

Mark Twain said that by the Law of Periodical Repetition, everything which has happened once must happen again and again--and not capriciously, but at regular periods, and each thing in its own period, not another's and each obeying its own law...the same Nature which delights in periodical repetition in the skies is the Nature which orders the affairs of the earth.

For over a million years man has tried to predict his future, but has always failed. Legendary fortune tellers, prophets, medicine men and mystics all have claimed possession of supernatural powers that enable them to see into the future. Wars were fought, kingdoms fell and civilizations were altered as a result of their pronouncements. Even today there are those who claim mysterious powers to enable them to solve murders, foretell the next earthquake and blueprint our days in advance.

But working quietly behind the scenes, many scientists working in such unrelated fields as history, botany, terrestrial magnetism, and economics-- to name a few-- are accumulating facts and figures that promise to make the dream of foretelling the future a reality. A new science which deals with the behavior of events recurring at reasonably regular intervals which may ultimately enable us to predict, scientifically and accurately the events of tomorrow. The consequences and responsibilities represented by this embryonic science are almost ~~so~~ too staggering to comprehend. Try to imagine a world where we know, in advance, the probabilities of when the next war will start, when the next panic will descend on the stock market, and when the next flood or earthquake will occur. We are just beginning to probe one of nature's basic secrets--rhythmic repetition of events. And when we unlock the last door to our quest we will have the answer to what may well be the greatest mystery in the world...cycles, and their cause.

Place your hand on the left side of your chest. Feel your heart beat? You are feeling a rhythmic cycle--something that occurs

Our world contains hundreds of similar cycles, such as the ebb and flow of the tides every  $12\frac{1}{2}$  hours...the moon appears every twenty-five hours, woman experiences a 28 day menstrual cycle. The seasons come and go on schedule. All these cycles, and countless more, are understandable and explainable. There is no mystery.

BUT there are thousands of rhythmic cycles for which there is no logical explanation...NO KNOWN CAUSE. In 1938 Dr. Hyde Clark of England was the first to notice rhythmic ups and downs in business activities; Ernest Seton, the American naturalist, was one of the first to notice rhythmic variation in the population of animals, and Samuel Benner in 1875 was the first American to recognize rhythmic cycles in prices. These men noticed regularities caused by something, they knew not what. But we can deduct a hint of forces abroad in the universe-forces surrounding us and influencing us, as much as bacteria ~~was~~ before it was discovered. When these forces and their laws have been removed from the realm of the unknown, it should be possible to throw light on the coming of epidemics, on future weather conditions, on the future of abundance of wildlife, and on hundreds of other natural mysteries.

But if these unknown forces affect the behavior of human beings as they seem to, we find ourselves at the very core of the problem of wars and depressions. If these activities are triggered by natural physical forces in our environment, we are on the threshold of a completely different and extraordinary way of life.

The science of cycles deals with events that recur with reasonable regularity. Such events may be in nature, business, or anything else. The important thing about regularity is that it implies predictability. And if you know an event is coming, you can often prevent it or avoid it if you wish. Or, you can at least prepare for it.



Atlantic salmon vary in abundance in a cycle that averages 9.6 years from peak to peak. Starting with the year with the heaviest salmon population, the fishing gradually gets worse for four or five years. Then the fish start to increase in numbers, and improves each year for four or five years, so that eight to ten years from your starting point the fishing is excellent again. In illinois, chinch bugs vary in population in the same cycle, as does the Canadian snowshoe rabbit. Heart disease in the United States has been found to fluctuate in the same cycle; the same is true with the acreage of wheat harvested in the United States.

After this, it probably would not surprise you to learn that grasshopper outbreaks and mouse plagues come in cycles that have a duration of 9.6 years. But they don't. Grasshopper plagues come 9.2 years apart. Mouse plagues come four years apart-- in Presidential election years. People join churches in cycles, prices of every commodity so far studied rise and fall in cycles. Sunspots erupt in greater cycles, the weather fluctuates in cycles and so so fashion in clothes, and human intellectual activity.

In many instances the regular rythum is undoubtedly the result of chance. BUT are ALL these cycles, some of them recurring time after time for hundreds of years, merely chance phenomena? Can we arbitrarily blame them all on chance when we discover that many of them, in phenomena completely unrelated to each other, have their highs and lows AT THE SAME TIME--as if their rythms were all being controlled by some unknown force?

Many cycles in nature seem to have the same wavelength as cycles in human affairs and some cycles found on earth seem to have the same wavelength as cycles found on the sun. The planets may even be involved and the implications are very strong that the solution to the mystery of the cause of cycles will be discovered somewhere in the universe. The evidence is mounting that something out there, some force that affect every living thing on the earth

war and peace, prosperity and depression, optimism and despair, discovery and isolation, creativity and ignorance.

As we widen our mental horizons, we will brush away our cobwebs of ignorance and acquire new knowledge of ourselves and our universe. We may be confronted with a basic secret of nature for the evidence is mounting that we are surrounded by cyclic forces, of which we know almost nothing. These forces bounce us like marionettes on a string. They make us fight, they make us love. And all the while we think we are doing these things solely for rational reasons. Our lives and our universe vibrate in rhythms that are regular and at least partially predictable and are caused by forces still unknown and possibly uncontrolled by us. We are more like a character in a Punch and Judy show, pulled this way and that by environmental forces, and we will be manipulated until we solve this mystery.

