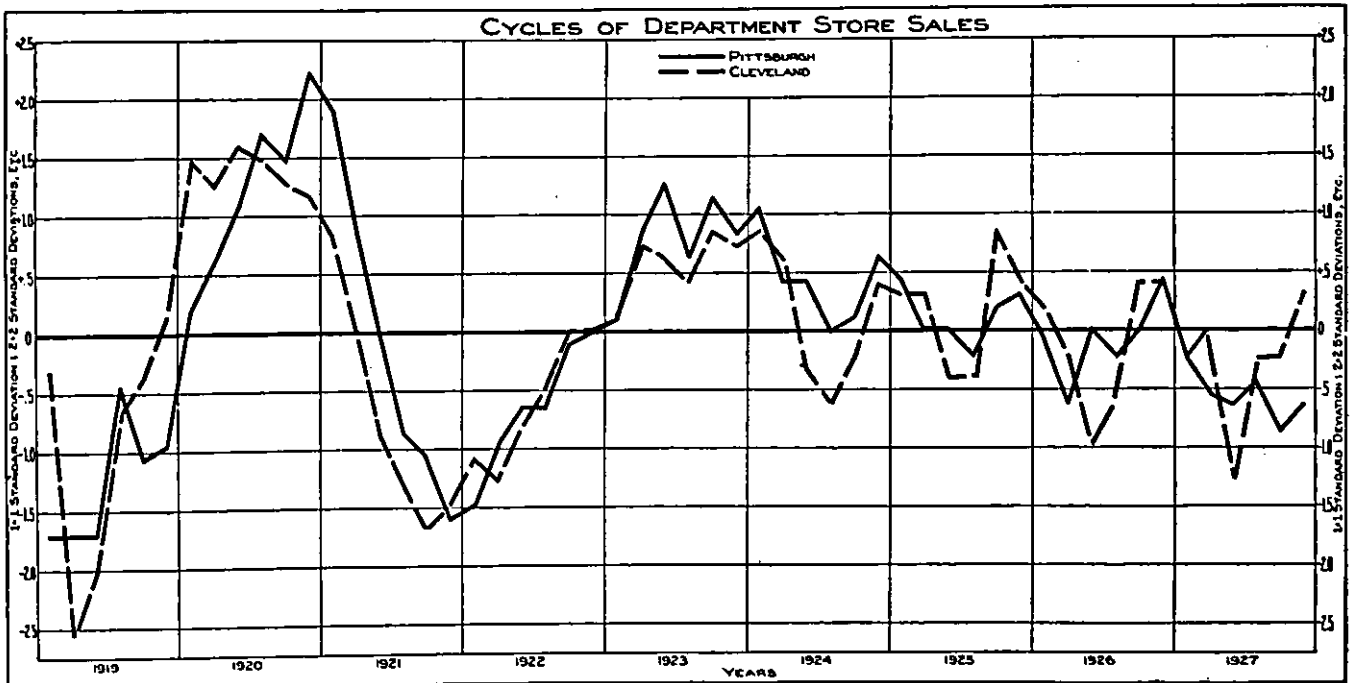
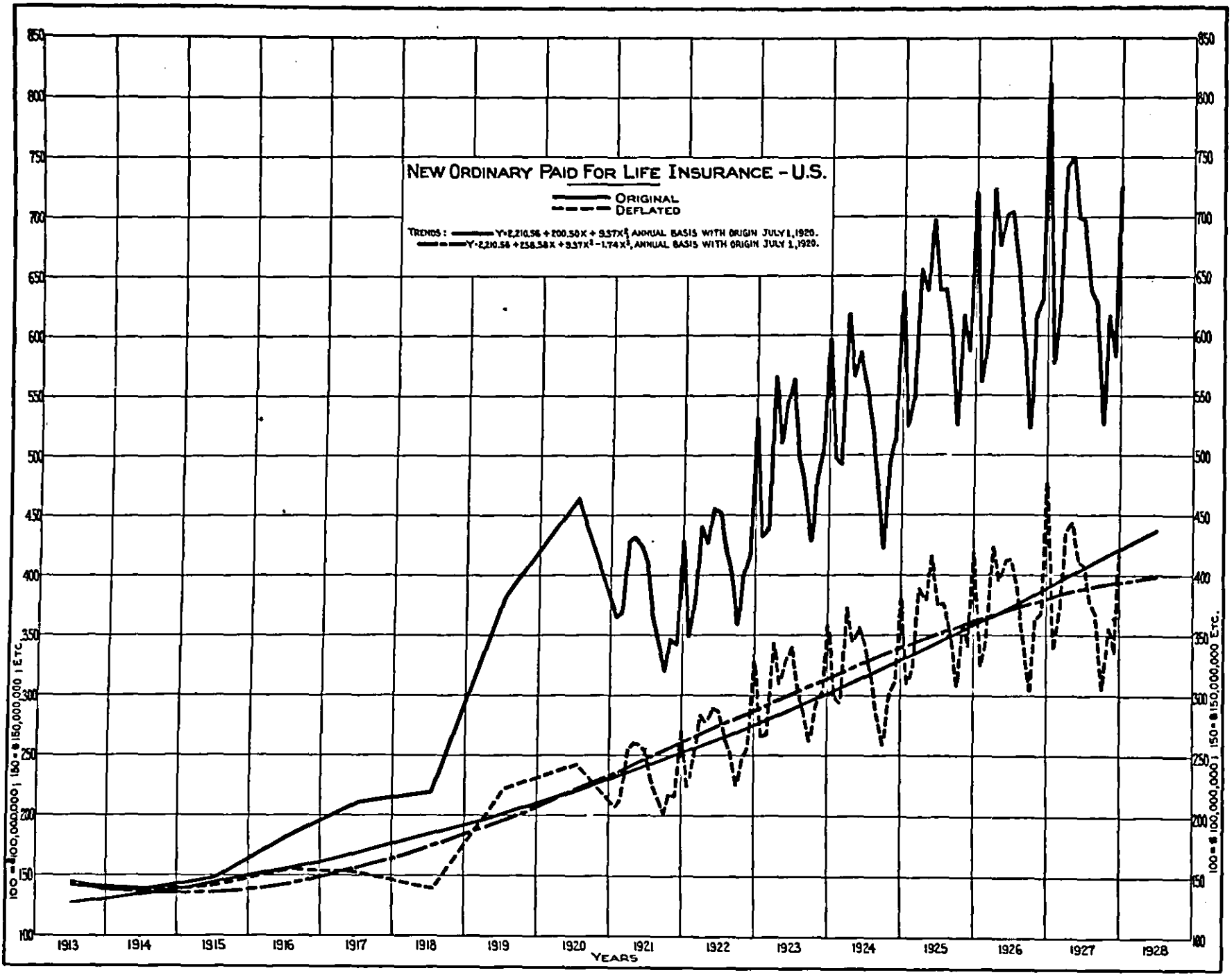


CHART 7



CHAR 8

Life Insurance Sales

Ordinary paid-for life insurance in the United States has increased from a total of \$1,697,400,000 in 1913 to \$7,804,400,000 in 1927. With the exception of the depression years 1921-1922, the rate of growth was gradual for the first six years, then more rapid, until 1927 when the total written was \$100,000 less than in the previous year.

