Biodynamic Research Bulletin:
Planting Times for Trees and Perennials

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Time-sensitive bulletin highlighting a series of fairly rare astronomical configurations favorable for planting all kinds of trees and perennials.

In his course of lectures that inaugurated the biodynamic agricultural movement in 1924, Rudolf Steiner described how plant growth is dependent not only on the soil, the weather and the sun, but also on the moon, the planets and the stars. The earth is immersed, as it were, in an ocean of celestial influences that are more subtle but no less important than the physical influences of the earth. Steiner suggested not only that seed germination is promoted by the influence of the *full moon*—i.e., by the moon's reflection of the forces of the sun—but also that the subsequent stages of plant growth are promoted by the influences of the other planets. Thus he says in his first agricultural lecture that plants with *short* life spans—i.e., *annual* plants—are related to the *near* planets with *short* orbital periods, i.e., to *Mercury* and *Venus* as well as the *moon*. On the other hand, Steiner relates plants with *long* life spans—i.e., *trees and perennials*—to the *distant* planets, *Mars, Jupiter* and *Saturn*, which have multi-year orbital periods. Since the moon's cycle of phases refers to its orbital cycle relative to the *sun*, i.e, to its *synodic* orbital period, and since Mercury and Venus are also unique among the planets in having phase cycles, it is their synodic cycles that are likely to be of most relevance to annual plant growth. Conversely, with the distant planets, which do not pass between the earth and the sun and therefore do not have a phase cycle (though they do have a synodic period), Steiner specifically mentions the importance of Jupiter's circa 12-year and Saturn's circa 30-year orbital periods, which means either their *tropical* or their *sidereal* periods, i.e., their orbital periods measured either relative to the *earth* or relative to the *fixed stars* (see Table 1). (Note that the lengths of a planet's tropical and sidereal periods are nearly identical; for example, Jupiter's average *tropical* period is 11.857 years, while its average *sidereal* period is 11.862 years.) Thus, although all of the planets have both synodic and tropical/sidereal orbital periods, with the *near* planets including the *moon* it is evidently the *synodic* period that is most relevant to plant growth—at least the early, non-woody stages—while with the *distant* planets it is the *tropical* or the *sidereal* period that is most relevant (bold in Table 1).

		Average ***tropical*** or ***sidereal***	Average ***synodic***
Table 1:	**Saturn**	**29.5 years**	378 days
Orbital Periods	**Jupiter**	**11.9 years**	399 days
	Mars	**1.9 years**	780 days (2.14 years)
	Sun	**365¼ days (1 year)**	—
	Venus	224.7 days	**583.9 days (1.6 years)**
	Mercury	88.0 days	**115.9 days**
	Moon	27.3 days	**29.5 days**

Steiner further indicates that the influences of the moon and near planets are dependent on the presence of the *calcareous* substances in the soil and recent *rainwater*, whereas the influences of the distant planets are dependent on the presence of fine *siliceous* particles in the atmosphere and on the atmosphere's *warmth*:

> Warmth heightens the effectiveness of the forces that work through the siliceous substances [in the air], the forces that proceed from Saturn, Jupiter, Mars. … [T]he strength with which the Saturn forces approach the earth's plant life always depends on the state of warmth in the air: when the air is cold, the forces cannot reach the plants; when the air is warm, they can. (Lecture One)

Since the atmosphere is warmest in the *summer*, when the *sun* is highest, these remarks suggest that the influences of the distant planets also depend on the position of the *sun*, much as the fullness of the moon or near planets depends on their position relative to the sun.

