Equisetum, the Kidney and the Planet Venus

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Dedicated with warm appreciation to Dr. Walther Buehler, "Teacher of the Pentagramma Veneris", on the occasion of his 80th birthday. Original German title: Equisetum, die Niere and der Planet Venus, from Der Merkurstab 1993; 46(2):137-50. English by Anna Meuss, FIL, MTA.

Botany of *Equisetum*

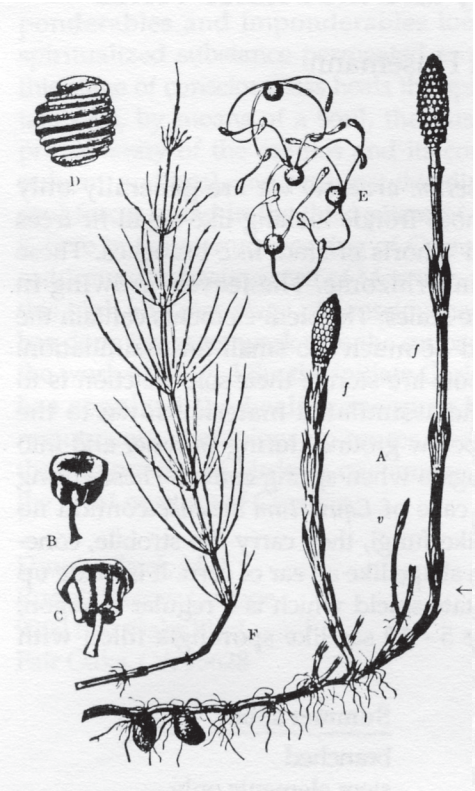
With the common horsetail (*Equisetum arvense*) we are generally only familiar with the summer shoots, those fronds looking like small fir trees which consist entirely of stems and whorls of stem-like branches. These grow from a perennial underground rhizome. The leaves, growing in whorls, are reduced to tiny lanceolate scales. The stem elements contain the chlorophyll, as the leaf areas would be much too small for assimilation.

These branching, green summer shoots are sterile; their sole function is to produce food reserves, sending the assimilated material down to the rhizome. The fertile shoots develop below ground during summer and into fall, so that they merely have to elongate when spring comes. These spring shoots are unbranched and in the case of *Equisetum arvense* contain no chlorophyll. Brown, looking rather like fungi, they carry the strobile, cone-like at first and later expanding into a shape like an ear of corn. It is made up of sphorophylls terminating in a peltate shield which is a regular hexagon; below (or rather medial to) this are 5 - 10 sac-like sporangia filled with spores.

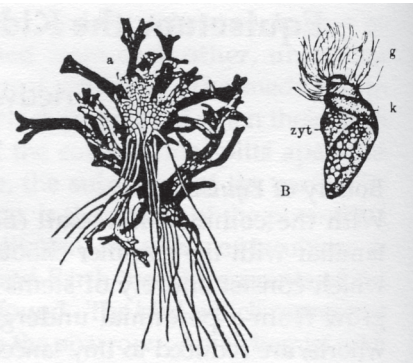
Spring shoot	Summer shoot
unbranched	branched
cone-shaped strobilus	stem elements only
short-lived	long-lived
no chlorophyll	chlorophyll
fertile	infertile

Equisetum arvense differs from almost all other Equisetum species in that there are marked differences between spring and summer shoots, and above all the fact that the spring

A. *Equisetum pratense*. Female prothallus from below, with archegonia (x 17). B. Equisetum arvense, spermatozoid; k, nucleus, g, flagella, zyt, cytoplasm (1250) (after Strasburger).



Equisetum arvense. A. fertile shoots (P, arising from the rhizome which bears tubers; vegetative shoots (v) still in bud. F. sterile, vegetative shoot. B and C. sporophylls with sporangia which have dehisced in C. D. spore with the two spiral bands (haptera) of the perispore. E. dry spores with extended haptera (less enlarged than D). (A, F, x1/2; B, C 6x; D 360x; E 100x; after Schenck).



shoot is unbranched and contains no chlorophyll.1 When the spores are moist,2 parallel bands are wound around each in a spiral; under dry conditions these haptera unwind, only to wind up again in the presence of moisture. The prothalli evolving from the spores are curly lobes a few millimeters in length, and very irregularly shaped, which is in marked contrast to the well formed-out structures of the other life stages of the plant. Male prothalli produce antheridia containing spermatozoids, female prothalli archegonia containing ova. A small amount of moisture between prothalli is sufficient to facilitate sexual reproduction, resulting in a new Equisetum plant.