"Cycle" comes from a Greek word for "circle." Actually, the word cycle means "coming around again to the place of beginning." Chapin Hoskins, the Managing Editor of FORBES began a study of the behavior of prices, production and other measures of economic activity shortly after the depression. He noticed that every three months there was a slight upsurge in bank debits of certain cities and he charted other cycles, making it possible to predict when things would be high, when they would turn down again. He began to make forecasts based on his observations. They came true!

Every sportsman knows that game is sometimes plentiful and sometimes scarce. Let us review a few mysterious cycles in wildlife. In 1942 the Ascension Island was selected as an ideal landing field for the Army Air Force. Hurriedly, they built their field and the B-25's and B-26's began their endless procession across the Atlantic. Ascension Island is accustomed to another type of winged visitor, for it is the nesting ground of the sooty tern, a bird with a unique breeding cycle. It returns to its breeding ground every 9.7 months to hatch its oversized eggs! But the Air Force was not aware of this rhythm of nature. The sooty tern posed a serious hazard to the fliers. When the planes would take off

or land, the tern would leave the ground and fill the sky with thousands of pounds of flying gull meat, only slightly less dangerous than anti-aircraft shells. Dr. James Chapin with the American Museum of Natural History finally was able to collect sufficient data to compute that terns return to their nests every 9.7 months. He finally hit upon the idea of breaking their eggs because he had learned that the parent bird rarely returns to a disturbed nest. Thus, the birds were saved as future breeding stock and undoubtedly many young pilots lives were spared.

What brings the tern back every 9.7 months? In temperate climate there is a wide variation in climate, temperature, and weather conditions ...birds have an annual breeding cycle. But the Ascension Island is near the equator. There is no distinct weather change, yet every 9.7 months, millions arrive at Ascension to hatch their young.

Nearly all bird populations fluctuate in cycles. The hairy woodpecker, the downy woodpecker and the bobwhite have an abundance cycle of 50.7 months. Changes in bird abundance are usually associated with their migrations. So experts say that food scarcity, which seems to occur at cyclic intervals, forces birds to move toward strange but warmer country. When their search is rewarded with abundant food, their fertility increases and they multiply. But the bobwhite's activities destroy this explanation for few of these small reddish-brown birds ever die more than a mile from the place where they were hatched.

The 9.6 year cycle in population is characteristic of much wildlife. Included in this grouping is the coyote, red fox, wolf, mink and skunk. The Atlantic salmon possesses the same cycle as has been established by cycle studies both in the Gulf of St. Lawrence and thousands of miles away in Wye, England. To be able to predict the good and bad years for salmon fishing can save thousands of man hours and millions of dollars. We need not wait until we solve our mystery to take advantage of knowledge we already possess.



There are business cycles, cycles in wildlife, cycles on the sun, and in many instances, these cycles have the same length, and go up and down together. Indeed, at least 1300 different items have been cataloged. Occasionally, there will be an interruption in a cycle but the amazing thing is that it will return to the regular pattern and time sequence.

Wars come in cycles. That is, the number of international battles tends to pulsate at reasonably regular recurring time intervals. Wars act as if they were stimulated by recurring cyclic forces. These forces are presumably external to human life, for even when the rhythm of war is disturbed, it returns to the old pattern. And the rhythms are much the same as those we find in animal life.

There is a growing mass of evidence that depressions occur at rhythmic time intervals. All the various aspects of depressions--- curtailed production, business failures, unemployment, financial collapse-- act as if they are unfluenced by rhythmic forces, the nature of which is unknown. Until we learn what these forces are and how they operate, any true science of economics is impossible. But until we solve this mystery, our limited knowledge of cycles can help throw some light on PROBABLE economic fluctuations of a disastrous nature.

How can one tell, in any given instance, whether or not a regular rhythm that one discovers is caused by a real underlying force or merely by chance? Let's begin with some common sense and simple logic. If a cycle has repeated enough times, with enough regularity and with enough strength, the chances are that it is significant. Such regularity cannot reasonably be mere accident.

A considerable amount of cycle research has been done in the natural sciences. You would be amazed at the cycles in nature. Tree rings, are wide and narrow in rhythmic cycles. Water levels in our rivers and lakes go up and down in cycles. Earthquakes recur at rhythmic cycles. So do volcanic eruptions. All aspects of weather show rhythmic cycles-- although very complicated ones. Many of the cycles in the natural sciences

For example, there is nothing very remarkable about the fact that there is a similar 8 year cycle in stock prices and manufacturing production. However, if the weather and earthquake and sunspot eruptions also have 8 year coincident cycles, you are confronted with a situation that makes you feel you are on to something big.

