Tides in the Affairs of Men

An Approach to the Appraisal of Economic Change

By

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FOREWORD

THESE studies should be looked upon as preliminary explorations. They present a picture far from complete. The field of inquiry which they outline is of such magnitude that no comprehensive survey of it can be expected in many years.

But in the meantime, additional premises and methods for the appraisal of economic ebb and flow are greatly needed. These incomplete studies are published, therefore, in the hope that they may encourage others to push the exploration further, each within the area of his own specialized knowledge, but perhaps with added appreciation of the need for recording his findings in form appropriate for more general application.

A few, at least, of the great army of statistical research workers, wearied of grinding over and over the same meager store of economic data, covering as it does so brief a period in history, may be tempted by these explorations to seek and to add new elements in their experimental calculations taken not from the record of man's activities, but from that of his health and his changing environment.

The experienced will not expect to find in the record of cycles any principles or periodicities which control without exception. But a knowledge of normal cyclical expectation can form the only basis for recognizing and appraising exceptional behavior.

Cycles occur in all forms of natural phenomena. So familiar are we with certain of these, that we forget how our knowledge of them saves us many times from undue alarm. If we did not understand, for example, the cycle of the sea-

sons, and that spring was the normal expectation after winter, then each time the lakes froze and the snow fell deep upon the fields from which we hoped to get our food, we might fear death in the approach of a new glacial age. In appraisals of economic probability, examples are not wanting of apprehensions similarly based. And so involved is mass psychology in the economic structure where credit plays a leading role, that these very apprehensions tend to cause or to aggravate the conditions feared.

If these pages tend to dispel some part of these recurrent apprehensions by suggesting the nature of certain cyclical forces which seem to influence our outlook and consequent behavior; if they help to point the direction in which further studies of these forces may be pursued with profit, then their publication will have been justified.

EDGAR LAWRENCE SMITH

CONTENTS

PART I

THE DECENNIAL PATTERN AND OTHER PERIODICITIES

CONTENTS

PART II

ECONOMIC RESPONSE TO SOLAR CHANGE

An Hypothesis of Solar-Economic Relationships and Their Measure in Terms of Weather Data

PART I

THE DECENNIAL PATTERN AND OTHER PERIODICITIES

BIOLOGICAL CYCLES AND STOCK PRICE MOVEMENTS

PROBLEMS arising from fluctuations in the volume of trade and in the price structure persistently confront leaders in banking, business and legislation. A better understanding of the forces underlying these fluctuations is essential to the solution of many of these problems and, hence, to the welfare of our economic and political structure.

Organized efforts to forecast economic change cannot, as yet, be relied upon. Still they can be of definite assistance to those who will take the time to understand the nature of the service they *can* render, as well as their limitations. For no business or financial plan of any importance is ever formulated which is not based, wittingly or unwittingly, upon some appraisal of the future. And this appraisal in turn is based consciously or unconsciously upon past occurrences clearly or vaguely remembered. Too often, important recurrent factors escape the memory at the moment a decision has to be reached.

If by a study of the past we may get a clearer conception of future probabilities, it is important to make such a study. For it is possible to take appropriate action to insure against or to mitigate a *known* danger, even if we do not *know* that it will actually overtake us. And through our planning we may insure with greater effect, if we can learn *when* dangers are more to be feared and *when* their appearance is less likely. The success or failure of many an undertaking has depended upon its timing, and it is our purpose here to show

how such timing can be improved through a study of recognizable tidal ebb and flow in the affairs of men.

It is assumed that the reader is familiar with some, at least, of the various conceptions of the business cycle currently discussed by economists. These are summarized, in greater detail than is necessary for our present purposes, in Mitchell's "Business Cycles, The Problem and the Setting" (1927), and King's "The Cause of Economic Fluctuations" (1938); the latter being noteworthy for its sympathetic reference to those who have found it necessary to push their search for the underlying causes of business cycles beyond the limits customarily regarded as the boundaries of the economic field.