This picture is represented by the oscillating solid (unbroken) line in Chart 8. When we correct the values of insurance for the changing value of the dollar, we have a picture represented by the irregular, broken line. Drawn from left to right, through this broken line, are two other lines. Of these two lines, the solid one represents the tendency which was in evidence prior to 1927. In other words, had the increase in insurance continued through 1927 at the rate indicated in previous years, this solid line would have passed approximately through the middle of the 1927 data. The other trend, represented as successive dots and dashes, indicates the modified tendency, affected by the failure of 1927 to increase at the same rate. It will be noticed that this line turns off toward a horizontal.

The experience of a large Pittsburgh insurance agency, the E. A. Woods Company, in writing ordinary life insurance, is represented in Chart 9. The data plotted in this chart are deflated and consequently are comparable with the broken line of Chart 8. It will be noticed that the trend of the local series makes a dip from 1919 through 1920 and then rises gradually to the middle of 1926, after which a horizontal tendency is in evidence.

Reference to Chart 20 will demonstrate that December and March appear to be favorite months for the writing of ordinary insurance in the country as a whole, while September seems least favored. The range from the highest to the lowest month is 32 points. Monthly positions of Pittsburgh insurance vary somewhat from the national experience. December remains the highest month but June is the second highest and August the lowest.

Cycles of ordinary life insurance in the United States and in Pittsburgh are represented in Chart 10, the former by a full line and Pittsburgh by a broken line. The general tendencies up and down with reference to the zero line are similar; 1921-

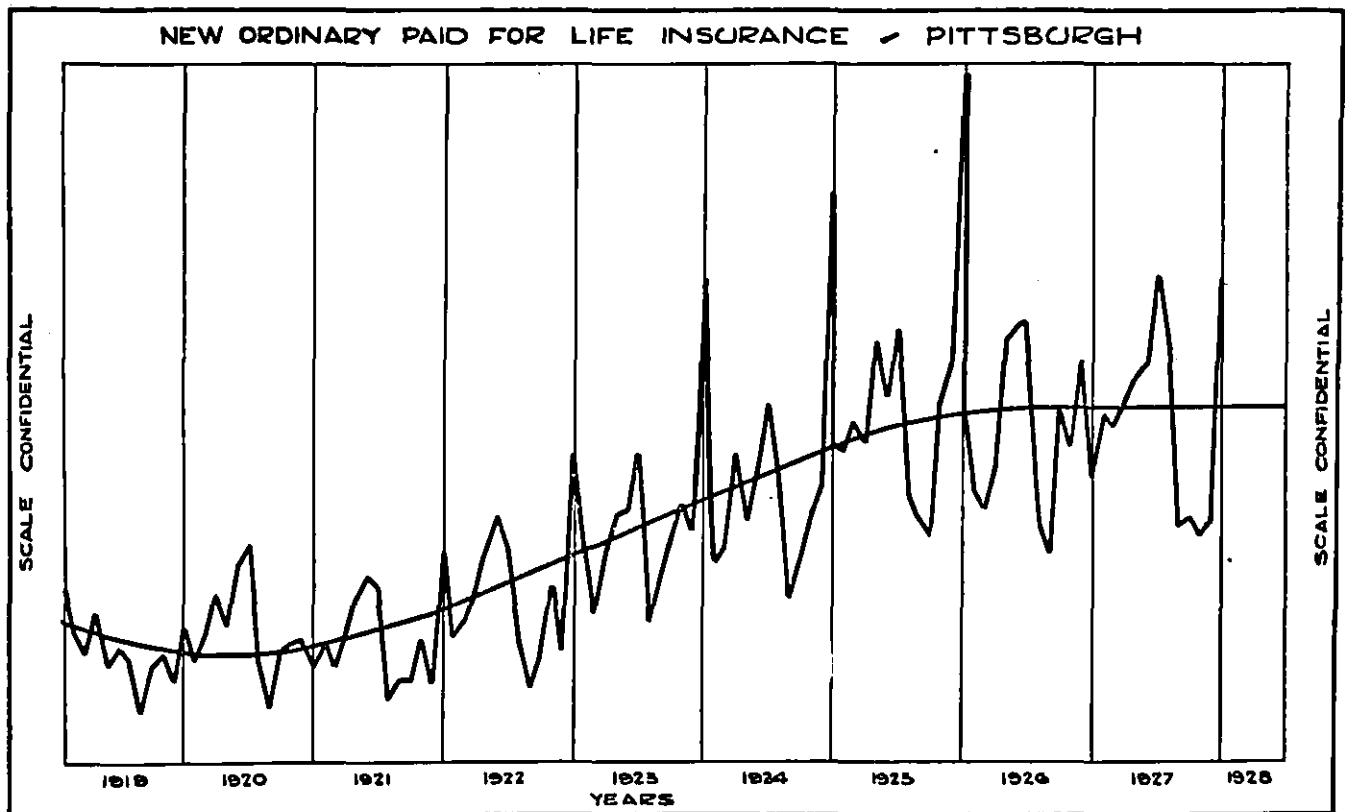


CHART 9

CHANGES IN PITTSBURGH'S BUSINESS CONDITIONS

1922 below the line, part of 1923 above, and so on. There is no agreement, however, as to the major turns in movements up and down. For instance, the national series was much more severely affected by the depression of 1921 than was the Pittsburgh series; recovery of the former, late in 1921, continued fairly constant through 1922. In contrast, the Pittsburgh series undulated slightly below the zero line until the spring of 1923 when it rose sharply to a peak in the fall of the same year. The decline of the local series from the 1923 peak was abrupt, while the national series fluctuated until the spring of 1924, starting downward coincident with the recovery of the Pittsburgh curve. Through the years, 1924, 1925

and half of 1926 the cyclical movements were approximately opposite. As in 1921, so again in 1927, the national series receded to a low point while the Pittsburgh series fluctuated close to the zero line. This relationship is unusual since the life insurance sales for the United States are a total of those recorded for 81 important companies and the cyclical fluctuations should represent a smoothed out tendency as compared with a local district. Consequently, it is apparent that the ordinary life insurance business of this Pittsburgh company is more stabilized and less affected by stringent business conditions than is the case in many other important insurance centers in the country.

