Astro-Economics

a study of astrology and the business cycle

1959
Llewellyn Publications
Saint Paul, Minnesota, 55165, U.S.A.

Sixth Printing 1974

Llewellyn Publications
Post Office Box 3383
Saint Paul, Minnesota 55165

International Standard Book Number: 0-87542-882-7

Printed in the United States of America

Only a little of the first fruits of wisdom, only a few fragments of the boundless heights, breadths, and depths of truths have I been able to gather.

—*Martin Luther*

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PREFACE

This book is the outgrowth of a series of lectures delivered by the Author during the past 11 years before such diverse groups as Astrologers, Engineers, Naval and Air Force Officers, and the general public. It contains the results of 45 years of study on the subject of Astro-Economics, or Economic Psychology, and it is the hope of the Author that this book will contribute to a better understanding of the underlying principles of this difficult art.

The importance of Economic Psychology is stated by Dr. George Katona, Professor of Economics and Psychology, University of Michigan, in the October 1954 issue of "Scientific American" as follows:

"As yet we know far too little about the origin of mass attitudes, their spread among people and the effects of different attitudes on action. But what we do know is that economic psychology may usefully supplement the theoretical and statistical approach of traditional economics. It contributes to the understanding and prediction of economic fluctuations, and thereby promises to provide poly makers with better tools which they may use to combat the recurrence of periodic depressions and inflations."

Dr. Carl G. Jung, of Zurich, Switzerland, one of the world's greatest living psychologists declares that, "Astrology represents the summation of all the psychological knowledge of antiquity." Hence the emphasis in this book on the development of an astrological tool to predict the turning points in mass psychology as applied to the economic field. It is hoped that the "tyranny of words" will not becloud the layman's unbiased approach to the subject.

An extensive review of the development of economic thought regarding the business cycle is included, because it is felt to be a pre-requisite to a full appreciation of the magnitude of the problem. The steps leading to the perfection of the astrological tool herein made available, are set forth in chronological order and give an historical background that should prove of inestimable value to the serious student.

The incredible developments in the field of atomic energy and the conquest of space have revolutionized the physical sciences. A similar revolution in the social sciences, of which economics is an important part, is essential if America is to remain the leader of the Free World. The dominant role which America is destined to play in the Aquarian Age, which was born in 1844, can be immeasurably facilitated by using to the fullest the astrological tool which the wisdom of the Ages has placed in our hands. May it be used wisely!

David Williams

Bayside, New York
July 1958

CHAPTER I
INTRODUCTION

For the third time since the end of World War II, the United States has almost over night plunged from Boom into Depression, and the "Business Cycle" has once again become a subject of paramount concern. The cause of economic fluctuations and the problems they present have engaged the best minds in business, banking, labor, and Government.

As the late Brig. General Leonard P. Ayres of The Cleveland Trust Company puts it, "Business cycles are as old as the industrial era. Their prosperities have created thousands of fortunes and their depressions have made millions of workers hungry and desperate. They have overturned governments, fomented revolutions, and caused wars. They are our most serious political problem".

The current business recession is not only of concern in the United States, but thruout the Free World, as is evidenced by the conclusions of a three-day European-American Conference held at Bonn, Germany May 30-June 1, 1958, which was participated in by seventeen European and eleven American industrial executives. The American group was headed by David Rockefeller, Vice Chairman, The Chase Manhattan Bank, through whose courtesy the following summary is presented.

Meeting The Challenge of Recession In a Free Economy

"Considerable concern was expressed by all conferees concerning the present recession in the United States, both as regards its probable duration and depth, for the following reasons:

"1. A deeper recession in America at this particular stage of the economic cold war could be a blow to the prestige of the free enterprise system in the eyes of the uncommitted nations of the world. However, it should be understood that pauses in the economic life of a free country are sometimes the price paid for the freedom of the individuals in the system. Every effort should be made, however, to minimize the cost to those affected.

"2. Concern was expressed that a continuing decline in the United States economy will spread to other countries.

"3. Just as political stability of governments is desirable, so too, it is essential that we learn more about providing stability to the economic level of nations. If prompt solutions cannot be found to recessions in countries operating under free enterprise, there is danger that government intervention will bring about an erosion of the freedom of enterprise as well as the individual.

"The Conference was unanimous in recognizing that anti-recession measures are the joint responsibility of government, business and labor.

Government Responsibility

"Government must be highly sensitive to the stage of the business cycles and can do so by maintaining a close working relationship with industrial leaders Government must recognize that prompt preventative action, when the level of activity is going either up or down too sharply, will be more effective and less costly than action taken after momentum in the new direction has become strongly established. For instance, in the area of credit, it is government's function to limit the supply of credit in times of boom, and promptly to ease credit restrictions when business activity begins to soften. In addition, the Conference urged that tax reforms to increase incentives and promote sound economic growth be given highest priority.

Business Responsibilty

"The conference was unanimous in its recognition that private business management must play a major role in connection with the business cycle. It is recognized that 'the economy' in the Free World does not consist primarily of government institutions but rather of the purchasing decisions being made by hundreds of millions of people and by many millions of individuals in privately owned businesses. Though government action is highly important, individual and business action remains the controlling factor in a free enterprise system. For this reason, restraint on the part of business in times of boom is desirable. It is dangerous for the business community to be carried away with the thought that the level of economic activity can only go upward. It is costly for business greatly to expand its productive capacity in such times when labor is short, material costs are high and money expensive.

"On the other hand, in times of recession business has a responsibility to look ahead and evidence, by its action as well as words, its confidence in the future, in the long-term growth potentials of the free nations of the world."

In the United States, the Government has long

sought the advice of professional economists, both in and out of Government service. Early in President Franklin D. Roosevelt's first Administration, the views of certain economists were embodied in the economic measures of the New Deal. These were largely the work of the Lord Keynes school, whose ideas may be summed up in the phrase, "Tax, tax, tax, and spend, spend, spend."

During the Fair Deal Administration of President Harry S Truman, there was set up in 1946 "The President's Council of Economic Advisers" under the able chairmanship of Dr. E. G. Nourse of the Brookings Institution. But he soon resigned when his orthodox economic advice was rejected in favor of that of the Keynes school advocated by his successor Leon Keyserling. Under the Presidency of General Dwight D. Eisenhower, the chairmanship first fell to Dr. Arthur F. Burns, an orthodox economist formerly connected with the National Bureau of Economic Research. The position is now held by Dr. R. J. Saulnier of Columbia University, a former associate of Dr. Burns.

It is interesting to note in the daily press of June 9, 1958 that a special study just completed for the President's Council of Economic Advisers by Dr. Goeffrey H. Moore, Associate Director of Research of the National Bureau of Economic Research, has indicated that if the experience of past recessions is any guide to the future, business activity may not return to previous peak levels for many months.

This statistical study was made to provide a set of measurements of past business cycle recessions with which any current recession could be compared. The new method of studying the severity of business cycles was evolved as an aid to analysis and not as a substitute for it, Dr. Moore emphasized, noting that it was not intended as a means of forecasting reliably either the ultimate depth or the duration of a recession.

Thousands of trained statisticians and economists are employed by private industry and Government, and hundreds of millions of dollars are spent annually to record and chart the course of business activity. In the past 50 years, thousands of textbooks on economics have devoted more or less space to an anlysis of the causes of business fluctuations. But economists fail to agree as to the cause, control or cure of the Business Cycle. Some of the conflicting views will be set forth in the following Chapters, and a new approach to the solution of the problem will be outlined.

CHAPTER II

THE ECONOMIST'S DILEMMA

The forecasts of the wisest economists or business men are, at best, mere guesses"
—Thomas W. Lamont of J. P. Morgan & Co.

What is the "Business Cycle"? Burns and Mitchell, in "Measuring Business Cycles" (1947) state that the National Bureau of Economic Research gives the following definition:—"Business cycles are a type of fluctuation found in the aggregate economic activity of nations that organize their work mainly in business enterprises; a cycle consists of expansions occurring at about the same time in many economic activities, followed by similarly general recessions, contractions, and revivals which merge into the expansion phase of the next cycle; this sequence of changes is recurrent but not periodic; in duration, business cycles vary from more than one year to ten or twelve years."

A slightly contrary view is taken by Professors Warren and Pearson of Cornell, who state in "PRICES" (1933):—"**There is no such thing as a definite business cycle.** There are a large number of cycles of different length for wheat, hogs, sheep, poultry, cattle, cotton, and automobile production, for building contruction, and for prices of pig iron, stocks, bonds, etc. The algebraic sum of all these cycles properly weighted makes the business cycle. Therefore, no two cycles are alike. The way to forecast future business cycles is to estimate each of the elements of the business cycle and to combine them according to their relative importance."

A somewhat similar view is expressed by Professor W. C. Mitchell in "Business Cycles and Their Causes" (1950) in which he says, "**Business history repeats itself, but always with a difference. A thoroughly adequate theory of business cycles, applicable to all cycles, is consequently unattainable.** Every business cycle, strictly speaking, is a unique series of events and has a unique explanation, because it is the outgrowth of a preceding series of events, likewise unique."

Since business cycles are peculiar to the industrial nations, it is appropriate that the first attempt at a scientific explanation of the nature of business cycles and the periodic return of crises should be undertaken by English economists. Thus we find Professor W. Stanley Jevons in 1863 discussing the nature of commercial fluctuations in a paper, "A Serious Fall in the Value of Gold." In it, while showing a clear understanding of the financial interpretation of business cycles, Jevons tentatively broached the theory of a "crop cycle."

However, the first attempt at a complete theory of the business cycle was made by John Mills, an English businessman, in a paper, "On Credit Cycles and the Origin of Commercial Panics" presented at a meeting of the Manchester Statistical Society in December 1867. While using some of Jevons' ideas on credit, gold, and interest rates, Mills originated the theory that the **mental mood** of businessmen tends to run in cycles. According to Mills, business cycles are essentially cycles of credit.

Dr. Warren F. Hickernell summarizes the Mills theory in "Financial and Business Forecasting" (1928) as follows:—"Mills bases his credit cycle theory upon two main elements; **first,** the tendency of human nature to exaggerate prospects for prospertity when prices rise and to underestimate business opportunities when trade is depressed. The **second** factor is the rate of interest, which causes wide-awake and intelligent men to extend operations when capital is abundant and to curtail operations when credit is distended relative to metallic banking reserves. Intelligent men furnish the initial impulse toward expansion when business is depressed, and they are followed by the ignorant. Later, the intelligent contract operations when inflation appears, but the ignorant expand excessively until checked by a crisis. In a state of panic, the ignorant curtail abnormally. Their activities cause violent and extreme fluctuations. whereas the policy of the intelligent tends to check extreme tendencies and minimize fluctuations.

"In view of the fact that business tends to move toward normal conditions thru the activity of intelligent men and tends to move toward extremes thru the actions of the ignorant, Mills concludes that the **most effective remedy for commercial panics is to increase the average intelligence** and elevate the average moral tone."

The "mental" theory of Mills receives strong support from Dr. Warren M. Persons, Professor of Economics, Harvard University, who states in "Forecasting Business Cycles" (1931); "The world of affairs in which we live is not a mechanistic world, it is a bewildering world of multiplicities, complexities, interactions, repercussions, and the vagaries of human wants, fears and hopes. It is a world in which, at times, facts and logic become subordinated to human emotions. At such times individuals, who by themselves are rational, join with other rational individuals to form an unreasoning mob. The business world then suffers from an epidemic of optimism, with hope, recklessness and indolence as its leading symptoms, or from

an epidemic of pessimism with fear, timidity and inertia as its leading features. It is also a world of wars, droughts, floods, earthquakes and monetary changes. In such a world there can be neither a 'sure-fire' system nor a reliable 'trick' method of forecasting business cycles."

In a somewhat similar vein, Dr. Frederick R. Macaulay in "The Movements of Interest Rates, Bank Yields and Stock Prices in the United States since 1856" (1938) states:—"The very essence of economics is that it is a study of human behavior, of the life of man, and basically of the mental life of man. It takes cognizance of facts in the external world, not for their own sakes but only because of their relations to the mind of man. It is a study of some of the causes and effects of those conscious or unconscious decisions that men inevitably make in their rational or instinctive struggle to 'earn a living' and to satisfy at least some of their desires by adjusting the external world to themselves and—perhaps—thereby securing happiness and well-being."

It is interesting to note that 90 years after the English businessman Mills enunciated his "mental" theory, a successful American businessman, Charles Mortimer, President, General Foods Corp. is quoted in The New York World-Telegram and Sun of June 12, 1958, as follows:—"I do not think it is an exaggeration to say that recessions begin and end in the minds of men. Nervousness in the front office about business prospects can be quickly translated into lowered carloadings."

Nevertheless, most economists take the position of Professor E. C. Bratt, who states in "Business Cycles and Forecasting" (1940) "Emotional response within the forces creating the self-generating oscillation may obey psychological laws, but if so these laws are as yet too obscure to be of any value for the purpose of explanation. The emotional response must, therfore, be accepted as a chance result for the present. Every business cycle has been unique in that the combination of forces is never the same. If the cause of business-cycle variation were always precisely known, forecasting would become simple."

Clement Juglar's theory of economic cycles is very similar to John Mills' credit cycle, but Juglar believes them to be self-perpetuating. Thus, prosperity, with high prices, engenders overspeculation and leads to a crisis. Liquidation removes the unfavorable factors in the business situation and paves the way for revival.

"The Guaranty Survey" of May 1958, published by the Guaranty Trust Company of New York, states, "The cycle of boom and recession is not uniform; no two cycles are even approximately alike. It is generally agreed, however, among businessmen at any rate, that booms generate unsound tendencies, including unwarranted expectations of future markets, excessive inventory accumulation, distorted price and cost relationships, outright speculation, credit strain, disproportionate production of different types of goods, and ill-advised investment. These tendencies occur in a variety of combinations that defy close analysis, prediction, and treatment. Yet, whatever the combination may be in a particular case, it requires correction, and the correction involves a temporary decline in business activity."

F. S. Oliver, a British journalist once wrote, "The besetting sin of the economists was their preference for argument over observation." Stuart Chase in "Power of Words" (1953) states:—"Economics has with some reason been called the dismal science. A major difficulty is that economics is so completely interwoven with human behavior that reliable theory cannot be formulated unless the economist takes both psychology and anthropology into account. Most economists have stubbornly held to pre-scientific assumptions about human behavior.

"One revealing collection of prophecies as to the course of the American economy between 1900 and 1929 made by serious students of economics showed nearly every prophet to be either seriously or totally wrong, the majority firmly convinced that prosperity would continue long beyond 1929. The post-World War II depression so confidently predicted by practically everybody, never arrived. The facts have consistently belied the predictions of the economists. Most economists cannot even foretell the general direction of the economy. The perennial argument is raging as to whether the economy is headed for more inflation, for a recession, or for an old-fashioned depression." (This is just as true in the current recession as it was in the 1953 recession.)

The next Chapter will discuss the important "crop-cycle" theory which has been propounded at various times and under various names.

CHAPTER III

THE SUNSPOT THEORY OF BUSINESS CYCLES

"Believe nothing without examination. But where reason and evidence will warrant the conclusion, believe everything and let prejudice be unknown. Search for truth on all occasions and espouse it in opposition to the World."—Andrew Jackson Davis.

The financial interpretation of the business cycle did not entirely satisy Professor Jevons, who felt that financial fluctuations might fundamentally depend upon changes in the production of food. During the next 12 years he labored to establish a fundamental physical law of commercial fluctuations, which culminated in a paper, "The Solar Period and the Price of Corn" read before the Bristol Meeting of the British Association in 1875.

In this paper Jevons states, "It is true that Mr. John Mills, in his very excellent papers upon Credit Cycles in the Tranactions of the Manchester Statistical Society (1867-8) has shown that these periodic collapses are really mental in their nature, depending upon variations of despondency, hopefulness, excitement, disappointment, and panic. But it seems to me very probable that these moods of the commercial mind, while constituting the principal part of the phenomena, may be controlled by outward events, especially the condition of the harvests."

But what affects the harvests? Jevons answers:—"It has lately been proved, beyond all reasonable doubt, that there is a periodic variation in the sun's condition, which was first discovered in the alternate increase and decrease of area of the sunspots, but which is also marked by the occurrence of auroras, magnetic storms, cyclones, and other meteorological disturbances. Little doubt is now entertained moreover, that the rainfall and other atmospheric phenomena of any locality are more or less influenced by the same changes in the sun's condition, though we do not yet know either the exact nature of these solar variations or the way in which they would act upon the weather of any particular country.

"Now if weather depends in any degree upon the solar period, it follows that the harvest and the price of grain will depend more or less upon the solar period, and will go thru periodic fluctuations in periods of time equal to those of the sunspots."

This was not a new idea, for the famous English astronomer Sir William Herschel in "Philosophical Transactions—1801" endeavored to discover a connection between the price of corn and the periodic variation in sunspot activity. But his facts were evidently too few to justify any sure inference.

Another English astronomer, R. C. Carrington, F.R.S. in "Observations of the Spots on the Sun from Nov. 9, 1853 to Mar. 24, 1861 shows a diagram comparing the price of corn with the sunspot curve during portions of the 18th and 19th Centuries. Carrington states, "I attach no importance to the diagram, but data of this kind were employed in an interesting and original investigation of the elder Herschel, which has been frequently referred to in subsequent years. The present diagram appears to me rather to indicate that, concurrently with abundant and deficient crops, social and political causes affect prices to an extent sufficient to destroy their value for the purpose for which he selected them. It will probably be noticed that no previously uninformed person could from the curve infer the year of the abolition of the Corn Laws."

Jevons used tables for Wheat, Barley, Oats, Beans, Peas, Vetches, and Rye, derived from Professor James E. Thorold Rogers' monumental "History of Agriculture and Prices in England from 1259 to 1793" published in 1866. Expressing prices in grains of silver in order to eliminate fluctuations due to currency changes during the 140 years under review, Jevons obtained an 11.11 year cycle which was the supposed average length of the principal sunspot cycle. He concluded, "I do not venture to assert positively that the average fluctuations as given in the preceding tables are solely due to variations in solar power. They seem to show that the subject deserves further investigation, which I hope to give to it when I have leisure."

Mr. Arthur Schuster, of Owens College, in "Nature" May 17, 1877, pointed out that good wine years in Germany corresponded closely with the years of minimum sunspots.

At the Dublin Meeting of the British Association held on August 19,1878, Jevons read a paper, "The Periodicity of Commercial Crises and its Physical Explanation" in which he states, "Three years ago, at the Bristol Meeting of the British Association, I read a paper giving the supposed results of a new attempt to prove the relation suspected by Herschel. Subsequent inquiry convinced me that my figures would not support the conclusion I derived from them, and I withdrew the paper from publication. I have since made several attempts to discover a regular periodicity in the price of corn in Europe, but without success. (What frankness!) Nevertheless, I have long felt convinced that a well-marked decennial periodicity can be traced in the activity of trade and the recurrence of commercial crises."

