

Notes from a discussion about phosphorus at the Experimental Circle 2012, Stroud.

## **Phosphorus**

Competing claims to the name, and how to work with it

As the end of lecture five of the Agriculture course approaches it seems as if RS is in a rush to finish before all the faces before him at Koberwitz go totally blank. It is as if he bolts on a quick paragraph about valerian, 'if you can still bring yourself to do one more thing'. He says that if valerian is 'applied to the manure in a very fine manner it will stimulate the manure to relate in the right way to the substance we call phosphorus,' (Creeger & Gardner) or, 'If this highly diluted juice of valerian is added to manure, it can arouse in it a proper behaviour towards phosphorous substances,' (Kolisko & Wachsmuth) or, 'Then you will stimulate it to behave in the right way in relation to what we call the "phosphoric" substance,' (Adams) (... insbesondere in ihm dasjenige hervorrufen, was ihn anregt dazu, sich gegenüber demjenigen, was man Phosphorsubstanz nennt, in der richtigen Weise zu verhalten. )

Note the progression as one moves through these translations. In the first it seems to be that the chemical element phosphorus is specified. In the second, 'phosphorous' (adjective *-ous*, not noun *-us*) is used and the plural 'substances' is used. Adams goes further to distance himself from over-associating the translation from the chemical element phosphorus by saying 'what we call' and using inverted commas around the adjective "phosphoric".

A chemist may well wonder what all that mealy-mouthed lack of precision is about? There's no need for any additional education with the Creeger-Gardner translation and, indeed, most writers about BD seem to go along happily suggesting that we can meet the chemical farmers on their own turf here, and that we have a way of increasing the chemical element P using 507. But unless there is something we haven't been taught in our school chemistry lessons, the other translations seem decidedly poor.

I happen to think there is something that has fallen off the chemistry syllabus and it is useful to get a feel for it to understand why these circumlocutions are justified illuminating clues.

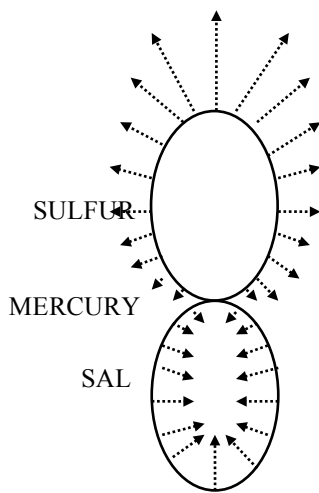
We can pick up corroborating clues in earlier lectures, such as in lecture 3 (the sisters of nitrogen) where Steiner is crystal clear: 'All these elements are inwardly related to a very specifically differentiated spirituality. They are quite different than the elements modern chemistry talks about.'

So if valerian isn't related to what modern chemistry knows as phosphorus what is it related to that has such as similar name? Earlier in lecture 3 we get another clue: 'The spirit working into the natural world follows the paths of sulphur. Sulphur is actually the carrier of the spirit; it's ancient name is related to the name 'phosphorus' and derives from the fact that in ancient times people could see the radiating spirit within the radiating light of the Sun. That is why they called substances like sulphur and phosphorus, which have to do with how light works into matter, the 'light bearers'.

Then in the lecture from which the latter quote was taken Steiner moves on to discuss alchemy and this is the final hint for where to look to begin to untangle this mystery. In the historical divorce settlement between chemistry and alchemy these disciplines must have been awarded joint custody of the terminology. This is the root of the confusion, because chemistry and alchemy mean something crucially different with such terms as phosphorus. Luckily Steiner helps us untangle things in his medical lectures where the following image is much more explicit.

So let's step back and find a starting point from which to attempt a clarification. My route into this begins by considering polarities. A spectrum is defined by two complementary and opposite fixed points between which the spectrum is arranged. Between light and dark we have the colours. Between Father Sky and Mother earth we have the seasons and the burgeoning and senescing plants that follow these seasons. The alchemists had names for the archetypical arrangement. There was an expansive, light or cosmic pole that was called *sulfur*. The complementary contracting, centripetal earthly pole was known as the salt pole or *sal*. The interaction between these poles, the rhythmically-manifesting mediating spectrum created between these poles was known as *mercury*. This archetypical template can be used to consider the functional aspects of the human body, of plants, of the mineral world, of the rainbow, of society and much much more.

