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ON THE SPECIAL THEORY OF ORDER

by William Arnold

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by William Arnold

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In Memorium, Edward R. Dewey, 1895-1978
Founder, Foundation For The Study of Cycles

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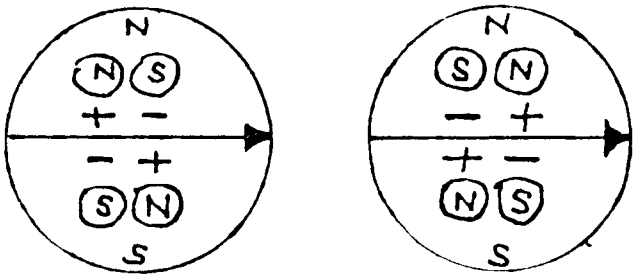
I. ABSTRACT

On the Special Theory of Order postulates Order. It holds that the physical laws of reality, known as "physics" in the realm of Science, extend into deep space. Certainly, they extend from the center of our own Milky Way galaxy to the center of our own Solar-Planetary System, the Sun. A Special Order on a cosmic scale, as demonstrated by this paper, is observed in the positive Correlation between the Sunspot, the Weather and the Planetary Cycles. In a previous paper on Solar-Planetary System Order (in *Cycler,* "Bode's Law Explained," 197)) this author demonstrated Ordinal Proportionality between planetary average distances from the Sun. In this present treatise, when planetary synodic cycles are oriented to the Galactic-Solar Axis (26G°-86°), a positive correlation is shown to exist between these mechanical events and subsequent electro-magnetic data observed in the Sunspot cycle and earthly Weather cycles. An emf (electro-magnetic force) mechanism is postulated, and supported by the work of Hale, Nicholson, Ellerman, Joy, Slurzberg and Osterheld, Sheeley, Parker, Van Allen, Chambers, Nelson, Jones, Bray and Loughead, and will account for the modulated cycle effects, supported by the work of Dewey, Shirk, Jarvis, Ludwig, Eddy and Hand. The Special Theory of Order about the mechanism of our Galactic-Solar Planetary System with the planets acting as conductor-inductors within the solar wind field when oriented to the Galactic center now appears more evident, suggesting a Special Order from the Macrocosm down to the micro.

II. Introduction: Electro-Magnetic Nature Of The Solar Wind

In 1908 G. E. Hale established that spectrum lines of sunspots exhibited the Zeeman effect and thereby proved the existence of a strong magnetic effect. In 1925 Hale and Seth Nicholson reported the laws of sunspot polarities that the magnetic polarity in Southern solar hemisphere spot groups is the opposite of that in the North. In addition, in 1937, Nicholson pointed out that at the end of each 11-year period of rising and falling numbers, the polarity of spot groups reverses. Thus, at the end of 22 years, sunspot polarities on both hemispheres of the sun had alternated through one complete full wave of positive and negative polarity. He proved his point by equating sunspot group polarity with particular cycles of observation.

Sunspot groups observed from 1901-1913, 1923-1933 were as the left diagram, while sunspot groups observed from 1913-1923, 1933-1944 were as the right diagram.



Nicholson also pointed out that the length of the 22-year Hale-Nicholson sunspot cycle should be measured minimum to minimum, in as much as sunspots of both polarity overlap near and after minimums.

In 1950 Slurzberg and Osterheld demonstrated that "Radio and television transmitting stations convert sound waves and light waves to electrical impulses. The electrical impulses that represent the original sound and light waves are sent out by the use of high-frequency alternating currents. These currents produce magnetic and electrical fields that radiate in all directions over long distances without losing much of their original strength. The magnetic and electrical fields produced by this means are called *radio waves.* The strength and frequency of the radio wave is dependent on the high-frequency alternating current producing it; therefore, it will vary in the same manner as the alternating current.

"An a-c (alternating current) wave (see Figure of an a-c wave) reverses its direction at fixed intervals, and during each interval the current will rise from zero to its maximum value, then diminish to zero. By referring to this figure it can be seen that an a-c wave completes one cycle after it has made two alternations, one in the positive direction and one in the negative direction. The fixed interval required for each alternation is 180 degrees, and for one cycle or two alternations it would be 360 degrees. I is a symbol used to denote current and *max* and abbreviation of the word maximum. I *max* would, therefore, mean the maximum amount of current flow; according to the Figure of an a-c wave this would occur at every 90- and 270-degree instant of an a-c wave."

In 1964 Neil Sheeley demonstrated a sunfaculae cycle or evidence of solar electrical activity and that "If the number of polar faculae and sunspot number both are plotted versus time with "polarities," the important feature appears that the number of polar faculae lag behind the sunspot number by approximately 90°."

In 1975 E. N. Parker established that hot solar gases emitted by the sun were "electrical" and related to nearby sunspots that were "magnetic." In 1950 Slurzberg and Osterheld demonstrated that "Magnetism has been described as the twin of electricity ...in 1819, Oersted made the famous discovery that a magnetic field always exists about a wire that is carrying a current." Or, as Parker pointed out, such an emf field exists in clouds of hot gases expelled from the surface of the sun, creating "a 'wind' of charged particles moving at speeds of between 300 and 600 kilometers per second. Hundreds of tiny bright hot spots scattered over the surface of the sun ...wink on and off with a lifetime of about eight hours ...such eruptions occur every few hours ...that give rise to much of the variation in the solar wind and ultimately in the magnetic field of the earth."

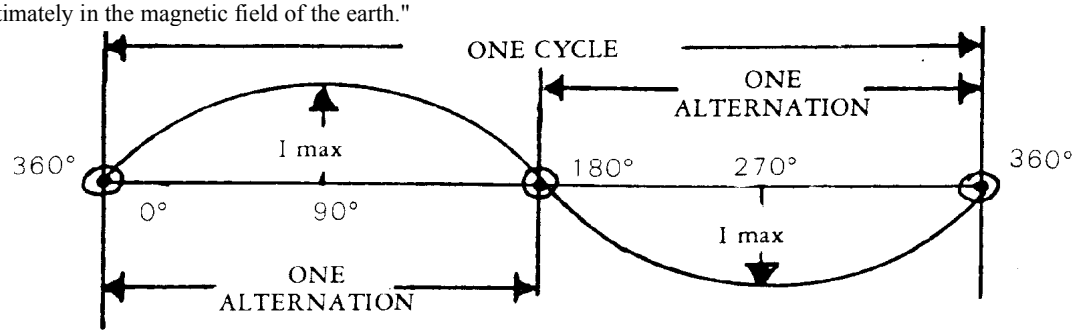


Figure of an a-c wave

Parker specifies the electro-magnetic nature of these gases in the expelled wind: "The hot, electrically charged gases of the sun make an excellent conductor of electricity ...the effect is that the magnetic fields in the sun are trapped in the gases. The strength of the magnetic fields around sunspots is typically 3,000 gauss (6,000 times the strength of the earth's field) across an area that may extend up to 50,000 kilometers. One cannot hold on to an iron object in a magnetic field of 3,000 gauss; a screwdriver or a pair of pliers is wrenched from one's hand and slams into the nearest pole of the magnet ...the magnetic field of the sunspot emerges through the umbra and reenters the sun, often in a neighboring sunspot of opposite magnetic polarity.... The earth moves around the sun on an orbit that is inclined at an angle of about seven degrees to the solar equatorial plane, so that the sunspots and flares point radially toward the earth only in the last years of the sunspot cycle."