Jevons then lists the following years when English trade reached a maximum of activity:—1701, 1711, 1721, 1732, 1742, 1753, 1763, 1772, 1783, 1795, 1805, 1815, 1825, 1837, 1847, 1857, 1866. Of them, he says, "These years, whether marked by the bursting of a commercial panic or not, are, as nearly as I can judge, corresponding years, and the intervals vary only from nine to twelve years. There being in all an interval of one hundred and sixty-five years, broken into sixteen periods, the average length of the period is about 10.3 years."

By eliminating the years 1701 and 1711, which he considers as not well-established, Jevans gets a period of 10.43 years, which compares with the mean duration of the sunspot period at that time of 10.45 years. Jevons concludes, "Judging this close coincidence of results according to the theory of probabilities, it becomes highly probable that two periodic phenomena, varying so nearly in the same mean period, are connected as cause and effect." This conclusion was not, however, susceptible of scientific proof.

In "Commercial Crisis and Sunspots" printed in "Nature" November 14, 1878, Jevons repeats most of the material contained in his British Association paper. He goes on to state, "All kinds of distinct reasons can be given why trade should be now inflated and again depressed and collapsed. But, so long as these causes are various and disconnected, nothing emerges to explain the remarkable appearance of regularity and periodicity which characterizes these events. I can entertain no doubt whatever that the principal commercial crises do fall into a series having the average period of about 10.466 years. Moreover, the almost perfect coincidence of this period with Broun's estimate of the sunspot period (10.45 years) is by itself strong evidence that the phenomena are causally connected. The exact nature of the connection cannot at present be established."

The next proponent of the sunspot theory was the English Astronomer, N. R. Pogson, who, in the "Indian Famine Bluebook—1881," traced an intimate connection between sunspot frequency, rainfall, and grain prices in Madras, India.

H. S. Jevons, developing the sunspot theory of his father in "The Sun's Heat and Trade Activity" published in the August 1909 Contemporary Review, stated: "The heat emitted by the sun varies in cycles of 3½ years, every third fluctuation being emphasized. These cycles generate crop cycles. The impulse from the harvests comes every 3½ years, so that trade fluctuations must fit into the nearest multiple of 3½ years. It requires further research to decide fully the respective shares of the economic and meteorological causes in determining whether the trade cycle shall last for seven or ten years."

It will have been noted that in the Herschel-Jevons Sunspot Theory, agriculture was the medium through which the meteorological influences were transmitted to industry. However, agriculture is not the only medium, for in 1919, Professor Ellsworth Huntington of Yale University offered the theory that variations in health, which often seemed to be the result of business cycles, were in fact a cause thereof; and that they themselves were the resultant of variations in weather and solar variation.

Economists, however, tended to belittle the sunspot theory until Dr. Carlos Garcia-Mata and Felix I. Shaffner reported in the November 1934 Quarterly Journal of Economics the results of a careful and impartial investigation into the relation between solar activity and business cycles. They found a startlingly high degree of correlation between solar activity and total production; exclusive of agriculture, for the period from 1875 to 1930. Exceptions were found only during the depressions of 1903-4 and 1913-14 and were due to the enormous quantity of volcanic dust blown into the atmosphere during the volcanic eruptions of Mount Pelee in 1902-3 and Mount Katmai in 1912-13.

Although the Garcia-Mata-Shaffner studies did not support the old theory that the connection arises through weather and crops, they advanced two hypotheses to account for the remarkable correlation between solar activity and the business cycle. First. There is a cycle in the magnetic activity of the earth which is similar in length to that of solar phenomena; and since nerve energy is electrical in nature, a direct biological effect may result from variations in the earth's magnetism. Second. The bright areas of the sun are directly related to the amount of ultra-violet rays reaching us; changes in ultra-violet radiation are capable of causing variations in health and vitality. These two factors might conceivably affect the mental state of people and make for variations of optimism and pessimism, which have been observed to be a factor in business cycles.

Dr. Wilford I. King of New York University is one of the few modern economists who took a favorable view of the sunspot theory, for, in "The Causes of Economic Fluctuations" (1938) he states: "The possibility remains that here we have the underlying force responsible for human fluctuations. As yet, however, the evidence in that direction must be considered decidedly inconclusive. Since no one else has produced equally strong evidence to support any other explanation accounting either for the relative suddenness with which human sentiment changes from optimism to pessimism, or for the marked periodicity characterizing many economic variables, the burden of proof seems to be upon those who reject the theory that solar radiation affects business."

A somewhat guarded resumé of the sunspot theory is given by Dr. N. J. Silberling in "The Dynamics of Business" (1943) as follows: "The reasoning, as expressed by Sir William Herschel, early in the nineteenth century, and later by W. Stanley Jevons, is that variation in the radiation or heat from the sun influences the yields of important farm crops and hence farm prices and income; these, in turn, affect the state of general trade and industry. Still more recent has been the attempt to read a new meaning into the roughly cyclical pattern of sunspots by suggesting that it is not the effect of sunspots, or alterations in physical radiation from the sun, upon rainfall or temperature or crop production, but rather their direct effect upon human psychology that accounts for the ups and downs in economic motivation. Briefly, the theory is that the sun transmits varying amounts of ultra-violet ray emanations, and these, in turn, have a physiological or neurological effect upon animal organisms that might conceivably be capable of bringing about alterations in moods, attitudes, and promotional energy."

"The actual relations between sunspot numbers and the cycles of trade and industrial production in the United States do, in fact, appear to be more or less correlated during the past half century, but a close examination of the data over a much longer period, serves to dispel the assumption of a high degree of correlation. Curiously enough, a direct correlation does seem to persist for several decades at a time, but unfortunately it is inverse at other periods and irregular enough on the whole to render any causal deductions whatsoever highly questionable. Although it is not impossible that further research along these lines may yet develop relationships that are fairly consistent, as well as rational, it cannot be said that our present knowledge of the sun and its possible complex effects upon mundane attitudes and business transactions is capable of being a safe basis for predicting the future course of events or for guiding business policy."

The relationship between sunspot activity and an index of general business is shown on Chart 1.

In a remarkable but little known paper read at the annual meeting of the American Meteorological Society, Philadelphia, Pa., December 30, 1926, Professor A. L. Tchijevsky of Moscow, Russia, advanced the theory that since about 500 B.C. there has been a cycle in human excitability about 11 years long, and that it is caused by or associated with the 11 year sunspot cycle. He stated that the greatest revolutions, wars and other mass movements which have created nations and whole systems of states, tend to coincide with the periods of the maxima of the sun's activity, and to attain their maxima in the moments of the highest points of this activity.

Tchijevsky explained that elemental changes in the sun are followed by a certain change in the material processes of the organs of man's higher nervous activity. This is derived from the main assumption of contemporary biophysics that the entire organism of man must be under the effect of powerful cosmic and geophysical factors.

To the question, "Are we not slaves of the sun and its electrical powers?" Tchijevsky answers, "Yes, in a certain way we are, but this yoke is only comparative, as we can direct our activities in the right way. The sun does not oblige us to do this or that; it only obliges us to do something. But humanity follows the way of least resistance and drowns itself in oceans of its own blood."

Does this not remind the astrological student of the axiom, "The stars incline—they do not compel?"

At a lecture given by the author before the Foundation for Metaphysical Arts and Sciences in New York City, November 15, 1950, attention was directed to the startling fact that the United States has been engaged in a war or has been in a depression during alternate periods of low sunspot activity. These periods occur at intervals of approximately 22 years, when sunspots die out in the Southern Solar Hemisphere and reappear in the Northern Solar Hemisphere, at which time their electrical polarity changes. These periods are listed in Table 1.

Table 1

U. S. Wars and Depressions vs. Sunspots

Year	Relative Sunspot No.	Historical Event
1755	9.6	French and Indian War
1775	7.0	American Revolutionary War
1798	4.1	Undeclared Naval War with France
1823	1.8	Depression—Monroe Doctrine (caused by threats of Holy Alliance and Russia)
1843	10.7	Debt Repudiation Depression
1867	7.3	Post-Civil War Reconstruction Depression
1889	6.3	Depression (Bloodless Revolution in Brazil)
1913	1.4	Depression caused by 2nd Balkan War leading to World War I
1933	5.7	Depression—Birth of New Deal—Rise of Hitler
1954	4.4	Depression.

The "crop cycle" theory was revived by Professor H. L. Moore of Columbia University in "Economic Cycles" (1913) based on the actual measurements of rainfall in the United States. His researches suggested the presence of an 8-year (the Venus cycle) and a 33-year cycle in rainfall in Illinois, and that 90% of that state's crop production fluctuated in close correlation with these rainfall cycles. In theory, when crops were large, prices fell. This was favorable to labor, as it lowered the cost of living. The demand for manufactured goods, especially iron and steel, was stimulated. Expansion in iron output and higher prices then followed. On the other hand, poor crops and consequently higher food prices, were unfavorable to manufacturing.

Moore found a one to two year lag in iron prices and a four year lag in general prices. Hickernell concluded that Moore's rainfall theory did not have much value in practical business forecasting, because it failed to take into account credit cycles.

However, the "crop cycle" theory cannot be thus lightly dismissed, for the September 1949 "Changing Times" magazine reports a striking correlation between the general level of business conditions and the water level of Lake Ontario, which, being the last basin in the chain of the Great Lakes which drain a vast agricultural area, is an accurate measure of the moisture conditions on the farms. Thus, a chart made by adding up the rainfall received by all 48 states, looks almost exactly like the chart of the water level in Lake Ontario.

In theory, several years of good rainfall increases crop production, making the farmers prosperous and free spenders. This spending stimulates

business in the agricultural areas. The increased rainfall has meanwhile raised the level of Lake Ontario. During a series of dry years, the level of Lake Ontario drops, crop production falls, the farmers curtail their spending, business in the rural areas slows down, and the recession spreads to all kinds of business.

Illustrative of the degree of correlation are the following: In the great boom year of 1929, the level in Lake Ontario was the highest in 60 years, whereas during the depression of the 30's, the lake level was the lowest in its recorded history. It rose in 1937, declined until the beginning of World War II, rose to a peak during the war and remained moderately high for three post-war years and declined during the recession of 1949. It is significant that the spring of 1958 has been an unusually wet one, foreshadowing bumper crops in the fall, when the current recession in business is expected to begin to turn upwards.

The next chapter will discuss two statistical types of business cycle theory.

CHAPTER IV

THE HISTORIC ANALOGY AND RHYTHMIC CYCLE THEORIES

In the previous chapters, the CREDIT and CROP-CYCLE theories of the business cycle were discussed. A third theory is based on the use of historical and statistical analysis. This school of thought is expressed in the following excerpts:

THE HISTORIC ANALOGY THEORY

Dr. Warren M. Persons, Professor of Economics, Harvard University, states in his book "Forecasting Business Cycles" (1931): **"We conceive of this world, not as a universe of isolated events, but as one of connected events — of developments, of causes and effects.** Our equipment for living in the world of the present and future is our accumulated, classified, and measured experience of the past. Experience says that our world is not mechanistic; it says that future events, to be sure, will develop out of past events, but that the complexity and multiplicity of human affairs prevent us from viewing specified future events as certainties. Experience says also that our world is not chaotic; it says that specified future events, while not certain, are more or less probable. A forecast of industrial production and trade is not a statement of a certainty; it is a description of one's concept of probable future developments."

Prof. A. B. Adams, from a study of all the business cycles since 1720 concludes in his book "Analysis of Business Cycles" (1936): "All statistical forecast charts are predicated upon the theory that business history will repeat itself, either as to fluctuations in the general trend of business, or as to correlations in the fluctuations of certain time series. **All forecasting agencies have used assumptions of historical repetition of cyclical movements, as well as assumptions of fixed sequences of time series, to aid them in making forecasts.** It is evident that the great weakness of the empirical or historical method of forecasting is the fact that business history does not repeat itself with sufficient regularity and similarity to make this method of forecasting reasonably dependable. Sound knowledge of the history of cyclical fluctuations is a necessary prerequisite to intelligent forecasting of the future trend of business. A thorough study of past cycles can be gained only through an analytical study of the economic happenings and conditions which attended each cycle."

Smith and Duncan, in "Elementary Statistics and Applications" (1944) state: "Business economists attempt many kinds of forecasts. **One of the most important objects of economic forecasting is to predict general business conditions; that is to say, the cyclical position of general business.** Statistically, general business is properly measured by some index of business activity. One of the methods used in forecasts of general business conditions is known as that of 'historical analogy'. It is based on the assumption that in cyclical fluctuations history tends to repeat itself. In its cruder forms, this consists merely in forecasting the course of general business, subsequent to some disturbance, from the course of general business that followed a similar disturbance in the past. For example, the forecaster might undertake to predict the course of general business following the crisis of 1939 from the course of business following the crisis of 1873."

Prof. S. J. Maisel of the University of California states in "Fluctuations, Growth and Forecasting" (1957): "Successful forecasting is intricate. Forecasts deal in probabilities. **Most forecasters make use of historical and statistical patterns. It is almost impossible to work without them.** The procedures assume that there are certain uniformities in the economy which can be discovered by an analysis of past experience. By means of statistics, observation, or theory, it is discovered that a certain situation A in the past has always been followed by another situation B. Assuming that this results from a relationship in the economy which will not change, it can be predicted that the next time A occurs, B will ensue."

A dissenting view is expressed by Dr. Leo Barnes, Chief Economist, Prentice-Hall, Inc., who in their "Handbook for Business Forecasting" (1949) gives the reason for the poor showing of modern economic forecasters as follows: **"Too many would-be forecasters confuse statistical correlation with causal connection."** Regarding forecasts based on cycles, he says: "Economic experts of the National Bureau of Economic Research have been studying business cycles for more than two decades. They have emerged with the discouraging conclusions that no two cycles are exactly alike, and that there is no automatic, inevitable periodicity on the basis of which a business analyst can spot the high and low of the current business cycle."

This view is reiterated by former Presidential Advisor Dr. Arthur K. Burns: "Economists have not yet evolved, if they ever will, a technique for making dependable forecasts."

THE RHYTHMIC CYCLE THEORY

The idea that business fluctuations occur at uniform intervals was quite prevalent during the 19th century, for Dr. Hyde Clarke in the "Railway Register" for 1847 called attention to a ten or eleven year periodicity in famines, which he first noted in 1838. In February 1848, J. T. Danson read a paper before the Statistical Society of London, attempting to trace a connection between the decennial periodic changes in the condition of the people and the variations occurring in the same period in the prices of the most necessary articles of food. William Langton, in Transactions of the Manchester Statistical Society for 1857 states: "These disturbances are the accompaniment of another wave, which appears to have a decennial period and in the generation of which moral causes have no doubt an important share."

Professor Jevons, in his 1875 paper stated: "Before concluding, I will throw out a surmise that it is now generally allowed that the fluctuations of the money market though often apparently due to exceptional and accidental events, such as wars, great commercial failures, unfounded panics, and so forth, yet do exhibit a remarkable tendency to recur at intervals approximating to ten or eleven years. Thus, the principal commercial crises have happened in the years 1825, 1836-9, 1847, 1857, 1866, and I was almost adding 1879, so convinced do I feel that there will within the next few years, be another great crisis.

"Now if there should be, in or about the year 1879, a great collapse (it actually occurred in the autumn of 1878) comparable with those of the years mentioned, there will have been 5 such occurrences in fifty-four years, giving almost exactly eleven years (10.8 years) as the average interval, which sufficiently approximates to 11.11, the supposed exact length of the sunspot period, to warrant speculation as to their possible connection."

At least one prominent American business man capitalized on this theory, for Edward R. Hewitt in "My Grandfather, Peter Cooper" (1952) states that Peter Cooper figured on a business panic about every ten years. When in his estimation, the bottom of the financial crisis had been reached, he would put all the gold he had on hand into the best Wall Street securities at low prices. He repeated this process five times during his long life-time (he died at the age of 92) and amassed a fortune, some of which was used to found the first free Art and Engineering College in America—Cooper Union—which will next year celebrate its 100th anniversary.

The decennial pattern was also used for a number of years to predict stock market movements, by Edgar Lawrence Smith, who describes his method in "Tides in the Affairs of Men" (1939). Smith stated, "There is not at present sufficient evidence to warrant relying upon the sunspot cycle as an index of the total condition of the sun and consequent quantity and quality of solar radiation." But he postulated the hypothesis:

"A. That all changes in the quantity and quality and angle of reception of solar radiation reaching the earth's atmosphere cause relative changes in this atmosphere;

"B. That a preponderance of these atmospheric changes are recorded proportionately in changing types of weather over large areas and, in turn, are reflected in certain comparisons of weather data for smaller areas;

"C. That the activities, health and mental outlook of populations subject to the impact of these changing environmental conditions are influenced by them either:

1. Directly—through changes in the quantity, quality and angle of solar radiation which envelopes them.
2. Indirectly—through meteorological or electrical changes in their environment caused by (1) above.
3. Indirectly—through (1) and (2) above operating either separately or jointly through crops, hence food, hence human metabolism on the one hand and upon food price structure on the other."

Somewhat similar to the sunspot theory, in that it emphasizes the supposed existence of regularly periodic waves in business and economic processes, is the theory of F. A. Pearson and his associates at Cornell University. The production cycle is broken down into distinct elements, each of which, on the basis of long term measurements from monthly data, is found capable of being "fitted" by a sine curve of appropriate period. Among the factors used are a major building cycle of 18 years, a minor residential-building cycle of 33 months, a textile-production cycle of 23 months, an automobile production cycle of 40 months and the purchasing power of farm income. When these dissimilar, but in each case strictly periodic, curves are averaged together, with appropriate weights, they generate an irregular cyclical pattern that gives a fairly close degree of correlation with the Federal Reserve index of industrial production.

While the foregoing approach to the problem of forecasting the business cycle is unique, its weakness lies in the assumption that the individual factors follow a regular, recurrent pattern. In actual fact, this condition seldom prevails.

Dewey and Dakin in "Cycles—The Science of Prediction" (1947) takes forecasters to task as follows: "When a people finds that predictions of many financial advisors, statesmen, historians, and other proclaimed experts are seldom better than the predictions of the astrologers, our social sciences have demonstrably not been earning their way." They then proceed to describe the numerous rhythmic cycles in the natural and social sciences that have been discovered by mathematical analysis of the statistical data accumulated over the years.

Despite the hostility of economists to the idea of cycles—in the sense of regularity (not the result of chance) Edward R. Dewey, Director, Foundation for the Study of Cycles, expresses his theory in the February 1952 issue of "Cycles" as follows: "If two phenomena have rhythmic fluctuations of exactly the same wave length, which in each series are so dominant, so regular, and have recurred over so many repetitions that they cannot reasonably be the result of chance, one may be the cause of the other, or they may have a common cause, or they may be indirectly related."