And it is in such wider, extramural explorations that the reader is invited to accompany us, recognizing that in leaving the comfortable confines of economics we necessarily increase the ground to be explored to so vast an area as to render it impossible for us to make more than excursionary surveys. On these excursions we will often find ourselves in regions occupied by groups speaking languages foreign to our common usage—anthropologists, physicians, psychologists, geophysicists, meteorologists and astronomers; each group engrossed in its specialized work and not always noting matters which might prove of interest to other groups. Fortunately, however, in many of the groups are individuals also looking outward, ready to help bridge the gap of language and formula which has too tightly segregated the divisions of modern thought.

In most of the appraisals of economic trends which follow, we have used the I.M.C.* Index of Industrial Stock Prices, and for those who believe the stock market unworthy of seri-

* Investment Managers Company. This index was compiled by the present author and is used throughout, mainly because of the large number of studies he has made with it. In general its behavior is parallel to that of the Standard Statistic's Index of Industrials, though its base differs.

ous consideration as fundamental to business, it may be well to refer to a paper by the present author in the American Statistical Journal for March, 1931, accompanied by charts suggesting that this index of stock price movement forms a close parallel with the volume and velocity of all business transactions using credit. It is, therefore, something more than an index of the price level for industrial shares; in fact, before we are through, we may be ready to regard stock price change as the most readily available index with which to gauge the time and degree of all changes in business *sentiment,* not only at New York but throughout the financial world of which New York is a part; a fever chart of mass psychology as it affects the myriad of business and financial decisions which, in the aggregate, are a major influence in the business cycle.

If we are to leave the confines of the economic structure to seek clues to the tidal ebb and flow of business, trade and prices in fields other than in the recorded activities of man, we may as well go the whole way at once and consider, first, the findings of a group of scientists whose work has been far removed from the financial markets. This group assembled at the summer camp of Mr. Copley Amory on the Matamek River near Anticosti, Labrador, in July, 1931, "to advance human prosperity through conclusions drawn from the study of biological cycles." The meeting was known as the "Canadian Biological Conference." To quote from an account of its proceedings which appeared in the *New York Times* of August 14, 1931:

"Somewhat to the surprise of the conference—the main discussion did not center around the well known sun spot cycle of eleven years * but around shorter cycles of four years and especially nine or ten years."

* This reference to eleven years is an approximate average and should not be held in the mind as the period of any single sun spot cycle, for these vary greatly in length.

"The most remarkable feature of the conference," reported Dr. Ellsworth Huntington, "was the great amount of evidence as to a cycle of nine or ten years. Dr. Leopold described such a cycle among the grouse and rabbits of Wisconsin and neighboring Lake States. . . ."

"In the plains around Edmonton, according to Dr. Rowan, a cycle of almost ten years is evident in grouse, other migratory birds and rabbits, and also in their enemies, such as coyote, lynx, red fox and other fur bearers. Further north the voluminous records of the Hudson Bay Company have given Mr. Elton abundant data which show a cycle of 9.7 years in hares, muskrats, grouse, lynx, red fox, marten, wolf, mink and goshawks."

"Still another type of evidence of the ten year cycle was contributed by Dr. Huntington himself. His measurements of the annual rings of growth in the giant sequoias of California * showed variations in the rate of growth recurring in about ten years."

"Thus once in ten years or a little less, something seems to happen which causes an increase and then a decrease in the vital activities of both animals and plants all over North America, from the borders of Alaska to the Maritime Provinces and Northern United States, and also in adjacent seas."