In 1975 James A. Van Allen demonstrated that the plasma or solar wind from the sun takes two days to impact earth. Van Allen also demonstrated the existence of the "Van Allen" Radiation Belts around the earth enclosed within an elaborate earth's magnetosphere, extending around the earth like a cocoon, oscillating to the varying solar wind and plasma's electrical and magnetic properties. Both Parker and Van Allen demonstrated that the oscillation of the solar flare and sunspot cycle is inverse to incoming background ¯radiation they termed "cosmic radiation." This cosmic energy bears all the time but most when spots are least. Normally, it is held at bay by the shield of energy emitted by the sun like an onion extending in layers outward from the center. Manmade satellites have demonstrated its existence beyond Neptune.

In 1915 George Chambers published drawings of the Solar corona of the Solar eclipse at Sunspot maximum of 1882, as the left diagram, and the Solar corona of the Solar eclipse at Sunspot minimum of 1867, as the right diagram.

Chambers observed, "When sunspots are at or near their maximum, the corona has generally been somewhat symmetrical, with synclinal groups of rays making angles of 45 degrees with its general axis ...at the epochs of minimum sunspots, the corona shows polar rifts much more widely open, with synclinal zones making larger angles with the axis, and being, therefore, more depressed towards the equatorial regions, in which, moreover, there is usually a very marked extension of coronal matter in the form of elongated streamers reaching to several diameters of the sun."

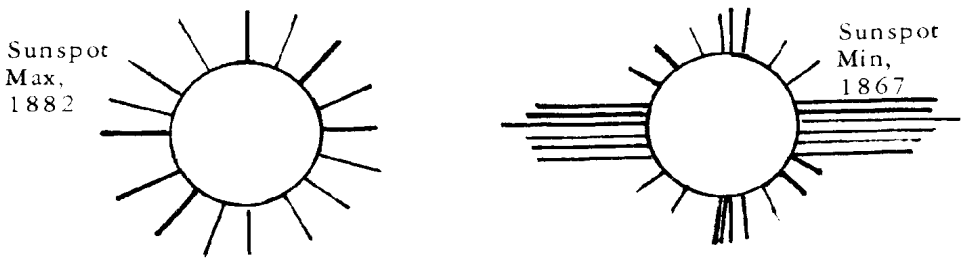
It will be postulated by this author that these two very distinct coronal displays are caused by two very distinct planetary synodic events: the former, symmetrical, shape during sunspot maximums appears associated with an expanded solar field whereas the latter, "more depressed towards the equatorial regions," shape during sunspot minimums appears associated with a compressed solar field (see EMF Mechanism Postulated).

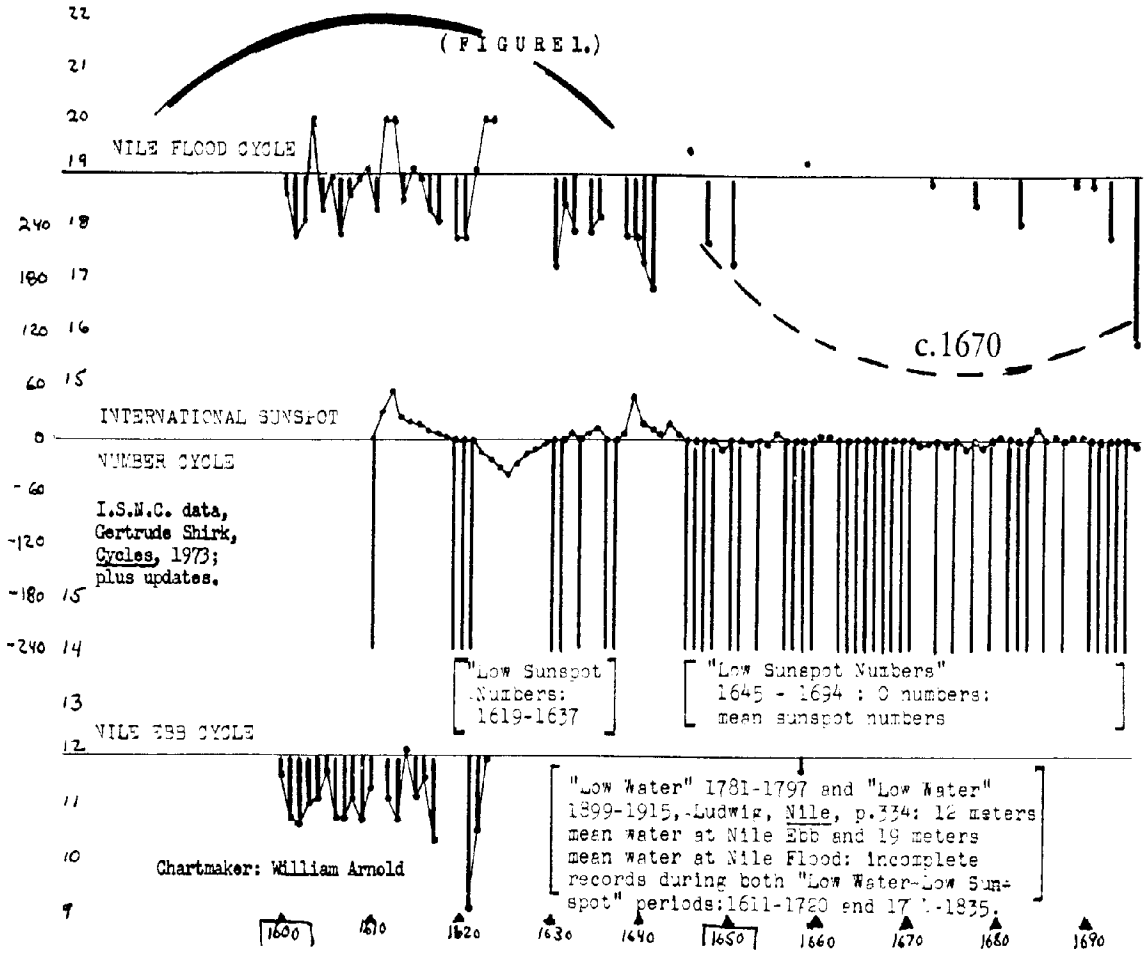
In 1951 John H. Nelson demonstrated the ability to predict sunspots and variations in the Earth's magnetic field by the relative positions of planets to each other.

III. Analysis of the Primary 22-Year Sunspot Cycle

The 22-year Hale-Nicholson sunspot cycle varies from as long as *circa* 27 years during the sunspot minimum period, as the years 1784-1811, to as short as *circa* 20.8 years during the sunspot maximum period as the recent epoch 1930s-1970s (see Figure 1, central portion of chart). If averaged from minimum to minimum using monthly "Wolf' (numbers, 1755-1975, with ten full-wave cycles (220 years divided by 10 cycles, averages out to 22 years per cycle) or from maximum to maximum, the 1760 peak to the 1980 peak, the 22-year cycle prevails.