The plant is known to have a high silica content which increases by a factor of three between May and October in the summer shoots, from 22.5 to 62 g per 100 g of dry matter. At the

same time the sulphur content decreases from 17 to 8.4 g per 100 g of dry matter.2

In *Equisetum arvense* the silica is deposited in opal form.2

Form principles of *Equisetum*

It is now a question of gaining an overall image covering all the different forms that come to expression in *Equisetum arvense*, so that we may find "the inner identity of various plant parts... with greatest diversity in outward form."3 Direct observation shows the major differences between spring and summer shoots; we need x 100 magnification to see the differences between moist and dry spores, and x 1000 magnification to observe spermatozoids and ova. The differences are, however, the same at all three levels. The contained, essentially unbranched form of the spring shoot contrasts with the much branched form of the summer shoot. The same contrast emerges even more clearly in the spores: moist spores form a sphere, dry ones spread their haptera, producing a radiant form. The ovum is approximately spherical; spermatozoids are flagellate, so that the emphasis is on the radiant principle. The polarity of form is therefore as follows:

spring shoot	summer shoot
moist spore	dry spore
ovum	spermatozoids
round form	radiant form

This polarity also allows us to establish a connection with the high silica content of the plant. The mineral form of silica is hexagonal. In geometry, a hexagon is constructed by marking off the radius of a circle six times on the periphery to give the corners of the hexagon.4 The form principle of quartz thus arises from interaction between rounded arc and straight radius, or, in terms of the *Equisetum* polarity, interaction of spherical and radial form.

Going back to the plant, we are now able to appreciate the plant forms in the light of the principle we have established.

The spherical form of the moist spore and the radial form of the dry spore present themselves as particularly typical; these forms are truest to type.

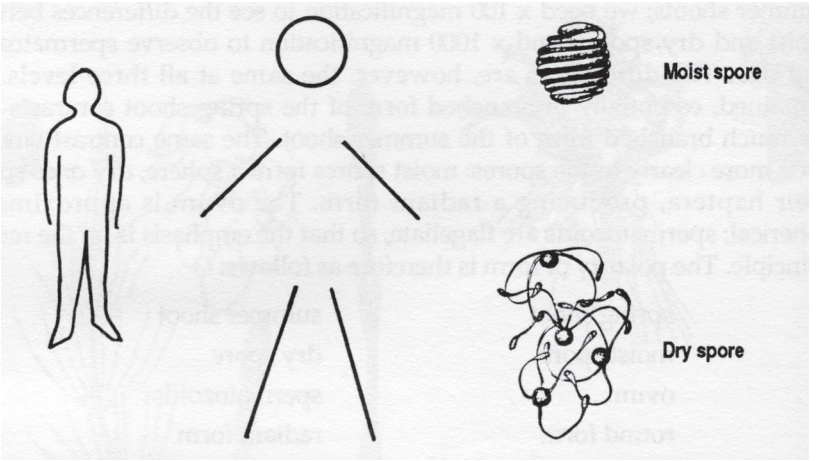
Polar opposite form principles, which in quartz have become frozen and solid, are transformed into one another in a living way through a number of stages as the horsetail plant goes through the seasons. *Equisetum* is living silica; silica is *Equisetum* which has died. The question now arises as to the nature of thought as it lives in human minds. The human mind has conscious awareness of exactly the same principle as is unconsciously brought forth in the natural world. The thoughts are in the objects,5 and this is why we are able to recognize them there. In geometry, we can make radius and circle transform into each other in a living way which is very similar to the process in the horsetail plant, rather than the quartz process. In reality, thoughts are creative, plastic, plant-like powers; only the thought shadows of our ordinary consciousness are dead and abstract. It is tremendously important that these dead thoughts gradually come alive again in human minds.

From plant form to human form

G. Grohmann has pointed out 6 that ferns essentially develop the leaf element, mosses the flower, and the horsetail family the stem principle.

Compared to higher plants, horsetail is without flowers and practically without leaves. Individual stem elements and branch segments appear as if cut apart and pushed together again, and by being completely different, spring and summer shoots recapitulate this fragmenting principle in time. The alternation of generations, with vegetative spore development alternating with sexual reproduction on the prothalli, separates functions which in higher, flowering plants are united. *Equisetum* also shows a well spaced-out polarity with reference to the human being. The spherical and radiant forms are found at opposite ends in the human form. The head is a sphere, the limbs are rays. Between these extremes lie thorax and abdomen, which have no equivalent in *Equisetum*. We have a head and four limbs; the horsetail spore, truest to type, is a single sphere when

Fig. 2 The fact that the illustration shows 4 dry spores is pure chance. The essential point is that every spore has 4 half haptera, or "arms", which justifies comparison with the human limbs.