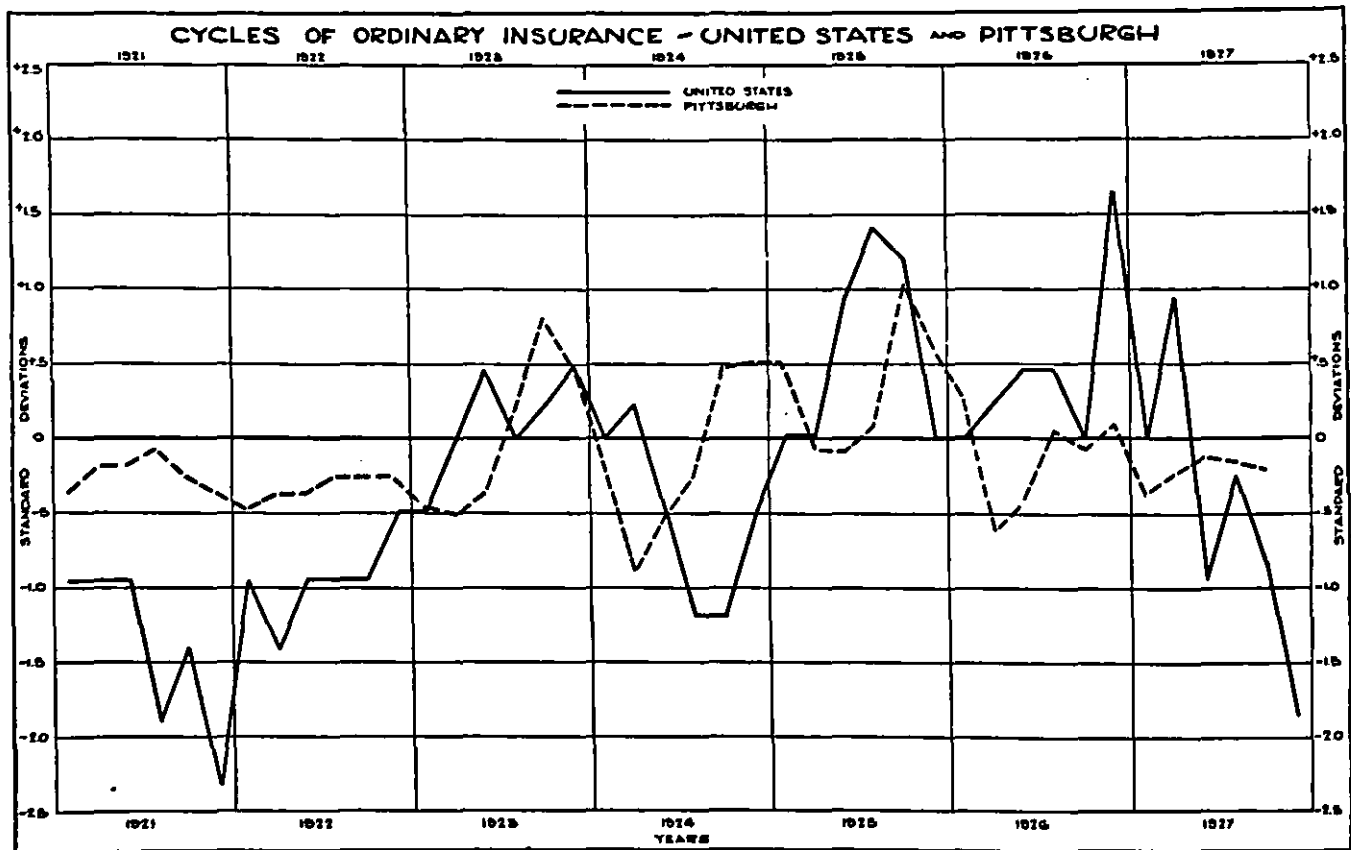


CHART 10

Commercial Electric Light and Power Consumption

In the period of seven years for which monthly data are available, increase in the use of electric light and power by commercial establishments in Pittsburgh has been rapid. This growth is readily visualized by reference to Chart 11, in which the solid line indicates the actual kilowatt hour consumption and the broken line the trend, or average growth, for the period. Total consumption for the year 1921 was 646,266,000 kilowatt hours and for 1927, 1,557,609,000 kilowatt hours. The average growth was 150,026,000 kilowatt hours annually.

As indicated in Chart 20, the greatest consumption occurs, on an average, in January and the least in July. The maximum range is only 10 points.

Consumption of electricity for commercial use appears to vary with cyclical changes in business conditions. This fact is particularly apparent in Chart 12 in the recession of 1921, the recovery and sustained use in 1922 and 1923, the reaction of 1924, and the flattened, less fluctuating demand during 1925 and 1926. The recent retrenchment is exemplified in the picture for 1927.