In addition, Steiner explicitly mentions that trees grow better and the quality of their wood is enhanced if they are planted during the "ascending period" of the planet associated with those trees:

> An oak tree properly planted during the corresponding Mars period will develop differently from one thoughtlessly put into the ground whenever it happened to be convenient. Or with plantations of conifer forests, where the Saturn forces play such a great role, these will turn out quite differently if one plants them in a so-called ascending period of Saturn than they would if planted at some other time. … For example, suppose we burn wood that comes from trees that were planted in the earth without any understanding of the cosmic rhythms; the warmth produced from these trees will be less healthy than the warmth from trees that were planted with understanding. (Lecture One)

Unfortunately, apart from mentioning Mars' connection with oaks and Saturn's with conifers, Steiner does not give many more guidelines about how the planets are related to particular trees or perennials. To be sure, in the second lecture of his Agriculture Course he does say that one can see Mars in the red color of a rose and Saturn in the blue color of a chicory flower, and that "in every apple you are actually eating Jupiter, and in every plum, Saturn." But he also says that one can see Jupiter in a yellow or white flower and gives the example of a sunflower, which is an annual plant, not a perennial. And the flowers of the plum tree are white or reddish, so is the plum related to Jupiter or Mars because of its flower color, or to Saturn because of its taste? Or, what do plums, chicory and conifers have in common that shows their relation to Saturn? Similarly, when Steiner designed his first Goetheanum building, he specified certain woods for the seven pairs of "planetary columns" in the great hall, but these indications again bring more questions than answers. In keeping with his later remark in the Agriculture Course, oak was used for the Mars column in the Goetheanum, but the Saturn column was made from beech (genus *Fagus,* or possibly blue beech, *Carpinus*) and the Jupiter column from maple. Furthermore, he also assigned certain woods for the columns of the moon, the sun and the near planets: cherry for the moon, ash for the sun, elm for Mercury and birch for Venus. Why is cherry assigned to the moon, while in the Agriculture Course plum—a stone fruit tree in the same genus as cherry (*Prunus*)—is related to Saturn? The basis of the Goetheanum column assignments is obscure and may in fact have no relevance to practical tree planting or to the principle articulated in the Agriculture Course that the length of a planet's orbital cycle is related to the length of a plant's life cycle. Nevertheless, it is still possible that woody plants may also have a relation to the moon and near planets via their *tropical* or *sidereal* periods. (For further sources of data on plant-planet associations, see Endnote 1.)

Given our limited understanding of the connection between specific plants and planets, it is all the more important to notice and utilize those infrequent time periods when the three distant planets—or even the near planets as well as the distant ones—are ***all ascending simultaneously***. These time periods should be favorable for the planting of many if not all kinds of trees and perennials. The purpose of this bulletin is to alert you to the fact that **we are presently in such a period** and to identify a few more such periods in the next five years.

It must be understood, however, that a planet's **"*ascending period*"** does not refer to its daily or nightly ascent above the local horizon due to the earth's rotation, but rather to the planet's much slower ascent relative to the earth's *equator* or the *celestial equator* (the intersection of the plane of the earth's equator with the celestial sphere). Just as the sun ascends relative to the whole earth during the half year between its winter solstice and its summer solstice, so do each of the planets (including the moon) undergo a longer or shorter period of ascent relative to the whole earth. This ascent and subsequent descent is called a movement in *declination* and the total length of a planet's *declination cycle* is exactly equivalent to its *tropical* period (see Table 1). (Note that the moon has both a short [circa-monthly] declination cycle and a long [18.6-year] cycle of declination maxima, also known as its standstill cycle. This latter will not be further considered here.) With respect to the northern hemisphere, a planet at the beginning of its ascent is at *maximum southerly declination* (winter solstice for the sun); in the middle of its ascent it meets the celestial equator at 0^{o} declination (vernal equinox for the sun); and at the end of its ascent it is at *maximum northerly declination* (summer solstice for the sun). (By convention, northerly declination degrees are indicated with positive prefixes and southerly declination degrees with negative prefixes.)

Information regarding the declination status or pattern of a planet (apart from the sun and the moon) is often quite difficult to find. This critical information is usually not included in planting calendars nor even in most printed astronomical ephemerides. Complete planetary ephemerides, however, can be found online (e.g., In-The-Sky.org). (For another source, see Endnote 2.) Table 2 gives the beginning and ending dates for the latest planetary ascension periods as well as the beginning of the next ascending period. (Only approximate dates are given for the maxima of the distant planets because around these times their declination barely changes—i.e., they neither ascend nor descend.)