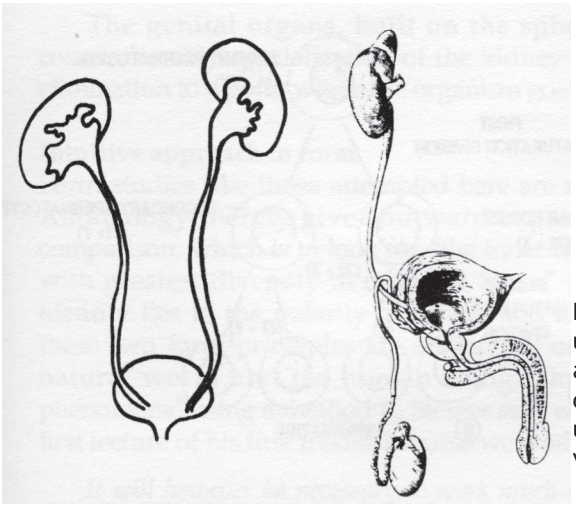
moist, and shows four limb-like rays when dry (4 half haptera) (Fig. 2). Instead of "moist" and "dry", we might also say "dilute" and "concentrated" if we think in terms not of dry matter but volume of fluid.

Form principles of kidney and genitalia

Our study of the form principles helps us to understand why *Equisetum arvense* "shows marked affinity to the kidney".7 Kidneys are essentially spherical, with a depression formed by the hilus. The ureter, a thin tube, is ray-like. The urinary bladder is almost a perfect sphere, the urethra again ray-like. The arterial glomerule is a sphere, and the first convolution of the tubules (tubulus contortus I) recapitulates this, though the loops of the tubule produce a less perfect sphere than the glomerule. The ascending and descending parts of Henle's loop are highly geometric linear rays. Closer to the glomerule the tubule becomes spherical again (tubulus cont. II), whilst the collecting tubules are ray-like again.

This also explains why a spore is head-like when moist, but sends out ray- or limb-like forms when dry. The glomerule in the renal cortex is the site of maximum fluid throughout, with 170 - 180 liters of primary urine filtered daily; a relatively damp situation, therefore. In the ray-like tubules, on the other hand,

right: Two mammalian nephrons.
In one, part b shows a long medullary loop.
1 Malphighian bodies (glomerules)
3 system of collecting tubules
a — e different structural elements of Henle's loop
(After Portmann 1959).



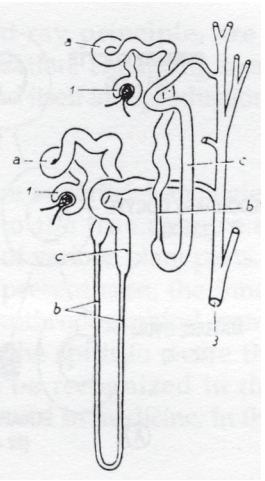


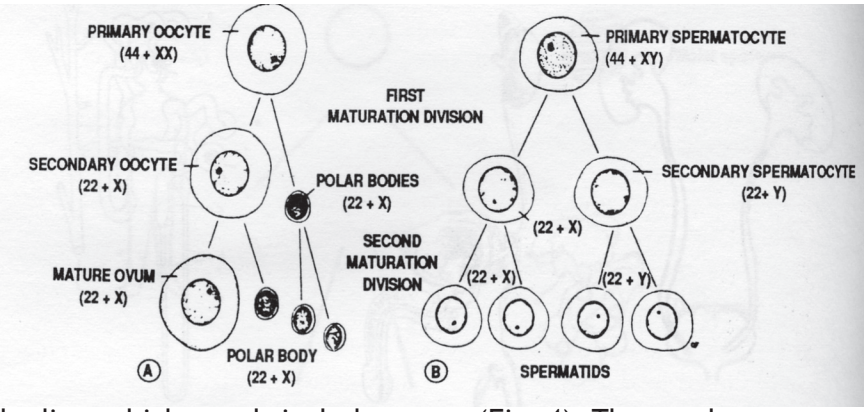
Fig. 3 Left: kidneys, ureter and bladder, anterior view; right: overview of male urogenital system, lateral view (after Benninghoff).

re-absorption and concentration take place, so that ultimately only 1% of primary urine is eliminated. The movements of the spores between moist and dry thus reflect the polarity between renal cortex and medulla even at a functional level.

The genital organs, which develop from the mesonephros in the embryo and partly share their efferent organs with the kidneys, show alternation between spherical and radial forms along their functional pathways. Consider ovaries and oviducts, uterus and vagina, or gravid uterus and birth channel during parturition. The same polarity exists between testes and ductus deferens, prostate and urethra.