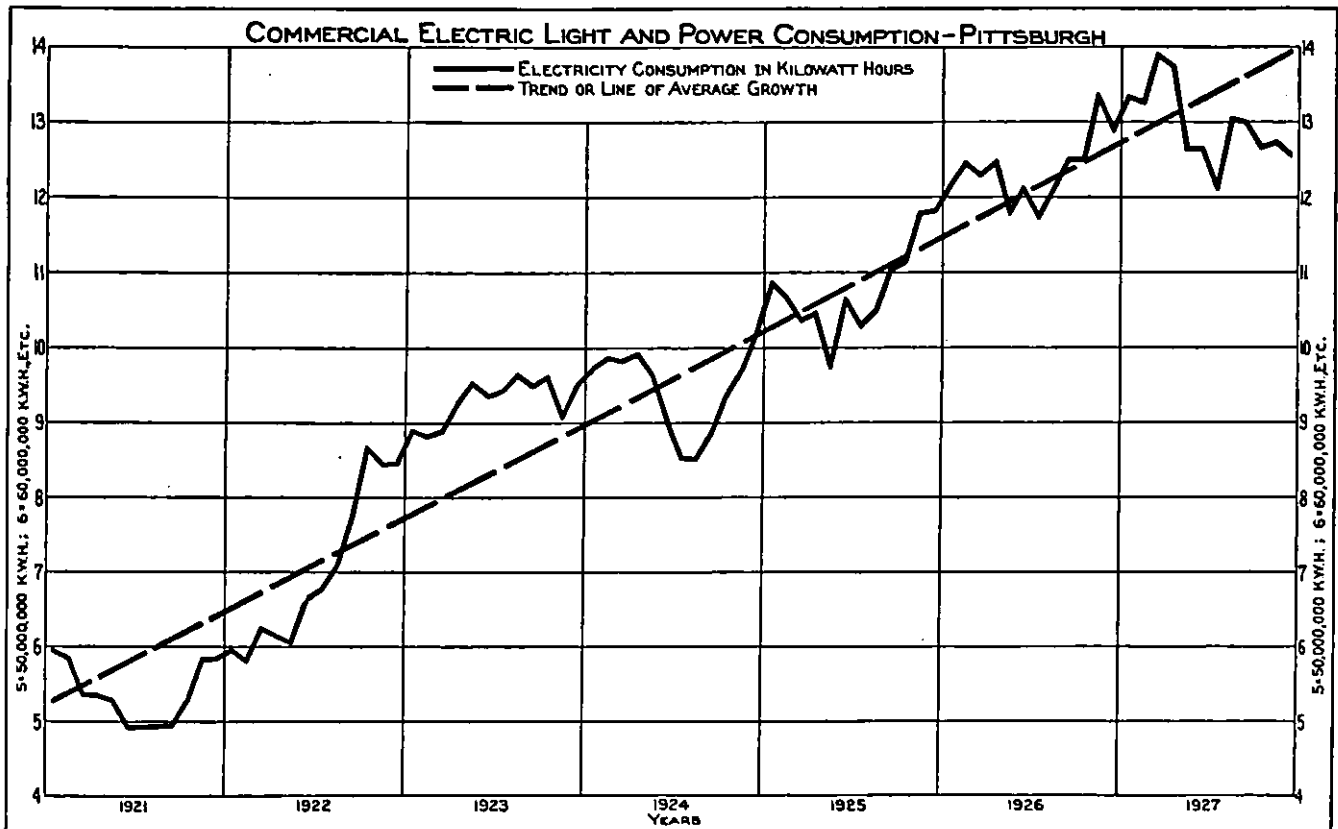


CHART 11

CHANGES IN PITTSBURGH'S BUSINESS CONDITIONS

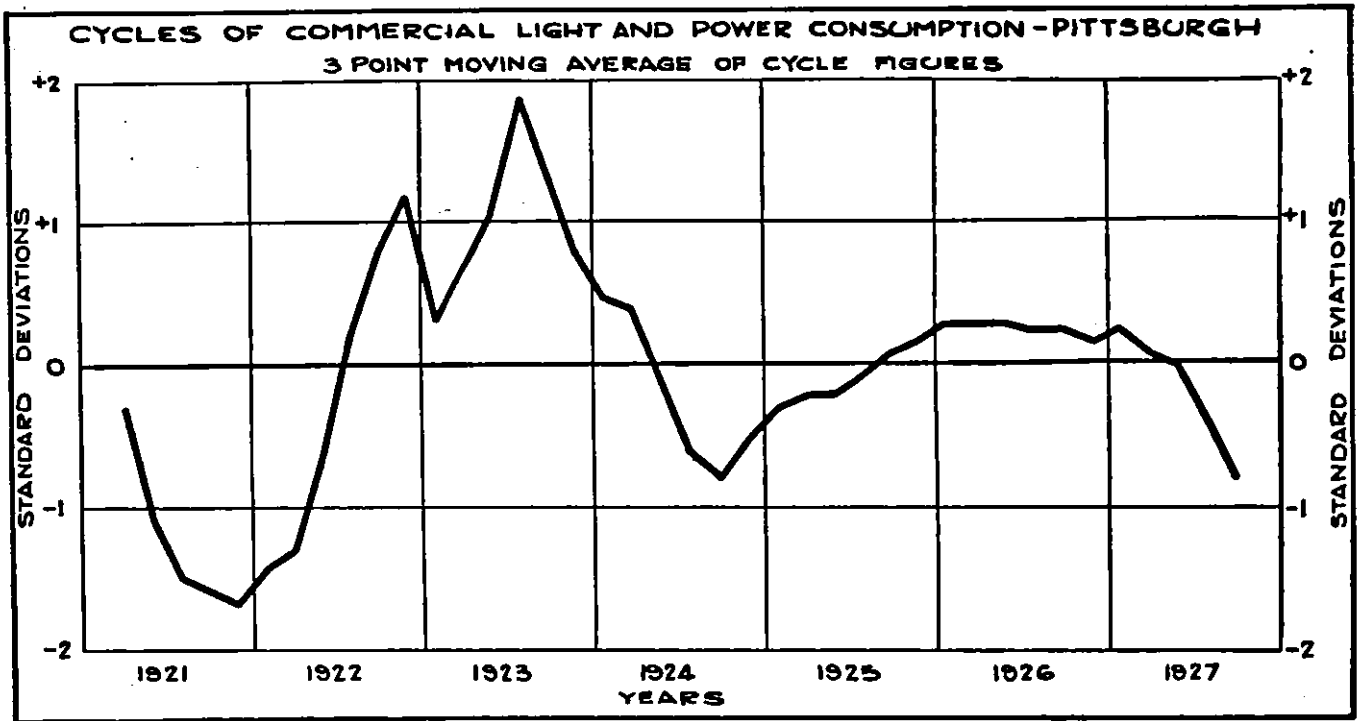


CHART 12

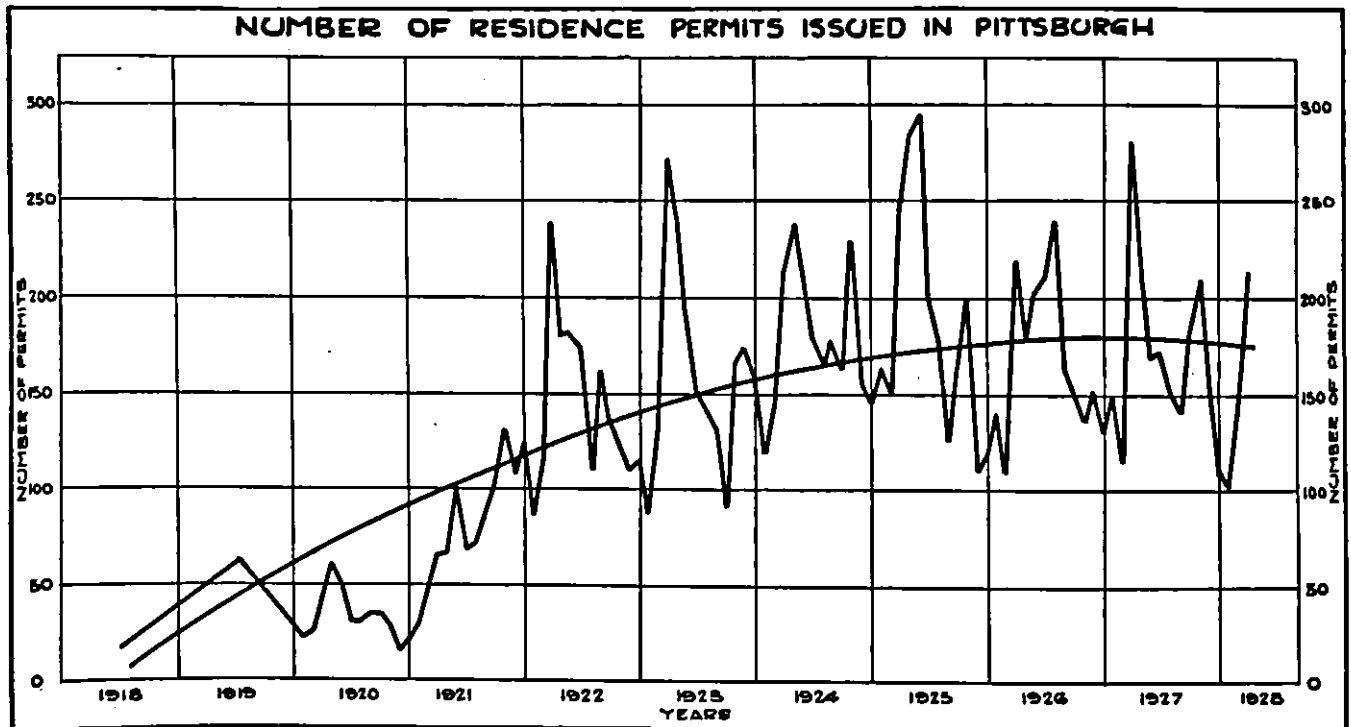


CHART 13

Building and Real Estate Activity

As representative of activity in building construction and in the real estate market, four series have been analyzed: numbers of residence permits issued, values of residence permits; deeds recorded; values of all building permits. All value series were, prior to further analysis, corrected for the changing cost of construction.

Chart 13 presents the picture of numbers of residence permits issued. The data are available as monthly totals from 1920 to date. In the two previous years points representing yearly averages are plotted. The trend line drawn through the plotted data shows a good fit for the period. However, should data be available for twice this period, it would probably be found that Chart 13 represents only half a cycle and that a trend fitted to the longer period would be a straight line passing above the curve during 1918-1921. This assumption is based

upon the tendency in the other local series and in available data for total permit values of twenty leading cities of the United States. This problem illustrates the importance of recording data for a long period as the basis for a scientific analysis.

Seasonal changes in the building field are shown in Chart 14. It is interesting to notice the differences in peak months, deeds reaching a maximum in June, numbers of residence permits in March, values of total building in August, and values of residence permits in May. This variation suggests possibilities for the further stabilization of the building industry.

Cycles of deeds and of total permit values are reproduced in Chart 15. Of particular interest are the differences recorded by the peaks occurring in 1920 and in 1924 in the deeds series. Both of these are largely speculative in character due to the depression in building during the immediately preceding period.