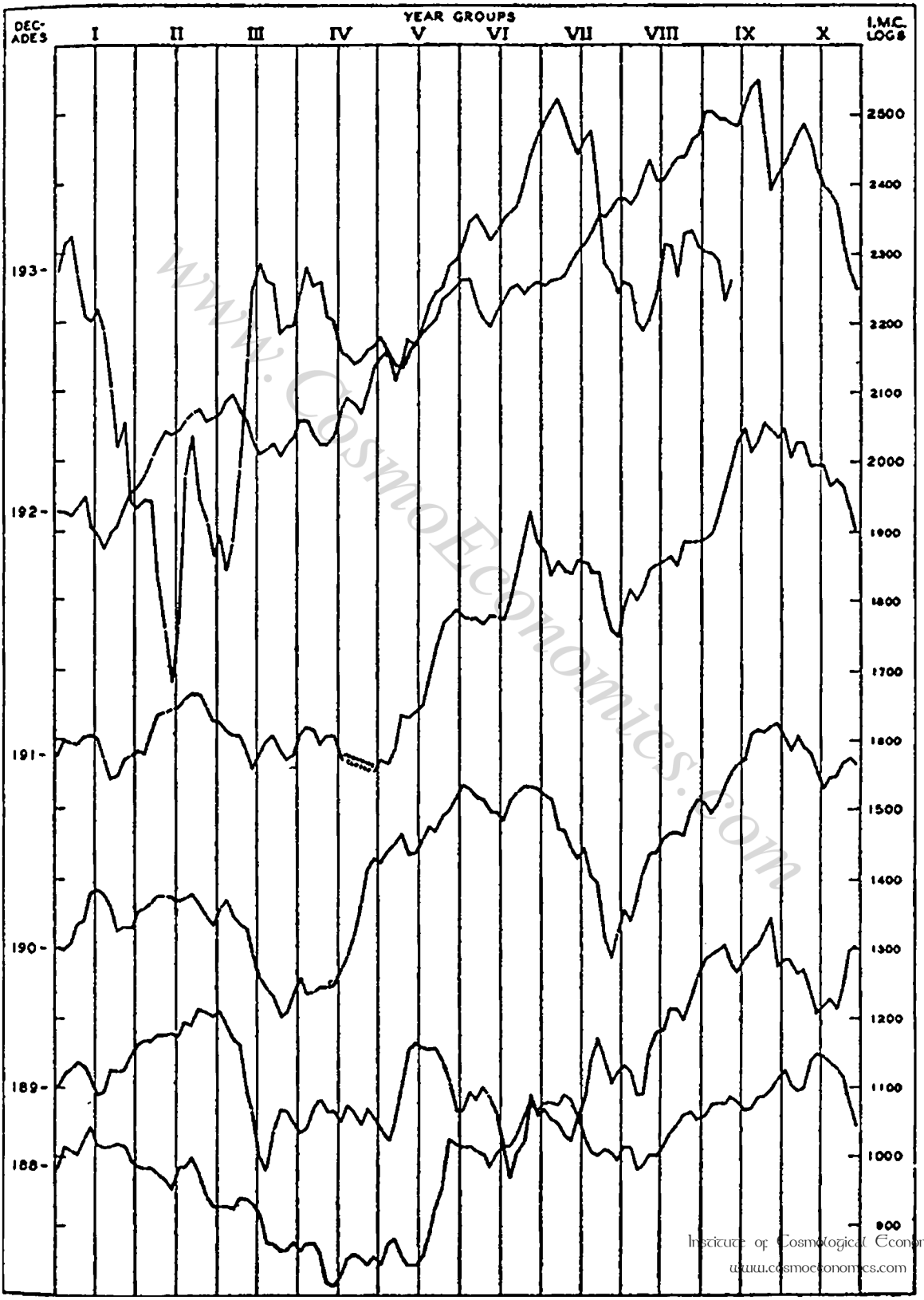
"To complete the picture, Aurel Comsia, a Roumanian graduate of the Schemnitz Forestry School of Hungary, presented evidence of a ten year cycle of disease in the rabbits of Europe."

Our present concern with these biological cycles arises from the fact that the account of them led to the performance of a simple operation upon our chart of stock price movements. We cut it into segments of ten years each, recording each decade above the preceding decade as they appear in Chart I, the long term upward trend serving well to keep the

* *Cf.* Studies of Dr. A. E. Douglass, the principal authority in this field.

CHART I

RECURRENT DECENNIAL PATTERN AS DISCLOSED IN I.M.C. INDEX OF INDUSTRIAL STOCKS



line of each succeeding decade from interfering too often with those which preceded, even though a single logarithmic scale is used throughout.

In passing, it may be observed that none cut through more than one line below, thus showing that the upward trend still serves to keep the price level of industrial shares higher than it was twenty years before. This suggests that the thesis of "Common Stocks as *Long Term* Investments" * need not be discarded as some have felt, following the drastic declines of 1929 to 1932. There is no evidence as yet, that the level for 1949 will not be above the peak of 1929.