The polarity is truest to type between round ovum and tailed sperm. The ovum is essentially at rest compared to the highly mobile sperm, a further indication of relationship to the human being as a whole. The comparison holds true even for the numerical laws of maturation divisions. The first two divisions produce four spermatids from the primary spermatocyte, all of which develop into mature sperm. The primary oocyte only produces a single mature ovum by two divisions, and three polar

Fig. 4 *Diagram showing the first two stages of maturation division.* A. the primary oocyte produces only one mature ovum. B. the primary spermatocyte produces four spermatids, all of which develop into spermatozoa (after Langman 1970).



bodies, which are shriveled-up ova. (Fig. 4). Thus we have a single spherical mature ovum as compared to four tailed sperms. The ratio is the same as between the head and four limbs. This helps us to see why the female organism is more spherical, or head-like, in build – consider the more rounded forms one sees, and particularly the breasts which are like two hemispheres. The male organism on the other hand is more limb-like in build, with the external sexual organ actually referred to as the "member". This also explains why the ovum is more at rest, being related to the head, and the sperm highly mobile, betraying the limb principle. With regard to the inner life, the woman represents the ideas principle, the man the will' The two have to be seen in a relationship of 1:4; respiration and heart beat, their ratio being 1:4 in the breath/pulse quotient, represent the life of feeling, a physiological image of love between the sexes.

1 head		1 ovum	thinking	woman
breath	1	fertilization	feeling	child
pulse	4			
4 limbs		4 sperm	will	man

The genital organs, built on the sphere and ray principle, are a cosmic/earthly specialization of the kidney organization, enhancing mere elimination to a point where the organism goes beyond itself in reproduction.

Intuitive approach to form

Form studies like those attempted here are not mere superficial analogies. An analogy merely gives outward expression to the true essence of comparison, which is to look for "the inner identity of various plant parts... with greatest diversity in outward form." In the present case, the inner identity lies in the polarity of sphere and ray. In anthroposophical terms these two form principles are archetypes used by the spirit to create the natural world and the human being. They can be recognized in the phenomena, using a method R. Steiner said was essential in medicine. In the first lecture of his first medical course we read:

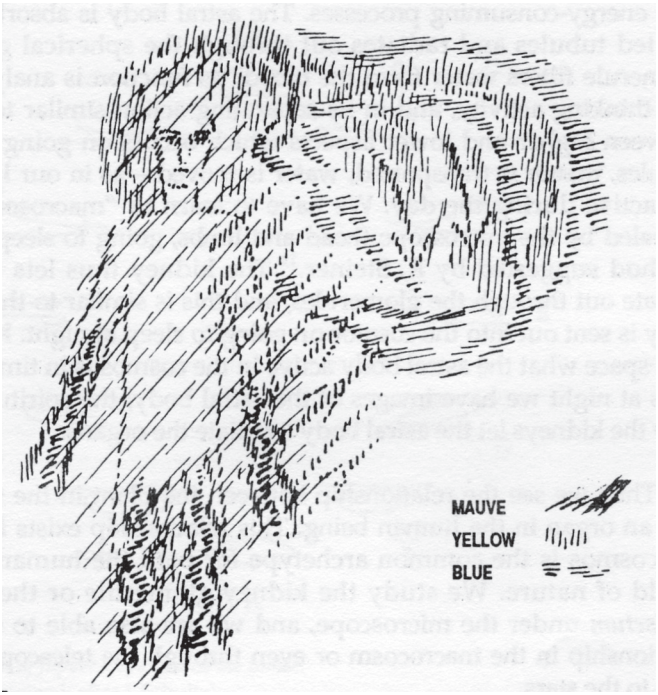
> *It will however be necessary to work much more intuitively with the true essence of medicine and to use the gift of drawing conclusions, from the phenomena of form, as to the nature of the human organism, which may be sick or healthy in a particular respect. This kind of trained intuitive observation of form must play an increasing role in the development of medicine, going towards the future.9*

***Equisetum* and kidney radiation**

Sentience radiates through the whole human organism from the kidneys, organs which astralize both organs and substances. Is it possible to use the *Equisetum* idea to gain understanding of kidney radiation?10 Or, in other words, what connection does the astral body have to sphere and ray?