A concrete example is given by Dewey in the December 1951 issue of "Cycles" as follows: "When John Nelson discovers that radio 'weather' has cycles which correspond in time interval and in actual calendar timing to planetary cycles, he is not only able to predict radio weather with 80% accuracy, months in advance, but he gives the whole world at least a hint that directly or indirectly planets may be a factor in magnetic storms here on earth."

In the May-June 1958 issue of "Cycles" Dewey makes several important observations: "First, rhythmic cycles are well nigh universal in nature. Second, natural science cycles are usually much simpler than human cycles, and are therefore easier to study. Third, when the wave-lengths of the cycles in natural science phenomena are the same as the wave-lengths in social science phenomena, we have reason to believe that we are dealing with something very fundamental indeed. Finally, the study of natural science cycles may teach you more about social science cycles than will the study of social science cycles themselves."

The weakness of the Dewey method lies in the mathematical techniques used in deriving cycles from the raw statistical data. The length of the cycle becomes an average, which can be very misleading. Thus, for example, although the mean length of the sunspot cycle is 11.1 years, the individual cycles vary in length from a minimum of 8 years to a maximum of 16 years. This was the rock upon which the Jevons sunspot theory of the business cycle foundered. And it is this fact which makes prediction on the basis of Dewey's cycles dangerous. Dewey also warns in the February 1952 "Cycles": "You must always be on the lookout for compound cycles. There is reason to believe that the well-known 41 month cycle and the 9.2 year cycle may be compound, and may be reversing at the present time, but a great deal more work needs to be done before we can be sure."

L. P. Ayres in "The Nature and Status of Business Research," in Journal American Statistical Association, March 1922, concludes, "The job of the business statistician is to look into the future. He is employed to furnish those in positions of top control in the firm with a fact-basis for their thinking and acting. If he can do this successfully he becomes one of the most valuable men in the organization."

This ideal goal is not being achieved, for Dr. Heinz E. Luedicke, Editor, the Journal of Commerce, who served as panel moderator at the annual convention of the National Association of Purchasing Agents held in Chicago, Illinois in May 1958 stated. "The economists still have not come up with any forecasting tool that can be safely and successfully used in determining the exact turning points in the business trend."

Such a tool will be described in succeeding chapters.

CHAPTER V

THE PLANETARY CAUSE OF SUNSPOTS AND THEIR TERRESTRIAL EFFECTS

Professor Jevons, in his 1875 paper made the following prophetic statements: "Assuming that variations of commercial credit and enterprise are essentially mental in their nature, must there not be external events to excite hopefulness at one time or disappointment and despondency at another? It may be that the commercial classes of the English nation, as at present constituted, form a body, suited by mental and other conditions, to go through a complete oscillation in a period nearly corresponding to that of the sunspots. In such conditions, a comparatively slight variation of the prices of food, repeated in a similar manner, at corresponding points of the oscillation, would suffice to produce violent effects.

"If, then, the English money market is naturally fitted to swing or roll in periods of ten or eleven years, comparatively slight variations in the goodness of harvests repeated at like intervals would suffice to produce those alternations of depression, activity, excitement and collapse which undoubtedly recur in well-marked succession. I am aware that speculations of this kind may seem somewhat far-fetched and finely-wrought, but financial collapses have recurred with such approach to regularity in the last fifty years, that either this or some other explanation is needed.

"It is curious to reflect that if **these speculations should prove to have any validity, we get back to something which might be mistaken for the astrology of the Middle Ages.** Professor Balfour Stewart has shown much reason for believing that the sunspot period is connected with the configuration of the planets. (I have since read Professor Stewart's memoirs on the subject and am inclined to think that the relation of the planets and solar variations is of a more remote nature than he believes.)

"Now, if the planets govern the sun, and the sun governs the vintages and harvests, and thus the prices of food and raw materials, and the state of the money market, it follows that **the configuration of the planets may prove to be the remote causes of the greatest commercial disasters.**

"It is a curious fact, not sufficiently known, that the electric telegraph was a favorite dream of the physicists and romanticists of the 16th and 17th centuries. It would be equally curious if the pseudo-science of astrology should, in like manner, foreshadow the triumphs which precise and methodical investigations may yet disclose, as to the obscure periodic causes affecting our welfare when we are least aware of it."

The scientific evidence leading to the fulfillment of this prophecy will now be presented.

The Planetary Theory of Sunspot Activity

The Sun is the most important member of our solar system, since it contains 99.9% of the mass of the system, and thus regulates the movements of the other bodies. From the Sun we obtain our light, heat, and energy, and on its life-giving rays depend all human activity. It acts on us through the atmospheric shell surrounding the Earth, which is being bombarded by electronic influences varying in intensity with cyclonic disturbances on the sun's surface evidenced by dark spots called sunspots, large, irregular, bright areas called faculæ, light and dark markings called flocculi, and vast eruptions of gases rising from the chromosphere to heights as great as 1,000,000 miles, called prominences.

The earliest records of sunspot observations are contained in the great Chinese Encyclopedia of 1322 A.D., which lists 45 sunspots between 301 A.D. and 1205 A.D. Nineteen additional sunspots were observed by the Chinese up to 1370 A.D. An Inca observer, Huyana-Capec, made sunspot observations between 1495 A.D. and 1525 A.D. But the first scientific study of sunspots began in 1610 A.D. with the telescopic observations of Galileo and his contemporaries, Fabricius, Harriot, and Scheiner. Reliable counts of sunspot numbers have been kept continuously since 1749 A.D.

The periodicity of sunspots was first noted by Samuel Heinrich Schwabe of Dessau, Germany, who in 1844 published the results of his observations between 1826 and 1843 inclusive, provisionally estimating the sunspot cycle to be about 10 years. Rudolf Wolf of Zurich, Switzerland, published in 1852 an analysis of all the recorded observation of spots which could be collected from 1610 to 1850, and estimated therefrom that the cycle was 11.11 years. Although the interval has been as short as 8 years and as long as 16 years, D. Justin Schove in "The Sunspot Cycle, 649 B.C. to A.D. 2000" (1955) confirmed Wolf's findings that the fundamental sunspot rhythm was 11.11 years.

The periodic nature of the recurrences of sunspots has suggested that the planets in some way were the cause of the atmospheric disturbances in the surface layers of the sun. Hence, various scientists have believed that the gravitational, magnetic, or electrical influences on the planets revolving around the sun set up tides in the solar atmosphere, in a manner similar to the tides in the oceans of the earth set up by the Moon. One of the earliest exponents of this view was Prof. W. A. Norton of Yale College, who wrote in "A Treatise on Astronomy (1867) as follows:

"The sun's spots are for the most part developed by, or in some way connected with, the operation of a physical agency exerted by the planets upon the photosphere. This remarkable fact has been conclusively established by the observations of Schwabe, Carrington, Secchi, and others; and especially by the detailed discussion to which all the reliable observations upon the spots, made during the past 100 years, have been subjected by Prof. Wolf of Zurich. The planets which exercise the greatest influence are Jupiter and Venus. The planetary agency is directly recognized in the origination of spots on the sun's surface brought by the rotation into favorable positions, and in the subsequent changes experienced by the spots while subject to the direct action of the planet. It is also shown by the dependence of the epochs of the maximum and minimum of spots upon the positions of the planets, especially of Jupiter and Venus.

"It appears from the results of observation, that the planets operate unequally in different parts of the ecliptic, and in different relative positions; and their effects are apparently modified, in certain positions, by the motion of the solar system through space."

W. De La Rue, Balfour Stewart, and Loewy, in "Researches on Solar Physics" (1869-1870) found some influence on sunspots due to the configurations of Jupiter and Venus, Venus and Mercury, Mars and Jupiter, and Mercury alone. Prof. John H. Tice in "Elements of Meteorology" (1875) states that Planetary Equinoxes were the cause of solar perturbations; that the maximum disturbance upon the earth must occur at or near Jupiter's Equinox; and that the energy of the equinox of any planet is intensified when that of another occurs at or about the same time.

Prof. E. W. Brown of Yale University in Monthly Notices of the Royal Astronomical Society (1900) reported on the tide raising effects of Jupiter and Saturn. Hugh Clements in "The Solution of the Sun-spot Mystery" (Dec. 25, 1900) stated that sunspot frequency was due to the particular grouping of the planets and their tide-lifting power, which is greatest at an angle of 45°, because at that angle the planet is pulling more or less at right angles to gravity and is therefore unopposed by it.

William Digby in "Natural Law in Terrestrial Phenomena" (1902) stated "De La Rue found that when two powerful planets were in line, as seen from the sun, the spotted area was much increased." Digby further states, "If we take the grouping of the planets at a time of maximum sunspots, we find that they are usually on the same side of the sun as the earth. When they are not on one and the same side, they are placed in line exactly opposite to act in unison with another planet; or, not being in line, they are so situated on the other side of the sun as to produce their tide-raising power within an angle of 90° from the earth or other powerful planet, and the spots are produced on the sun's face next to us."

In Monthly Notices, Royal Astronomical Society (1907), Mrs. A. S. Maunder showed that more sunspots are born on the side of the sun away from the earth than on the face of the sun, and that more spots appear to die on the face of the sun toward the earth than on the hemisphere turned away from the earth. This was confirmed by Prof. Arthur Schuster in "The Influence of the Planets on the Formation of Sunspots" published in the 1911 Proceedings of the Royal Society, who also found a similar relationship with respect to the planets, particularly in the case of Venus. He also suggested that in a solar atmosphere in which the downward gravitational pull was nearly balanced by the outward pressure of light or by electrostatic repulsion, the pull of the planets might well raise tides of appreciable size.

H. H. Clayton in Ellsworth Huntington's "Earth and Sun" (1923) found that a double maximum of sunspots are formed for each planet during a sidereal revolution. He found that though the tide-raising power of Jupiter is 2 to 3 times that of the Earth, the observed amplitude of sunspots is more nearly the cube of three. Hence, he concludes that spot production increases much more rapidly than the tidal force. Ellsworth therefore suggests an electrostatic influence. He states, "The energy derived from the planets may be no more than that of pressing a button, which starts an explosion. When a little eddy is once started, the slight movement so generated may be reinforced by stresses due to the rapid cooling of the sun's outer layer, or to the sun's varying rate of rotation at different latitudes."

H. Voigt, a German investigator, constructed a chart in which the influences of Neptune, Uranus, Saturn and Jupiter were combined to give a close resemblance to the sunspot curve from 1749 to 1928. A. L. Tchijevsky in "Epidemic Catastrophes and Periodical Solar Activity" (1930) shows a striking correlation between sunspot activity and the positions of Jupiter, Earth, Venus and Mercury. He, however, states, "One difficulty with all planetary theories for explaining the appearance of sunspots is that the tidal action of the planets is too small to be significant in causing eruptions in the solar atmosphere on gravitational grounds. If one were to suppose, however, that the planets are at different electric potentials, then there is perhaps a fresh basis for attack on the sunspot theory from the planetary viewpoint."

In April 1935, Clayton constructed a curve based on the mean period of seven planets that shows a remarkable coincidence with the curve of sunspot numbers. He took the mean period of a pair of planets when they were at their maximum distance from the earth's equator. Fernando Sanford, in "Influence of Planetary Configurations upon the Frequency of Visible Sun Spots" (1936) stated that:

(1) "the sunspottedness was 76.9% greater when Venus and the Earth were on opposite sides

of the Sun than when they were on the same side;

(2) there was an increase of 15% in sunspottedness when Mercury and the Earth were on opposite sides of the Sun;

(3) The mean value of the observed sunspot numbers when Venus and Mercury were on opposite sides of the Sun was 24.9% greater than when they were on the same side;

(4) the observed spottedness when Venus and Mercury were at an angular separation of 90° was 8.8% greater than when they were on the same side of the Sun."

Dr. Birkeland made an exhaustive study of the sunspot curve and the effects of Jupiter, the Earth, and Venus, in which he accounted for many of the major maxima of sunspots and many of the minor fluctuations. K. G. Meldahl in "Tidal Forces in the Sun's Corona due to Planets" (1938) has calculated the tidal forces of Mercury, Venus, the Earth, Jupiter and Saturn, which he adds vectorially to get the height of the force wave running around the equator. He says, "Variations in the sun's corona are due to tidal action from the planets, consisting of positive and negative vertical forces, combined with tangential forces. Prof. W. A. Luby in "Popular Astronomy" (Dec. 1940) suggests the precessional pull of the planets on the equator of an oblate sun as a cause of sunspots. Clayton in "Popular Astronomy" (Nov. 1941) finds that "both for the Earth and for Venus the maximum of sunspots in a sidereal revolution is surprisingly close to that called for in Professor Luby's theory."

Clayton in "Solar Relations to Weather and Life" (1943) finds that, "the important periods in spot formations are not the individual planets, but the conjunction of the planets when at or near their greatest distance above or below the plane of the sun's equator." He further states, **"The two largest factors in spot production appear to be the conjunction period of Jupiter and Saturn, and the conjunction period of Venus and Mercury,** when they are at their points of greatest departure from the plane of the sun's equator."

Maxwell O. Johnson in "Correlation of Cycles in Weather, Solar Activity, Geomagnetic Values and Planetary Configurations" (1946) states, "In our analysis of sunspot numbers, all the main periodicities are found correlated with the synodic periods of the major planets. These striking correlations indicate that variations in solar activity, as indicated by sunspot numbers, are influenced by planetary configurations. These planetary influences cannot be gravitational but must be magnetic or electrical in character. If the planets are electrically charged, their tidal like forces of attraction or repulsion at the sun might cause periodic variations in sunspots correlating with their synodic periods and furnish a better explanation than a purely magnetic theory. Periodicities in solar radiation, weather, and geomagnetic data also appear correlated with periodicities in sunspots and planetary configurations. Gravitational forces may play a more important part in periodicities in solar radiation than they do in sunspot numbers."

Johnson found a repressing tidal-like influence on sunspots when Saturn was in opposition or conjunction with Uranus, Neptune or Pluto. Coulomb's Law states that the force between electrostatic charges is directly proportional to the magnitude of each charge and inversely proportional to the square of their separation. Johnson assumes that Saturn-Uranus, Saturn-Neptune, and Saturn-Pluto have about equal charges; their relative distances from the sun are as 1, 1.5 and 2; their maximum effect is therefore about 80, 35, and 20 in sunspot numbers.

H. T. Stetson in "Sunspots in Action" (1947) gives a table of the tidal effects of the planets, based on the assumption that the tide-raising force varies directly as the mass of the planet and inversely as the cube of its distance from the Sun. He says, "It is possible that even the slight tide-raising forces of the planets could in the course of time set up a major oscillation in the sun's atmosphere, very much the way in which synchronized footsteps of a regiment may set a steel bridge swaying."

Stetson in "Earth, Radio and the Stars" (1934) says, "If barometric variability increases with periods of increasing variability of the release of solar energy, and if this sun in turn be related to the position of the sunspots, as Huntington has demonstrated, and if the planetary position is of significance in the changing tide of energy release from the sun, then we do come ever closer to a possible interrelation within the affairs of man."

Terrestrial Effects of Solar Disturbances

Astronomers seem to be agreed that the following solar and terrestrial relationships may be considered well established:

1. There is a close parallelism between terrestrial magnetic activity and sunspot activity.
2. There is a correspondence between the frequency of Auroras and sunspots similar to that between magnetic activity and sunspots.
3. The amount of ultra-violet radiation from the sun and the potential gradient of the earth vary with the sunspot cycle.
4. The earth's magnetic field is most persistently disturbed during March and September, when the sun crosses the equator.
5. Moderate magnetic disturbances tend to recur at 27-day intervals.
6. Brilliant flares which are frequently seen near large active spot groups of irregular magnetic polarity, occur simultaneously with sudden fade-outs in high frequency radio transmission over the daylight side of the earth.
7. Magnetic storms may occur on days without visible sunspots.
8. Severe magnetic storms seriously interfere with short-wave radio transmission, long distance telephone and telegraph lines, teletype circuits, submarine cables, electric power lines, and oil and gas pipe lines.

Forecasts of geomagnetic disturbances and radio-propagation conditions should have considerable commercial value, and should be particularly important in time of war. During World War II, what

was at first thought to be "jamming" of the radio channels by the Nazis, was found to be due to sunspot activity. Hence, in July 1942, Dr. D. H. Menzel and Dr. W. O. Roberts of the National Defense Research Committee began to correlate data on geomagnetic and solar activity, which formed the basis for short-term forecasts in radio propagation having an accuracy of 70% over a period of 15 months. This work was discontinued following the end of the war.

J. H. Nelson, Radio Propagation Analyst of RCA Communications, then began the serious study of radio interference, and in "Shortwave Radio Propagation Correlation with Planetary Positions" (Mar. 1951) in "Sunspots and Planetary Effects upon Radio Signals (Jan. 24, 1952), and "Planetary Effects on Shortwave Radio" (Mar .1952) gives the results of five years of research in this field. After the first year of research, he developed a fairly reliable forecasting system of shortwave conditions based on the position, age, activity, and classification of sunspots, but occasional failures indicated that phenomena other than sunspots needed to be considered.

This conclusion had also been reached by earlier students of sunspot activity as follows: Hale in 1920 had announced that magnetic effects had been found in groups of faculæ or flocculi when the sun was apparently free of sunspots. At about the same time, E. W. Maunder had found that areas on the sun's surface may be magnetically active both before visible spots form and after they have disappeared. Meldahl in 1938 had suggested that disturbances in the sun's corona may cause ejection of particles, creating auroral and magnetic storms with only small spot activity. Dr. J. T. Wilson in "Electrical Engineering" (Dec. 1947) had stated, "Only the most intense magnetic storms upon the earth appear to be associated directly with the sunspots. However, the earth's magnetic activity correlates to a surprisingly accurate degree with the behavior of C region emission as observed by the scientists using the coronograph." Skilling and Richardson in "Astronomy" (1948) state that there have been 32 small magnetic storms recorded on days when no spots whatever were visible.

Hence, in 1948 Nelson began to study the works of Huntington, Clayton, and Sanford on planetary effects, and eventually developed a 24-hour forecasting system based on planetary correlations which showed an average accuracy of 85% throughout 1950 and 1951. In subsequent years, Nelson greatly improved the degree of accuracy for his method of forecasting.

Nelson found that when Jupiter and Saturn are spaced near any multiple of 90°, short wave radio signals are poorest, but that when spaced 60° or 120° apart, signals averaged of far higher quality. For example, in 1948, when Jupiter and Saturn were 120° apart, better quality radio signals were obtained than in 1951 when Jupiter and Saturn were 180° apart, even though there was a considerable decline in solar activity in 1951. These two slow-moving planets appear to set a long term pattern, while the faster planets appear to set the short term pattern. In other words, Jupiter and Saturn set the stage for both disturbed or quiet conditions, and radio storms occur when the other planets make angles of 0°, 90°, 180° or 270° from them, or between each other.