		begin last ascent (max. S declination)	**end** current ascent (max. N declination)	**begin** next ascent (max. S declination)
Table 2: *Current Planetary* ***Ascending*** *Periods*	**Saturn**	**October 2018**	**April 2033**	**September 2048**
	Jupiter	**December 2019**	**June 2025**	**November 2031**
	Mars	**February 2020**	**April 2021**	**January 2022**
	Sun	Dec. 22, 2019	June 20, 2020	Dec. 21, 2020
	Venus	Nov. 28, 2019	May 3, 2020	Jan. 12, 2021
	Mercury	Jan. 2, 2020	May 27, 2020	Dec. 24, 2020
	Moon	April 13, 2020	April 27, 2020	May 9, 2020

From Table 2 (between columns 1 & 2) one can see that in April 2020 not only are all three distant planets in their ascending periods but also the sun, Venus and Mercury. Furthermore, from April 13th until April 27th, 2020, these six planets will be joined by the moon, so that for two weeks in April ***all seven classical "planets" will be ascending at the same time*****!** The relative rarity of these phenomena can be judged from Table 3, which shows that since 2010 there have been only four "windows" (usually about 2 months long) where all three distant planets ascended simultaneously (column 1), or four 2-week windows where all seven classical planets ascended simultaneously (column 2).

window	Saturn, Jupiter, Mars	Saturn, Jupiter, Mars plus Sun, Venus, Mercury, Moon
#1	***Jan. 13 – Mar. 10, 2010***	***Feb. 9 – Feb. 23, 2010***
#2	***Feb. 7 – Apr. 4, 2012***	***Feb. 16 – Mar. 2, 2012***
#3	***Mar. 14 – Apr. 8, 2015***	***Mar. 24 – Apr. 5, 2015***
#4	***Apr. 6 – June 9, 2017***	***May 15 – May 28, 2017***

Table 3: *Simultaneous* ***Ascent*** *of the Planets (2010 – 2019)*

Tables 2 and 3 take into consideration one further factor that has not yet been discussed here (and which was also not discussed in the Agriculture Course), namely, that all of the planets except the sun and moon regularly undergo periods of ***retrograde motion*** when they temporarily reverse (or at least slow down) their normal direction of movement. (The planets appear to move retrograde because we are observing them from the earth which is itself in motion around the sun.) At these times they not only change their "horizontal" movement along the ecliptic but also their "vertical" movement in declination relative to the celestial equator. The *ascending* period of a planet, therefore, is often interrupted by one or more brief periods of retrograde motion and *descent*, which may in fact represent a *less* favorable time for planting trees and perennials. (Conversely, during an overall *descending* period, a period of retrograde motion and *ascent* may represent a brief *favorable* planting time.) Because the interaction between the retrograde motion and the declination cycle can be quite complex, it is best to plot this on a graph where their net effect on declination can be readily seen. In Figures 1-5 this is done for the for the five planets that undergo retrograde motion. (Customized graphs can be created at In-The-Sky.org. The line at mid-April 2020 is the position of the planet at the time this bulletin was published.)

Figure 1:
Declination of ***Saturn***
(Jan. 2020 - Oct. 2022)

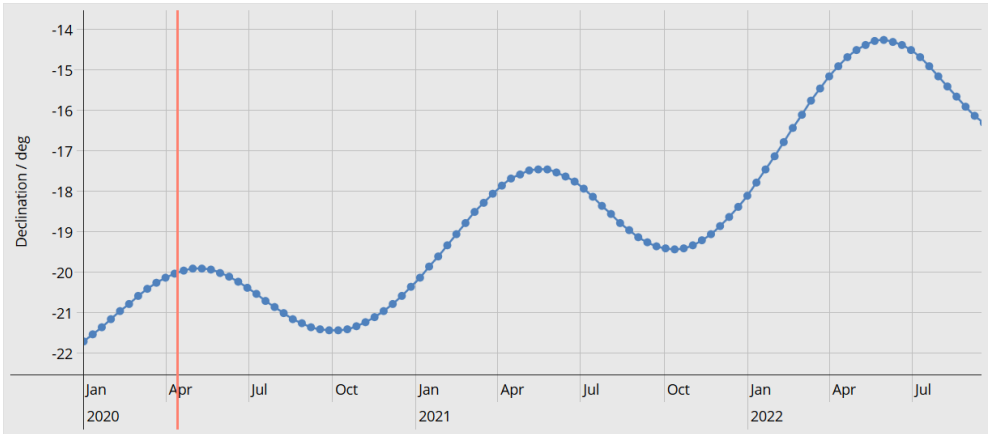


Figure 2:
Declination of ***Jupiter***
(Jan. 2020 – Oct. 2022)