The data of Figure 1 has been extended back to the first records of Galileo in 1610. By 1625, solar-white-light polar faculae and equatorial faculae were distinguished with the aid of the newly perfected Galilean telescope. Based on work by Scheiner (1630), Hevelius (1647), Cassini (1671) and Flansteed (1684), in 1711, William Derham concluded that the 1600s was an epoch of low sunspot numbers, " there are doubtless great intervals when the sun is free, as between the years 1660 and 1671, 1676 and 1684." Derham also drew specific attention to the variability of sunspot numbers.

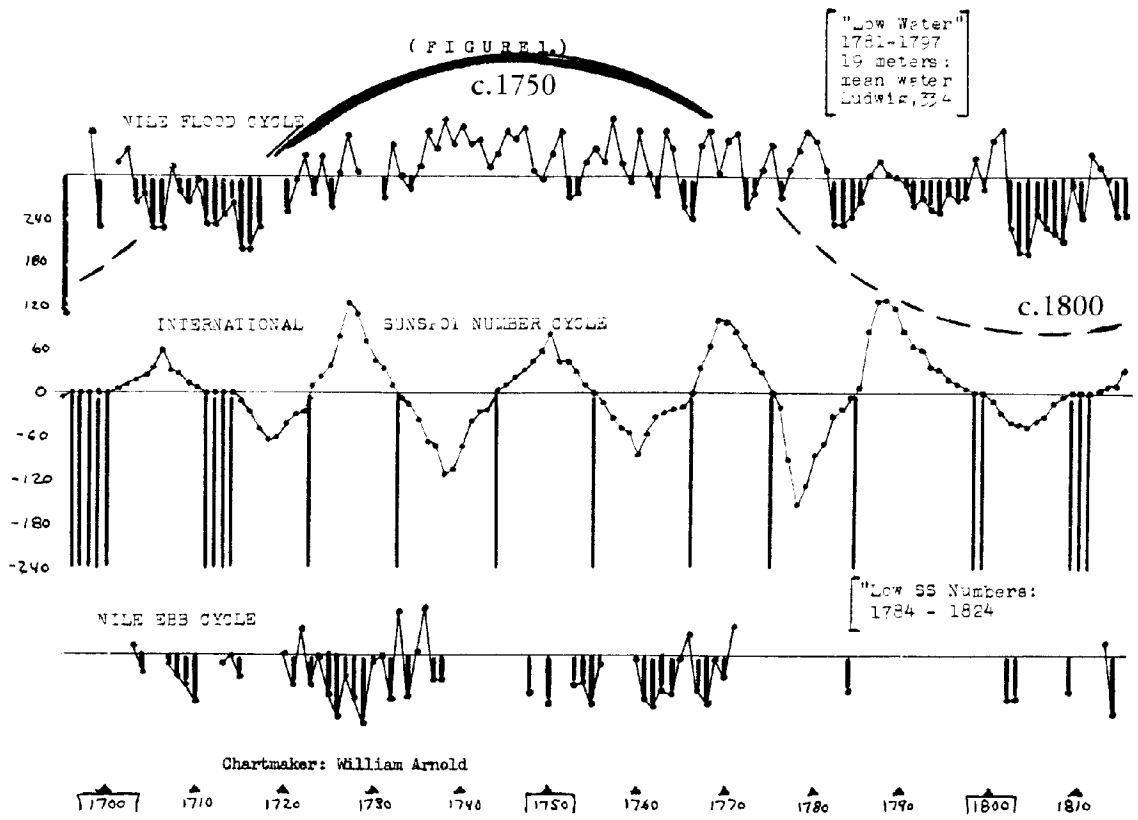




In 1844 Heinrich Schwabe demonstrated periodicity in sunspot numbers with a laborious 19-year record, concluding "the sunspots have a period of about ten years." This half-wave alternation of the sunspot cycle was during maximum years when a lower average is consistent with cycle lengths which tend to lengthen during minimums. It was not until 1848 that Rudolf Wolf organized a number of European astronomical observatories into recording monthly "Wolf" sunspot numbers. In 1887 Gustav Sporer noted the amplitude or number of spots during maximum years varied sharply. He noted particularly the 1600s which exhibited historically low amplitudes but a persistent periodicity. He also noted the 1400s and the 1600s were times in which world temperatures experienced a "severe dip of cold." In 1890 E. W. Maunder published a summary of Sporer's analysis, entitled "A Prolonged Sunspot Minimum." In astronomical circles these respective eras are known as "Minimum Periods" for their dual nature of minimum temperatures and also minimum sunspot activity.

In 1976 John Eddy demonstrated from these and other historical papers that the 11-year peaks of sunspot numbers were evident throughout the 1600s, "Historical searches following Schwabe's announcement demonstrated that the 11-year cycle of sunspots had been in operation for at least a century before he began his patient record keeping, quite probably as early as the time of Galileo, and possibly for thousands of years before that." Thus, the importance of Neil Sheeley's sunfaculae cycle as a comparative tool to aid researchers of the sunspot cycle stresses the need for a regular recording and reporting process. Both cycles would yield electrical as well as magnetic cycle turnpoints, nodes and maximum-minimum data for further analysis.

In 1966 Edward R. Dewey stressed the importance of the 22 year sunspot cycle in "The 22-Year Cycle in Sunspot Numbers, Alternate Cycles Reversed." Then in 1970, in "Cycle Synchronies," Dewey demonstrated positive correlations between the sunspot primary cycle and its harmonic multiples and subharmonics with periodic earthly cycles: including, Business Failures, Stock Prices, International War Battles, Floods in the Mississippi Valley, Rainfall in London, Tree Ring Growth, and literally thousands of other cycles whose turnpoints turn in unison with mechanical precision. As early at 1801, William Herschel, also known for his discovery of Uranus, had found comparative cycles in sunspot numbers and the price of wheat.