A glance at this chart shows quite clearly that something is at work on these stock prices, not once every ten years but throughout each ten year period, so that each such period has a wavelike motion tending to resemble similar wavelike movements occurring at approximately the same relative time or position in a *majority* of other decades. Thus we see in each decade, three of those forty month cycles referred to by Mitchell (p. 385) as "the median value of the observations upon the duration of American Cycles" from 1878 to 1923.

What is more striking in Chart I is the manifest tendency towards the formulation of a *pattern* which, in even some of its minor aspects, recurs more often than it does not. Take, for an example of such minor decennial recurrence, the pattern of the years 1891, 1901, 1911 and 1921. The movements in these years are far from "cyclical" in amplitude, but as they are here recorded, a majority of them disclose marked similarity. The year 1881, to be sure, shows a moderate variation from the majority pattern, while 1931 discloses almost complete divergence. Yet here we have four out of the six examples available in the period covered by our data, following a recognizable pattern *within the year*.

Before seeking any clue to the obvious deviations from the

* By the present author, The Macmillan Co., 1924.

recurrent decennial pattern suggested by Chart I (notably 1931, '32, '33), it is desirable to study this pattern as it appears in the chart and to note those periods in each decade where certain types of market action seem to have occurred with measurable regularity. To discuss these periods easily, we must adopt a method of naming our groups of years. To this end, there will be found on Chart I, at the top of each column, Roman numerals intended to identify years by their position in each decade. For example, Roman numeral I refers to the first year in each decade, i.e., the years 1881, 1891, 1901, 1911, 1921, 1931. We shall designate these years as "first years." Roman numeral II refers to "second years" in each decade, i.e., 1882, 1892, 1902, etc. It is worth while to point out, however, that there is in reality no first year to a decade. Any year would do as well as another, for what we are to discuss is not a ten year cycle, but a continuing decennial pattern. I is used as the commencement of the decades under observation merely as an easier method of identification than would follow cutting our decades, so that the years ending in three or any other number became the first years.

Using this system of identifying our year groups, let us examine stock price movements in Chart I and note under each group of years how regularly in over a half a century they have tended to follow a pattern and to what extent they have deviated from an identifiable habit of behavior.

During the period 1881 to 1936 inclusive, and on the basis of the monthly averages used, the following stock price movements occurred at ten year intervals.

I. (First Years)

The market in March or April of the I years is found without exception to have been higher than it was in January; and in April it has always been higher than in one or more months in the last quarter (October, November or December).

II. (Second Years)

In spite of the general divergence from pattern in this group of years, it will be observed that without exception, September is higher than January; October higher than December.

III. (Third Years)

While chapters which are to follow disclose the III years to be of major significance over a greater space of years than is here under consideration, yet in this period they offer no important movement which is not contradicted by the strong upward movement in 1933. But in 1933, it will be remembered, the dollar in which these prices are measured was threatened with devaluation which occurred in January, 1934.

IV. (Fourth Years)

The fourth appears to be an indeterminate year in the Decennial Pattern, having displayed important movements in both directions as well as years of little movement.

V. (Fifth Years)

From the early months in the V years, the market has, without exception, shown a strong upward movement, and while the pattern varies somewhat, November and December are without exception higher than January.

This rising tendency for the V years we have found in other charts, extends without exception at least as far back as 1855.

VI. (Sixth Years)

In the VI years there is a noticeable tendency to form a saddle. February or March is without exception higher than some subsequent month between May and August inclusive; but also without exception November is higher than March.

VII. (Seventh Years)

The VII years with the III years are important from a longer point of view than is recorded in the chart we are considering, as we shall find in later discussion; yet in the chart, two exceptional years spoil the consistency of the record of downward movements.

VIII. (Eighth Years)

With the V years, the VIII show consistently rising markets, and like V we have found their record of upward movement extends without exception back at least to 1858.

IX. (Ninth Years)

The IX years continue, without exception, the upward movement of the VIII years, at least to September.

X. (Tenth Years)

These, with the III and VII years, will be found important in the longer term view. In the period covered by this chart there is no case where January of a X year was not substantially higher than some subsequent month in the same year, though it will be observed that the peak month varies between September of the IX year and June of the X.