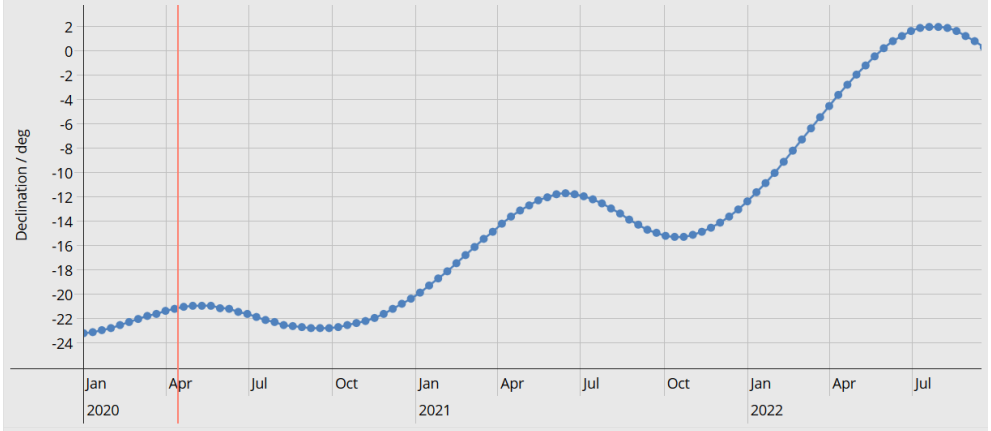


Figure 3:
Declination of ***Mars***
(Jan. 2020 – Oct. 2022)

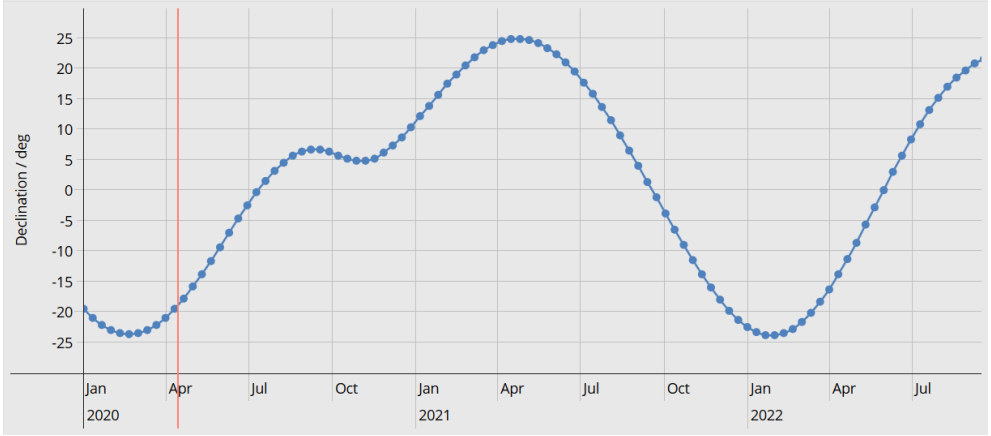


Figure 4:
*Declination of **Venus***
(Jan. 2020 – Oct. 2022)