IV. Analysis of the Nile Flood cycle

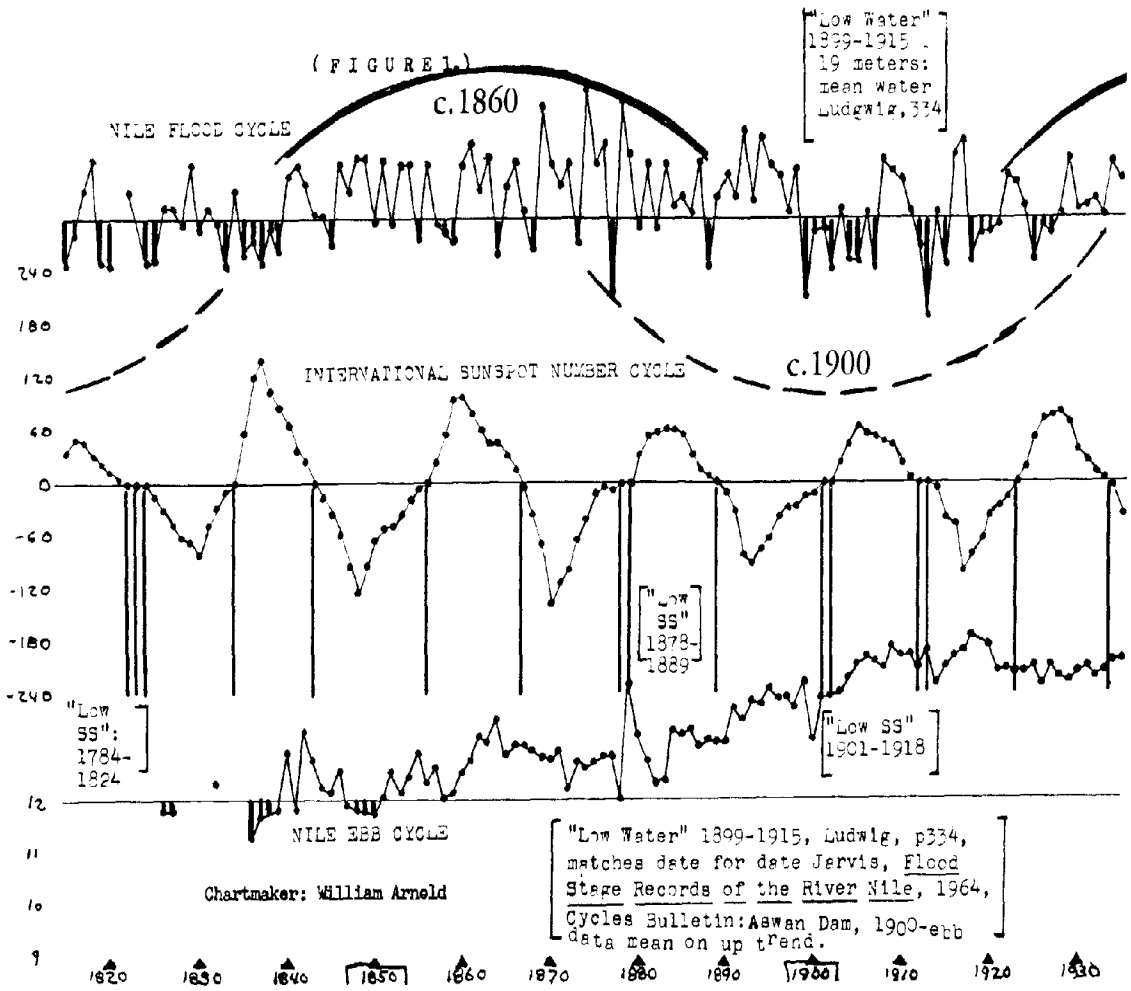
The Nile Flood cycle (see Figure 1, upper portion of chart) was compiled from data by C. S. Jarvis, Cycles, 1964.

Note, Nile historian, Emil Ludwig designated the 1781-1797 and the 1899-1915 periods as "low water" eras of supreme drought throughout Africa. Note, also, that 19 meters seems the normative mean water for a Nile Flood over the past three centuries, Note the major primary drought periods, the 1630s-1710s, 1780s-1830s, 1870s-1920s and 1970s-2010s (history records drought in Africa, 11 years straight, circa 1973-1985).

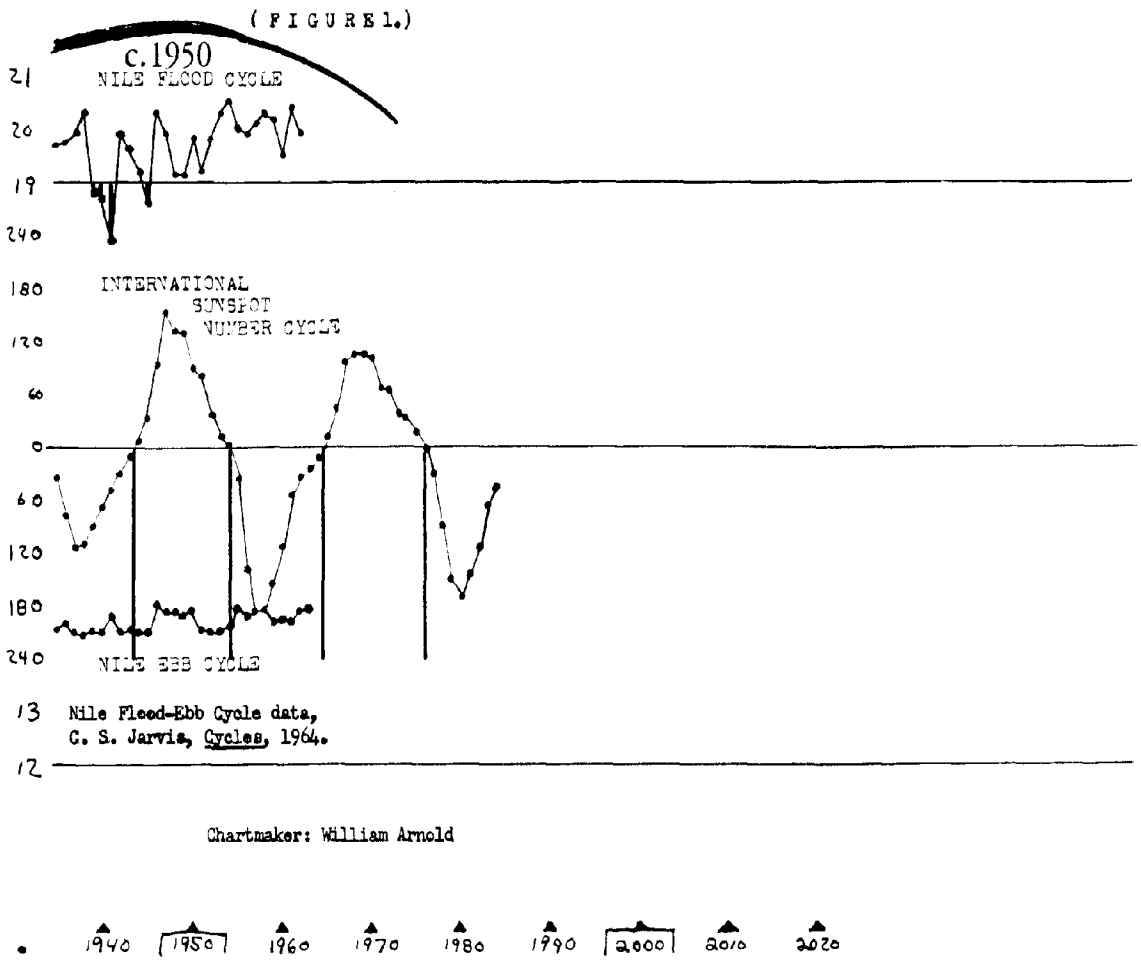
A Weather Cycle as observed in the Nile Flood cycle, Max rain followed by Min rain, appears discernible with maximums at 1750, 1860, 1950 and minimums at 1670, 1800, 1900 and a minimum at 1990 predicted.