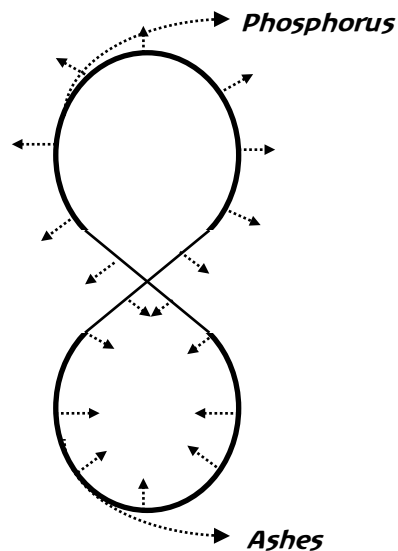
One has to be careful when reading the alchemists' mind-map because the modern person is more familiar with most of these labels as substances. Phosphorus, sulphur, mercury, salt and potash are the chemical elements P, S, Hg, salts like NaCl and K. This is the meaning of the chemist. But this is not the sense in which the alchemists use these terms. If we wanted to understand these folk we would do better to think in terms of relative qualities or directions rather than fixed substances.



We can draw this up using an alchemical/Anthroposophical image – yes, here it comes – the lemniscate.

However, one is not limited to exploration of the territory between these poles. It is possible to consider the territory beyond these poles – on the two opposing sides away from the spectrum between the poles. These outlying regions were also named in the alchemical template. As one moved out from the *sulfur* pole, in the opposite direction from the mercurial spectrum, one moved into the realm of *phosphorus*. In the opposite direction, beyond the realm of salt, lay the zone of *kali* – of potassium and other ashes.

I've drawn it like this because one way of imagining the situation is to travel around the outline of the lemniscate as if it were a scalectrix track. At manageable speeds one can hold the corners and go around and around crossing the mercury bridge first in one direction and then in the next, from sulphur to sal and back. However, if the speeds exceed one's traction one leaves the



track at the sharpest bends. If one blows out at the sulphur bend one goes into the phosphoric realm. If one leaves the track at the salt pole one comes to the realm of ashes, of kalium.

Perhaps some examples will be helpful here. First we can go back to the original context which is that of manure and compost, because Dr Steiner 507 introduced the Valerian preparation in that context. What did he intend when he said that this preparation has the role of establishing a good relation between the muck and the phosphoric substances? The organic farmer will discuss the valuable nutrients that come with composting, but if we embrace the Anthroposophical context, we are trying to re-enliven and keep the soil sensitive to all the useful forces. That means that we are looking beyond the physical stuff of the soil-chemist to the living (etheric) and sensitive (astral) forces that linger in the plant-wastes and manures. If we get the warmth right these forces are digested and retained in the heap so that we have a reserve of astral and etheric (and more?) forces for the plants to grow in so that these don't have to be bootstrapped right from the mineral. This digestion can go wrong if the warmth is lacking or too high. Then we lose the nutrients and the etheric and astral forces as will be clear to our noses and as can be witnessed in the ashes that form in the heap. Then we have leachates and evolved gasses and all the attendant problems growers know well. The 'personal relation' with the muck – aerating or watering or covering as the evolving process demands - enables us to keep the heap from going off the ends of our track. Then we get the structured and sweet-smelling chocolate-brownie compost that we know is going to be a boon to our soil. The blanket or skin of 507 has a role in regulating the warmth so that these processes stay 'on track'.

The alchemical template is valid beyond the compost heap. Let us consider the chemical context. One has to be careful here because the chemical elements, although not the same as the alchemical processes, share names for a reason. The chemical element sulphur is famous for its burning and fiery nature. It clearly has an expansive aspect and so has a centre of gravity in the *sulfur* pole of the alchemical template. Salts sediment and crystallise out of the liquid solutions and so receive an earthly form. The shiny liquid elemental mercury shares expansive and contractive properties from each pole. A blob of mercury dropped from a height to a hard surface will shatter into a thousand little balls but if some are prodded around there is great readiness of these blobs to re-coagulate into one single blob. So one can see that these three chemical elements and the 3 central alchemical processes have the same name because the alchemical characteristics of these 3 chemical elements are readily apparent.

Is the same true for kali and phosphorus? To see that this is indeed the case it helps to consider another aspect of the polar elements – *salt* and *sulphur*. Although sulphur's fiery qualities are readily apparent when sulphur burns it does so with a lot of smokey smutty residue. This earthly aspect is a distinctive characteristic of elemental sulphur, especially when contrasted with the cool other-worldly blue flame of a phosphoric fire. And although salt crystals are clearly formed and centred in the earth their crystalline structure is run through with parallel lines and facets which meet at infinity. So we can see that the salts are also formed with reference to the infinite periphery, whereas ash becomes amorphous and mere dust, losing all expansive connection. The eastern philosophy has forged axioms to describe these aspects. It's yin and yang describes the poles, but yin lies in the heart of yang, and yang in the

heart of yin. So the earthly smut lies in the heart of sulphur, and the reference to the periphery in the earthly crystals' structure. But when we come to phosphorus and kali, the potash, we find elements which have lost any connection with each other and have gone their separate ways. Another way to consider this is that the cycle that is evident in the lemniscate is lost – think Scalectrix again. If we compost to bring the physical etheric astral and spiritual back to the plants then we are recycling. But these aspects are lost in the potash and phosphoric processes.