J. H. Clark of Press Wireless, Inc., after verifying Nelson's system of forecasting, found in August, 1951 that Uranus, Neptune and Pluto also had an effect on radio signal quality, Pluto being especially effective. This was subsequently verified by Nelson.

Sunspots and the Weather

While there is a tremendous literature on the relationship between sunspots and the weather, there does not appear to be an unqualified acceptance of the causal relationship between those two phenomena. In Chapter III we have noted the researches from Herschel, Carrington, Schuster, Jevons and Pogson. Rudolph Wolf in 1852, from an examination of the Chronicles of Zurich from 1000 A.D. to 1800 A.D. concluded, "that years rich in solar spots are in general drier and more fruitful than those of an opposite character, while the latter are wetter and more stormy than the former." He found that during years of maximum sunspots, there have been on the average six to eight violent hurricanes per year, while the average number during sunspot minimum is only one or two per year.

In 1858 N. R. Pogson, the English astronomer, stated that a relationship existed between sunspot phenomena and atmospheric conditions on the earth.

Between 1877 and 1902 Sir Norman Lockyer asserted a connection between sunspots and rainfall. Prof. Garriott, in 1902, while serving as Forecaster in Chief, U. S. Government, stated "the sun's magnetic influence, stretching out and embracing the earth, varies the earth's magnetism and gives rise to weather changes."

In 1922, Sir William H. Beveridge stated that many regular, periodic movements affecting weather and crops may be accounted for through similar oscillations on the sun, moon, or even the planets.

H. H. Clayton in "World Weather" (1923) stated, "The irregular changes known as the weather result chiefly, if not entirely, from the irregular changes in solar radiation." Clayton finds that in equatorial regions, (a) atmospheric pressure is less at sunspot maxima than at sunspot minima; (b) temperatures are distinctly lower during sunspot maxima and higher at sunspot minima. In the Western Hemisphere, atmospheric pressure is higher at sunspot maxima than at sunspot minima, while temperatures are lower during sunspot maxima than at sunspot minima.

Prof. A. E. Douglas of the University of Arizona, in "Climatic Cycles and Tree Growth" (1928) found a definite correlation between sunspots and weather from a lifetime study of tree rings. Not only has he found periods of sunspots related to periods of abundant or deficient moisture in the great Southwest, which in the case of the Sequoias go back 3200 years, but he has found similar cycles of rainfall and drought dating back to the Egyptian Pharaohs.

H. W. Clough in Monthly Weather Review (April 1933) shows a chart of the 11-year sunspot period, frequency of auroras, severe winters, Chinese earthquakes, wheat prices, growth per year of Arizona pines, and changes in the River Nile floods. He concludes, "These consistent variations in the logs of the meteorological events and their persistency for 1500 years afford additional proof of the reality of both solar and meteorological periods."

Prof. C. J. Kullmer of Syracuse University in "The Latitude Shift of the Storm Track in the 11-year Solar Period" (1933) found from a study of records extending from 1883 to 1913 that 40 per cent more storms passed over the fundamental storm track of North America during sunspot maxima than at sunspot minima.

H. H. Clayton in "Solar Relations to Weather" (1943) states, "Weather changes are found to be closely related to changes taking place on the surface of the sun, such as sunspots, faculæ and flocculi. These are found to be related to changes in solar radiation outside our atmosphere, particularly to changes in the amount of radiant energy in the ultra-violet and blue end of the solar spectrum. If it proves correct that the sunspot period is formed by the combined action of planetary periods, and that the periods found in solar-constant changes are also related to planetary periods, then these periods can be projected indefinitely into the future, and all the terrestrial relationship in magnetic, electric, and meteorological effects by can be foretold for any desired epoch."

Prof. Ellsworth Huntington of Yale University in "Mainsprings of Civilization" (1945) says, "Cyclonic storms represent the effect of the electromagnetic field of the sun and the solar system superposed upon the still greater effect of the sun's heat."

M. O. Johnson in "Correlation of Cycles in Weather, Solar Activity, etc." (1946) says, "There appears fairly good correlation between the synodic periods of the major planets and many of the longer term trends in weather found by different investigators."

Dr. C. G. Abbott in "The Scientific Monthly" (Mar. 1946) says, "It is well known that sunspots are like machine guns, in that they bombard space, including, of course, the earth, with electric ions. This bombardment is very active at times of maximum numbers of sunspots. It is also well known that electric ions, which in our atmosphere, besides reflecting radio waves around the earth so that we get programs from great distances, in addition act as centers of condensation for the water vapors of the atmosphere and so promote cloudiness, and doubtless also rain. Clouds, of course, also alter temperatures. So in this way, the 11⅓ year sunspot cycle becomes a weather cycle."

H. P. Gillette in "Weather Cycles and their Causes" (June 1946) says, "Weather disturbances are caused by influxes of solar electrons in five ways:

(1) By generation of atmospheric currents in accordance with Faraday's principle of magnetic rotation of electric currents;

(2) by the tendency of electrons to cause condensation of atmospheric moisture in accordance with Wilson's principle;

(3) by increased windiness, which increases oceanic evaporation and rainfall;

(4) by increased evaporation due to increased electronic charge of water;

(5) by reduced influx of solar heat, due to reflection of radiant waves by atmospheric electrons, and to absorption and scattering by atmospheric moisture."

H. T. Stetson in "Sunspots in Action" (1947) states, "With the accumulation of increasing evidence of connections between solar activity and the earth, even conservative meteorologists are now conceding the possibility that changes in solar radiation may be ultimately connected with changes in weather patterns."

Dr. W. F. Petersen in "Man, Weather, Sun" (1947) says, "Changes in the atmosphere in which we exist are governed by the electronic impact on the 'ionic shells' which surround our earth; this changing electronic impact is in turn conditioned by cyclonic disturbances on the sun's surface (sunspots); these sun-storms are periodic and these periodicities, or cyclic phenomena, are possibly related to stresses associated with planetary motion and position."

S. W. Wood, in the "Illinois Engineer" of March 1949 states that solar changes directly affect our weather and are the underlying fundamental cause of floods, droughts, and other violent meteorological phenomena, and that the gravitational or tidal pull of the planets is a primary cause in the formation of sunspots and solar prominences.

Abbott climaxes 50 years of solar research, in "Periods Related to 273 Months or 22¾ years" (1956) wherein he lists 64 periodicities in the variation of the measurements of the solar constant of radiation conduct almost daily during the past 30 years by the Smithsonian Astrophysical Observatory. These periodicities are all, within one percent, exact submultiples of 273 months, which is close to the master sunspot cycle discovered by Dr. G. E. Hale, who in 1908 first gave observational proof of the electromagnetic nature of sunspots. In 1912, the polarities of the sunspot groups were found to be the reverse of those found in the previous cycle. Thus, the true sunspot cycle is now considered to be twice the 11.11 year period, or 22-23 years.

Abbot finds that as many as 23 of the foregoing periodicities are present in periodic weather changes. By separately tabulating periods of high and low Wolf numbers of sunspots (above and below 20), dividing the year into three seasons, making allowances for secular changing conditions, and using 5-month smoothed running means of monthly records of temperature and precipitation tabulated in "World Weather Records" and subsequent U. S. Weather Bureau records, Abbot has made some remarkably accurate long-range weather forecasts.

Abbot states in "Sixty Year Weather Forecasts" (1955), "I feel that if meteorologists could accept these proofs, Governments would feel justified in supporting similar studies of temperature and precipitation at numerous stations within their borders. From such studies, maps of expected weather conditions for many years in advance could be drawn. Such maps, if found to give general conditions with reasonable approximation, would evidently be of great value for many industries. The only fly in the ointment seems to be that tremendous disturbances of the atmosphere, such as sometimes are caused by volcanoes, and also by profuse use of powerful bombs, in war and in tests, may spoil forecasts of this ambitious type."

The effects of planetary configurations in the economic sphere will be described in the next chapter.

CHAPTER VI

THE PLANETARY CAUSE OF THE BUSINESS CYCLE

"Do not be afraid to challenge authority at any time, if a search for truth is in question. Truth is not found behind a man's reputation. Truth appears only through the search for answers to questions by a free mind." —Vincenzo Galilei (father of Galileo)

The use of planetary cycles for forecasting commodity and stock prices has a long history. It is recorded that in 1543 Christopher Kurz of Antwerp devised an astronomical system for predicting the course of the money market, which was mildly successful. In 1876, Samuel Benner of Cleveland, Ohio, made some remarkable predictions based on Jupiter's period, in a booklet, "Benner's Prophecies of Future Ups and Downs in Prices."

Professor Jevons' 1875 prophecy that "the configuration of the planets may prove to be the remote cause of the greatest commercial disasters" was strikingly confirmed by L. Krohn in "Market Fluctuations and Business Crises in the Light of Astrology" (Modern Astrology 1912) who stated, "From a certain point of view Astrology may be defined as the science of cycles. The conjunctions and oppositions of the major planets, Jupiter, Saturn and Uranus, in almost every case coincide with commercial crises (price minimum or a period of falling prices). A square aspect seems in most cases to be followed by a fall in prices, and for that reason usually marks a maximum." He lists the following illustrations, using Geocentric aspects:

Panic of 1857 — Jupiter-Saturn square Mars, and Jupiter-Uranus conjunction becoming complete in 1858.

Panic of 1873 — Jupiter-Uranus conjunction and opposition Saturn.

Depression of 1884 — Jupiter-Saturn conjunction. (French crisis due to rapid liquidation of speculative securities.)

Panic of 1893 — Jupiter opposition both Saturn and Uranus.

Depression of 1900-02 — Jupiter, Saturn, Uranus conjunction. (German panic spread to France, England, U. S., and lasted until 1904.)

Panic of 1907 — Jupiter-Uranus opposition.

Depression of 1910-11 — Saturn conjunct Mars, Jupiter opposition Mars.

Before proceeding with a detailed comparison of long range planetary configurations with the ups and downs of the business cycle, it seems appropriate at this point to give a brief account of:

The Origin of Astrological and Astronomical Predictions

In 1851 and 1853 Sir Henry Layard and his assistant, Hormuzd Rassam, discovered in the ruins of the library of King Ashurbanipal (669-633 B.C.) at Nineveh, Assyria, 22,000 clay tablets, amongst which were 70 containing the standard work on Babylonian astronomy and astrology called "The Illumination of Bel," which tradition ascribes to Sargon of Acead (ca. 2360 B.C.). A. H. Sayce, Deputy-Professor of Comparative Philology, Oxford University, in "The Religion of the Ancient Babylonians" (1881) states, "Babylonia was really the cradle of astronomical observations." Similarly, Morris Jastrow, Jr., Professor of Semitic Languages in the University of Pennsylvania, in "The Religion of Babylonia and Assyria" (1898) says, "The zodiacal system as a whole is the product of the Babylonian schools of astronomy."

From "The Illumination of Bel" we learn that Babylonians assigned a separate section to the sun, moon, each of the five planets, and to each of certain important stars, such as Sirius, Antares, and Regulus. In each section were noted the peculiarities (regular and irregular) connected with each of the heavenly bodies, their appearance and disappearance, the conditions prevailing at rising and setting, the relationship of the moon to the sun or to a star, of the stars to one another and to the ecliptic.

Many of the tablets in Ashurbanipal's library are stated to have been copied from the originals in the ancient Temple Library at Nippur, Babylonia, which was discovered in 1900 by Prof. H. V. Hilprecht and J. H. Haynes of the University of Pennsylvania Babylonian Expedition. Amidst the ruins were found more than 24,000 tablets, some of which date back to the 3rd Millenium B.C. They covered such scientific subjects as mathematics, astronomy, medicine, history and linguistics; religious works covered hymns, prayers, omens and incantations, mythology and astrology.

Based on his study of Ashurbanipal's' tablets, Sayce wrote that the zodiacal circle was invented by the ancient Accadians about 4700 B.C., when the sun entered the Constellation of Taurus at the Vernal Equinox. By that time, the leading groups of stars had been named, a calendar had been formed, eclipses of the sun and moon had been noted and recorded, the annual path of the sun through the sky had been divided into twelve sections, and each section had been distinguished by its chief constellation or star.

The religion of Sumerian Chaldea was Shamanism—the belief that events are brought about by the agency of the innumerable spirits of earth and air, and can be controlled by the spells, exorcisms, and incantations of the sorcerer or Shaman. With the conquest of Sumer by Sargon of Accad, the Babylonian priests replaced the Sumerian sorcerers, and instituted a system of astro-theology based on the theory that **events are natural occurrences, caused and determined by other natural occurrences, which could be discovered and noted by the observer.** Hence, every important Babylonian temple had an observatory from which the heavens were observed by the priests, who recorded their observations on clay tablets.

The Babylonians believed that nothing that occurred was accidental; from experience they had learned that the same thing undertaken at different times turned out differently—in the one case being brought to a successful conclusion, in the other followed by misfortune. The obvious inference was that the day on which something was done, or was to be done, was of great significance, i.e., that there were favorable and unfavorable days. But how did one day differ from another? The priests had learned by oservation that the planets and stars never appeared alike on two successive nights—there was always some change in the position of the heavenly bodies. In the variations presented by the heavens at night, the priests saw a potent reason for the varying results produced by the same act undertaken at different times.

The priests, therefore, prepared long lists in which all possible phenomena connected with the planets and stars were noted and their meaning indicated. The larger the number of observations, the greater the possibility of finding an answer to a particular problem. Similarly, the interpretations of the phenomena were founded on the actual occurrence of certain events at certain times when the conditions indicated actually existed. Hence, no important enterprise was undertaken without first ascertaining what phenomena might be looked for on the day fixed for any action; and what these phenomena portended.

Just as the gods were held chiefly responsible for the larger affairs of this world, so the planets and stars, as symbols of the gods, were regarded as auguries for the chief of the country—the vicar of the deity on earth—rather than for the miscellaneous population, and more for the general welfare, than for individual prosperity. To the priest—the servant of the gods—had been granted the ability to foretell the future.

Sayce summarized: "The Chaldean priests had grasped but imperfectly the idea of causation; their fundamental assumption was that when two events had been noticed to happen one after another, the first was the cause of the second. Hence, their anxiety to record the phenomena of the heavens and the occurrences that took place after each; if a war with Elam followed an eclipse of the sun on a particular day, it was assumed that a recurrence of the eclipse on the same day would be followed by a recurrence of a war with Elam. In this way a science of astrology was created whose students could foretell the future by observing the signs of the sky."

Jastrow summarized that, although the stars were observed by the Babylonian priests in the interest of navigation, "the chief motive in the development of astronomy in the Euphrates Valley was the belief that the movements of the heavenly bodies portended something that was important for man to know. **Scientific observations were but means to an end; and the end was invariably the derivation of omens from the movements and position of the planets, stars, and the vernal equinox.** The omens usually referred to: rain, crops, war, distress, the country's prosperity, the king's welfare or misfortune. Lists of omens derived from eclipses, works on the planets and stars and the calendars, all have the same origin due to observation of coincidences, to past experience, and to a variety of combinations, some logical and some fanciful, of supposed relationships between cause and effect."

Thus, the ancient Babylonian astrologers sought to predict the destiny of rulers and nations from their observation of celestial movements. Although the records of their countless observations and predictions have been lost to us, we may surmise that their predictions were more accurate than those of their modern counterparts for the following reasons: (1) the ancient astrologers were priests, i.e., the most highly educated and trained minds of the nation. (2) Agriculture and war were the chief occupations of the people, and hence dependent upon the seasons and weather, which were readily susceptible of prediction. (3) The nations were absolute monarchies, hence the horoscopes of the rulers and perhaps those of their principal advisers, were all that had to be consulted.

Prof. George Rawlinson in "The Five Great Monarchies" (1862) writes, "Curiously enough, it appears that they (the Astrologers) regarded their art as locally limited to the regions inhabited by themselves and their kinsmen, so that while they could boldly predict storm, tempest, failing or abundant crops, war, famine, and the like, for Syria, Babylonia, and Susiana, they could venture on no prophecies with respect to other neighboring lands as Persia, Media, Armenia." The reason for this undoubtedly was that they predicted only from data that had been accumulated concerning their own countries. Herein lies a valuable lesson to modern astrologers—stick to what you know has proven true!

Dr. James H. Breasted, Director of the Oriental Institute at the University of Chicago, in "Ancient Times" (1935) wrote, "Under the Chaldeans (or Neo-Babylonians) star reading developed into the art of astrology, and then later into the science of astronomy. As far back as the 23rd Century B.C., in the days of the kings of Sumer and Akkad, the astrologers observed an eclipse of the moon which has now been calculated by a modern astronomer to have accurred in 2283 B.C. But at that remote date such observations were only occasional, and they were also very inaccurate and unsystematic. Gradually, it became customary to make more frequent observations, until in 747 B.C., in the reign of the Babylonian king Nabonassar, the series of observations became continuous.

and a record of them was carefully kept on file.

"From the continuous observations of the preceding two hundred and fifty years, Naburimannu, a Chaldean astronomer about 500 B.C., compiled tables of the motions of the sun and moon, from which he exactly dated eclipses of those bodies, and other important astronomical events. From these tables he made the earliest calculation of the length of the year, coming within 26 minutes, 55 seconds of the modern value. About a century later Kidinnu made a similar group of tables of greatly increased accuracy (because he had the records of 360 years of observations at his disposal) and discovered the phenomenon known as the "Precession of the Equinoxes."

Breasted says of Naburimannu and Kidinnu, "These Chaldean pioneers in astronomy who first revealed to men a system of the celestial world, and thus became the founders of astronomical science, should be reverently remembered long after the kings and conquerors of the ancient world have been forgotten." Their astronomical observations passed on to the Greeks, and through Ptolemy's "Almagest" to the Western World.

O. Neugebauer, Professor of the History of Science at Brown University, states in "The Exact Sciences in Antiquity" (1952), "To the historian of civilization, astrology is not only one of the significant phenomena of the Hellenistic world but an exceedingly helpful tool for the investigation of the transmission of Hellenistic thought. **Compared with the background of religion, magic and mysticism, the fundamental doctrines of astrology are pure science.** Of course, the boundaries between rational science and loose speculation were rapidly obliterated and astrological lore did not stem—but rather promoted—superstition and mysticism. To a modern scientist, an ancient astrological treatise appears as mere nonsense. But we must not forget that we must evaluate such doctrines against the contemporary background. To Greek philosophers and astronomers, the universe was a well defined structure of directly related bodies. The concept of predictable influence between these bodies is in principle not at all different from any modern mechanistic theory. And it stands in sharpest contrast to the ideas of either arbitrary rulership of deities or of the possibility of influencing events by magical operations."

