Crystallisation in Nature

In the second lecture of his 'Agriculture" course Dr Steiner mentioned a process he called crystallisation, - where Cosmic forces are drawn into the Earth, - which he suggested occurs in the North Hemisphere around February , each year. These forces are 'crystallised' into the quartz sand particles of the soil and then released back upwards through the plant during the following season. In his lecture on 'the winter imagination' in the lecture cycle "Four Seasons and the Archangels", he outlines this process more deeply and suggests this occurrence is seasonally based. This has no doubt lead many in biodynamic circles to hold to the belief that crystallization is a winter seasonal phenomena, even though mid winter in the northern hemisphere is December 21st.

In the 1930s E & L Kolisko did experiments with mineral salts, which established that there was a period around February of each year where more salts would crystallize out of solution.

The question remained however as to whether this was a global phenomena or seasonally based.

In the mid 1950s similar experiments, to the Kolisko experiments, were carried out by Professor G Piccardi. The results of these experiments are published in the book titled : The Chemical Basis of Medical Climatology" (ISBN 0 398 07049 0). Piccardi found similar results to the Koliskos regarding the March peak in crystallisation as well as a smaller peak occurring around August each year. His search for the cause of this event lead him to his "Solar Hypothesis"

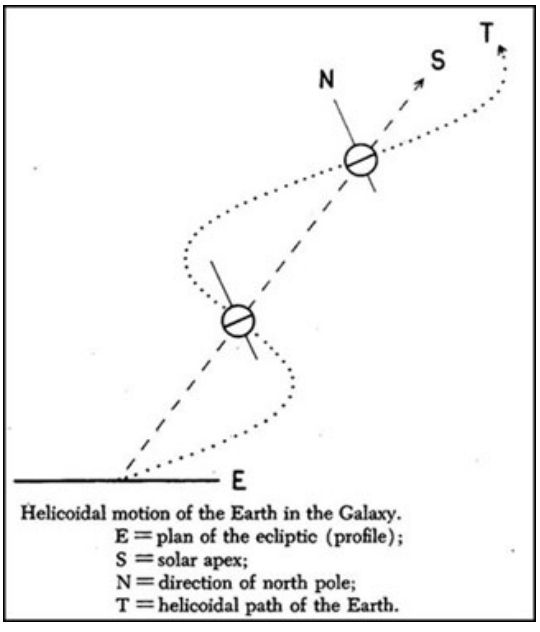
Piccardi says:

The Solar Hypothesis

We know that the sun moves, together with all the bodies which are bound to it, towards the constellation Hercules. Standard apex: oc =270°, t, = 30° (in equatorial coordinates). Its motion is uniform and rectilinear; its speed (constant for us): 19-20 Km/sec.

We know too that the Earth turns about the sun at an approximate average speed of 30 km/sec.

From the combination of these two motions, one rectilinear and uniform, the other circular and uniform roughly speaking, a helicoidal trajectory results. This is the helicoidal motion of the Earth in the Galaxy, referred to the neighboring stars (Fig. 19).



Helicoidal motion of the Earth in the Galaxy.
E = plan of the ecliptic (profile);
S = solar apex;
N = direction of north pole;
T = helicoidal path of the Earth.

From this fact an elementary calculation or a simple graph shows that:

1) during the month of March the Earth moves in its equatorial plane;

2) during the month of September the Earth moves, if not along its axis, then in a direction not too far removed from that of the North Pole;

3) the speed of the Earth's helicoidal displacement varies during the year and passes from a maximum in March (45 Km/sec.) to a minimum in September (24 Km/sec).

4) the Earth is displaced with the Northern hemisphere leading, except during a small part of the month of March.
If space were empty, empty of fields of matter and inactive, a consideration of this type would be of no importance. But today we know instead that both matter and fields exist in space. For this reason, the displacement of a body such as the Earth in one direction or another is not inconsequential. Its general physical conditions must vary in the course of a year.