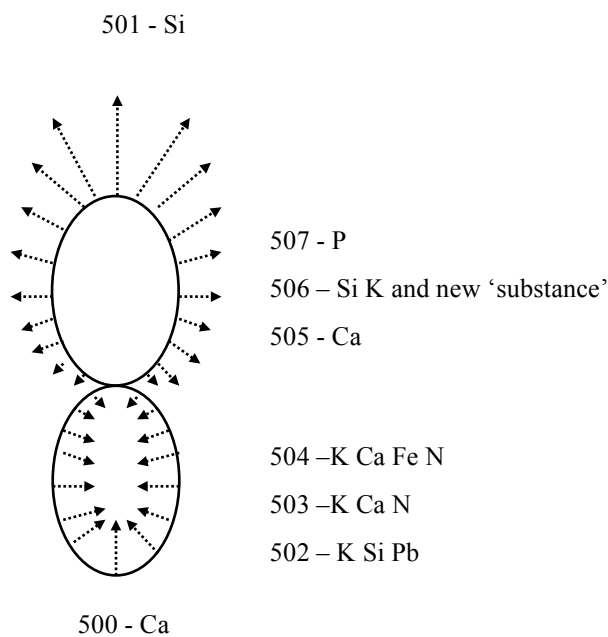
This becomes even clearer in the social ideas that Steiner elucidated and which have long been known as the 'threefold social order' – another arena which fits well to the template we are using. One way to understand this is to consider the three names each of us have. There is the one that people use who have no idea about us as individuals – our surnames. I am Mr Moodie to the tax office, and to the waiter at the restaurant and so forth. And then there is a name that the person who can know me best uses. That name is 'I' – a name that no one else can use for me. Same for you reader, no? In the latter case I am rightly the centre of my universe. In the former I might just as well be a number, or a statistic: I could be replaced like a worn out tap washer, because I am essentially an economic unit as a stranger that most will never even pass on the street. These are the two polar elements of my social being. The mercurial element is the family or community. This is the heart of my social being where I am known by my Christian name. I am born here and, as I mature, I come to know myself more and to be more useful to the world, continually and rhythmically passing through the central point where the hearth is.

What is the phosphorus and kali of this realm? If the I is at the *sulfur* pole what is too far in that direction? Egotism, and selfishness! And what is too far in the opposite direction, when I lose all contact with my uniqueness? Then one is just a number, just a worker, just a soldier, just a national insurance number, just a tattoo on the arm, just a statistic. The right counterbalance to the I is brotherliness and the right counterbalance to being one of 7 billion is to recognise the uniqueness of the lady at the checkout at the supermarket, and to recognise the humanity of the person who checks the little piece of plastic that covers the screen of my new mobile phone. Are there already names we recognise here? Yes: phosphorus means that one who bears the light and another name for light is hidden in 'lucid' and 'luminous.' Lucifer is that egotistical tempter towards whom we were taught to pray that we are not led. And the other side? Kali is the dark one, the one for whom the earthly is everything and who assures us that the illusion of spiritual uniqueness is just vapid dreaming for the feeble-minded. The one reality is the Earth says Ahriman / Mephistopheles – the one to whom we pray that we are not delivered.

So, I hope at least one of these examples – compost, chemistry, social life and the lord's prayer – brings the alchemical idea of phosphorus to life a little so we can understand better why three intelligent sets of translators have come to different formulations of a tiny phrase in one of Steiner's lectures.

My main contention here is that whilst the chemical element phosphorus is a phosphoric element in many circumstances, 507 is not primarily something to increase phosphorus on the farm. It is something to regulate the phosphoric process – the process by which losses are minimised during manuring and other cyclic processes.