The range in meters between a plentiful flood and a drought flood seems minor in the numbers but real in consequence. In the 1900s, 17.17-20.40 meters, a range of 3.23; in the 1100s, 15.32-18.33 meters, a range of 3.01; and in the 600-700s, 16.29-18.50 meters, a range of 2.21. When the flood hits the upper limits it meant a good Nile flood, and good times; while those years it hit only the lower limit meant a bad Nile flood, and bad times. A range of three meters, or 9 feet, without variation, over the centuries (Jarvis, 1964), has beat harmonically with the music of the sunspot cycle to the synodic planetary dance, determining good times and bad rhythmically on a cosmic scale.

Ludwig reports, "Today the secret of the origin of the Nile flood is the secret of the monsoons that break against the Alps of Abyssinia ...though the rain arrives punctually, setting in, after a gentle beginning, with full force in the middle of June in the lands south of Egypt, as we know from Egyptian records which noted the beginning of the flood thousands of years ago, yet it varies greatly in strength and quantity ...in 2350-215 B.C., a priest of Heliopolis wrote, 'the land is lost ...the Nile is empty, thou canst cross it on foot' ...now we know that in September, 48 B.C., Caesar defeated Pompey at Pharsalus and entered *Egypt* and formed his liason with Cleopatra in the Year of the low flood in Egypt, a time of want, rebellion, war from Rome across the Mediterranean."



It should be pointed out that during times of drought, the ruling administration lost its grip on the populace and the lack of recorded data reinforces for scholars the downbeat effects of the Nile flood cycle. Low flood and drought went hand in hand in ancient Egypt as they do in present day Africa, during the drought of 1970-80s (90s?). There is a plethora of data to demonstrate the point, as Ludwig reports, "From the Hegira, the flight of the Prophet in 622 A.D. to 1935 (the *date* of his book) we have :he figures for all but 192 years; for 1122 years we know the height of the Nile flood." Jarvis' data demonstrates that wrought was equally awesome in not only the 1600s but also Sporer's 1400s, both epochs marked by minimum low temperatures, low floods, and the latter by recorded low sunspot activity.



V. Analysis of the Secondary 100-Year Sunspot Cycle and the 100-Year Weather Cycle

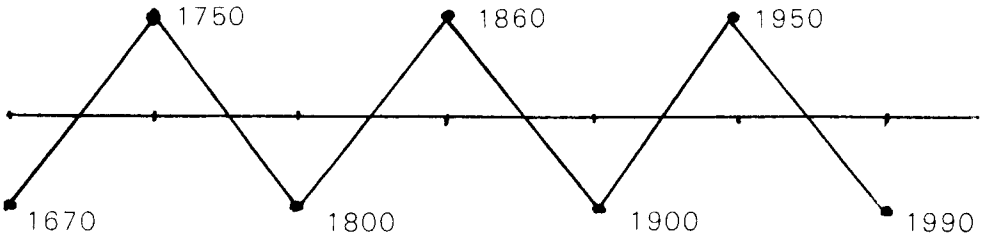
Note, during "low water" periods of the Nile flood cycle, the Sunspot cycle showed either smoothed, curved turnpoints or "dampened" numbers of spots observed on the sun (see Figure 1, upper then central portion of chart). These "low number" periods of the Sunspot cycle occur at regular intervals and are properly termed *nodes (see* Schedule 1, Analysis of the Primary 22-Year Sunspot Cycle Nodes, which is an accounting of all low or less than ten spot months). Note, in addition to the low sunspot numbers of the 1600s, this has led to two extensive periods *of circa* two years each in which no sunspots were observed, 1810-1811 and 1822-1823.

Today, the data series is no longer known as "Wolf" sunspot numbers but is known as the International Sunspot Number Cycle; this is important to note by researchers because the data are not always charted as the Hale Nicholson 22-Year Primary Sunspot Cycle. (Often, mistakenly, in this author's opinion, the cycle is charted as an 11-year "direct current" cycle in which all the amplitudes march in the same direction.)

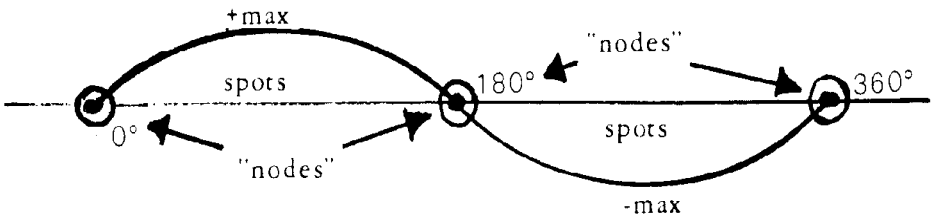
Note, then, the major periods of dampened sunspot numbers, the 1648-1714, 1783-1829, 1874-1919 and the 1965-2009 (predicted).

A Secondary Sunspot Cycle and Weather Cycle, max spots followed by min spots and max flood followed by min flood, as per the Slurzberg and Osterheld diagram of an a-c wave, appears discernible with maximums at 1750, 1860, 1950 and minimums at 1670, 1800, 1900 and a predicted minimum at 1990.

This Secondary Sunspot Cycle and Weather Cycle seem to beat together (in electronics and cycle theory, the two cycles are said "to be in phase"). They measure an average length of *circa* 100 years, 1750 peak to 1950 peak, with two complete waves or cycles completed (note the graphic aid of the bold lines above the Nile flood chart to indicate maximums and the dotted lines below the same chart to indicate minimums).



VI. Schedule 1, Analysis of the Primary 22-Year Sunspot Cycle Nodes



Dates of Node	Months of No Spots	Months of 9 or less	Dates of Node	Months of No Spots	Months of 9 or less
1753-56	3	16			
1766	0	7	1866-67	1	13
1774-76	1	11	1875-79	2	33
1783-84	0	9	1886-90	0	37
1796-1800	6	31	1897-1903	4	31
1807-15	27	38	1910-14	3	42
1819-25	18	38	1922-24	0	18
1832-35	0	17	1932-34	0	23
1843-44	0	9	1944	0	8
1855-57	2	21	1953-54	0	17
			1964-65	0	10
			1975-77	0	8
			1986-90?		