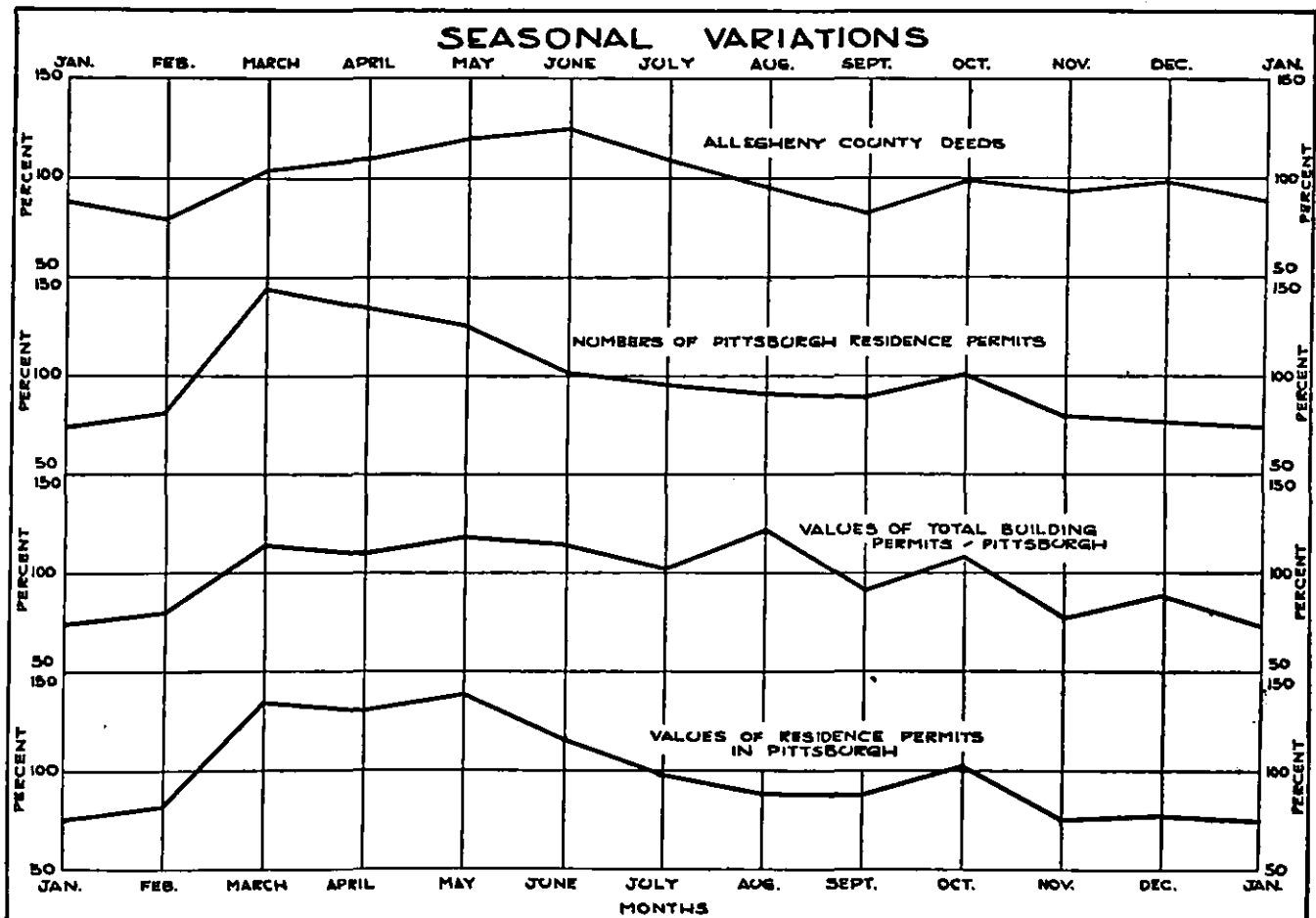


CHART 14

CHANGES IN PITTSBURGH'S BUSINESS CONDITIONS

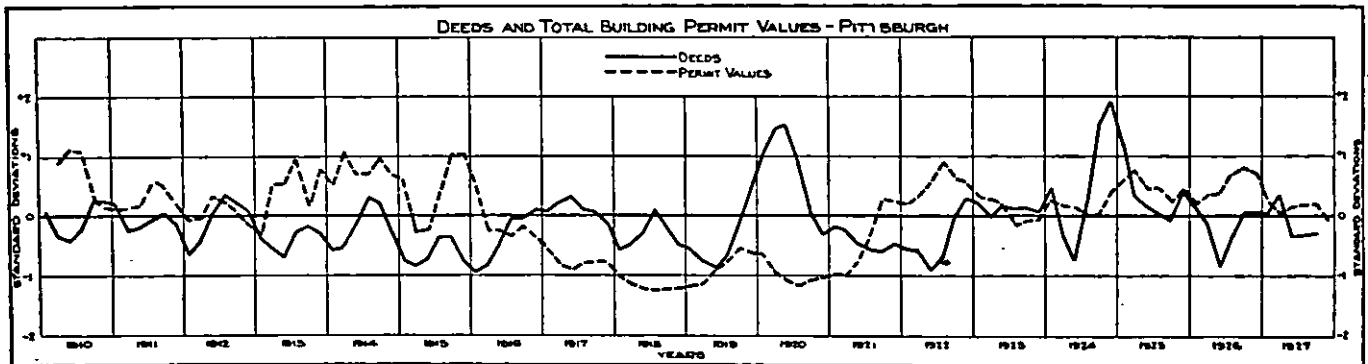


CHART 15

This experience has occurred in many cities where, after a period of hesitancy in construction, market prices start to rise and speculators take advantage of the market for a quick turnover of property. The cycles of deeds and total permit values in Pittsburgh appear to be much shorter than in many other communities.

In Chart 16 are presented comparisons of cyclical variations in numbers and values of residence permits. There is little agreement as to time of changes in direction. The value series is generally preferable, assuming that correction has been made for changing costs, as in the present instance.