In a lecture given on 22 June 1924, 11 R. Steiner spoke of going to sleep and waking up in a way that makes it possible for us to answer the question. Astral body and ego do not leave the body just anywhere when we go to sleep but through the head. When we wake up, astral body and ego are active in fingertips and tips of toes, by noon they are in a position that is more or less as if we were sitting in a sitzbath, and by evening they have reached the head, only to separate again from physical body and ether body as we go to sleep. Rudolf Steiner produced the following drawing:

The spherical form of the head therefore relates to the situation where the higher aspects of the human being leave the



lower ones behind. The head is also the region where ego and astral body are freely at our disposal in thinking and conscious awareness. In the limbs, on the other hand, ego and astral body act right down into matter. The radial form of the limbs relates to the higher aspects in the process of incarnation. Let us apply this to the kidney and astral body. Filtration in the spherical glomerule is a passive process; re-absorption, diffusion and secretion in the renal tubules are active, and energy-consuming processes. The astral body is absorbed in the limb-related tubules and radiates out through the spherical glomerules. The glomerule filters water from the blood; its function is analytical, similar to our thinking activity, and in its separating action similar to the separation between higher and lower aspects which occurs on going to sleep. In the tubules, matter is transported, water is moved – as in our limbs when they are active during the day. We have to learn to "macroscopize" the facts revealed by the microscope (head and limbs; going to sleep, waking up), a method suggested by R. Steiner.12 The kidney thus lets the astral body radiate out through the glomerules, and this is similar to the way the astral body is sent

out into the cosmos on going to sleep at night. Kidney radiation is in space what the astral body active in the cosmos is in time. In the radiant stars at night we have images of the astral body; the spiritual scientist sees how the kidneys let the astral body irradiate the organs.

Thus we see the relationship between the plant in the world of nature and an organ in the human being. This relationship exists for a reason, for the cosmos is the common archetype for both the human being and the world of nature. We study the kidney glomerule or the archegonia of *Equisetum* under the microscope, and we are also able to study the same relationship in the macrocosm or even through the telescope. We raise our eyes to the stars.

Equisetum and the planet Venus

To gain a fuller view of the kidney radiation, let us consider if *Equisetum* also shows a relationship to the kidney planet, which is Venus.13

Venus is close to the Sun and only to be seen as Morning or Evening Star. When it rises before the Sun as Morning Star it is at its maximum western elongation from the Sun. Seen from

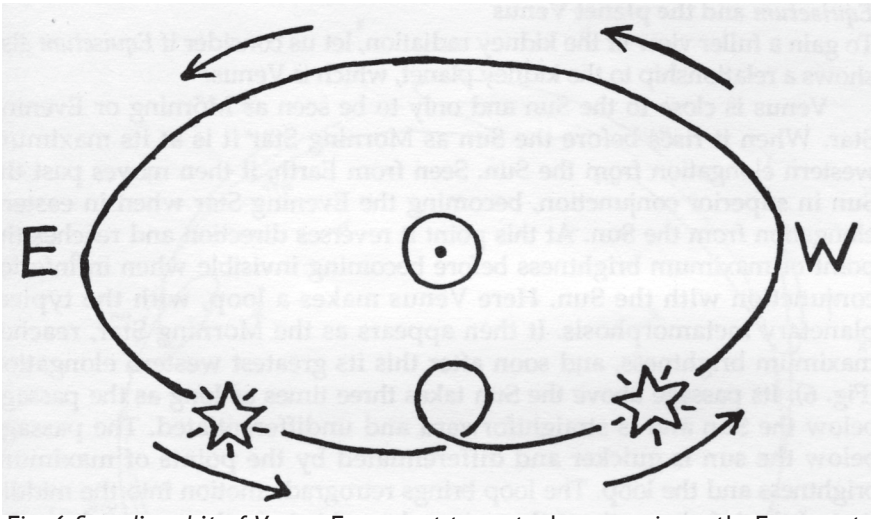


Fig. 6 *Synodic orbit of Venus*. From west to east: slow superior path. From east to west: more rapid and differentiated inferior path. To the east of the Sun (in center), Venus is the Evening Star, to the west of the Sun, it is the Evening Star.

Earth, it then moves past the Sun in superior conjunction, becoming the Evening Star when in eastern elongation from the Sun. At this point it reverses direction and reaches the point of maximum brightness before becoming invisible when in inferior conjunction with the Sun. Here Venus makes a loop, with the typical planetary metamorphosis. It then appears as the Morning Star, reaches maximum brightness, and soon after this its greatest western elongation (Fig. 6). Its passage above the Sun takes three times as long as the passage below the Sun and is straightforward and undifferentiated. The passage below the sun is quicker and differentiated by the points of maximum brightness and the loop. The loop brings retrograde motion into the middle part of the inferior path, at the point where this is furthest away from the superior path, and this motion is related to the superior path. The closed form of the loop (in the ideal case) recapitulates the whole of the Venus orbit on a smaller scale. The transformation of the loop from orbit to orbit follows the same principle as with the exterior planets. A number of basic forms can be established, as shown in Fig. 7 for Jupiter. Fig. 8 shows the actual Venus loops in 1961-1967.