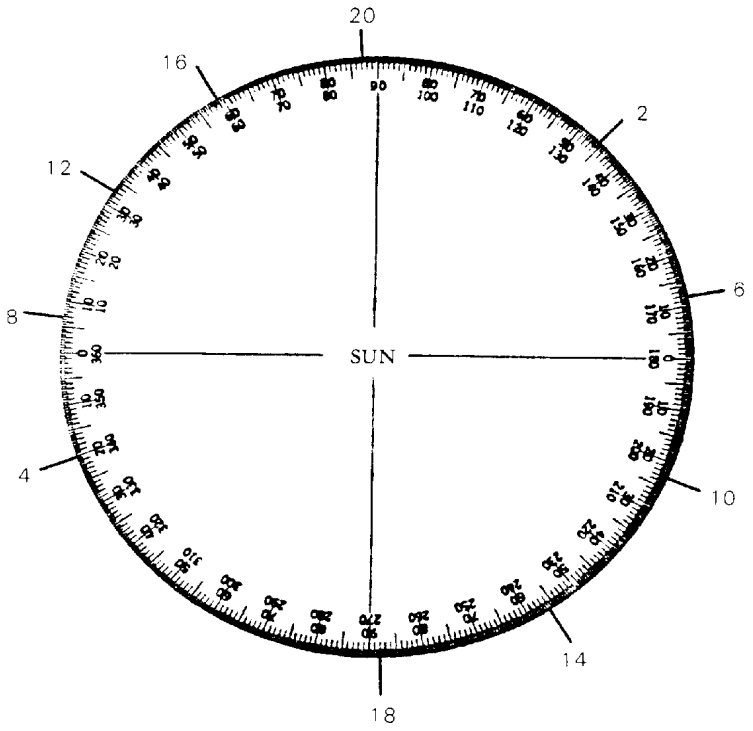
(this nodal period ought to be the beginning of several in which numbers drop to low sunspot figures as the 1600s, 1796-1825, 1875-1914 periods, not completing its "dampened" cycle until year 2009.)

*Monthly "Wolf" sunspot data dates from 1749: see Shirk, Gertrude, "Data: Zurich Relative Sunspot Numbers," *Cycles*, Oct. 1973; plus updates!

(Figure 2)

SATURN — URANUS SYNODIC CYCLE
Cycle # 22 of Master Chart of Planetary Cycles
360° Heliocentric data

William Arnold
Robert Hand



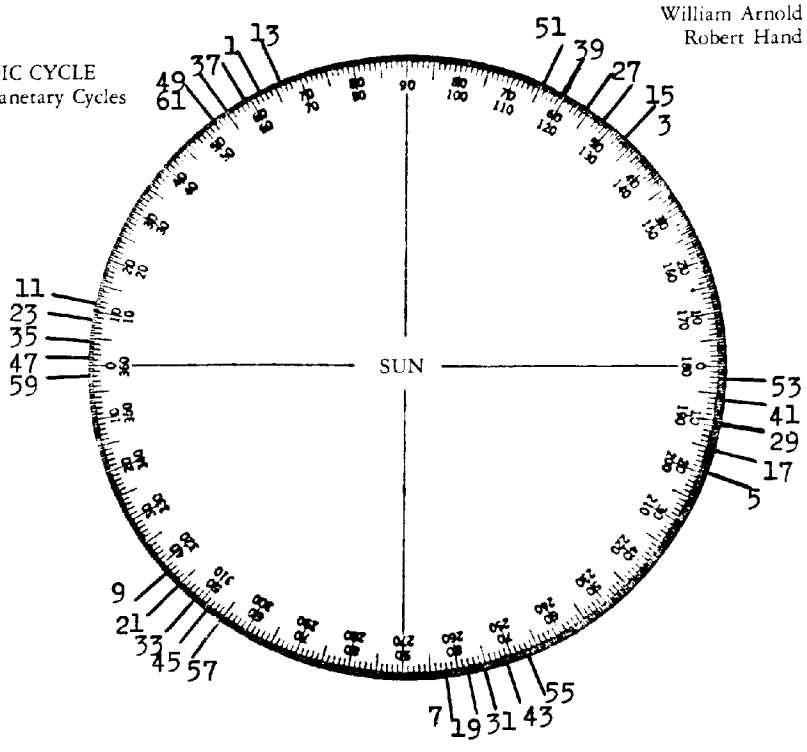
Key: (1) 1601 Sat 215° - Ura 350° (180° Opposition)
(2) 1624 Sat - Ura 134° (Synod or Conjunction)

(3) 1648 S67°-U247°
(4) 1671 SU340° (S)
(5) 1691 S244°-U64°
(6) 1714 SU168° (S)
(7) 1738 S96°-U276°
(8) 1761 SU7° (S)
(9) 1783 S276°-U96°
(10) 1806 SU203° (S)
(11) 1829 S123°-U303°
(12) 1851 SU33° (S)
(13) 1874 S311°-U131°
(14) 1897 SU236° (S)
(15) 1919 S149°-U329°
(16) 1942 SU59° (S)
(17) 1965 S345°-U165°
(18) 1988 SU268° (S)
(19) 2009 S174°-U354°
(20) 2032 SU87° (S)

(Figure 3)

JUPITER — URANUS SYNODIC CYCLE
Cycle # 18 of Master Chart or Planetary Cycles
360° Heliocentric data

William Arnold
Robert Hand



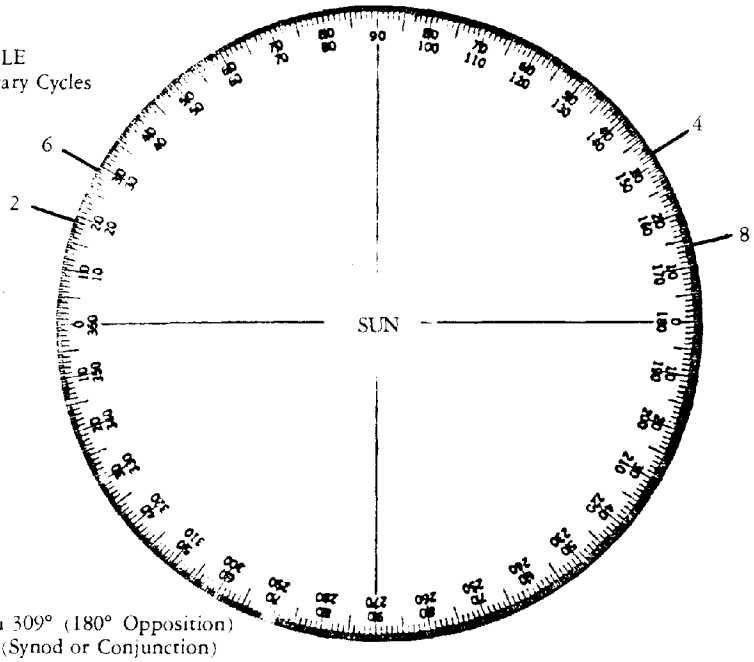
Key: (1) 1609 Jup - Ura 70° (Synod or Conjunction)
(2) 1617 Jup 282° - Ura 102° (180° Opposition)