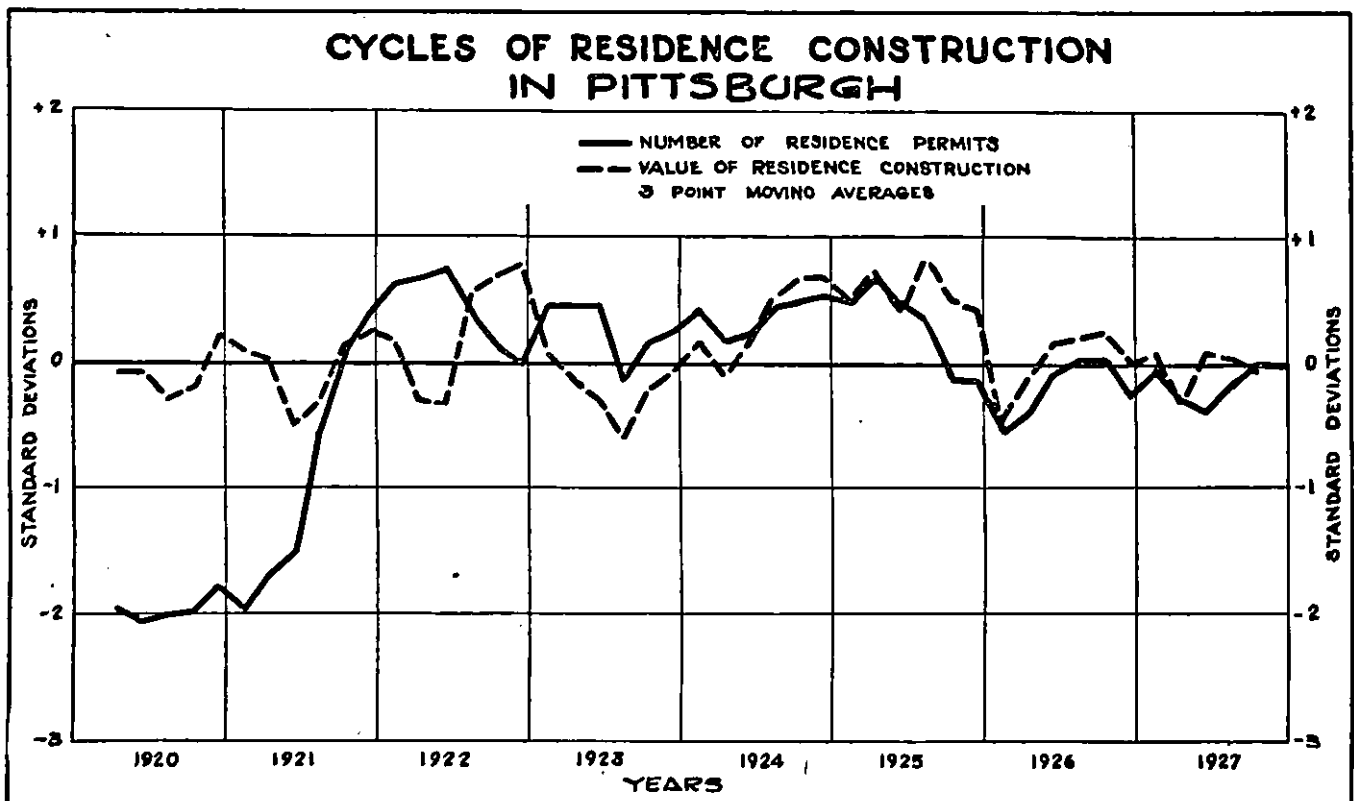


CHART 16

Bank Clearings and Debits

When Pittsburgh bank clearings have been corrected for the changing value of the dollar, a gradual increase of approximately \$83,000,000 annually for the period 1900 to date is recorded. The contrast of original and deflated values is pictured in Chart 17. The unbroken line is so rugged that it would be difficult to indicate the general direction. The course of the broken line, on the other hand, can be very readily approximated by holding a taut string across it.

Total clearings for important cities excluding New York City, but including Pittsburgh, when deflated have an annual average increase of \$2,518,460,000 for the period 1900 to date.

There is only a slight variation in the month-to-month relationship in bank clearings recorded in

Pittsburgh. April and October rank highest, with June a close competitor, while February is relatively the lowest month. The maximum range of seasonal variation is 15 points. The seasonal relation of clearings outside New York City places October as the highest month with December and January closely following; February is again the lowest month of record. The maximum range in this case is 18 points. The Pittsburgh variation is depicted in Chart 20.

For the picture of cyclical fluctuations in bank clearings, Chart 18 is presented. Following the general, undulatory movements as distinct from the sharp minor fluctuations, we gain the impression of tendencies toward depressions, recoveries, and stabilization. Following the course of the broken line, representing bank clearings outside New York City, and

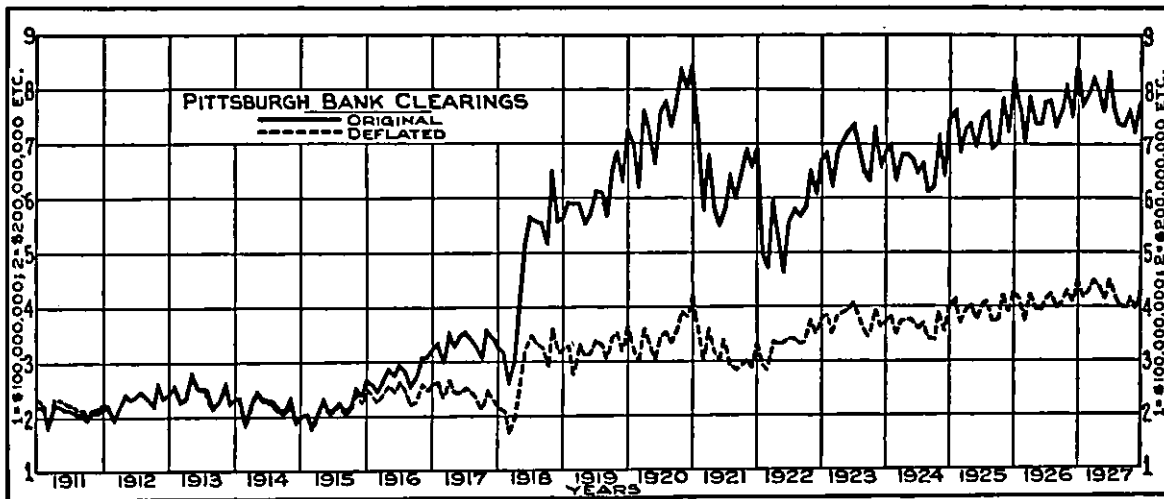


CHART 17

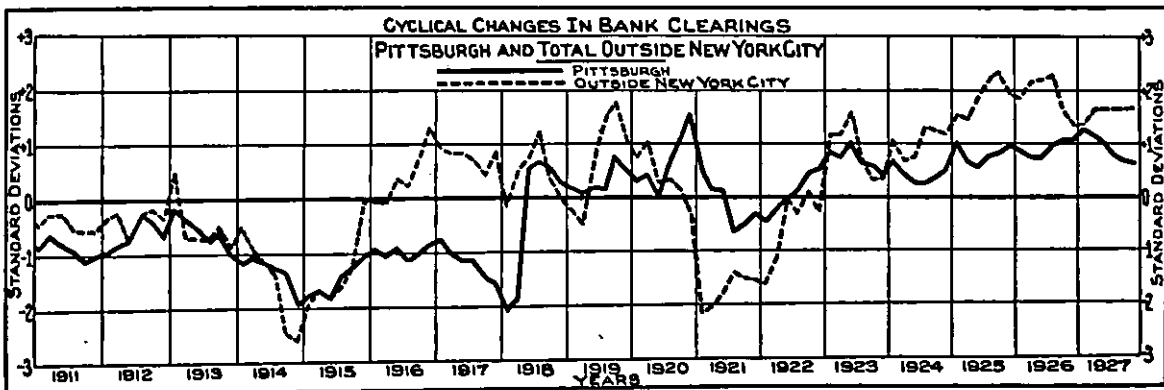


CHART 18

CHANGES IN PITTSBURGH'S BUSINESS CONDITIONS

including Pittsburgh, we notice that it gradually swings downward to a low point in 1914, recovers rapidly to a position above the zero, or average, line in 1916, and remains above, on the whole, until the end of 1920, when a sharp recession occurs, ending in the depression of 1921. Subsequent to 1921 we have an initial tendency toward repetition of the wave-like movement, but the series soon flattens out and fails to record a definite cycle marked by the return of a depression of the 1921 type.