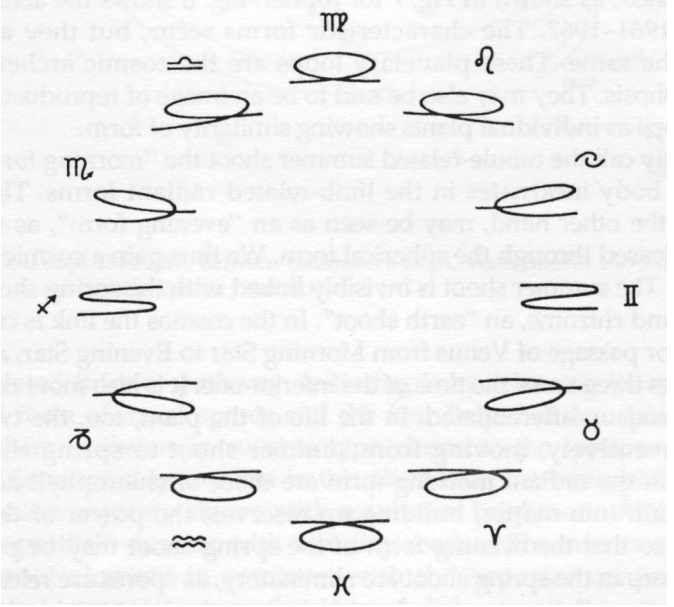
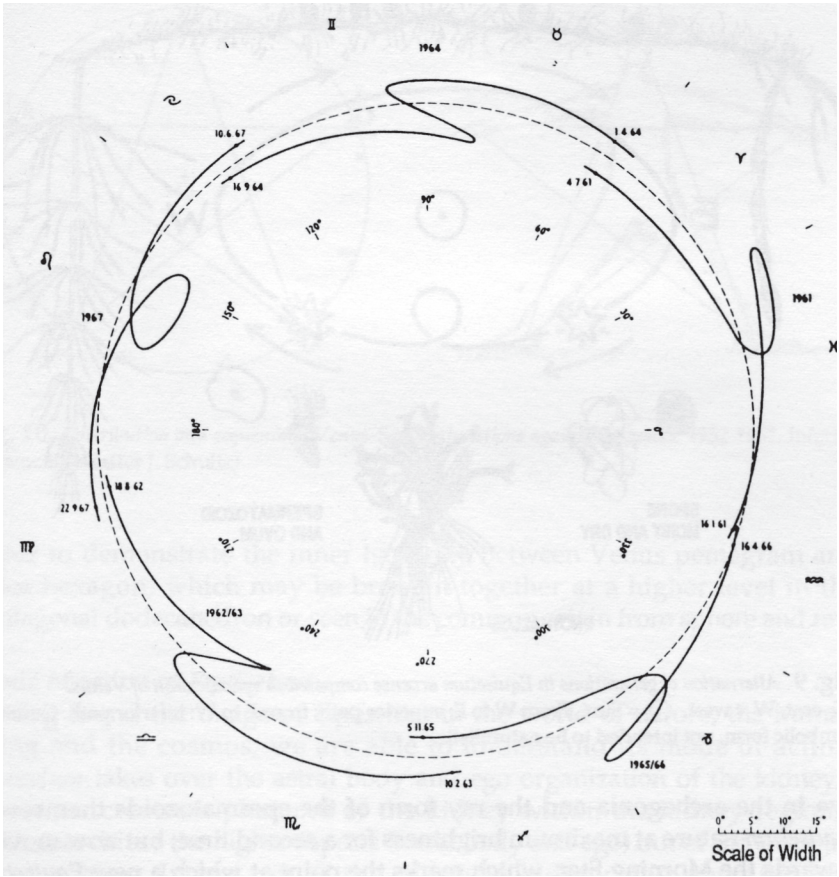


Fig. 7 *Metamorphosis of Jupiter loops against the zodiac*. (Basic principle emphasized; after J. Schultz).