(3) 1623 JU 133° (S)
(4) 1630 J346°-U166°
(5) 1637 JU 199° (S)
(6) 1644 J50°-U230°
(7) 1651 JU 262° (S)
(8) 1658 J109°-U289°
(9) 1665 JU 318° (S)
(10) 1672 J164°-U344°
(11) 1679 JU 11° (S)
(12) 1686 J219°-U39°
(13) 1692 JU 66° (S)
(14) 1699 J278°-U98°
(15) 1706 JU 128° (S)
(16) 1713 J342°-U162°
(17) 1720 JU 195° (S)
(18) 1727 J47°-U227°
(19) 1734 JU 258° (S)
(20) 1741 J106°-U286°
(21) 1748 JU 315° (S)
(22) 1755 J160°-U340°
(23) 1761 JU 8° (S)
(24) 1768 J215°-U35°
(25) 1775 JU 62° (S)
(26) 1782 J274°-U94°
(27) 1789 JU 124° (S)
(28) 1796 J338°-U158°
(29) 1803 JU 190° (S)
(30) 1810 J42°-U222°
(31) 1817 JU 255° (S)
(32) 1824 J102°-U282°
(33) 1831 JU 311° (S)
(34) 1837 J157°-U337°
(35) 1844 JU 4° (S)
(36) 1851 J212°-U32°
(37) 1858 JU 59° (S)
(38) 1865 J270°-U90°
(39) 1872 JU 119° (S)
(40) 1879 J334°-U154°
(41) 1886 JU 186° (S)
(42) 1893 J38°-U218°
(43) 1900 JU 251° (S)
(44) 1907 J99°-U279°
(45) 1914 JU 308° (S)
(46) 1920 J154°-U334°
(47) 1927 JU 1° (S)
(48) 1934 J208°-U28°
(49) 1941 JU 55° (S)
(50) 1948 J266°-U86°
(51) 1955 JU 115° (S)
(52) 1962 J330°-U150°
(53) 1969 JU 182° (S)
(54) 1976 J34°-U214°
(55) 1983 JU 247° (S)
(56) 1989 J95°-U275°
(57) 1997 JU 305° (S)
(58) 2003 J151°-U331°
(59) 2010 JU 358° (S)
(60) 2017 J205°-U25°
(61) 2024 JU 52° (S)
(62) 2031 J262°-U82°

(Figure 4)

URANUS — PLUTO SYNODIC CYCLE
CYCLE # 23 of Master Chart of Planetary Cycles
360° Heliocentric data

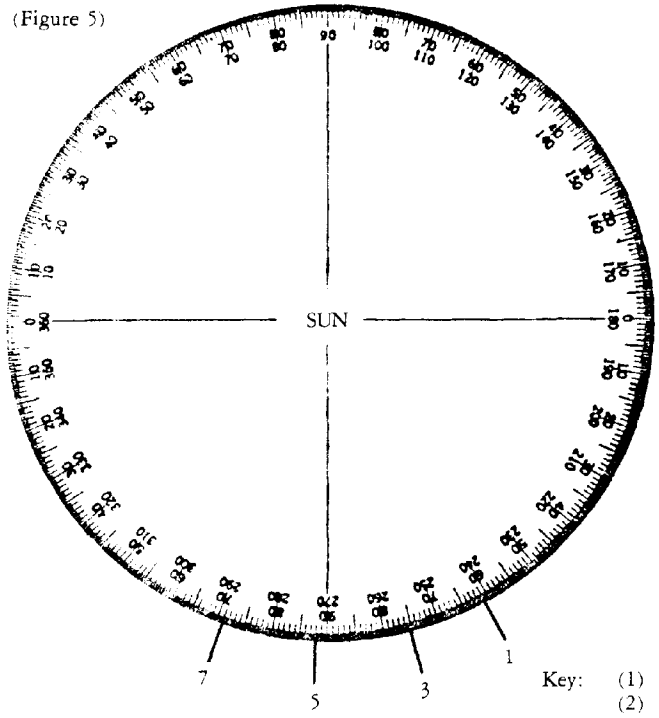
William Arnold
Robert Hand



(3) 1648 U248°-P68°
(4) 1710 UP 148° (S)
(5) 1793 U143°-P323°
(6) 1850 UP 29° (S)
(7) 1902 U257°-P77°
(8) 1966 UP 166° (S)
(9) 2047 U154°-P334°

Key: (1) 1539 Ura 129° — Plu 309° (180° Opposition)
(2) 1597 Ura — Plu 19° (Synod or Conjunction)

(Figure 5)



URANUS — NEPTUNE SYNODIC CYCLE
Cycle # 24 of Master Chart of Planetary Cycles
360° Heliocentric data

William Arnold
Robert Hand

(3) 1650 UN 255° (S)
(4) 1736 U267°-N87°
(5) 1821 UN 272° (S)
(6) 1908 U284°-N104°
(7) 1993 UN 289° (S)
(8) 2079 U299°-N119°

Key: (1) 1479 Ura - Nep 241° (Synod or Conjunction)
(2) 1565 Ura 248° - Nep 68° (180° Opposition)

VII. Theory of a Special Order

A positive correlation between the Primary 22-Year Sunspot Number Cycle and the Saturn-Uranus Synodic Cycle can be demonstrated by analysis of Figures 1 and 2. The data suggests that the synods or conjunctions and the oppositions occur during the downside of the Primary 22Year Sunspot Number Cycle ("negative" alternation) as depicted in Figure 1. The 90°-quadratures of the SaturnUranus Synodic Cycle occur during the upside ("positive" alternation). The Saturn-Uranus Synodic Cycle appears primarily causal to the Primary 22-Year Sunspot Number Cycle. Such an objective correlative would suggest the present down cycle of sunspot numbers of 1985 will not end until 1988! Other synodic cycles (probably, the "regular" Jupiter-Saturn) appear to enhance maximums, minimums, turnpoints and nodes. The Jupiter-Saturn Synodic Cycle appears to "alternate" in step with the 11-year alternating interval of the primary sunspot cycle.

A positive correlation between the Secondary 100-Year Sunspot Cycle, the 100-Year Weather Cycle (the Nile Flood Cycle) and Planetary Synodic Cycles can be demonstrated by analysis of Figures 1, 2, 3, 4 and 5. The data suggests that the smoothed cycle and lower number of sunspots at nodes during the 1648-1714, 1783-1829, 1874-1919 and the 19652009 (predicted) periods corresponds with a lower Nile flood (drought) during the same intervals. Both of these 100-year full-wave sunspot and weather cycles appear to be caused by the Saturn-Uranus Synodic Cycle of planetary conjunctions-oppositions of Figure 2 when oriented to the Galactic-Solar Axis (a line drawn through their respective centers, the galactic center at longitude 266.1314° and 086.1314').

Significant enhancement of maximums, minimums, timing of turnpoints and nodal periods of both 100-year cycles appears to be caused also by the Jupiter-Uranus Synodic Cycle (Figure 3), the Uranus-Pluto Synodic Cycle (Figure 4) and the Uranus-Neptune Synodic Cycle (Figure 5) when also oriented to the G-S Axis.

Note the commonality of Uranus and its halfway position between the center and the fringe of our Solar-Planetary System to each of these synodic cycles. Perhaps, Uranus' apparent "sideways" motion (inclination of equator, 98') as distinct from the other large planets operates as a pushpull "trigger" of current-magnetic flow changes between the sun, its planets, and the galaxy.