Professor Giorgio Abetti in "The History of Astronomy" (1952) says, "The caste of the Babylonian priests was distinguished for their profound knowledge of astronomy, on account of which their religious activities became largely astrological. On clay tablets are found observations and calculations of the positions and motions of the planets. These data had been accumulated in the course of many centuries before the destruction of Nineveh (607 B.C.), in order to establish and verify astrological predictions at short range.

"Astrology was the main goal of the Babylonian astronomers. They have the great merit of not having relied upon pure fantasy or simple deception, as did other peoples later in the Middle Ages, but upon accurate and systematic celestial observations extending throughout many years. **These observations were made mainly to investigate the periodicity and prediction of phenomena which, considered as supernatural, must have influence upon human beings and their earthly existence.** This idea has always been believed and cultivated in various forms by primitive peoples. And it has reason to exist, aside from religion and superstition, because of the greatness of natural phenomena, which are beyond the control of man, and which do exert an influence upon the earth.

"That the astronomer-astrologers of Babylonia proceeded in their applications of astronomy to astrology with sure faith is proved by the existence of their large indices and rules handed down from one generation to another during the various centuries. Having succeeded in predicting fairly accurately the eclipses of the moon, they understood all the more how much importance their observations and researches assumed, while on the other hand their fame increased, as well as the consideration given them by their rulers and by their people.

"The priests in Egypt also were concerned with astronomy. They tried jealously to keep hidden from the public at large their doctrines and results acquired from observations, in order to use them later for their own astrological deductions."

One may be pardoned for wondering if the proclaimed antagonism of men of science to the application of astronomical observations to mundane affairs may not be traced to the same jealousy that caused the ancient Egyptian priests to hide their secrets from the profane. The number of modern scientists who will publicly admit that there may be truth in astrological doctrines, is few and far between.

In contrast to the centuries old observations of the ancients, the only long-continued modern series of Astronomical observations are the Meridian observations of the Royal Observatory, Greenwich, England, which began in 1750, only two hundred years ago. From the records of past observations, modern astronomers are able to calculate the positions of heavenly bodies far into the future, as well as backwards into the distant past. An example is the publication in 1951 by the U. S. Naval Observatory of the orbits of the 5 outer planets from 1653 A.D. to 2060 A.D. This was made possible by the use of the "Electronic Brain." The data, unfortunately, is not in a form that can be readily used by astrologers.

CHAPTER VII

THE RATIONALE OF ASTROLOGICAL PREDICTION

"Prediction is the ultimate test of science." —Stuart Chase.

Why do planetary configurations cause observable and detectible terrestrial disturbances, such as changes in the weather and changes in radio reception, which are generally admitted, and the ups and downs of the business cycle, which are not so generally admitted? Scientists attribute to planetary configurations changes in the electromagnetic field of the earth, which react on the electromagnetic field of the individual.

Thus, in the December 1944 issue of "The Frontier," published by the Armour Research Foundation, the late Professor Ellsworth Huntington of Yale University states: "Studies such as those begun by Adrian and continued by Burr indicate that the human body has its own definite electrical field. If that is the case, variations in the external electrical field must inevitably influence the internal human field. It is likewise obvious that, if the electrical field of the sun or of the solar system as a whole undergoes variations, there must be corresponding disturbances in the field of the earth. Thus, there is a logical connection between solar activity, the earth's atmosphere, man's psychological reactions, prices on the stock market, and the ups and downs of business. Thus far this whole matter is in the stage of an hypothesis. Nevertheless, the hypothesis seems to fit a great number of facts which were previously inexplicable."

Dr. W. F. Petersen, in "Man, Weather and Sun" (1947) says, "All life is rhythmic in some fashion, and all life is meshed into the inorganic rhythm of the universe. The immediate state or 'constitution' of the atmosphere is of paramount importance. This is a terrestrial matter involving time, place and amplitude. Cosmic forces (the sun and possibly planetary effects on the sun) govern the play of the atmosphere. Weather is conditioned by variations in force that modify the electronic and lower gaseous layers of the atmosphere, and these forces must come from the sun and the changes induced therein by planetary motions."

"If we wish to evaluate the present and project the future, we can do so only in the framework of the past. Patterns of human reactions are expressions of reaction to major cosmic forces, that directly or indirectly govern the state of the organic world as they do the inorganic, govern the individual as they do the mass, govern not only man today but have governed man in the past and will govern mass man in the future, despite all imaginable controls that we may devise."

In addition to solar radiation, scientists have detected radiation from the stars, which is called sidereal radiation. Garfield A. Drew in "New Methods for Profit in the Stock Market" (1948) states: "The Townsend Brown Foundation in Los Angeles, California, has made a study of sidereal radiation for the past twenty-five years, recording the impulses by an instrument developed some twenty years ago. Complete records, however, have only been kept since 1937, except for the war period when the equipment was taken over by the Naval Research Laboratory.

"The conclusion of the Brown Foundation is that sidereal rays are not electromagnetic in nature, but are (1) tremendously penetrating and (2) are subject to decisive changes in intensity in an irregular wave-like pattern. Their studies indicate a correlation between the intensity of sidereal radiation and various records of human expression, including the trends of stock prices—not, of course, with absolute perfection, but to a degree suggesting that more than chance is involved."

Miss M. Gosh in the March 1953 "Journal of Geophysical Research" states: "The ionizations of the different ionospheric regions are known to vary not only with the hour of the day and the season of the year, but also with the phase of sunspot activity." These variations in the intensity of the electromagnetic field surrounding the earth are believed to be due to the geometrical configurations of the planets and the movement of the earth around the Sun. Since planetary movements can be accurately predicted, we thus have a most valuable tool with which to work.

The theory back of the predictive nature of planetary configurations has been stated by W. J. Tucker in "The Principles, Theory and Practice of Scientific Prediction" (1930) as follows: "At the moment of birth certain resultant magnetic conditions are present which produce a type of sensitivity and selectivity in the individual then born and when an electrically charged body (the transiting planet) again enters the area which held the original electrically charged body (the natal planet) magnetic effects are produced which operate as a cause affecting the individual with whom they are synchronized."

Again in "The Principles of Scientific Astrology" (1938) Tucker writes, "Self-animation enters in the child at the moment of drawing its first breath. This, then, is the critical moment in which the lines of force of the resultant magnetic field of the Sun, Moon and Stars, running through the child's body fix and determine the relative positions of the electrons and protons in the atoms of the child's flesh, blood and bones for the duration of its life. That is why the child will behave in a characteristic manner as it progresses through life, and why certain configurations of the heavenly bodies appear to affect him. The type of magnetic field set up by existing configurations (of transiting planets) is the actuating medium."

The importance attached by astrologers to the moment of birth, i.e., when the child takes its first breath of air, may be grasped from the fact that Dr. G. R. Wait, of the Department of Terrestrial Magnetism of the Carnegie Institute of Washington, D.C. demonstrated in a series of extremely delicate experiments that every human breath contains at least 700,000,000 electrically charged particles, which are produced by the collision of cosmic rays and uranium and thorium emanations from the soil with atmospheric molecules. The electrical charge of the air we breathe is affected by changes in the electromagnetic field surrounding the earth, and thus we are affected biologically.

Dr. Peterson further states, "The seemingly insignificant impact of the moment may, if occurring for some short period of time during the earliest stages of development, leave its imprint fixed for the duration of the life of the individual. So the simple tides of inorganic forces of the world and the universe—reflected and amplified—dampened and stemmed in flesh and blood, in brain and marrow, may, in the final analysis, be of supreme importance, not only for the individual, but for the mass of mankind, as long as mankind is led (or misled) by the individual."

Stuart Chase writes, "Cosmic rays, by hitting the genes, may cause sudden biological mutations. We are drilled by about 100 cosmic rays every minute of our lives. According to the physiologists, every one of us creates the patterns in his brain, beginning with the day he is born. The world he apprehends at any given time is shaped by those patterns. He has moreover the power deliberately to seek new experiences, create new patterns, and even change the shape of his world."

Thus, while the moment of birth establishes certain patterns, man is endowed with Free Will, which disposes of the popular misconception that astrology is fatalistic. Indeed, Sir James Jeans, the eminent British scientist says in substance that it may be that the gods determining our fate are our own minds working on our brain cells, and through them on the world about us. Scientists have even invented a machine that records the force of our thoughts, for every thought expressed by the mind of man radiates energy as it passes through the brain cells, and this radiation is measurable. University of Chicago scientists are using a thought wave measuring device as an aid in selecting business executives for promotion.

The late John J. O'Neill, Science Editor, the New York Herald Tribune in a latter dated July 8, 1951, stated: "The hypothesis of the astrologers that **forces are transmitted to the earth without attenuation with increasing distance,** and do not vary with respect to the difference in masses of the sun, moon and planets on which they originate, was totally inconsistent with the old style Newtonian mechanics; but today is in complete accord with the much more recent Einstein photo-electric theory, which demonstrates that the effect of a photon does not diminish with distance, and which has been universally adopted by scientists to supplant the Newtonian mechanics in that field.

"The hypothesis of the astrologers that different effects will be produced by different configurations of the heavenly bodies, is entirely consistent with the modern developments in the field of chemistry, in which the properties of substances are stated in terms of the architectural configurations of the atoms within the molecules, and with the theories of the atomic physicists that the properties of the atoms are associated with the orbital architecture of the electrons."

Rodney Collin, in "The Theory of Celestial Influence" (1954) states, "All phenomena in nature are the product of three forces—Sun, Planets, Earth. If the Sun is the source of life and energy, and Earth the quarry of raw material, Planets are the creators of form and function. The result is the whole world of nature. All rotating bodies in the universe create and are surrounded by a magnetic field. All magnetism affects all other magnetism. The true influence of the planets upon the earth is almost certainly of a magnetic nature."

This interaction of magnetic fields is explained by David Dietz, Scripps-Howard Science Editor on June 14, 1958 as follows: "The sun is a great shotgun, spraying the earth with showers of sub space atomic bullets. Blasts from the solar shotgun are heralded by the appearance of bright outbursts of ultra-violet light on the surface of the sun—the so-called solar flares. A cloud of hydrogen gas is thereby released, which becomes electrified or ionized and the atoms of hydrogen separate into their constituent particles, namely protons and electrons.

"The spray of protons and electrons encounters the earth's magnetic field and is bent into a circle around the earth. But the protons, being positive, move in one direction, and the electrons, being negative, move in the other. This sets up a tremendous electric current which flows in a ring around the earth. A magnetic field is generated by this ring of current, and it is the interaction of this magnetic field that results in magnetic storms."

Collin further states, "If the possibility exists that a planet may stimulate an organ in one particular man, it seems indisputable that the same conjunction could activate this organ in millions of men, producing waves of business activity or depression, cycles of wars, periodic fluctuations in birth rate, and so on."

Elbert Benjamine, in "Beginner's Horoscope Reader" (1943) states that in the physical world energies are limited by Einstein's Special Theory of Relativity, to the speed of light (186,000 miles per second.) But, in the inner world, which is variously termed the subconscious mind, the unconscious mind, or the soul, there are energies with velocities exceeding the speed of light. Amongst these energies are those known as astrological energies, which influence not only electromagnetic energies in space, having approximately the velocity of light, but also electromagnetic energies within a living organism having velocities slower than that of light. Thus it is through the medium of electromagnetic energies that the outer plane affects the inner plane of man and conversely, the inner plane affects the outer plane.

Each planet radiates astral energy of a different frequency, hence has a different effect upon the astral form of things, just as each different musical tone or pitch has a definite vibratory frequency and each different color has a definite electromagnetic frequency. The planetary energies converge upon the earth from different angles, and these angles determine the manner in which the energies combine into harmony or discord. From time immemorial, it has been found that the following angles or aspects between planets are harmonious in their effects: 60° or Sextile and 120° or Trine; whereas the following have been found to be inharmonious: 0° on Conjunction, 90° or Square and 180° or Opposition.

The characteristic effect of a planetary configuration or angle may vary within certain limits from perfect. These limits are known as orbs of influence and are usually of the following order of magnitude: Conjunction 10°, Sextile 6°, Square 8°, Trine 8°, Opposition 10°. The potency of an aspect rises slowly as the planets enter the orb of influence and accelerates rapidly during its approach to exactitude. It then declines in like manner as the planets move apart. The potency of the aspect at various points within orb may be represented by a symmetrical sine curve, which shows that an aspect which is one-third of its distance to exact, has only one-fourth of its ultimate value. At the half-way mark, it reaches half of its potential, and at two-thirds of exactitude it exerts three-fourths of its total potential.

The planets whose geometrical configurations appear to affect the business cycle the most are: Jupiter, Uranus and Saturn. Jupiter, the largest of our planets, makes one complete revolution around the sun in 11.86 years, while Uranus, more remote from the sun, requires 84.02 years to complete its circuit. The time required for these two planets to complete a circle of 360° with respect to each other is 13.81 years and is known as their SYNODICAL PERIOD.

Saturn requires 29.46 years to complete its solar revolution, and its synodical period with respect to Jupiter is 19.86 years and with respect to Uranus is 45.36 years.

Sepharial, in "A Manual of Occultism" states: "Great importance is attached to the conjunctions of the major planets, and it may be said that no phenomenon of this kind ever happens but it is attended by great mutations and upheavals in the political, religious and physical worlds."

The conjunctions of Jupiter and Uranus, occurring at intervals of 13.812 years, have with but two exceptions* since 1762 coincided with low periods of American business activity, as is indicated in the following tabulation, which is based on the heliocentric longitude of the planets.

TABLE II
15 JUPITER - URANUS CONJUNCTIONS

Jan. 1762	Depression following end of French & Indian War
Oct. 1775	Depression during Revolutionary War
June 1789	Primary Post-War Depression
Aug. 1803	Depression following Peace of Amiens
Sept. 1817	Minor Panic of 1817
*June 1831	Inoperative-Pluto sextiles the conjunction and trines Mars
Dec. 1844	Debt Repudiation Depression
June 1858	Depression following Panic of 1857
*Mar. 1872	Inoperative-Mars trine Venus and Pluto trine Saturn more powerful
June 1886	Depression of 1884
Aug. 1900	Depression
Apr. 1914	World War I Depression
Oct. 1927	Profit-less Prosperity Depression
Apr. 1941	Pre-World War II Depression
Feb. 1955	Recession of 1954 (Predicted)—"January White Sale" of Electrical Equipment.

Astrologers associate Uranus with the electrical industry, and it is a curious fact that in January 1955 (less than a month before Jupiter-Uranus conjunction became exact), the electrical manufacturing industry became embroiled in the most vicious kind of price-cutting that the writer has known in his more than 40 years association with that industry. Hundreds of millions of dollars worth of major electrical equipment were sold at prices up to 50% less than those prevailing before the "January White Sale." As no one seemed to know what really caused this sudden onslaught, various "reasons" were given!

Moore's Almanac for 1762 says of the Jupiter-Saturn conjunctions: "These Conjunctions have been constantly observed to stimulate the most powerful Influence of any other of the Planets; therefore their Configurations are properly said to dispose of Times, whilst the lower Planets as lesser Causes do more particularly manifest the Intention or Remission of the Influence of those greater Causes." Note how this is confirmed by Nelson: "Jupiter and Saturn, the largest planets in the solar system, are the most important. Due to their great size and slow motion, they can exercise the predominating influence on the sun for prolonged periods of time and therefore establish an over-all standard of disturbed or quiet conditions. However, the arrangements of the other slow planets can add to or take away from their effectiveness to some extent. Therefore, when Jupiter and Saturn are spaced near any multiple of 90 degrees, we should find the most degraded years, with a high percentage of the radio disturbances severe."

*See Chart IV

Similarly, Johnson states that Saturn in conjunction with Jupiter has a repressing effect on sunspots. See Table III for the depressive effects of the Jupiter-Saturn conjunction on American business activity, and Table IV for the effect on U. S. Presidents. Johnson also states that, when Saturn is in conjunction with or in opposition to Uranus, Neptune or Pluto, there appears to be a dissolving or repressing tidal-like influence on sunspots. See Table V for the depressive effects of the Saturn-Uranus conjunctions on American business activity. The effects of Saturn with Neptune and Pluto have not been accurately determined, because Neptune wasn't discovered until 1846 and requires 165 years to complete a solar revolution, while Pluto wasn't discovered until 1930 and requires 246 years to complete a solar revolution. However, since Johnson concluded that the electrical charges of Uranus, Neptune and Pluto are about equal, their effects in combination with Saturn should be about equal. Further research on this point is indicated.

During almost 200 years of American history, the conjunctions of Jupiter and Saturn, which occur at intervals of 19.859 years, have with but two exceptions* coincided with periods of financial and political stress, as is indicated in the following tabulation, which is based on the heliocentric longitude of the planets (see Chart IV).

TABLE III
10 JUPITER - SATURN CONJUNCTIONS

Feb. 1762	Depression following end of French & Indian War
Aug. 1782	Depression following end of Revolutionary War
May 1802	Depression following end of Carrying Trade Prosperity
Sept. 1821	Bottom of Primary Post War (War of 1812) Depression
Mar. 1842	Debt Repudiation Depression
Jan. 1862	Civil War Depression
*Apr. 1881	Inoperative because of Venus-Mars and Venus-Neptune trines followed by Jupiter-Uranus trine in August.
*Oct. 1901	Inoperative because of semi-sextile to Uranus
Aug. 1921	Bottom of Primary Post War (World War I) Depression
Nov. 1940	Pre-World War II Depression

It is a curious fact that ever since the Great Mutation Conjunction of 1842, every President of the United States whose term of office fell within a Jupiter-Saturn conjunction period, died in office, as per the following tabulation:

TABLE IV
U. S. PRESIDENTS AND JUPITER - SATURN CONJUNCTIONS

Date of Geocentric Conjunction	President	Elected	Died
Jan. 26, 1842	W. H. Harrison	1840	Apr. 4, 1841
Oct. 21, 1861	A. Lincoln	1860	Apr. 14, 1861
Apr. 18, 1881	J. A. Garfield	1880	Sept. 19, 1881
Nov. 28, 1901	W. McKinley	1900	Sept. 6, 1901
Sept. 9, 1921	W. G. Harding	1920	Aug. 2, 1923
Feb. 15, 1941	F. D. Roosevelt	1940	Apr. 12, 1945

The conjunctions of Saturn and Uranus, occurring at intervals of 45.36 years, have with but one exception* coincided with the following low periods of America business activity (see Chart IV).

TABLE V
5 SATURN - URANUS CONJUNCTIONS

Nov. 1761	Depression following end of French & Indian War
*Jan. 1806	Inoperative because sextiled by Jupiter, and Venus-Mars conjunction sextiled by Neptune
Nov. 1851	Depression
Apr. 1897	Silver Campaign Depression
Apr. 1942	Bottom of Stock Market prices

The entrance of the planet Uranus into the sign of Gemini every 84 years has been of major significance in American history, as indicated by the following:

TABLE VI
URANUS IN GEMINI

1607	1st Successful English Settlement founded at Jamestown, Va.
1691	Colonial Revolution establishes Religious Freedom
1775	Revolutionary War establishes Political Freedom
1858	Civil War establishes Personal Freedom
1942	World War II establishes Economic Freedom

The effects of the other aspects of Jupiter, Uranus and Saturn will be analyzed in the next chapter.