Broadly speaking, we find that the III, VII (sometimes the VI) and the X years have shown a marked tendency towards declining markets, while the V, VIII and the greater part of the IX years have shown an even stronger tendency towards rising price levels.

This summary, together with a careful re-examination of Chart I, should go a long way to establish in the reader's mind the fact that there appears to exist a tendency towards decennial recurrence in minor as well as major stock price movements.

During the early stages of the investigation it seemed incredible that the *degree* of movement in stock prices could be controlled by such environmental factors as apparently affected the life habits of the beasts and fishes discussed at the Canadian Biological Conference, but it did not seem beyond possibility that the timing and the duration of upward and downward movements might be broadly related to some natural phenomena, which in turn might be reflected in meteoro-

logical data such as rainfall, barometric pressure, temperature.

In order, then, to express our decennial pattern in terms of the number of months of upward and downward stock price movements regardless of whether these movements were important or unimportant, the following tabulation was prepared.

TABLE I

MONTHS OF RISING AND FALLING STOCK PRICES, 1881 to 1936

YEAR GROUPS	I	II	III	IV	V	VI	VII	VIII	IX	X
Number of Months										
Rising Prices.....	39	40	29	38	49	39	25	43	43	25
Falling Prices.....	*33*	*31*	*42*	*29*	*21*	*31*	*33*	*13*	*16*	*34*
No Change in Prices..		1	1		2	2	2	4	1	1
Total Months Reported	72	72	72	67	72	72	60	60	60	60
Number of Months										
Excess of Rising Prices	6	9		9	28	8		30	27	
Excess of Falling Prices			*13*				*8*			*9*

Italic = Falling Tendency. **Boldface** = Rising Tendency.

In the column headed I are reported the number of months of rising and falling prices in the first years of the Decennial Pattern, i.e., the years 1881, 1891, 1901, 1911, 1921, 1931 —a total of six years or 72 months.

In similar manner, the second, third, fourth, etc., years of the pattern are recorded under their respective designations.

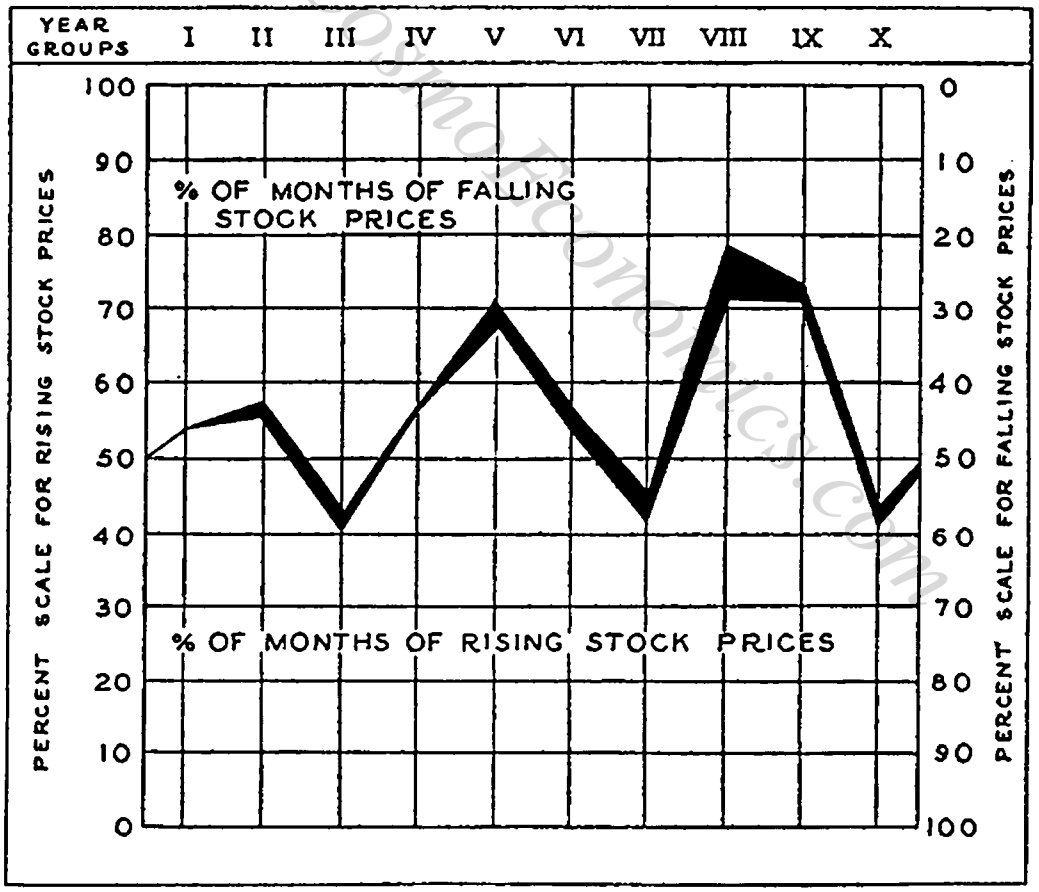
Under IV, only 67 months are reported because the New York Stock Exchange was closed for four months in 1914, eliminating five monthly changes.