VIII. EMF (Electro-Magnetic Force) of a Galactic-Solar-Planetary System Postulated, see Figure 6

When Saturn and Uranus synod in the sector behind the sun oriented to the galactic center *(circa* 356° - 86° - 176°) [Ed.Note: 356° was originally published as 350°] and within the solar wind tail pushed behind the sun by the pressure of the galactic wind (Parker and Van Allens' "cosmic radiation"), the 100-year sunspot activity reaches maximum values, centered round 1750, 1860, 1950 and 2030 predicted (Saturn and Uranus synod again behind the sun, 87 degrees, 2032: see Figure 2, bottom data). In the same way **the** solar wind pushed the earth's magnetic field into a tail behind the planet, it is postulated by this author that the galactic wind pushes the solar emf field into a tail behind the **sun:** a mechanical explanation suggests that the planets operate as conductor-inductors and cut more solar force field lines in the elongated space behind the sun, thus inducing enhanced sunspot activity (and electrical activity, Sheeley, 1964). The conclusion for the reduction of sunspot activity is also supported by the data. When these planets synod in the sector in front of the sun oriented to the galactic **center** *(circa* 176°-266°-356°) and outside the solar wind tail with its elongated and compressed force field lines, it is found the planet-conductor-inductors run parallel to the field lines and thereby cut less lines, sunspot activity reaches minimum values, centered round 1670, 1800, 1900 and 1990 predicted (Saturn and Uranus synod again in front of the sun, 268 degrees, 1988: see Figure 2, bottom data). The steeper rise to sunspot maximum of each 11-year interval appears caused by the "narrower" zone of the elongated Solar wind tail behind the sun, while the slower slope of the sunspot minimum approach appears caused by the "wider" zone outside. The role of Jupiter (mass, 3X Saturn, Saturn in turn, 6X Uranus) appears to be secondary, magnifying or dampening maximums and minimums as well as altering the exact timing or turnpoints of both the 22-year and 100-year cycles.

Note particularly (see Figure 2, bottom data) the start of the dampening *cycle* or curved 22-year Sunspot Cycle with the 1783 opposition, Uranus behind the sun and the middle with the 1806 synod and the end with the 1829 opposition, Saturn behind the sun at end; and finally note the predicted dampened period with the 1964 opposition, Uranus behind the sun, the 1988 synod in the middle and the 2009 opposition Saturn behind the sun; note, for variation of effect, the positions of the synods, or centers of the dampening effect, are rotating forward *circa* 30 degrees. Analysis of the magnified cycle or pointed 22-year Sunspot Cycle periods, 1829-1874 and 1919-1965, center on Saturn and Uranus synods behind the sun, at 1851 and 1942 [Ed. Note: originally published as 1806 and 1897], respectively. The 1600s and early 1700s reflect a period when the rotation of the synods occurred in an extreme dampening configuration whereas the opposite might occur in the **next** cycle, with the synod of 2032 resembling that

of 1942, behind the sun-nearly opposite the Galactic Center.

Note, the seemingly unusual start of the earliest dampening cycle with the 1648 opposition, Saturn behind the sun and the seemingly unusual double-middle of the 1671 synod at 340° and the 1691 opposition with Uranus behind the sun, and the seemingly unusual end of the cycle with the 1714 synod at 168°; also note, A. E. Douglass and E. W. Maunder demonstrated a positive correlation between this unusually-long dampened cycle of sunspot activity and tree-ring growth, dated 1645-1715 (Stetson, *1937).*

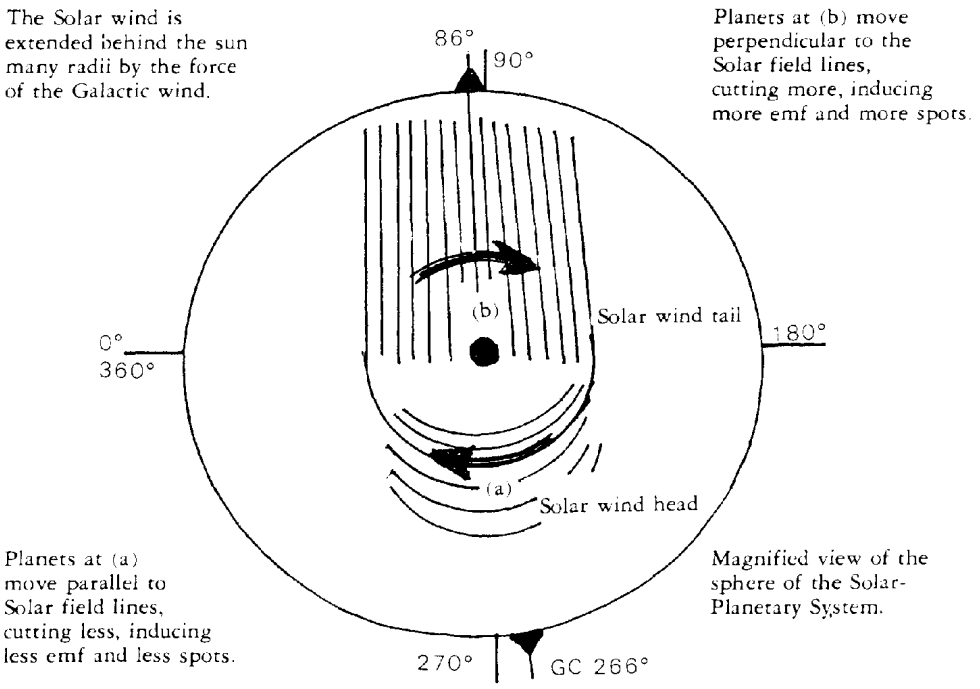
In 1950 Slurzberg and Osterheld demonstrated "Lenz's law is: when a current flowing through a circuit is varying in magnitude, it produces a varying magnetic field which sets up an induced emf (electro-magnetic force) that opposes the current change producing it ....The value of the induced emf in any conductor is proportional to the rate of cutting lines." Figure 6 is an illustration diagram of the phenomenon.

IX. Philosophical considerations on an Ordered Galactic- Solar-Planetary System

Apparently, cycle variations, whether in magnitude, length, turnpoint, or nodal, occur because the conductor-inductors of the change (the planets) are not always in the same portion of the Solar field at the same time when the vital synods occur; and the strength and direction of the field blown behind the sun by the galactic wind ("cosmic radiation" of Parker and Van Allen, 1975) is constantly varying. Therefore, the expanding-contracting alternating magnetic field is constantly varying as must be the current supplying the Solar field. The sun appears to operate as a solenoid, a device for converting emf energy into mechanical, and vice-versa. Cycle theory will apply to the problem in the same manner sine-wave theory explains all a-c wave technology. The general laws of electronic inductance will account for the 90-degree lag between the sunfaculae and sunspot cycles. The regular 22-year and 100 year cycles as orchestrated in the "earthly" sphere by forces from the galactic center will seem at first to be quite deterministic. Certainly, the implications of Order on a cosmic scale down to the microcosm, earth, are staggering not only for science but, perhaps, more so for philosophy. The mechanical movement of planetary conductor-inductors in an impersonal emf field stretching from the Galaxy to the Sun to the Earth might determine broad eras of time in which the flow goes one way and then mechanically turns and flows opposite, but it does not take away "free willed" variations within these broader cycles. Indeed, man ought to be able to welcome Cosmic Order on the horizon as the dawning of the Age of Aquarius, the advent of the Music of the Spheres made manifest.

(Figure 6)

Note: Clockwise Rotation



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