*See Chart IV

CHAPTER VIII

MORE PLANETARY CORRELATIONS

"Prediction must inevitably fail, unless we have lighted on the true cause of the phenomena; success is therefore a guarantee of the truth of the theory."—Professor G. H. Darwin.

In order to predict the probable future developments of industry and trade, economists study the fluctuations that have taken place in the past, and construct a composite index from as comprehensive data as is available. Of such an index, Persons says, "The index gives a picture of real fluctuations of business which reflect the operations of (a) internal economic forces, and (b) external events and developments. Divorced from its historical background, the index for any period means little; divorced from economic theory, the cycles traced by the index become merely empirical curves for the mechanistic chart reader to play with. But fluctuations of the index (a) attached to and interpreted in the light of their historical background, and (b) rationalized by economic analysis, becomes pregnant with meaning. Thus used, the index becomes at once the living record of business experience and the basis for formulating a realistic concept of probable future developments in business."

The business index shown on Chart II was derived for the years 1761 to 1790 from Silberling's "Annual Index of American Trade and Production 1700-1940," and is based primarily on English exports to the American colonies. From 1790 to the present, the Cleveland Trust Company "Index of American Business Activity Since 1790," originated by the late Brigadier-General Leonard P. Ayres, was used. This latter index is composed of one set of 10 series of annual data from 1790 to 1855, and of another set of 10 series of annual data from 1885 to 1901. The annual figures from 1901 to 1919 are those of the Thomas index of manufacturing production with mineral production added, and from 1919 to date the monthly figures of the Federal Reserve index of industrial production are used. All the foregoing data is reduced to a per capita basis.

The planetary configurations or aspects are based on the heliocentric (sun-centered) positions of Jupiter, Saturn and Uranus. For the period 1760 to 1800 the Jupiter-Saturn data was derived from Robert White's Ephemerides for 1760, 1761, 1762, 1770, 1774; the Uranus data was derived from Simon Newcomb's "Tables of Uranus" published by the U. S. Nautical Almanac Office. From 1800 to 1984 the data was derived from Hugh MacCraig's "The 200 Year Ephemeris" (1949).

The solid line represents the Jupiter-Uranus Heliocentric Aspects based on their Synodical Period of 13.812 years. One fourth of this period approximates the 3½ year cycle, which H. S. Jevons, the son of the founder of the sunspot theory of the business cycle, announced in the August 1909 Contemporary Review that meteorologists had found to exist in solar radiation and barometric pressure and which he had found to exist in crop yields. But it remained for the American economist, Joseph Kitchin, to prove in the January 1923 Review of Economic Statistics, on the basis of careful measurement of certain indexes during the years 1890-1922 in both Great Britain and the United States, the existence of a cycle averaging 3½ years or 40 months. This cycle was thereafter called the "Kitchin" cycle.

The younger Jevons found that every third fluctuation of the solar radiation was emphasized, hence trade cycles could be 3½, 7 or 10½ years long. Kitchin confirmed this by stating that major cycles are merely aggregates, usually of two, less commonly of three, minor cycles, and that the limits of these major cycles are marked by a high maximum of the indexes, and sometimes a panic. The average of these major cycles, he stated, was eight years, and the most usual interval seven or ten years. These major cycles are called "Juglar" cycles, after Clement Juglar, the French economist, who in 1860 first showed that trade fluctuations were cyclical in nature, and that periods of prosperity, crisis, and liquidation followed each other in the same order. The dotted line on Chart II represents the Jupiter-Saturn Heliocentric Aspects based on their Synodical Period of 19.859 years. One half of this period approximates the so-called 9-year Juglar rhythm, and is the 17th harmonic found in a study of sunspots made by Gerould T. Lane and reported in the January 1954 "Cycles."

The form in which Chart II was constructed was the result of a successful effort to check the theory expressed by J. M. Funk in "The Cycles of Prosperity and Depression" (1933) that a 56-year cycle existed in American business activity beginning in 1817. The author, however, carried his researches back to 1761, when business was depressed following the end of the French and Indian War. It will be noted that 56 years later, in 1817, another depression occurred, although a minor one. Fifty-six years later came the severe Panic of 1873, and finally, 56 years later, the Panic of 1929. A similar series of panics or business declines occur at 20-year intervals from each of the foregoing

dates, i.e., 1781, 1837, 1893 and 1949 (which came exactly on schedule). Another 20-year series begins in 1801, 1857, 1913, and if the pattern persists—1969.

The foregoing pattern was first publicly presented by the author in a lecture at the Henry George School of Social Science in New York City on April 16, 1947. At the time, he was unable to give any reason for the phenomenon, but intensive research in planetary cycles gave a clue. The Jupiter - Uranus and Jupiter - Saturn Heliocentric (sun-centered) aspects were added to the Chart and the correlation with the ups and downs of the business index noted. The Saturn-Uranus curve is not shown on the Chart, but the data is tabulated hereinafter.

In "Cycles" for May 1953, Nelson reports that severe radio disturbances occurred when four planets were equally spaced at 60°, or when three planets were spaced 120° apart. Of the latter configuration, Vivian E. Robson in "A Student's Textbook of Astrology" states, "Three planets in trine to one another from the corners of an equilateral triangle are said to be in grand trine and to exert a very evil influence." Examples of the disturbing effect on radio transmission of 4 planets 60° apart occurred: (a) on January 24, 1949, Venus was 180° from Mercury, 60° behind Neptune, and 120° behind Pluto; (b) on September 25, 1952 Mercury was 180° from Earth, 60° ahead of Venus and 120° ahead of Mars. Three planets equally spaced at 60° produce shorter disturbances, and three planets equally spaced at 45° are also effective, but to a lesser degree.

Examples of unfavorable business conditions due to three planets 60° apart are the following (see Chart VI):

1798 Saturn sextiles Jupiter and Uranus
1829 Uranus sextiles Jupiter and Pluto
1891 Venus sextiles Jupiter and Uranus
1932 Venus sextiles Jupiter and Uranus

Examples of unafavorble business conditions due to four planets 60° apart are the following (see Chart VI):

1874 Saturn opposition Uranus, Mercury sextile Jupiter and Saturn.
1878 Mars opposition Jupiter, Saturn sextile Jupiter and Pluto.
1904 Saturn opposition Venus, Jupiter sextile Pluto and Saturn.

In "Cycles" for November 1953 Nelson reports that very severe radio disturbances occurred without visible sunspots, on the following occasions:

(1) January 27, 1953 when Mars was 180° from the Saturn-Neptune conjunction which was 90° from Mercury. Mars was also 60° behind Venus and 120° behind Pluto which was 90° from Jupiter. Here we have a combination of conjunctions, oppositions, squares, and four planets 60° apart.

(2) May 17, 1953 Mercury was 180° from Neptune, 60° behind Mars, and 120° behind Pluto. This was followed on May 19 with Venus 180° from Mars, 60° ahead of Neptune, and 120° ahead of Pluto. A very severe radio disturbance began on May 15 and ended on May 21.

(3) August 25, 1953 Mercury 60° behind Pluto and 120° behind Neptune. Venus was 90° from Pluto and Uranus was 90° from Neptune. This is a combination of three planets 60° apart and two pairs of planets 90° apart.

Of the 14 Jupiter-Uranus oppositions listed in the following table, it is interesting to note that the only three whose disturbing effects were nullified were those when a third planet was 60° from the first and 120° from the second planet (see Chart V):

TABLE VII
14 JUPITER - URANUS OPPOSITIONS

Jan. 1769	Minor Recession
Dec. 1782	Post Revolutionary War Depression
Aug. 1796	Decline from Sea Borne Commerce Prosperity
*June 1810	Inoperative-Pluto Sextiles Jupiter and Trines Uranus
Mar. 1824	Minor Recession
Dec. 1837	Depression after the Panic of 1837
Oct. 1851	Recession
Sept. 1865	Primary Post Civil War Depression
Aug. 1879	Secondary Post War Depression
May 1893	Panic of 1893
*Feb. 1907	Inoperative-Venus Sextiles Jupiter and Trines Uranus, followed by Jupiter-Saturn trine in July
Nov. 1920	Primary Post World War I Depression
Sept. 1934	Secondary Post War Depression
*July 1948	Inoperative-Saturn Sextiles Uranus and Trines Jupiter

Similarly, in the case of the Jupiter-Saturn oppositions, the disturbing effect was nullified in four of the cases by a third planet being 60° from the first and 120° from the second planet, as shown in the following tabulation (see Chart V):

TABLE VIII
10 JUPITER - SATURN OPPOSITIONS

Nov. 1772	Recession
*Jan. 1792	Inoperative-Uranus Sextiles Jupiter and Trines Saturn
Nov. 1811	Recession from previous Restricted Carrying Trade Prosperity
*June 1832	Inoperative-Venus Sextiles Jupiter and Trines Saturn, followed by Neptune trine Saturn and sextile Jupiter
Oct. 1851	Recession
June 1871	Recession
*Jan. 1892	Inoperative-Mercury Sextiles Saturn and Trines Jupiter, followed by Jupiter sextile Pluto-Neptune in June
May 1911	Depression
Dec. 1930	Secondary Post World War I Depression
*Aug. 1951	Inoperative-Mercury Sextiles Saturn and Trines Jupiter, followed by Venus sextile Jupiter and trine Saturn.

In the only inoperative case of a Saturn-Uranus opposition, the disturbing effect was nullified by a semi-sextile followed by a trine, as shown in the following tabulation:

TABLE IX
4 SATURN - URANUS OPPOSITIONS

*Feb. 1784	Inoperative-Jupiter semi-Sextiles Saturn followed by Jupiter-Uranus Trine
Mar. 1829	Secondary Post War of 1812 Depression
Aug. 1874	Secondary Post Civil War Depression
June 1919	Recession

Summarizing, we find that in 5 out of 30 conjunctions (16⅔%), the unfavorable indications of the planetary configuration were nullified by more powerful configurations in operation on those occasions. In the case of oppositions 8 out of 28 (28½%) were similarly nullified. Thus a total of 13 out of 58 (22.4%) of the unfavorable planetary configurations were nullified, while 77.6% came true.

Now let's look at the record of the favorable planetary configuration, i.e., the Trines (120°) and the Sextiles (60°).

TABLE X
28 JUPITER - URANUS TRINES

*July 1776	Inoperative because of subsequent Jupiter-Saturn Square
Feb. 1771	Boom
July 1780	Rise from Revolutionary War low
Mar. 1785	Post Revolutionary War Recovery
June 1794	Sea Borne Commerce Prosperity
*Oct. 1798	Inoperative-Saturn Sextiles Jupiter and Uranus (3 Planets 60° apart)
*May 1808	Inoperative-Jupiter 90° Neptune, Mercury 90° Uranus
*Sept. 1812	Inoperative-Jupiter, Uranus and Pluto in Grand Trine
Feb. 1822	Era of Good Feeling
*Aug. 1826	Inoperative-Mars 90° Pluto, Jupiter approaching 90° Saturn
Aug. 1835	Bank Credit Land Boom
*June 1840	Inoperative-Saturn 90° Uranus
*Apr. 1849	Inoperative-Mars 90° Uranus
Mar. 1854	California Gold Inflation Prosperity
Mar. 1863	Civil War Prosperity
Dec. 1867	Minor Rise
*Apr. 1877	Inoperative-Pluto 90° Uranus
Aug. 1881	Gold Resumption Prosperity
*Apr. 1891	Inoperative-Venus Sextile Jupiter and Uranus (3 Planets 60° apart)
Aug. 1895	Recovery of 1895
Dec. 1904	Corporate Prosperity
July 1909	Rise from Panic of 1907
July 1918	World War I Prosperity
May 1923	Boom
*Mar. 1932	Inoperative-Veus Sextile Jupiter and Uranus (3 Planets 60° apart)
Feb. 1937	Boom
Jan. 1946	World War II Prosperity
Oct. 1950	Korea War Prosperity

TABLE XI
20 JUPITER - SATURN TRINES

*Apr. 1769	Inoperative because of Jupiter-Uranus Opposition
*Nov. 1775	Inoperative because of Jupiter-Uranus Conjunction
*June 1788	Inoperative
Oct. 1795	Sea Borne Commerce Prosperity
*Feb. 1809	Inoperative-Venus opposition Neptune-Saturn Conjunction
Mar. 1815	Post War of 1812 Recovery
*Feb. 1829	Inoperative-Saturn Opposition Uranus and Uranus Sextile Jupiter and Pluto (3 Planets 60° apart)
May 1835	Bank Credit Land Boom
Jan. 1848	Mexican War Prosperity
May 1855	Boom
Sept. 1868	Minor Boom
*Oct. 1874	Inoperative-Saturn Opposition Uranus, Mercury Sextile Jupiter and Saturn (4 Planets 60° apart)
Oct. 1888	Railroad Prosperity
Dec. 1894	Recovery of 1895
July 1907	Corporate Prosperity
*Dec. 1914	Inoperative-Venus opposition Mars, Mercury Square Saturn
Mar. 1928	Bull Market Boom
*June 1934	Inoperative-Jupiter opposition Uranus
July 1948	Post World War II Prosperity
*July 1954	Inoperative-Mars opposition Jupiter

TABLE XII
9 SATURN - URANUS TRINES

*June 1775	Inoperative because of Jupiter-Uranus Conjunction
Jan. 1792	Boom
*Nov. 1822	Inoperative-Pluto 90° from Conjunction of Mars, Uranus and Neptune
Mar. 1836	Bank Credit Land Boom
*Aug. 1865	Inoperative-Jupiter opposition Uranus and Venus opposition Mars
July 1882	Gold Resumption Prosperity
Mar. 1913	Boom
Nov. 1926	Coolidge Prosperity
Sept. 1956	Rising Market (Predicted)

TABLE XIII
29 JUPITER - URANUS SEXTILES

Mar. 1764	Minor Rise
Aug. 1773	Minor Rise
*Dec. 1777	Inoperative because of preceding Jupiter-Saturn Square
*Mar. 1787	Inoperative because of preceding Jupiter-Saturn Square
Jan. 1792	Minor Rise
Jan. 1801	Carrying Trade Prosperity
Feb. 1806	Maritime Commerce Prosperity
Apr. 1815	Post War of 1812 Recovery
*Dec. 1819	Inoperative-Mars opposition Uranus-Neptune Conjunction
*Mar. 1829	Inoperative-Saturn opposition Uranus, and Uranus sextile Jupiter and Pluto (3 Planets 60° apart)
July 1833	Boom
*Nov. 1842	Inoperative-Saturn Square Venus-Pluto Conjunction
Dec. 1846	Mexican War Prosperity
May 1856	Boom
Sept. 1860	Minor Rise
Dec. 1869	Industrial Over-expansion Prosperity
*Oct. 1874	Inoperative-Saturn opposition Uranus, Mercury sextile Jupiter and Saturn (4 Planets 60° apart)
Nov. 1883	Gold Resumption Prosperity
Jan. 1889	Railroad Prosperity
Jan. 1898	Minor Rise
Nov. 1902	Merger Prosperity
Jan. 1912	Rise
June 1916	World War I Prosperity
Sept. 1925	Coolidge Prosperity
Nov. 1929	Bull Market Boom
*Apr. 1939	Inoperative-Jupiter opposition Neptune and Mars opposition Uranus.
July 1943	World War II Prosperity
Nov. 1952	Korea War Prosperity
July 1957	Boom (Predicted)

TABLE XIV
20 JUPITER - SATURN SEXTILES

*Mar. 1765	Inoperative because of Jupiter-Uranus Square
*Feb. 1779	Inoperative because of Jupiter-Uranus Square
July 1785	Post Revolutionary War Recovery
*Nov. 1798	Inoperative-Saturn sextiles Jupiter and Uranus (3 Planets 60° apart)
Mar. 1806	Maritime Commerce Prosperity
Oct. 1818	Boom
Jan. 1825	Era of Good Feeling
Oct. 1838	Cotton Boom
Feb. 1845	Minor Rise
*July 1858	Inoperative because of Jupiter-Uranus Conjunction
*Oct. 1865	Inoperative because of Jupiter-Uranus Opposition
*May 1878	Inoperative-Mars opposition Jupiter, Saturn sextile Jupiter and Pluto (4 Planets 60° apart)
*Aug. 1884	Inoperative-Mercury, Venus and Saturn in Grand Trine
May 1898	Minor Rise - Spanish American War
*Aug. 1904	Inoperative-Venus opposition Saturn, Pluto sextile Jupiter and Venus (4 Planets 60° apart)
Feb. 1919	World War I Prosperity
May 1925	Coolidge Prosperity
*Dec. 1937	Inoperative because of Jupiter-Uranus Square
May 1944	World War II Prosperity
*Dec. 1957	Inoperative-Sextile split by Mars-Neptune Conjunction opposed to Venus.

10 out of 20 = 50% Inoperative.

TABLE XV
9 SATURN - URANUS SEXTILES

Sept. 1768	Minor Rise
*Aug. 1798	Inoperative-Saturn sextiles Jupiter and Uranus (3 Planets 60° apart)
May 1815	Post War of 1812 Recovery
*July 1844	Inoperative because of Jupiter-Uranus Conjunction
*May 1853	Inoperative because of Jupiter-Uranus Conjunction
June 1889	Railroad Prosperity
Jan. 1906	Corporate Prosperity
*Mar. 1935	Inoperative-Jupiter sextile Neptune opposition Saturn-Uranus sextile
Sept. 1948	Post World War II Prosperity

4 out of 9 = 44.4% Inoperative.

Summarizing, we find that in 22 out of 57 trines (38.6%), the favorable indications of the planetary configuration were nullified by more powerful unfavorable configurations. In the case of sextiles 21 out of 58 (36%) were similarly nullified. Thus, a total of 43 out of 115 (37.4%) of the favorable planetary configurations were nullified, while 62.6% came true.

The listing of Squares in Tables XX, XXI and XXII show that in 18 out of 58 (31%) cases, the unfavorable indications were nullified by more powerful favorable configurations. The summation in Table XXIII shows that 68% of the 231 aspects studied correctly indicated the phase of the business cycle, and 32% were nullified by more powerful contrary configurations. But, in practically every case, the result of these contrary configurations could have been accurately predicted, thanks in large measure to the findings of Nelson in his radio research work. Thus, a new and more powerful tool is now available for predicting the ups and downs of business, with a proven record of accuracy far exceeding any other known method.

It is interesting to note from Chart II that business activity was at a low level during the Revolutionary War and the War of 1812, but at a high level during the Mexican War, the Civil War, World War I, World War II and the Korean War. This is undoubtedly due to the fact that the first two wars were fought on our own soil, while all the other wars with the exception of the Civil War were fought on foreign soil. While the Civil War was fought on American soil, the industrial centers of the North were not ravaged and thus operated at a very high level.