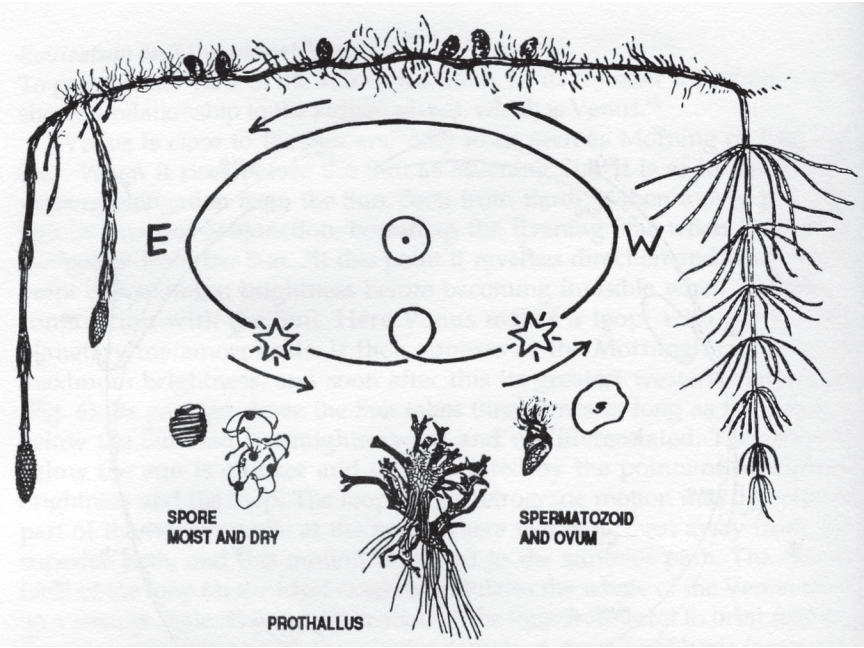
Fig. 8 Venus loops 1961-1967. Between consecutive loops, Venus moves 1 3/5 times through the zodiac. ----- = ecliptic (after J. Schultz).



The characteristic forms recur, but they are never entirely the same. These planetary loops are the cosmic archetype of a metamorphosis. They may also be said to be an image of reproduction, if we see the loops as individual plants showing similarity of form.

We may call the tubule-related summer shoot the "morning form", since the astral body incarnates in the limb-related radiant forms. The spring shoot, on the other hand, may be seen as an "evening form", as the astral body is released through the spherical form. We thus gain a cosmic image of *Equisetum*. The summer shoot is invisibly linked with the spring shoot by the underground rhizome, an "earth shoot". In the cosmos the link is created by the superior passage of Venus from

Fig. 9 *Alternation of generations in Equisetum arvense compared to synodic orbit of Venus.* E = east, W = west, center circle = Sun. From W to E: superior path; from E to W: inferior path. Ovum in symbolic form, not intended to be naturalistic.



Morning Star to Evening Star, a passage which takes three times the time of the inferior one. It is also more consistent, root-like, and undifferentiated. In the life of the plant, too, the two forms arise consecutively, moving from summer shoot to spring shoot. The processes in the radiant morning form are those of chlorophyll-dependent condensation into matter, building up reserves; the power of the Sun is absorbed, so that the evening form of the spring shoot may be produced. The processes in the spring shoot are eliminatory, as spores are released. The long-lasting, radiant summer shoot comes at the beginning of the long superior pathway and is its prime mover. The much more short-lived, spherical spring shoot comes at the beginning of the much shorter, but differentiated inferior pathway, initiating it by releasing its spores. The spherical form of moist spores and the four "rays" of dry spores are the aspect where *Equisetum* is truest to type, closest to the spirit, and in semi-symbolic form

we may say that in this alternation between sphere and ray the *Equisetum* mystery shows with maximum brightness. After this, the dioiceous prothalli develop with their tiny rootlets. The inferior conjunction has the root element in common with the superior conjunction. In astronomical terms this means that Venus briefly recapitulates the direction of its superior pathway in its retrograde motion. Botanically speaking we may say that Equisetum takes root in the prothallus. The spherical form of the ova in the archegonia and the ray form of the spermatozoids then reveal *Equisetum* nature at maximum brightness for a second time, but now moving towards the Morning Star, which marks the point at which a new *Equisetum* generation may be born.

Like Venus, therefore, *Equisetum* has a double link in its morning and evening forms: in the first place through the underground rhizome which moves on from the morning to the evening form, and in the second place through spores, prothalli and sexual reproduction which take the plant from its evening form to a new morning form.

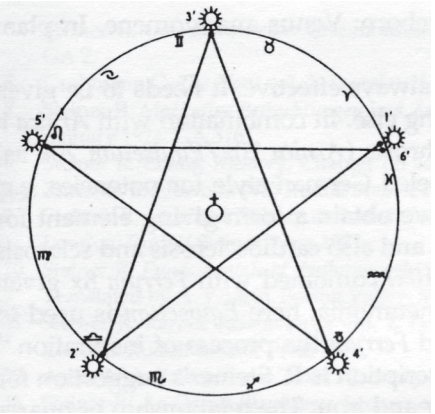
The pentagram created by five orbits of Venus around the Sun over an eight-year period provides further substantiation of this. After eight years, Venus reaches the same position relative to the Sun in the zodiac, the difference being a mere 2.4 days. Related to the human microcosm, this "skeletal structure of our ether body"" connects the head with the four limbs (Fig. 10). The 1:4 ratio of sphere : ray, or head to limbs, is given cosmic harmony in the pentagram.