Following the course of the solid line representing Pittsburgh clearings, we find a movement corresponding to the national series until the end of 1915 when the local series fails to record a recovery. The sudden jump in May, 1918, was due in part to war activity with increase in prices, and in part to the opening of the check clearing service of the Pittsburgh branch of the Federal Reserve Bank, which accounts for about 40 per cent of the Pittsburgh clearings. If we refer back to Chart 17 and hold our string, representing a trend, across the broken line, it will be seen that the years 1916 and 1917 fall relatively low, a fact which is recorded in Chart 18. This random condition is not in evidence in the case of clearings outside New York; consequently, the

difference is recorded in Chart 18 for these years. The recession of 1921 did not duplicate for Pittsburgh the serious depression recorded for the country as a whole, so far as bank clearings represent generalized business conditions. Since 1922, both the Pittsburgh and national curves have remained above the zero line with Pittsburgh in a less favorable position than the average for the country as a whole.

Debits to individual accounts for Allegheny County have been recorded only since 1919. When reduced to a basis comparable with the 1913 dollar, they show an annual average increase of \$215,858,-300.

As recorded in Chart 20, December is the record month for debits with April second and September third. August and November are equally low. The maximum range is twenty points.

It is interesting to notice in Chart 19 the high random point reached late in 1920, followed by a rapid recession to a low point early in 1922. Recovery continued until the middle of 1923 when the curve swung downward again to a low point late in the same year. A similar movement recurs in 1924. Subsequently, until 1927, the fluctuations are less radical above and below the zero line.

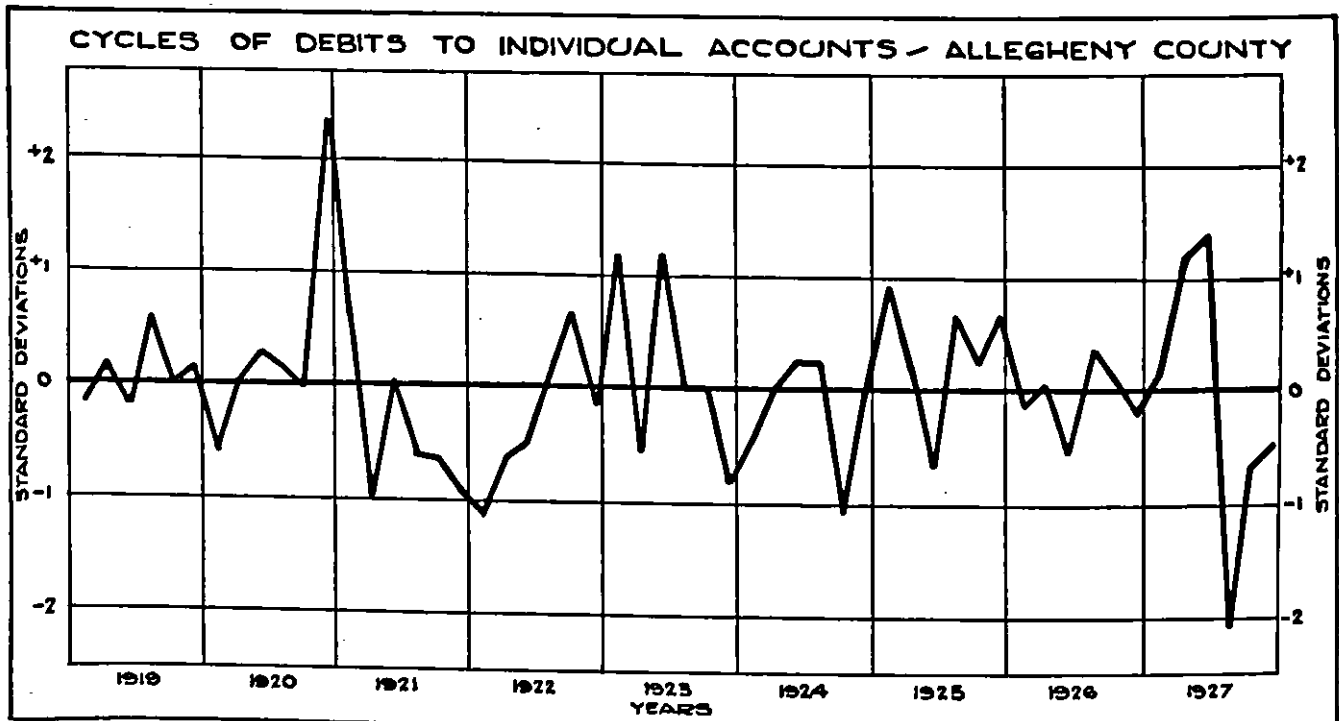


CHART 19

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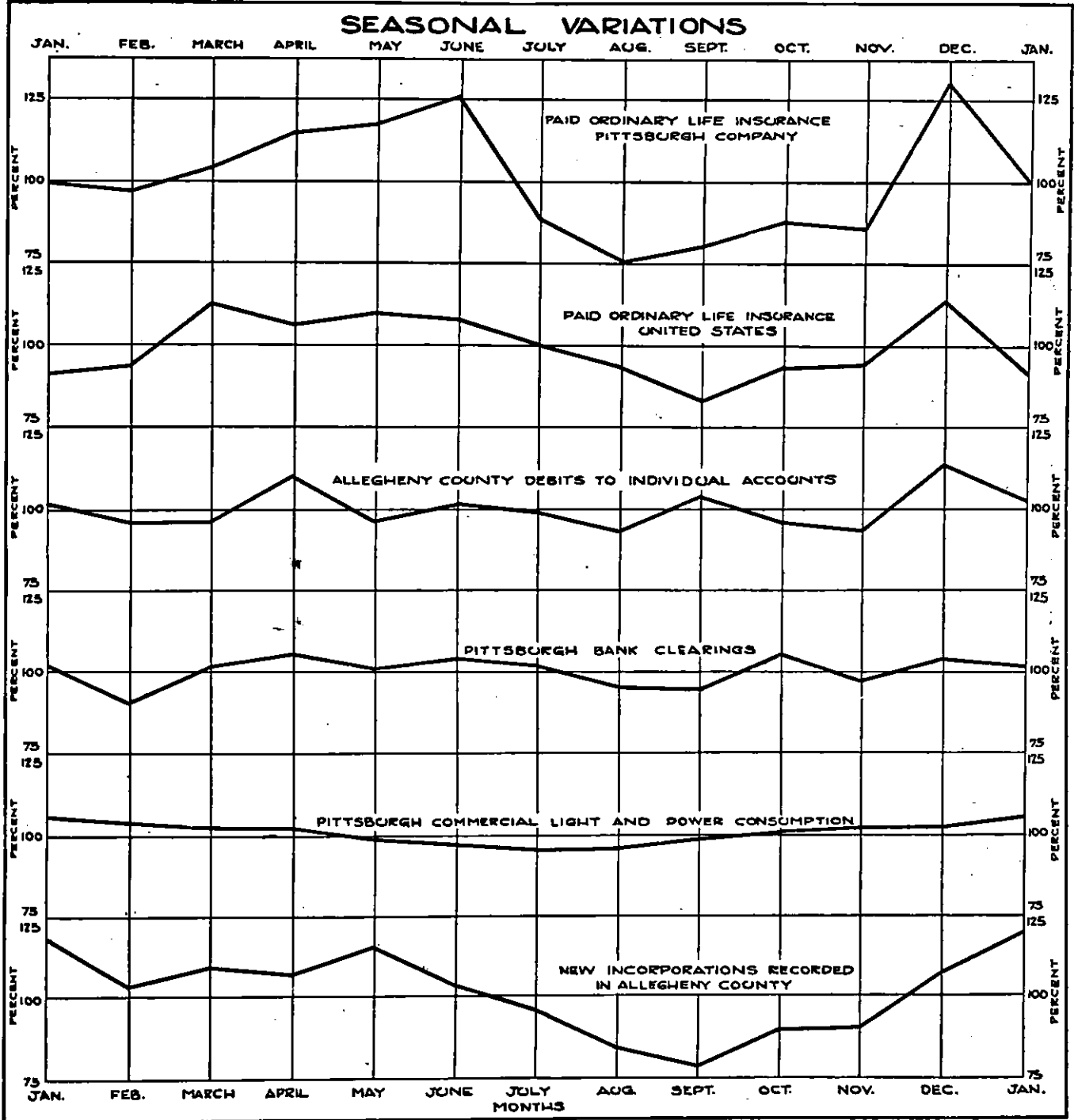