Under VII, VIII, IX and X only 60 months are covered, as the tabulation ends with the year 1936, when these studies were made.

In view of the different number of months available for record in the different year groups, it is desirable to record the months of rising, falling and stationary markets in terms of their percentage of the total number of months in each year group for which we have recorded data. Such percentages form the basis for Chart II which follows.

CHART II

PERCENTAGE OF MONTHS
SHOWING RISING, FALLING AND STATIONARY STOCK PRICES
IN THE YEAR GROUPS OF DECENNIAL PATTERN
1881-1936



Breadth of line indicates percentage of months in which no movement occurred.

It will be noted that in giving equal weight to a month in which stock prices declined, let us say 5 per cent, with one in which it declined 25 per cent or more, we avoid one source of error that otherwise creeps into the use of averages in attempting to discover cyclical habits. When average amplitudes are used, a single extreme case, if not definitely offset by proportionately heavy movements in the other periods for which the average is being taken, falsely colors the picture and suggests the presence of recurrent movements, when in fact only one movement of importance took place. This error at least has been avoided in Table I and Chart II.

We have then in this chart another expression of the average Decennial Pattern in stock price movements in terms of the percentage of the total *time* in each group of years by which the characteristic movement (as seen in the pattern Chart I) exceeded the *time* during which stocks were moving in the opposite direction.

Upward Movements

I	Years	show	an	excess	of	8.3%	upward	movement	
II	"	"	"	"	"	12.5	"	"	
IV	"	"	"	"	"	13.4	"	"	
V	"	"	"	"	"	38.9	"	"	
VI	"	"	"	"	"	11.1	"	"	
VIII	"	"	"	"	"	50.0	"	"	
IX	"	"	"	"	"	45.0			

Downward Movements

III	Years	show	an	excess	of	18.1%	downward	movement	
VII	"	"	"	"	"	13.3	"	"	
X	"	"	"	"	"	15.0	"	"	

While the percentages in the downward group are smaller, it must be remembered that falling markets habitually move further in a shorter time than do rising markets, and it must not be overlooked that the figures represent only time studies,

not amplitude. The same thing applies in year groups showing moderate excess periods of rising prices, i.e., the I years and the II, the IV years and the VI. Some years in these groups show (in Chart I) declines of greater amplitude than is suggested by these average time studies.

In simplest terms, it would seem that advancing prices were to be expected chiefly in the V, VIII and IX years; while declining tendencies seemed preponderantly concentrated in the III, VII and X years.

But why should there be anything like such a tendency towards ten year recurrence as appears in these charts and tables? At present there seems to be no ready answer to this question, just as there is no answer with regard to the ultimate causes of any natural phenomena, if inquiry is pushed far enough beyond observed and measured facts.

The next best thing to discovery of a logical cause for recurrences of the sort disclosed is to find that other careful observers have seen and noted in one way or another—at different times and places—phenomena which confirm the existence of the time schedule indicated in our own data. Each observer may have developed his own explanation of the phenomena —but in these explanations we are not, for the moment, interested. They can all be found, clearly summarized by the skilled hands of Mitchell and King. But we are interested in how many have tended to refer to ten years as the "normal" cycle, and how many times the dates of their "crises" fit into the III, VII and X years of our pattern.