Indeed, if notes and correspondence doesn't mind me holding the readers hand through what I have written over the last three years we can fill out this a little more to understand even more of lecture 5 – and even the ashing in lecture 6. Steiner doesn't spoon-feed us with his agriculture course. He doesn't say that silica is the *sulfur* pole or that calcium is the *salt* pole of soil – but I would be interested to hear if anyone now thinks this is not his assertion. Between these poles – which we can augment with 500 and 501 especially if not naturally strong on our land – lie other elements and the other 'compost' preparations. I have borrowed Nastati's contention that the ordering of the preparations in the Agriculture lectures is because of their ordering in the spectrum between these poles. And I would suggest that the 'elements'



that Steiner connects with the various preparations makes more sense in light of the alchemical model. I will just draw it out now and let you think it through for yourself if you are interested. I will be specific on NPK – nitrogen, phosphorus and potassium - which Nastati calls the agricultural threefoldness of the obstructive powers when the nitrogen is isolated by electricity from the air. Steiner's insistence on living forms of nitrogen and that there is no alternative to the nettle preparation we should have around our heart might be understood to bear this out.

So much for 507 and 'phosphoric substances'. If 507 isn't necessarily the means, how do we increase soil phosphorus as the world's phosphorus mines empty out? At the meeting I was hoping that Jo would have the results of an attempt to increase phosphorus on his land. He had a soil analysis from the Laverstoke soil conference and I managed to get a preparation that was designed to increase phosphorus in the soil. Jo missed the meeting but he had treated one field with the 'ProPhosphorus' preparation leaving half otherwise unsprayed. He sent his analysis via email some time after the meeting showing a 60% increase in the measured P level when sprayed with the 'ProPhosphorus'. Although one is reluctant to say that it clearly worked on so slight an experiment without repetitions and so forth – it *is* the result that we wanted. So what is the 'ProPhosphorus' story? In "The Nature of Substance" by Rudolf Hauschka asserts that the zodiacal correspondence to the substance chemists know as phosphorus is the Crab. On March 10 2011 I sent my suggestions for application along with the ProPhosphorus I got from Italy to Jo.

"Dear Jo

I hope you remember that during the Experimental Circle we agreed to try and prepare for next years 'Phosphorus' theme with a potion which is intended to increase

the phosphorus in the fields. It is a preparation related to the constellation of Cancer. The Sun is in front of Cancer from approximately 20 July to 10 August in 2011. On the 30th July both Sun and Moon are there and that is supposed to be particularly good. The evening is said to be the best time of day.

So I would suggest that - ideally - you would spray one of the fields that you had tested last year on the evenings of 24th July, 30th July and 6th August and then have the soil test done at the same time of year as you had done recently sampling both the field sprayed and at least one of those that were not sprayed as the 'control'.

I have ordered the potions and they should come back with Michael Atherton who is going to Italy later this month.

Is there anything I can do to assist you with this project? If there are financial implications the experimental circle can also take that burden off you.

Cheers

Mark

Enzo wrote the following in the 'Handbook':

### **8) STIMULATING SOIL TO PRODUCE DEFICIENT SUBSTANCES**

The soil has a natural ability to regenerate itself. Our experience is that this ability is closely related to the influences that the macrocosm (stars and planets) has on the soil. We may hypothesize the existence in the soil of two mineral components, one more "stable" and the other more 'labile' - that is more susceptible to profound and intimate transformations. Comparing chemical analysis performed on the same soil but in different months, it may be noticed that each year, in the same month, an increase of a particular chemical substance occurs. For example, an increase of the nitrogen content in the soil is noticed each year in May.

From our point of view - knowing the relationship between the constellation of Taurus and the element nitrogen - it is thanks to the radiating action of Taurus that we can find in the soil a greater presence of the substance (nitrogen) linked to it. This occurs more precisely in the month of May (or around the first days of June), when the Sun travels through the part of the sky having the Taurus constellation in its background.

In the days in which also the Moon transits in front of the Taurus constellation, the effect of the transformation in the soil results greatly enhanced, since the various planets (or mobile celestial bodies of the planetary sphere), act as "bridges" for the descent of these zodiacal forces.

For this vision the various substances are like 'ambassadors' of these subtle influences upon Earth. We know that many people will smile reading this hypothesis,

all we can say is that years of verification have proven its validity. These processes are also verifiable with chemical analysis.

Our studies have allowed us to develop some products that help this inherent ability of the soils.

These products should be sprayed once a year, in the evening, when the Sun is in the relevant constellation (see Calendar), and on a day also corresponding to the constellation. When only the day corresponds to the constellation they are related to they should be sprayed at every season's change instead, for a maximum of three times.”

As for how to make a potency that resonates with the Crab one would need to ask Enzo or see the videos of his 2008 introductory course or read his book on potentiation. It might be interesting to note that he also has a preparation for reducing phosphorus in soil.

Be that as it may, it seems that we might just have provoked a 60% increase in soil phosphorus without 507. Anyone else interested to try and secure this with a more rigorous experiment?

Mark Moodie