CHART 20

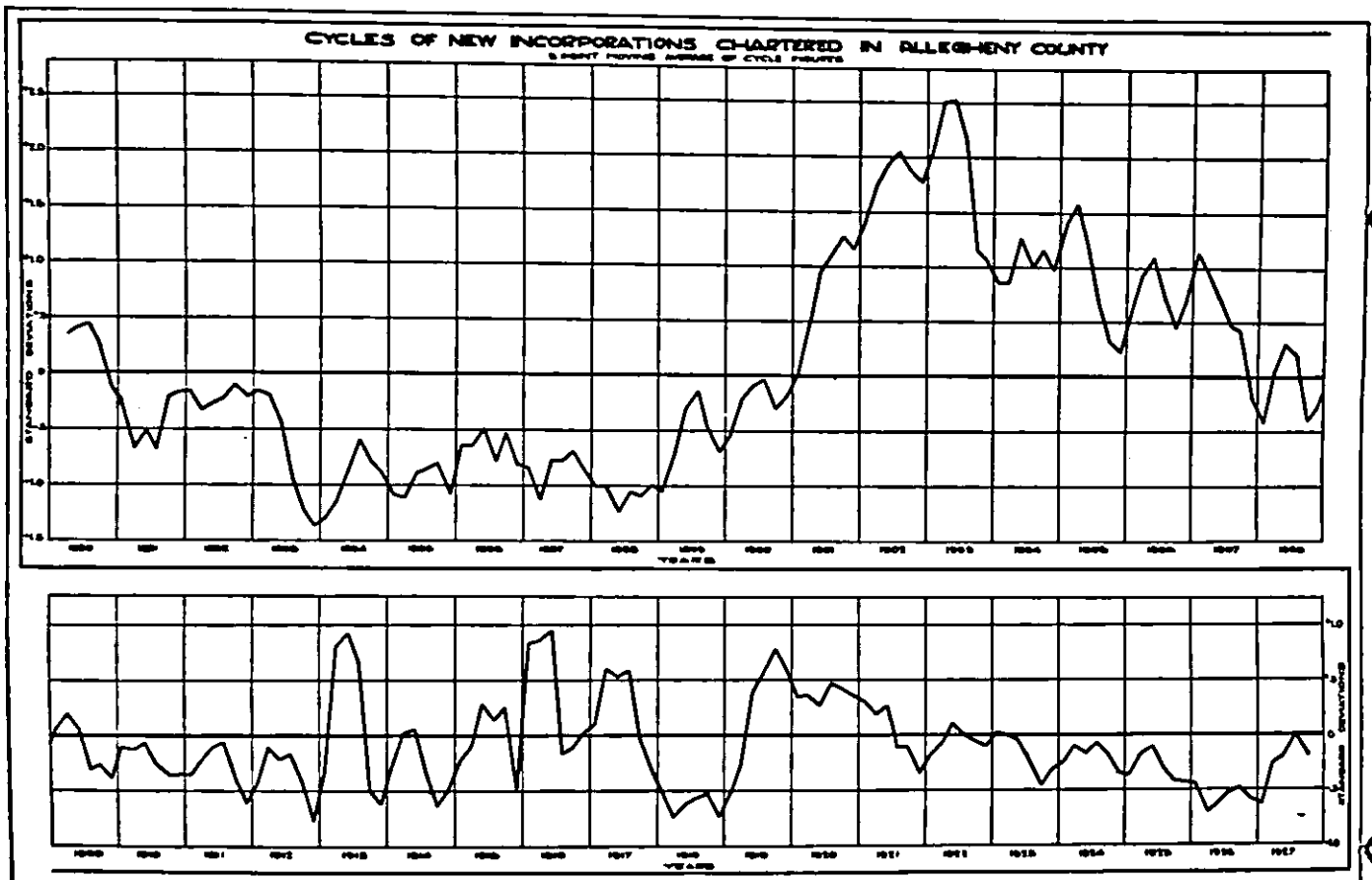


CHART 21

New Incorporations

Charters granted for the incorporation of new business enterprises tend to indicate the opinion of the business community as to business prospects. Total numbers of new incorporations recorded in Allegheny County were collected by months for the period 1890 to date. The increase over this period was so small as to approximate only seven new incorporations each year. The smallest number, 117, was recorded in 1894 and the largest, 454, in 1903. In 1927, there were 391.

Seasonally, January is the peak month and September the lowest for charters granted in Allegheny County. The corresponding series for New York State records March as the highest month and January as second with September the lowest. The combined capitalizations of new incorporations representing \$100,000 or more recorded in Maine, Massachusetts, New York, Pennsylvania and Delaware place January as the leading month, June as second

and August the lowest. The local seasonal index is graphed in Chart 20.

In Chart 21 are recorded the cyclical fluctuations of the Allegheny County series. The swings above and below the zero line were longer and less abrupt prior to 1913 than subsequently. A long trough is in evidence from 1891 through 1900. In 1901 there is a recovery which reaches a maximum in 1903. This is followed by a recession, the curve dropping hesitantly to a sub-zero position in 1909. There is an interesting recovery late in 1912 which, however, gives way early in the following year. The general ebb and flow then becomes of much shorter duration and violence. Since 1921 the movement has been mild with very little response to specific business conditions such as the prosperity of 1925. The contrasts in cyclical amplitude and periodicity as between the early and late periods are typical of business tendencies.

General Conclusions

Trend Comparisons

Of the series presented in this study, ten indicated growth tendencies of the straight line type, approximating regular increments over the periods considered. One was best described by lines first rising gradually, then increasing more rapidly. Two started to rise gradually, then more rapidly and finally turned to the right toward a horizontal or decline. Only one was of a more complex type.

The fact that no series showed a tendency to decline over the whole period indicates a healthy condition for Pittsburgh business; for growth, except in detrimental factors, such as death rates, is the natural inclination of data dependent upon human development.

Summary of Seasonal Indexes

Seasonal changes in business conditions are the causes of much waste in modern business. Could they be eliminated and all months be on a par, business stabilization would be greatly advanced. Charts 5, 14, and 20 permit comparison of varying month-to-

month relationships. Of all series, commercial electric light and power consumption has the least change, department store sales in the Third Reserve District the greatest. December is the predominate month of business activity.

Business Cycles

Measuring cycles from peak to peak or pit to pit, it is evident that the series presented vary in length. Similarly, wide differences in magnitude on either side of the zero line are in evidence. Moreover, periodicity and amplitude of successive cycles in the same series are usually irregular.

In recent years, there is a tendency toward elimination of definite cycles in many series, minor fluctuations close to the average line replacing larger undulations. This fact encourages belief that our modern business machine is becoming technically more proficient and that improved institutions such as the Federal Reserve System may result in a stability which, until recently, appeared impossible of accomplishment.

Acknowledgments

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