Trees have another fascinating cycle. Their electrical potential goes up and down in rhythm. If you drill two small holes vertically, a yard or so apart, in the trunk of a living tree and insert a piece of wire into each hole, an electrical current will flow along the wire, as if the tree were an electric battery. Current from the tree flows one way and sometimes the other. Dr. H. S. Burr of Yale University, has kept constant records of changes in voltage for a number of trees in the New Haven area for many years. His records indicate two startling facts... First the voltage goes up and down in a cycle of approximately 6 months. Second, another tree of the same kind, even thirty miles away, behaves in the same manner. When it flows down in one, it does the same in the other. Dr. Burr attempted to link this change to changes in barometric pressure, temperature or humidity but eventually abandoned all of these as the possible cause. What could possibly cause trees to act this way? The cause must be environmental. Something unknown in the air or on the earth must influence their behavior.

The Smithsonian Institute has published a paper by Dr. C. G. Abbot, based on 40 years of observations that states that radiation of heat from the sun varies in cycles of approximately 22.7 years, the same length as your longest grasshopper cycle.

The human body is no exception to the operation of cyclic forces. Earlier, I mentioned your heart beat. We breathe, and our lungs expand and contract in rhythm. Your blood flow and pressure are also cyclical, as are your adrenal secretions, your bile production and your body temperature. Even your brain operates in a rhythmic way. Amazingly, the bacteria in your body have a cycle of abundance, just like the salmon and partridge.

Commercial airline pilots frequently complain about time-zone fatigue which results from their bodies functioning on their home-zone schedule, after they have crossed several time zones. All living organisms seem to have internal clocks. In 1957 Professor Frank Brown of Northwestern University collected a number of oysters from the seashore at New Haven, Connecticut and transported them to his laboratory in Evanston, nearly a 1000 miles away. He wanted to find out if they would open their valves in Evanston at the same time as they always had at New Haven, in synchrony with the tides on their old seashore habitat. In covered containers of Atlantic Ocean salt water and at constant conditions of temperature, for a few days, they opened and closed as they did on the Atlantic seashore. But within two weeks they were opening and closing at a different time, in accordance with the positions of the moon in Evanston! The positions of the moon always coincide with the ebb and flow of atmospheric tides everywhere in the world but there is no ocean tide in Evanston, Illinois. Yet the oysters were synchronizing their movements with a nonexistent ocean tide.

Professor Brown then began to experiment with the biological process common to every living thing...metabolism. He selected small pieces of potatoes with sprouting eyes which were sealed in constant darkness and under constant conditions of pressure. With a proper recording apparatus to measure the rate at which the young sprouts consumed oxygen, it was discovered that the potato had a 24 hour cycle of oxygen consumption, similar to a 24 hour cycle in barometric pressure outside the sealed container. Most surprising was the potato's ability to predict the outside barometric pressure two days in advance! The height of the afternoon peak in the metabolic rate appeared to be related to the barometric pressure of the area two days later.

Every living thing studied---from carrots to seaweeds, from oysters to rats...has shown this capacity to predict safely, the barometric pressure two days in advance.

Human beings, in the mass, have alternating periods of elation and depression. They become belligerent in cycles, producing wars



9

At one period they will flow to the financial centers risking all their holdings on resort land or that intangible called the stock certificate. At other times they are overwhelmed by plagues of doubt and they stampede to convert their assets into cash and gold. Why does our behavior alternate with such regularity? Are people depressed in a depression because business is poor? Or, is business poor because people are depressed? I suspect it is the latter.

Despite evidence accumulated through many years, the case for the existence of outside forces that may cause cycles has yet to be proved. We do not KNOW that forces of this sort surround us, and if they do exist, what they are. No one has seen them, for they are as invisible as radio waves. Yet, the circumstantial evidence that they exist is overwhelming.

Summer follows winter, new moon follows old, day follows night. The universe is not static; every component from an electron to a galaxy is continually moving and such movement cannot proceed forever in the same direction. Sooner or later it must complete a circle, or stop and return in the opposite direction.

NW. Yost papers

a delight and timely  
Intelligence cycle  
Intellectual activity

REBUTTAL

Unlike Noah, I have made no attempt to include every species in my "ark" for it would sink from sheer weight and you would cease listening from sheer boredom.

This paper was not intended to be a sort of Rod Sterling excursion into the unknown. It was my desire that it would be a scientific inquiry as to the cause of the repetition of events.

*George Draper*  
Your responses were interesting and predictable.

I have charted the comments of the Athenaeum members for the past 10 years. The results are amazing! You have been carefully charted!

Every 4.3 weeks during the annual Athenaeum cycle:

3 Members in their comments pretend to possess vast store of Knowledge on ANY subject and are willing to expound at great length. The truth is they are in a month to month cycle frantically searching for tibits of worthless knowledge that may be applied to any given subject.

6 Members are extremely complimentary of the speaker, regardless of the subject or the treatment given it. Without variation, the two main speakers are always in this category.

3.5 members are always bold and daring in their shock treatment.

7 members believe that silence is golden and remain in quiet mediation *for 3 hours.*

6 members skip out at intermission.....three to the bar

2.8 members delight in syllabic profundity, and 14 will pretend to understand.

*Having completed our cycle*  
AND SO...WE WILL DEPART...TO RETURN AGAIN IN 4.3 weeks

Many items are concurrently -  
concurrently - Jungol theory - etc -