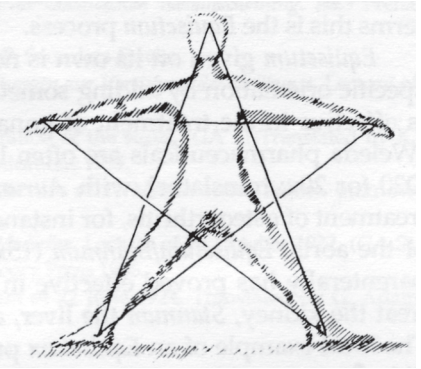
The hexagonal form of the quartz crystal need not militate against this. The two geometric figures arise in different ways. It would need another paper to demonstrate the inner harmony between Venus pentagram and silica hexagon, which may be brought together at a higher level in the pentagonal dodecahedron or seen in the common origin from sphere and ray.

Mode of action of *Equisetum*

Having found the image of *Equisetum* in the world of nature, the human being and the cosmos, we are able to understand its mode of action. *Equisetum* takes over the astral

Fig. 10 *Distribution and sequence of Venus-Sun conjunctions against the zodiac 1952-1961.* Inferior conjunctions (after J. Schultz).





body and ego organization of the kidney; 15 *Equisetum* creates a phantom of the kidney within the kidney region;15 *Equisetum* drives the higher aspects (astral body and ego) out of the kidney.15 Having been driven out of the diseased kidney, the liberated ego organization and astral body have a reactive effect on the organ which works to restore health.15

Compare this principle of action, which is given out of spiritual science, with the *Equisetum*/Venus image we have evolved: the spherical form relating to the higher aspects at the time of going to sleep signifies that they are separating from the kidney; the radiant form relating to the higher aspects at the time of waking up signifies that the astral body, and with it the ego, enter into the kidney again, bringing the freshness and newness of morning. The diseased kidney is too awake, as it were; *Equisetum* lets it sleep, so that it may wake up revitalized. In the whole of the human body we have the situation that the astral body catabolizes the body through the day, tiring it out; in the morning it brings back the archetypes found in the stars during the night, and these act via the ether body to anabolize the body and refresh it. The astral body of the kidney is with Venus during the night. When it enters into the fluids coursing through the kidney again in the morning, we may say that Venus is reborn: Venus anadyomene. In plant terms this is the *Equisetum* process.

Equisetum given on its own is not always effective. It needs to be given specific orientation by adding something else. In combination with *Arnica* it is effective in the treatment of gonarthrosis (*Arnica* 20x/*Equisetum* 20x aa) [Weleda pharmaceuticals are often labeled German style for potencies, e.g. D20 for 20x; translator], with *Aurum* we obtain a form-giving element for treatment of osteoarthritis, for instance, and also cardiosclerosis and sclerosis of the aorta. *Equisetum*/*Stannum* (15x/10x) combined with *Ferrum* 8x given parenterally has proved effective in pneumonia; here *Equisetum* is used to treat the kidney, *Stannum* the liver, and *Ferrum* the process of inspiration.16 The ideal example of an *Equisetum* prescription is R. Steiner's suggestion for Bidor®, a composition of quartz, sulphur and iron. The relationship of quartz to sulphur is exactly that found in *Equisetum*. In R. Steiner's view, this relationship is the "most wonderful" counter image of migraine. *Equisetum* contains a high concentration of quartz and little sulphur, whereas migraine sufferers have too much metabolism (sulphur) and too little sensory function (quartz) in the head. *Equisetum* on its own does not prove effective against migraine; it has to be "animalized" first by adding iron. *Equisetum* thus provided the model for Bidor® by adding iron! 17

In *Equisetum* we therefore have a therapeutic mantle which needs to be wrapped around a third element. We have morning and evening, but the therapeutic day and the therapeutic night need to be added. We only reach the two opposite ends of the human form with *Equisetum* — head and limbs; the area in between waits to be brought to therapeutic completion by us. The plant itself has only spherical and ray form; it has forgone leaf lamina and flowers, leaving a free space. This is where we physicians come in and add to the medicine what it lacks. When a patient is healed we know that thanks to the contribution we have made Equisetum has gained a leaf or a flower.

The common horsetail has grown beautiful before our "medicinal eyes", as Paracelsus once put it.

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15. The three references to Equisetum seen together in GA 316 (see Note 7); lectures of 2 January, 4 and 24 April 1924 (evening meeting).
16. According to H. M. Stellmann, Bad Aibling; has also proved effective in my experience.
17. Steiner R. Anthroposophische Menschenerkenntnis und Medizin. Lecture of 2 September 1923. (GA 319).

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