It will be noted that since Chart II was prepared in April 1947, the following predictions have come true: the "Panic" of 1949, the high of 1950-51, the low of 1952, the high of 1953, the low of 1953-54, the dip in 1956, the high in 1956-57, and the decline of 1958. The turning point of the current recession is indicated on Chart III as falling between the Jupiter-Neptune Conjunction of July 1958 and the Jupiter-Uranus Square of December 1958. Many financial advisory services and businessmen such as Standard & Poor's, Alexander Hamilton Institute, The New York Journal of Commerce, and Mr. Harlow T. Curtice, President of General Motors Corporation, have recently been quoted in the daily press as looking for an upward turn during the Fourth Quarter of 1958.

Chart III is an enlargement of Chart II for the years 1949 through 1968, with the addition of the Zurich Relative Sunspot Numbers, the Jupiter-Neptune and Saturn-Uranus cycles. The Revised Cleveland Trust Co. Business Activity Index was also used. It is interesting to note that preliminary reports from the Zurich Observatory, the international clearing-house for sunspot statistics, indicate that December 1957 witnessed the highest sunspot activity ever recorded during the past 200 years. On December 24-25, the relative sunspot numbers reached 355, the highest value ever observed. The second highest value was 353 on May 17, 1778, during the American Revolutionary War! Is there an ominous parallel here? Wholesale commodity prices during the Revolutionary War reached their peak less than one year later—February 1779. When it is recalled that the Revolutionary War was financed by printing press money, which was finally redeemed at one cent on the dollar, and that World War II and the subsequent years saw the Government resorting to the euphemistic device of more and more Deficit Financing, with consequent erosion of the purchasing power of the dollar, it gives one food for serious thought.

When a method for correlating the ups and downs of the business cycle has been found to be highly accurate over a period of 186 years in the past, and a projection made 11 years into the future has also come true, one can reasonbly be assured that equally good results will be obtained from following the planetary indications for as far into the future as one wishes.

CHAPTER IX
CONCLUSION

"The roads you travel so briskly lead out of dim antiquity, and you study the past chiefly because of its bearing on the living present and its promise for the future."
—Lt. Gen. James G. Harbord

In the foregoing chapters we have traced the long and tortuous path trodden by eminent students of the physical and social sciences in the never-ending quest for an insight into the future. Despite the blind prejudice of materialistic scientists and economists who scoff at astrology, irrefutable evidence has been presented that planetary configurations can be successfully used to predict important turning points in the business cycle.

The lead article in the June 15, 1958 issue of "Forbes" magazine opens with the following unflattering statement: "If I were an anthropologist," a highly successful but largely self-educated businessman recently remarked, "I would say that modern business, as much as any primitive African tribe, has its own witch doctors and medicine men. I'm referring to the economists. We businessmen call them in to read the future, rationalize the past and justify the present to us. And, like tribal medicine men, the economists don't have to produce results—only 'explanations' and a kind of business cosmology."

Why are businessmen so skeptical of economists? The answer is given in the June 1958 issue of "Current Economic Trends" published by the American Institute for Economic Research, which states: "The science of economics is relatively immature. Much that is published on the subject, including supposed remedies for recessions, etc., has no more scientific standing than the notions of the itinerant medicine men who sold health elixirs to a gullible public a few decades ago."

What can economists do to improve their low estate? Dr. Macaulay gives the following sound advice:

"Because economics is a study of the behavior of men, economists will probably never be able to make much use of the concept of necessity (or invariable sequence) which permeates the physical sciences. Economic 'laws' in the strict sense of the word will probably always be merely statements of more or less pronounced 'tendencies'. Economics is one of the social sciences, and the chain of causation in all the social sciences is necessarily indirect rather than direct, mediate rather than immediate. The mind of man is always the connecting link—and the disturbing element. The obstacle that will always block the attainment of any such exactitude in economics as is possible in the physical sciences, is that the minds of men do not admit of the same definite analysis as do the events of the external world.

"Economic activities are peculiarly concerned with the future: forecasting is of the essence of such activities. But the economic future cannot be accurately known, and though it is conceivable that it could be forecast with a fairly high degree of probability, successful forecasting is now rare. Few men have either the necessary knowledge of the present or the technical equipment and ability to deduce the future from such knowledge. The first problem in economic reform involves a study of the problem of how to forecast the future. To the extent that the future can be foreseen, it can be prepared for. It is of course highly desirable to learn how things actually have occurred—and particularly how closely or distantly they have followed a 'rational' pattern; to study the problems of economic prediction even into the fields of 'irrational' sequences.

"With the growth of knowledge, the accuracy of forecasting will increase, but this can bring about a pronounced decrease in the violence of economic disturbances only if it entails something more than mere 'speculative' forecasting. It must lead to a change in those present conditions that tend to produce untoward future results. We must make the future and not merely foresee it. And that can only be done in the present. The primary reason for the variableness of the economic future to which man must adjust himself lies in man himself. Without knowing what the future effects of his present acts will be, and often apparently caring less, he proceeds to make a future to which he will find he cannot adjust himself."

Since the controlling factor is the mind of man, economists should make a serious study of those extra-terrestrial forces that affect man individually and in the mass. This means that they should drop the age-old prejudice against astrology—a prejudice which Smith and Duncan express as follows: "The human desire to look into the future led, even in ancient times, to the rise of various forms of pseudo-scientific forecasts. Astrologists were, and still are, consulted for what the stars have to say. It was partly to disprove some of these astrological notions that the statistical method was first undertaken on a scientific basis."

But, the statistical method is not necessarily synonomous with the scientific method which

Stuart Chase defines as follows: "Any activity that produces dependable, invariant knowledge, which all competent observers can agree has a high probability of being correct. Usually, the method involves three steps: (1) observation, (2) a hypothesis or theory to explain the observation, and (3) verification." The astrological tool described herein has been derived by the application of the scientific method, and is destined to become an important branch of the new science of Astro-Economics.

Even though the application of the scientific method in the field of economics may never provide answers to all economic problems, the American Institute for Economic Research is convinced that only those answers obtained through the application of the scientific method should be classified as warranted assertions. Condemning astrology, without making an adequate investigation of the subject is the utter negation of the scientific method. Economists who do so are guilty of "proceeding from an unwarranted assumption to a foregone conclusion."

The late Pulitzer Prize winner, John J. O'Neill, formerly Science Editor of The New York Tribune, and one of the most brilliant of American men of science stated: "Scientists today cannot look down on astrology; instead, they must raise their eyes to take in the higher horizons that astrologers have preserved for them. Astrology is one of the most important fields for scientific research today, and one of the most neglected. Astrology, properly defined, is the science of the relationship of man and his celestial environment; it is the accumulated and organized knowledge of the effect on man of the forces reaching the earth from surrounding space. The hypothesis of astrology are consistent with a vitalistic cosmogony. In this respect the astrological concept is much more modern than the astronomical."

Scientists are accustomed to living in a world where certainty is rarely found. They should realize that the most to be hoped for is confidence in a higher degree of probability that a theory is sound. However, this does not imply that practical application of such theories should wait until warranted assertibility has been superseded by certainty. Prof. John Dewey defines "warranted assertibility" as "knowledge derived through application of the scientific method, knowledge that is highly probable to be sufficiently accurate for practical purposes."

It is firmly believed that the astrological technique described herein fully meets the requirements of Professor Dewey's definition, and it is earnestly hoped that sincere students will be encouraged to carry on further research in the much-neglected field of Astro-Economics. It should, however, be realized that since no two events in nature are identical, scientific prediction must take the form of probabilities rather than complete certainties. But, no other branch of the social sciences can approach astrology in the percentage of predictions which have such a high probability of coming true.

APPENDIX "A"

MAJOR PLANETARY CONFIGURATIONS IN HELIOCENTRIC LONGITUDE

Compiled by LCDR. David Williams

TABLE XVI

JUPITER - URANUS ASPECTS — SYNODIC PERIOD 13.812 YEARS

Degree	Date	Degree	Date	Degree	Date	Degree	Date
0	Jan. 1762						
60	Mar. 1764	60	Dec. 1819	60	Oct. 1874	60	Nov. 1929
90	Apr. 1765	90	Jan. 1821	90	Jan. 1876	90	Dec. 1930
120	July 1766	120	Feb. 1822	120	Apr. 1877	120	Mar. 1932
180	Jan. 1769	180	Mar. 1824	180	Aug. 1879	180	Sept. 1934
240	Feb. 1771	240	Aug. 1826	240	Aug. 1881	240	Feb. 1937
270	July 1772	270	Dec. 1827	270	Oct. 1882	270	Mar. 1938
300	Aug. 1773	300	Mar. 1829	300	Nov. 1883	300	Apr. 1939
360	Oct. 1775	360	June 1831	360	June 1886	360	Apr. 1941
60	Dec. 1777	60	July 1833	60	Jan 1889	60	July 1943
90	Mar. 1779	90	July 1834	90	Mar. 1890	90	Oct. 1944
120	July 1780	120	Aug. 1835	120	Apr. 1891	120	Jan. 1946
180	Dec. 1782	180	Dec. 1837	180	May 1893	180	July 1948
240	Mar. 1785	240	June 1840	240	Aug. 1895	240	Oct. 1950
270	Mar. 1786	270	Sept. 1841	270	Oct. 1896	270	Oct. 1951
300	Mar. 1787	300	Nov. 1842	300	Jan. 1898	300	Nov. 1952
360	June 1789	360	Dec. 1844	360	Aug. 1900	360	Feb. 1955
60	Jan. 1792	60	Dec. 1846	60	Nov. 1902	60	July 1957
90	Apr. 1793	90	Feb. 1848	90	Dec. 1903	90	Dec. 1958
120	June 1794	120	Apr. 1849	120	Dec. 1904	120	Feb. 1960
180	Aug. 1796	180	Oct. 1851	180	Feb. 1907	180	June 1962
240	Oct. 1798	240	Mar. 1854	240	July 1909	240	July 1964
270	Nov. 1799	270	Apr. 1855	270	Oct. 1910	270	Aug. 1965
300	Jan. 1801	300	May 1856	300	Jan. 1912	300	Oct. 1966
360	Aug. 1803	360	June 1858	360	Apr. 1914	360	Apr. 1969
60	Feb. 1806	60	Sept. 1860	60	June 1916	60	Nov. 1971
90	Apr. 1807	90	Nov. 1861	90	June 1917	90	Jan. 1973
120	May 1808	120	Mar. 1863	120	July 1918	120	Feb. 1974
180	June 1810	180	Sept. 1865	180	Nov. 1920	180	Apr. 1976
240	Sept. 1812	240	Dec. 1867	240	May 1923	240	June 1978
270	Nov. 1813	270	Dec. 1868	270	July 1924	270	Aug. 1979
300	Apr. 1815	300	Dec. 1869	300	Sept. 1925	300	Nov. 1980
360	Sept. 1817	360	Mar. 1872	360	Oct. 1927	360	June 1983

Note: Degree column represents Distance planets are apart. It does not give position with respect to Celestial Equator.

TABLE XVII

JUPITER - SATURN ASPECTS — SYNODIC PERIOD 19.859 YEARS

Degree	Date	Degree	Date	Degree	Date	Degree	Date
0	Feb. 1762	60	Jan. 1825	60	Aug. 1884	60	May 1944
60	Mar. 1765	90	Jan. 1827	90	Sept. 1886	90	July 1946
90	Mar. 1767	120	Feb. 1829	120	Oct. 1888	120	July 1948
120	Apr. 1769	180	June 1832	180	Jan. 1892	180	Aug. 1951
180	Nov. 1772	240	May 1835	240	Dec. 1894	240	July 1954
240	Nov. 1775	270	Jan. 1837	270	Aug. 1896	270	Mar. 1956
270	May 1777	300	Oct. 1838	300	May 1898	300	Dec. 1957
300	Feb. 1779	360	Mar. 1842	360	Oct. 1901	360	May 1961
360	Aug. 1782						
		60	Feb. 1845	60	Aug. 1904	60	Feb. 1964
60	July 1785	90	June 1846	90	Dec. 1905	90	July 1965
90	Nov. 1786	120	Jan. 1848	120	July 1907	120	Feb. 1967
120	June 1788	180	Oct. 1851	180	May 1911	180	Jan. 1971
180	Jan. 1792	240	May 1855	240	Dec. 1914	240	Aug. 1974
240	Oct. 1795	270	Dec. 1856	270	July 1916	270	Feb. 1976
270	May 1797	300	July 1858	300	Feb. 1918	300	Sept. 1977
300	Nov. 1798	360	Jan. 1862	360	Aug. 1921	360	May 1981
360	May 1802						
						60	Nov. 1984
60	Mar. 1806	60	Oct. 1865	60	May 1925		
90	Sept. 1807	90	Apr. 1867	90	Oct. 1926		
120	Feb. 1809	120	Sept. 1868	120	Mar. 1928		
180	Nov. 1811	180	June 1871	180	Dec. 1930		
240	Mar. 1815	240	Oct. 1874	240	June 1934		
270	Feb. 1817	270	Sept. 1876	270	Apr. 1936		
300	Oct. 1818	300	May 1878	300	Dec. 1937		
360	Sept. 1821	360	Apr. 1881	360	Nov. 1940		

Note: Degree column represents Distance planets are apart. It does not give position with respect to Celestial Equator.

TABLE XVIII

SATURN - URANUS ASPECTS — SYNODIC PERIOD 45.362 YEARS

Degree	Date	Degree	Date	Degree	Date	Degree	Date
0	Nov. 1761						
60	Sept. 1768	120	Nov. 1822	240	July 1882	300	Mar. 1935
90	Jan. 1770	180	Mar. 1829	270	Jan. 1886	360	Apr. 1942
120	June 1775	240	Mar. 1836	300	June 1889		
180	Feb. 1784	270	Mar. 1840	360	Apr. 1897	60	Sept. 1948
240	Jan. 1792	300	July 1844			90	July 1952
270	June 1795	360	Nov. 1851	60	Jan. 1906	120	Sept. 1956
300	Aug. 1798			90	Nov. 1909	180	Nov. 1965
360	Jan. 1806	60	May 1858	120	Mar. 1913	240	Jan. 1973
		90	Sept. 1861	180	June 1919	270	June 1976
60	Mar. 1815	120	Aug. 1865	240	Nov. 1926	300	Feb. 1980
90	May 1819	180	Aug. 1874	270	Jan. 1931	360	June 1988

Note: Degree column represents Distance planets are apart. It does not give position with respect to Celestial Equator.

TABLE XIX

JUPITER - NEPTUNE ASPECTS — SYNODIC PERIOD 12.782 YEARS

Degree	Date	Degree	Date	Degree	Date	Degree	Date
0	Jan. 1767						
60	Jan. 1769	60	Oct. 1832	60	Sept. 1883	60	Mar. 1935
90	Dec. 1769	90	Sept. 1833	90	Nov. 1884	90	May 1936
120	Dec. 1770	120	Oct. 1834	120	Dec. 1885	120	May 1937
180	Dec. 1772	180	Oct. 1836	180	Apr. 1888	180	May 1939
130	Mar. 1775	240	Feb. 1839	240	June 1890	240	May 1941
270	May 1776	270	Apr. 1840	270	July 1891	270	May 1942
300	July 1777	300	June 1841	300	June 1892	300	May 1943
360	Sept. 1779	360	July 1843	360	May 1894	360	Sept. 1945
60	Oct. 1781	60	June 1845	60	July 1896	60	Jan. 1948
90	Sept. 1782	90	June 1846	90	Aug. 1897	90	Feb. 1949
120	Sept. 1783	120	June 1847	120	Nov. 1898	120	Feb. 1950
180	Sept. 1785	180	Sept. 1849	180	Mar. 1901	180	Feb. 1952
240	Dec. 1787	240	Jan. 1852	240	Apr. 1903	240	Jan. 1954
270	Feb. 1789	270	Feb. 1853	270	Mar. 1904	270	Feb. 1955
300	Apr. 1790	300	Feb. 1854	300	Mar. 1905	300	Mar. 1956
360	June 1792	360	Apr. 1856	360	Mar. 1907	360	July 1958
60	Aug. 1794	60	Apr. 1859	60	June 1909	60	Oct. 1960
90	July 1795	90	Apr. 1859	90	Aug. 1910	90	Nov. 1961
120	July 1796	120	Apr. 1860	120	Oct. 1911	120	Nov. 1962
180	July 1798	180	July 1862	180	Dec. 1913	180	Oct. 1964
240	Aug. 1800	240	Nov. 1864	240	Dec. 1915	240	Oct. 1966
270	Sept. 1801	270	Dec. 1865	270	Nov. 1916	270	Nov. 1967
300	Nov. 1802	300	Jan. 1867	300	Nov. 1917	300	Jan. 1969
360	Mar. 1805	360	Dec. 1868	360	Dec. 1919	360	May 1971
60	May 1807	60	Dec. 1870	60	Apr. 1922	60	Aug. 1973
90	May 1808	90	Dec. 1871	90	July 1923	90	July 1974
120	May 1809	120	Jan. 1873	120	Aug. 1924	120	July 1975
180	Apr. 1811	180	June 1876	180	Sept. 1926	180	June 1976
240	May 1813	240	Sept. 1877	240	Aug. 1928	240	July 1979
270	Aug. 1814	270	Oct. 1878	270	Aug. 1929	270	Oct. 1980
300	Sept. 1815	300	Sept. 1879	300	Aug. 1930	300	Dec. 1981
360	Jan. 1818	360	Sept. 1881	360	Dec. 1932	360	Mar. 1984
60	Feb. 1820						
90	Jan. 1821						
120	Jan. 1822						
180	Jan. 1824						
240	Apr. 1826						
270	June 1827						
300	Aug. 1828						
360	Oct. 1830						

Note: Degree column represents Distance planets are apart. It does not give position with respect to Celestial Equator.