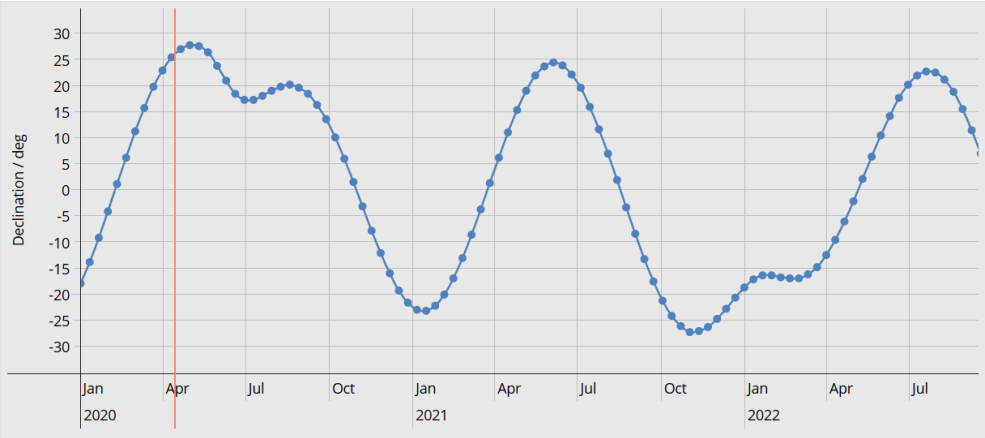
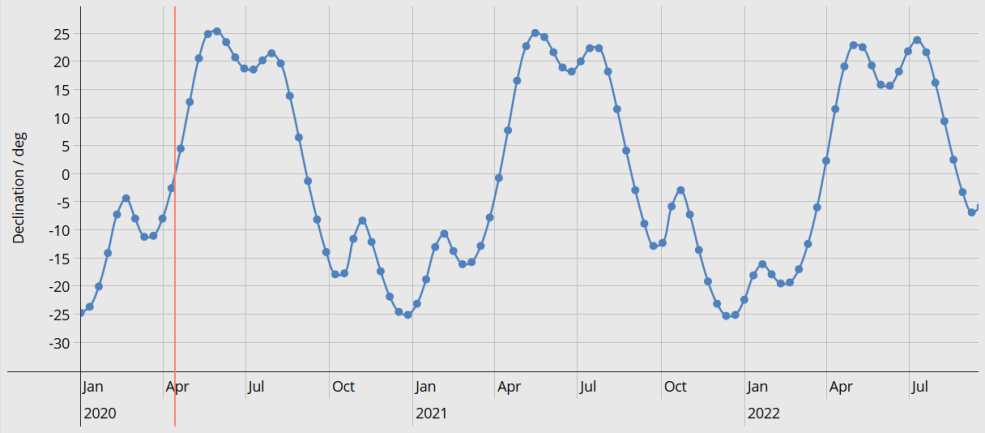


Figure 5:
*Declination of **Mercury***
(Jan. 2020 – Oct. 2022)



Dates of retrograde motion for the five planets during the next five years are summarized in Table 4 (underlined dates are retrograde periods where a planet *ascends* during its overall descending period).

Saturn	May 11–Sept. 28, 2020;	May 23–Oct. 10, 2021;	June 4–Oct. 22, 2022;	June 17–Oct. 3, 2023;	June 29–Nov. 23, 2024
Jupiter	May 14–Sept. 12, 2020;	June 20–Oct. 17, 2021;	July 28–Nov. 22, 2022;	Sept. 4–Dec. 30, 2023;	Oct. 9, 2024–Feb. 3, 2025
Mars	Sept. 9–Nov. 13, 2020;		Oct. 30, 2022–Jan. 11, 2023;		Dec. 6, 2024–Feb. 23, 2025
Venus	May 13–June 24, 2020;	Dec. 19, 2021–Jan. 28, 2022;		July 23–Sept. 3, 2023	
Mercury	Feb 17–Mar. 9 & June 18–July 11 & Oct. 14–Nov. 2, 2020; Jan. 30–Feb. 20 & May 29–June 21 & Sep 27–Oct. 17, 2021; Jan. 14–Feb. 3 & May 10–June 6 & Sept. 10–Oct. 1, 2022; Dec. 29, 2022–Jan. 17, 2023 & Apr. 21–May 14 & Aug. 23–Sept. 14, 2023; Dec. 13, 2023–Jan. 1, 2024 & Apr. 2–Apr. 24 & Aug. 5–Aug. 27 & Nov. 26–Dec. 14, 2024				