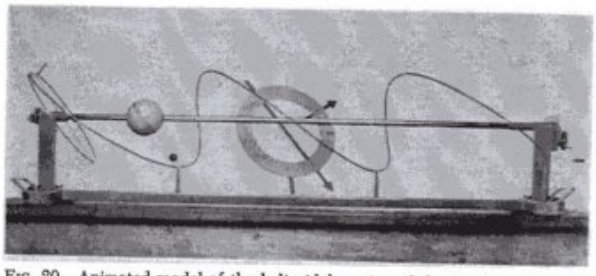


FIG. 20. Animated model of the helicoidal motion of the Earth in the Galaxy, presented at the Brussels World-Fair (side view).

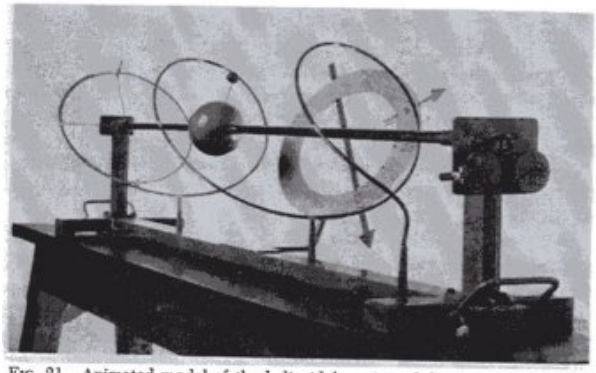


FIG. 21. Animated model of the helicoidal motion of the Earth in the Galaxy, presented at the Brussels World-Fair (close to).

I have tried to give an interpretation of the annual variation of test D. But the variation of test D need not be considered. The hypothesis—that the helicoidal motion of the Earth in the Galaxy brings with it a regularly recurrent modification of the Earth's general physical conditions, with a non-sinusoidal rhythm going from March to March of the next year—can exist as an idea on its own, independent of the experimental facts which pointed to it.
This is the solar hypothesis.
Considering the motion of the Earth in the Galaxy, it was necessary to determine in what manner the Earth was displaced towards the galactic centre.
The standard galactic coordinates of the centre are: l == 325°, b = 0°, the apex of the sun: l = 23°, b = 22°. From this fact it is easily deduced that during the month of March the Earth is directed approximately towards the galactic centre. The angle formed by its speed and the direction of the centre is at a minimum. To continue, during March, and only during March, the Earth is directed approximately, at maximum speed, towards the galactic centre—that is, along the lines of force of a radial field and perpendicular to the lines of force of a dipolar galactic field. This double condition will not be encountered again throughout the year. The conditions during March are thus quite exceptional.
The precise characteristics of the helicoidal orbit of the Earth have been recently calculated by Dr. Quilghini of the Rational Mechanics Institute of the University of Florence. A working model of the motion of the Earth in the Galaxy was displayed in 1958 at the Brussels Planetarium during the World Fair (Figs. 20,21).

The questions still remained about the way this effect would show up seasonally in the different hemispheres.

During the years of 1958 and 1959 a range of research institutes carried out simultaneous crystallisation (polymerization) experiments at similar latitudes in the northern and southern hemispheres.

Piccardi says:

The Effect of Latitude and the Dissymmetry of the Northern and Southern Hemispheres

The fact that the Earth is displaced with the North Pole in a more or less leading position throughout the year, save for a very short period which corresponds with the month of March, should lead to a dissymmetry between the two hemispheres of the Earth and to an effect of latitude. The calculated maximum of dissymmetry occurs in correspondence with the month of September.

The Pattern of Test D in the Two Hemispheres

(Test D -This test uses the precipitaton of bismuth oxychloride, under a copper sheet.)

The solar hypothesis brings up another problem: if the annual minimum of test D depends upon the motion of the Earth in the Galaxy, this minimum should be observed not only in the northern hemisphere, but also, and at the same time, in the southern hemisphere. The entire Earth should feel the effects of the change in conditions resulting from its helicoidal motion.
Unfortunately, during the Spring of 1958 the chemical test research was interrupted for two months at Leopoldville and had not yet been initiated at Kerguelen.