APPENDIX "B"

EFFECT OF SQUARE (90°) ASPECTS AND SUMMATION

TABLE XX
29 JUPITER - URANUS SQUARES

Apr. 1765	Stamp Act Low
*July 1772	Inoperative
Mar. 1779	Revolutionary War Low
Mar. 1786	Primary Post-War Depression
Apr. 1793	War between France and England
Nov. 1799	French Hostilities
*Apr. 1807	Inoperative because of Venus-Mars and Saturn-Pluto Trines
Nov. 1813	War of 1812
Jan. 1821	Primary Post-War Depression
Dec. 1827	Secondary Post-War Depression
July 1834	Depression
Sept. 1841	Debt Repudiation Depression
Feb. 1848	Decline from Mexican War Prosperity
Apr. 1855	Dip after California Gold Inflation
Nov. 1861	Secession Depression
*Dec. 1868	Inoperative because of Venus-Neptune Trine followed by Saturn-Uranus Trine
Jan. 1876	Secondary Post-War Depression
*Oct. 1882	Inoperative because of Saturn-Uranus Trine
*Mar. 1890	Inoperative because of Venus-Jupiter Sextile followed by Mars-Saturn Sextile
Oct. 1896	Silver Campaign Depression
Dec. 1903	Rich Man's Panic
Oct. 1910	Depression
*June 1917	Inoperative - Mars Sexiles Venus and Pluto Conjunction
July 1924	Depression
Dec. 1930	Depression
Mar. 1938	Depression
*Oct. 1944	Inoperative because of Jupiter-Saturn Sextile
*Oct. 1951	Inoperative - Mars Sextile Saturn and Jupiter Trine Pluto
Dec. 1958	Depression
	8 out of 29 = 27.6% Inoperative

TABLE XXII
9 SATURN - URANUS SQUARES

Jan. 1770	Low prior to Boston Massacre
*June 1795	Inoperative because of Jupiter-Saturn Trine
May 1819	Primary Post-War Depression
Mar. 1840	Depression following end of Cotton Boom
Sept. 1861	Secession Depression
Jan. 1886	Depression of 1884
*Nov. 1909	Inoperative because of Saturn-Pluto Sextile and Jupiter-Uranus Trine
Jan. 1931	Secondary Post-War Depression
July 1952	Dip after Korean War Prosperity
	2 out of 9 = 22.2% Inoperative

TABLE XXI
20 JUPITER - SATURN SQUARES

Mar. 1767	Stamp Act Low
May 1777	Revolutionary War Low
Nov. 1786	Primary Post-War Depression
May 1797	French Hostilities
*Sept. 1807	Inoperative because of Saturn-Pluto Trine
*Feb. 1817	Inoperative because of Jupiter-Pluto Trine
Jan. 1827	Secondary Post-War Depression
*Jan. 1837	Inoperative because of Venus-Jupiter Sextile
June 1846	Dip prior to Mexican War Prosperity
*Dec. 1856	Inoperative because of Pluto-Saturn Sextile
Apr. 1867	Dip after Post-War Recovery
Sept. 1876	Secondary Post-War Depression
*Sept. 1886	Inoperative because of Mars-Jupiter Sextile
Aug. 1896	Silver Campaign Depression
*Dec. 1905	Inoperative because of Saturn-Uranus Sextile
*July 1916	Inoperative because of Jupiter-Uranus Sextile
*Oct. 1926	Inoperative - Mars Trine Neptune and Sextile Jupiter
Apr. 1936	Depression
July 1946	Primary Post-War Depression
Mar. 1956	Steel Strike Dip
	8 out of 20 = 40% Inoperative

TABLE XXIII
SUMMATION OF ASPECTS

ASPECT	Wrong	Total	% Wrong	% Correct
Saturn-Uranus Conjunction	2	15	13.3	86.7
Jupiter-Saturn Conjunction	2	10	20.0	80.0
Saturn-Uranus Conjunction	1	5	20.0	80.0
Jupiter-Uranus Opposition	3	14	21.4	78.6
Saturn-Uranus Square	2	9	22.2	77.8
Jupiter-Uranus Sextile	7	29	24.1	75.9
Saturn-Uranus Opposition	1	4	25.0	75.0
Jupiter-Uranus Square	8	29	27.6	72.4
Saturn-Uranus Trine	3	9	33.3	66.6
Jupiter-Uranus Trine	10	28	35.7	64.3
Jupiter-Saturn Opposition	4	10	40.0	60.0
Jupiter-Saturn Square	8	20	40.0	60.0
Saturn-Uranus Sextile	4	9	44.4	55.6
Jupiter-Saturn Trine	9	20	45.0	55.0
Jupiter-Saturn Sextile	10	20	50.0	50.0
GRAND TOTAL	74	231	32.0	68.0

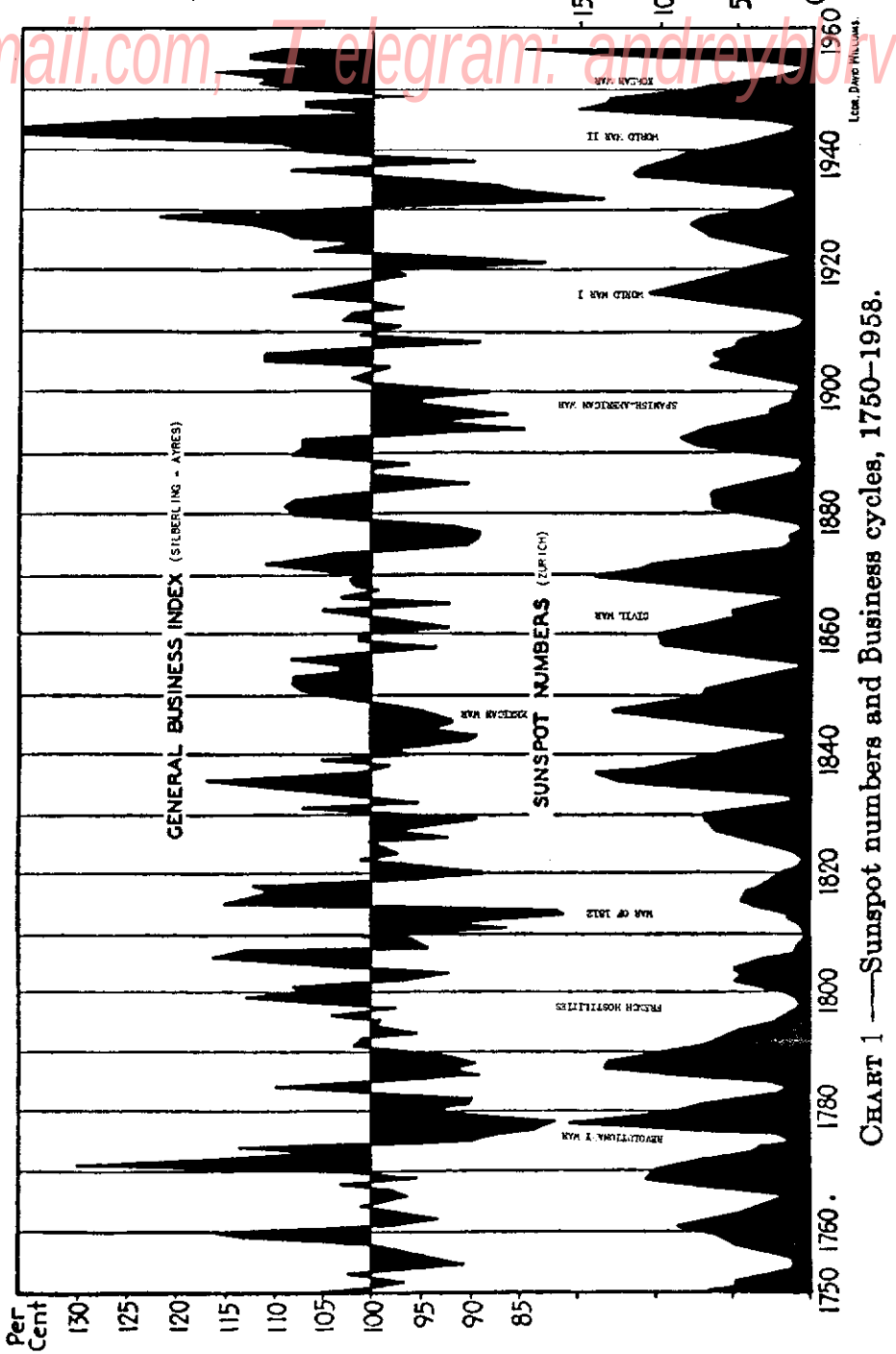
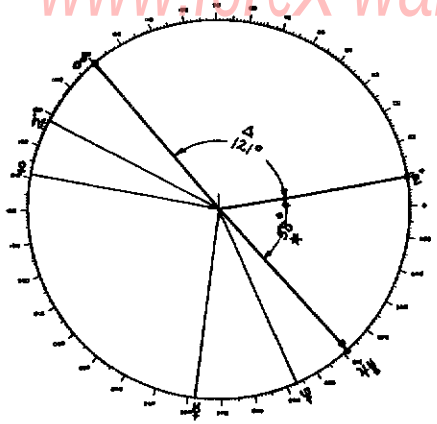


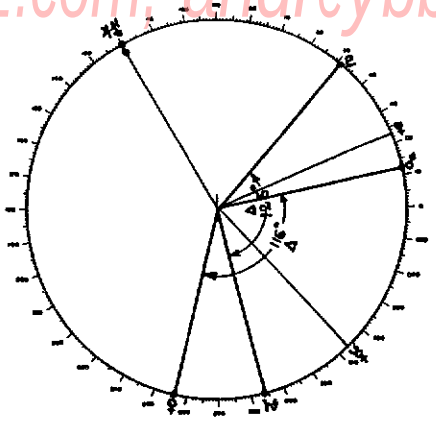
CHART 1.—Sunspot numbers and Business cycles, 1750–1958.

CHART II — SIDEREAL PATTERN OF AMERICAN BUSINESS ACTIVITY SINCE 1761

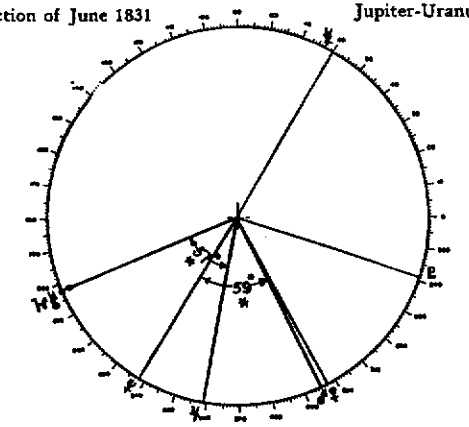
CHART III — SUNSPOT, BUSINESS AND PLANETARY CYCLES



Jupiter-Uranus Conjunction of June 1831



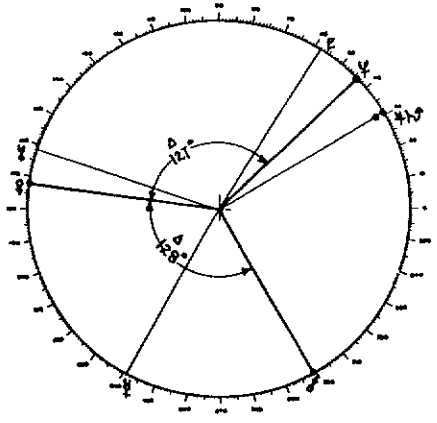
Jupiter-Uranus Conjunction of March 1872



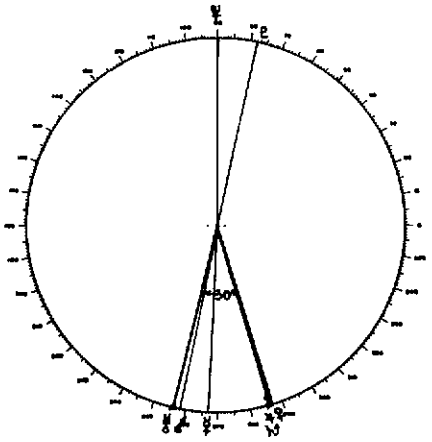
Saturn-Uranus Conjunction of January 1806

Key

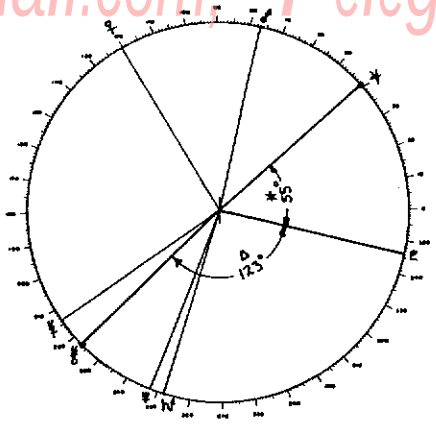
☿ Mercury
♀ Venus
♂ Mars
♃ Jupiter
♄ Saturn
♅ Uranus
♆ Neptune
♇ Pluto
* Sextile
△ Trine



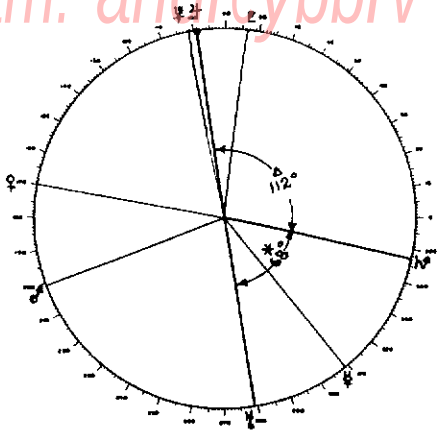
Jupiter-Saturn Conjunction of April 1881



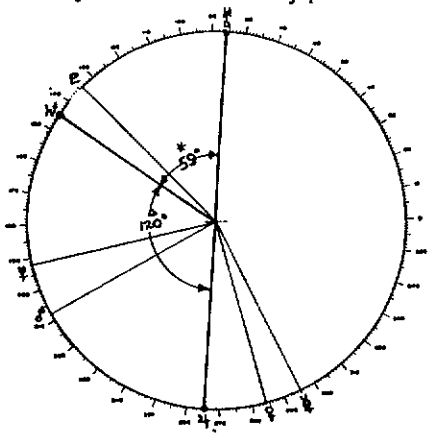
Jupiter-Saturn Conjunction of October 1901



Jupiter-Uranus Opposition of June 1810



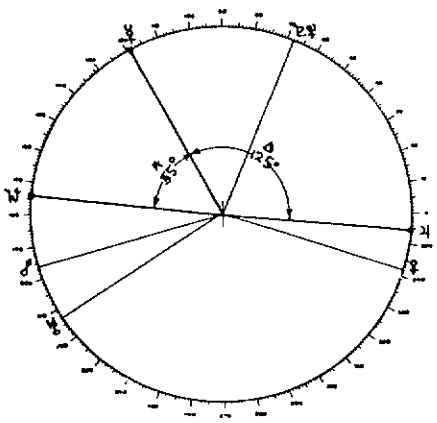
Jupiter-Uranus Opposition of February 1907



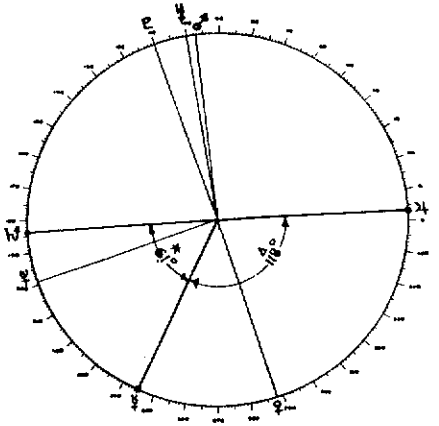
Key

☿ Mercury
♀ Venus
♂ Mars
♃ Jupiter
♄ Saturn
♅ Uranus
♆ Neptune
♇ Pluto
* Sextile
△ Trine

Jupiter-Uranus Opposition of July 1948

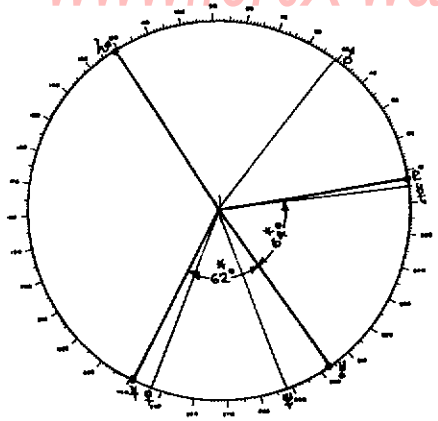


Jupiter-Saturn Opposition of January 1892

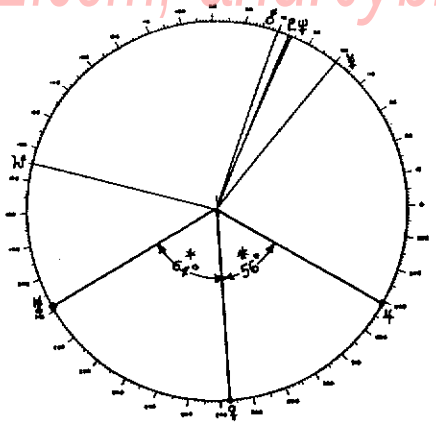


Jupiter-Saturn Opposition of August 1951

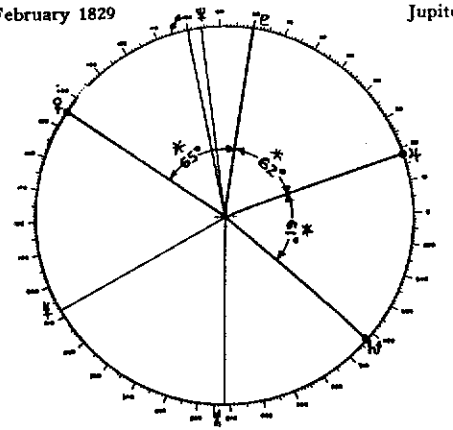
CHART VI EXAMPLES OF SEXTILES AND TRINES NULLIFIED BY 3 OR 4 PLANETS 60° APART



Jupiter-Saturn Trine of February 1829



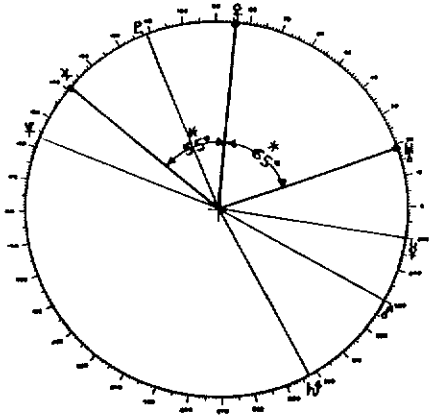
Jupiter-Uranus Trine of April 1891



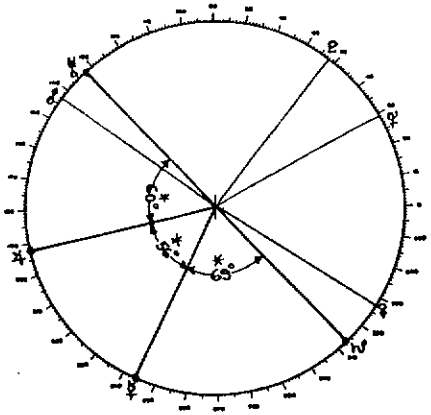
Key

- ☿ Mercury
- ♀ Venus
- ♂ Mars
- ♃ Jupiter
- ♄ Saturn
- ♅ Uranus
- ♆ Neptune
- ♇ Pluto
- ✶ Sextile
- △ Trine

Jupiter-Saturn Sextile of August 1904



Jupiter-Uranus Trine of March 1932



Jupiter-Uranus Sextile and Jupiter-Saturn Trine of October 1874

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