Table 4: *Planetary **Retrograde** Motion (2020 to early 2025)*

Although all three of the *distant* planets are now (***mid-April 2020***) in their overall ascending period, they will actually all be ascending only until ***May 11, 2020***, when Saturn goes retrograde (Figure 1 or Table 4). And after May 14th, both Saturn and Jupiter will move retrograde and descend until the end of September, at which time also Mars will have begun to move retrograde (Figures 1-3 or Table 4). Thus, the next window in which all three of the distant planets are again actually ascending will begin only after ***November 14, 2020***, and last until ***April 2021***, when Mars will have reached its maximum northerly declination (Table 2 or Figure 3). Then, in ***January 2022***, Mars will again be at maximum southerly declination and begin a new ascending period. This ascending period will coincide with the ascent of Saturn and Jupiter until ***June 4, 2022***, when Saturn begins to go retrograde (Figure 1 or Table 4). Either Saturn, Jupiter or Mars are then retrograde until ***January 12, 2023***, after which time all three ascend until ***March 2023***, when Mars again reaches maximum northerly declination (not shown). When Mars returns to maximum southerly declination in ***January 2024***, the final window of simultaneous ascent in the next five years will begin and then last until ***June 29, 2024***, when Saturn again goes retrograde (Table 4).

In **summary**, between now and 2025 there will be five large windows of time when the three distant planets will be ascending simultaneously (Table 5, column 2), and several smaller windows within these when the other planets will join them (Table 5, columns 2 & 3).

window	Saturn, Jupiter, Mars	Saturn, Jupiter, Mars plus Venus, Mercury	**all five planets plus the moon and the sun**
#1	***April–May 11, 2020***	***April–May 3, 2020***	***April 13–April 27, 2020***
#2	***Nov. 14–April 2021***	***Feb. 2–April 2021***	***Mar. 8–22 & Apr. 4–18, 2021***
#3	***January–June 4, 2022***	***Feb. 4–June 4, 2022***	***Feb. 4–12 & Feb. 26–Mar. 12 & Mar. 26–Apr. 8 & Apr. 22–May 6 & May 19–June 2, 2022***
#4	***Jan. 12–March 2023***	***Jan. 18–March 2023***	***Jan. 20–Feb. 2 & Feb. 17–Mar. 2, 2023***
#5	***January–June 29, 2024***	***January–Apr. 2 & Apr. 25–June 29, 2024***	***Jan. 10–23 & Feb. 7–19 & Mar. 4–18 & Apr. 29–May 11 & May 26–June 8 & June 22–29, 2024 (sun past solstice)***

Table 5: *Simultaneous* ***Ascent*** *of the Planets (2020 – 2025)*

If we bear in mind Steiner's indication that the influences of the distant planets are enhanced by the *warmth* of the atmosphere—i.e., by the *sun's* position in its cycle of declination—then the last four large windows will be considerably narrowed and #4 possibly eliminated altogether (depending on one's latitude and climate). If, in addition, we wanted to choose a planting time when both *Venus and Mercury* are also ascending (see Table 5, column 2), this would narrow window #1 to end on ***May 3, 2020***, when Venus ends its ascent (Table 2 or Figure 4). (Interestingly, Venus' retrograde period, which starts already on May 13th [Table 4], does *not* cause Venus' declination to ascend again until right *after* Venus ends its retrograde movement on June 24th [Figure 4].) Including Mercury and Venus in our planting window would also delay window #2 to begin after ***February 20, 2021***, when Mercury ends its retrograde motion and resumes its ascent (Figure 5 or Table 4), and it would slightly delay window #3 until after ***February 3, 2022***, when Mercury does the same. Likewise window #4 would be slightly delayed until after ***January 17, 2023***, when Mercury again ends its retrograde motion (Table 4), and, lastly, window #5 would be interrupted from ***April 2 to April 25, 2024***, while Mercury is retrograde (Table 4). And if we wanted to choose a planting time where *all five of the planets plus the moon* are in their ascending periods (and the *sun* is also either ascending or near its summer solstice), this would of course further narrow our planting windows, but it would ensure that these windows are the ***most optimal time for planting any kind of tree or perennial*** (Table 5, column 3).