The research was prolonged in these two places up through all of July 1960, that way it was possible to have the data of two complete years.
We can make a resume of the results regarding test D in this manner: Let us distinguish above all the data gathered at northern and southern mean latitudes from those gathered nearest the equator, remembering that Libreville lies less than 1° N and Leopoldville about 4° S from the equator.

a) Test D at Northern and Southern Mean Latitude
If we calculate the monthly averages of all the data gathered in Uccle-Brussels and in Florence in 1957, 1958, 1959 and 1960, and all the useful data gathered at Fort Dauphin and Kerguelen and order them by month we obtain two functions of the time of D which have parallel behaviour.

Both present the large minimum and the little minimum at the same time. The effect of the helicoidal motion of the Earth seems therefore evident because they are independent of the seasonal effect.

In the North test D maintains itself on higher values and in the South on lesser values. The amplitude of the two functions are almost equal, perhaps the amplitude in the South is wider. The dissymmetry of the Earth depending upon the helicoidal motion seems therefore evident in the case of test D (Fig. 22).
The little August minimum divides the time function of D in two parts. In the North the first part (spring-summer) curve, the second part (autumnal – winter) comes to a sharp point. In the South the inverse happens: the first part comes to a sharp point and the second curves. This is a typical seasonal effect, to place in relation to the height of the Sun on the horizon.

We could not hope for more or better. Test D shows one more time the effects of helicoidal motion of the Earth: large annual minimum, small annual minimum and dissymmetry between northern and southern hemispheres. Further, it shows us an ordinary seasonal effect.

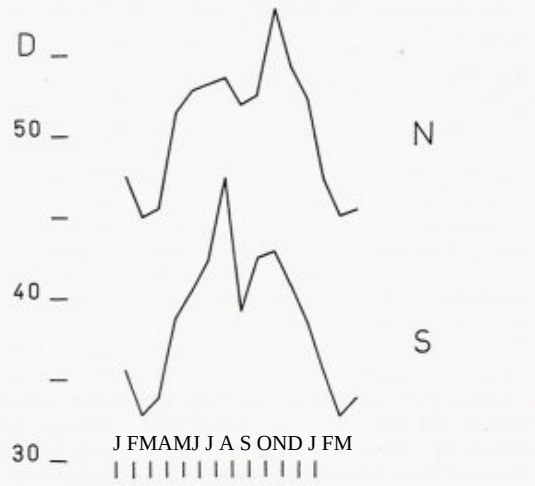


FIG. 22. Annual variation od test D in the northern and in the southern hemispheres (mean latitudes). *On the abscissa:* the twelve months of the year. *On the ordinate:* test D. Monthly averages of two years. Winter-spring minima and August minima appear together in both hemispheres. They do not depend upon a seasonal effect: thermic summer at the north and thermic winter at the south and vice versa.

It appears from this data that the minimums occur in both hemispheres at the same time and are related to the helicoidal motion of the Earth through the Galaxy.

Test D and its Cosmogonical Sense

The annual variation of test D is of such importance that it is difficult to interpret it as a result of the interaction of weak fields, which are the terrestrial field and the exterior field in which the Earth moves. Until the present it was held that the fields which exist in space are weak, but this belief is not firm. A much more profound and general cause must come into play. Prof. Giao has considered the solar hypothesis from a point of view of relativistic cosmology and is able to explain the annual variation of test D in a quite general manner by means of relativity.

Giao, studying the problem of the existence and properties of Time (evolution, succession, sense), shows that besides the four- dimensional space-time solution (the physical Universe) the relativistic field equations also have a three-dimensional spacial solu tion. This solution is a three-dimensional Universe which performs a successive exploration of the four-dimensional physical Universe thus introducing an evolution, in other words a real Time, in the physical Universe. Giao analysed the important interactions of the three-dimensional and the four-dimensional Universe and shows that it is possible to explain the annual variation of the D test from relativistic point of view on the basis of the Earth's annual helicoidal motion as a manifestation of the energy flow representing the action of the three-dimensional Universe on the physical Universe.

Today the solar hypothesis, as I have shown, embodies extensive experimental results obtained during the IGY and IGC.

It is owing to this hypothesis that it was possible to foresee these facts, to seek them out and to study them.

It can thus be considered at least a highly useful working hypothesis.

The questions for Southern hemisphere Biodynamic growers remains:- How does the late summer peak in crystallisation manifest in our plant growth?

Further reading

http://www.orgonelab.org/MillerReich.htm