One last issue, however, is the practical question of what exactly did Steiner mean by "planting" a tree? This probably does not merely refer to planting a seed, since *germination* is already governed by the synodic moon cycle and the remainder of annual growth is presumably governed by the synodic cycles of the near planets, Mercury and Venus; but does it include *transplanting* or *dividing* or *grafting*? Since Steiner specifically says that the distant planets promote the "bark of trees" and "everything else that makes a plant into a perennial plant," is it important that the planted plants not yet be woody? Is it still relevant to observe these planting recommendations when transplanting older specimens, e.g., bare-root stock or container-grown stock? These and many more questions remain open, so it would be ideal, scientifically, if experiments could be done to *compare* the growth of plants that were planted or transplanted or divided or grafted at optimal times and at astronomically sub-optimal times. If you are interested in such experiments, please consider sharing your intentions and your results widely. Due to the length of these cosmic rhythms and the long life-cycles of perennial plants, research in this area often requires a multi-generational, communal approach.

Note 1: In the medieval "doctrine of signatures" and in the cultural lore of many other cultures, many other plant-planet associations have been described, but these are often contradictory and their rationale often obscure or superficial. One promising area of research and data, however, is the propensity of many plants to accumulate high amounts of specific minerals or metals, and the association, especially of the metals, with certain planets. The traditional association between *silver* and the *moon*, *quicksilver* and *Mercury*, *copper* and *Venus*, *gold* and the *sun*, *iron* and *Mars*, *tin* and *Jupiter*, *lead* and *Saturn* are supported and explained by Steiner (*Spiritual Science and Medicine*, Lecture Six). Steiner also used these associations in introducing the pharmaceutical technique of "plantized" or vegetabilized" metals, a method of "potentization" where plants with affinities for certain metals are grown for several years in composts enriched with those metals and with their own composted vegetable matter. Steiner specifically suggested potentizing iron with stinging nettle (*Urtica dioica*), copper with lemon balm (*Melissa officinalis*), and quicksilver with miracle leaf (*Bryophyllum pinnatum/Kalanchoe pinnata*). Apart from Steiner's indications, there is also a large amount of data available on "accumulator" or "hyperaccumulator" plants.

Note 2: As mentioned above, the length of the declination cycle and the tropical period for a planet are identical. Therefore, an additional source of declination data can be found in any *astrological* ephemeris that uses the *tropical zodiac*. In the tropical zodiac the northern vernal equinox—where the sun crosses the celestial equator in spring—is always the beginning of Aries, and the beginning of Cancer and Capricorn always mark the summer and winter solstices respectively. Indeed, the word 'tropical' comes from the Greek *trope* (a turning) and refers to the solstices as the "turning points" of the sun's annual, north-south journey. Similarly, the "tropics" are bounded by the Tropic of Cancer and of Capricorn, the highest northern and southern latitudes where the sun can be directly overhead. Similarly, *all of the other planets also reach maximum northerly or southerly declination close to the time when they enter the tropical signs of Cancer or Capricorn* (periods of retrograde motion may shift the exact time).

With the tropical zodiac, the sun's annual *north-south* path relative to the *earth* is effectively divided into twelve equal segments, which however were *named* according to the *star constellations* in the background of this path during ancient Greek times. These constellations were a convenient coordinate system for specifying a planet's northward or southward *deviation from the celestial equator* (the great circle defined by the intersection of the plane of the earth's equator with the celestial sphere). But this convenience brought great confusion in its wake. Firstly, because the *same* names were *also* used to describe a planet's *east-west* motion along the *ecliptic* (the sun's apparent path against the background of the true or *sidereal* zodiac, which is inclined 23½º relative to the celestial equator). And secondly, because it turned out that the whole starry coordinate system was itself in motion relative to the earth and the celestial equator. This latter motion is known as the "precession of the equinoxes" (as the equinoxes shift relative to the stars, so of course do the solstices and declination maxima). (Because this precession is very slow—circa 1º every 72 years—the *tropical* and *sidereal* orbital periods of the planets are therefore *almost* identical.) Modern planting calendars are right to use the *sidereal* zodiac rather than the tropical zodiac to describe the *east-west* movement of the planets along the ecliptic, but it is unfortunate that as a consequence they usually omit the information about the planets' *north-south* declination that is intrinsically embedded in the *tropical* zodiac.

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