

'T AIN'T NECESSARILY SO

IF THE FERTILIZER INDUSTRY IS RIGHT, THEN THE OBSERVATIONS OF THE ORGANIC FARMER ARE WRONG. THE MAGIC IS UNRECOGNISED IN THE MUCK

In Newman Turner's 'Fertility Farming' there's a very interesting paragraph in which he muses on the mystery of fertility on the organic farm. By presenting his findings and without offering any explanations for his observations, he rattles the foundation of the materialism which is sending the top soil to the seas. He feels unable to solve the mystery himself and is content to be its beneficiary. But perhaps now, 40 years later, we can bring a bit more light - or confusion.

Let history set the scene; an interesting historical period saw Hahnemann poison himself with quinine, whilst Pasteur gained the upper hand in the debate with Bechamp over the agents of disease. The lakes played host to tubercular poets full of opium and mystical feelings. Napoleon was postponing his date whilst Albert was keeping his amused. Goethe found a new bone. Darwin was of the opinion that in Nature there is always fighting and editing herself, whilst a young Marx took his place in the library. Throughout this period people were negotiating the old world conceptions. In the fifty years either side of the start of the nineteenth century reason really began to find its feet and investigated areas previously monopolised by faith and the imposition of faith. New models became fashionable, flourished or died. The enlightenment had secured the foundations of our 'objective' science and in this time the seed of materialism began to thrive in the soil prepared by Bacon and Descartes two hundred years before.

In that age of uncertainty people looked for things upon which they could rely. A brown rock stays brown and always has the same effect when you throw it against a pane of glass. If it's going to change there are easily understood laws which means that there are few surprises. Matter became a reliable foundation for investigations of the world. (Perhaps one would better say that when one investigated mere matter the chances of removing doubt were great- it was very encouraging.) Lavoisier declared that matter could not be created or destroyed and that the inviolable pieces of matter were 'atoms'. These were pictured as tiny billiard balls of different types. Everything is made of these atoms, and the same atoms that were in the big bang are still spinning in the trees and in us and will continue their whirls until the big crunch. Nothing else exists except the nothing that atoms are in.

Agriculture had to be re-evaluated in the Light of this exciting new outlook. It had been in the hands of the great unwashed for too long and even a good deal of enclosing and clearing hadn't woken the silly buggers up. It was all rhymes to decide when to plant and strange ideas about the weather depending on St. Swithen. Terribly seventeenth century.

Justus von Liebig had some feel for materialism at this time. He thought that if you took a field and removed a certain amount of atoms, assembled as grain and straw, then that field would have that many less atoms. Obviously this couldn't go on for long or there would be nothing left in the field for the DNA of the grain to redirect into new crops. So von Liebig burnt some plants, analysed the ash, and reckoned that if you got a similar amount of the atoms he found in the ash from anywhere else and mixed them back into the field then as long as the rain fell and the sun shone one should have no difficulty in getting crops for ever and ever.

Actually von Liebig was tainted with wider respect for Nature and rejected the simplistic view but his followers developed these concepts into the rationale for the fertilizer industry and gained von Liebig the title of father of the fertilizer industry.

Perhaps materialism was too new and unwieldy to be challenged by von Liebig's contemporaries or perhaps it was already seen that there was a buck to be made. Be that as it may, by the time the news was widely understood the crops were being harvested in record amounts under the influence of Chilean cormorant shit and you can't argue with that.

The momentum that came along behind von Liebig and materialism has continued to this day. The assumption is that the plant sucks up all the atoms it needs through its roots and gets some others with the aid of its leaves - and those atoms form the plant as it grows. All land needs is enough of the right sort of atoms which took the collective title of 'plant foods'. This is the view of life and matter that supports the fertilizer industry. In the 150 years since von Liebig published his thoughts and findings research has accumulated which enables us to challenge this as incomplete, misleading and part of the dangerous tide of agribusiness. Let's begin at the simple end of suggesting the fallibility of the model and try to develop to the weird and side.

Newman Turner; 'In theory, by not using artificial fertilizers, and not importing feed stuffs to my farm, I am exhausting its fertility ... a crop of wheat of 2 tons 2 cwt. to the acre takes 50 lb. of nitrogen ... 29 lb. potash, 21 lb of phosphorous and 9.2 lb of calcium. Grass makes even heavier demands.

'All these elements, in natural form, available to plant life, are going off the farm with everything I sell. Every gallon of milk and every animal I market removes calcium and phosphorus, yet despite the additional losses from 'plant foods' washed out in drainage water, I still have more than I started with The famed Broadbalk Field at Rothamsted, after bearing wheat for 100 years, with no manure of any kind and an average crop of 12.5 bushels an acre, still contains in its top soil 2500 lb. nitrogen, 2750 lb. phosphoric acid and 6750 lb. potash ... Bare land, under arable cultivation by ploughing from Virgin prairie lost 1400 lb. more nitrogen than was recovered in the crop in 22 years. In the same period at Rothamsted, land allowed to run completely wild gained 2200 lb., or 91.7 lb. per year. Fertility farming adds far more.

This is the first challenge to the theoretical foundation of fertilizing artificially from the corner of empiricism. It threatens the idea that a field is like a test tube, a closed system, with material inputs and outputs we balance like the tax man's ledger.

Why this is so might not be the first prize to be gained from Newman Turner's experience but it invites us to look for alternative models of nature to propose for those who need to be convinced by reason and experiment. If we can provide a more encompassing model then we can add something constructive to the criticism of the current orthodoxy.

So let's go on to the fun world of speculation introduced tangentially by Mr. Turner in the paragraph I mentioned at the start of this paper; 'Further, when compost is spread on the surface of the soil, and not ploughed in, it has the ability of increasing not only the nitrogen content of the soil, but also the phosphorus and calcium and potash. My knowledge of science is insufficient to explain why. As far as I know they do not exist in the air, though that would seem to be the only source from which the organic matter can absorb them. Maybe dust particles in the air carry phosphorus, potash and calcium or maybe some scientist will discover that even air in conjunction with organic matter is able to create them. The fact is that they appear in abundance where surface organic matter is adequate and they benefit the crop in a way which is not evident when organic matter is ploughed down or when these elements are applied in artificial form.'

Let us clarify the nature of the mystery here; were a field to grow a certain crop which was then composted and returned to the field surface as Turner explains then there is a greater quantity of the elements he lists than in the field before the crop was grown. Turner offers no explanation but notes that this is a much more beneficial way of treating the soil than if these elements that have beamed up from somewhere were put there by physically importing artificial food stuffs. So where does the extra stuff come from that Newman Turner could only surmise came from the air.

A few scientists, before and after, have worked on this question. The one with the least outlandish explanation was doing his major work after Newman Turner published 'Fertility Farming'. His name is C Louis Kervran.

Kervran was no mad hippy struggling feverishly in a garret to bring down the philosophical edifices of the western world. He was a scientist rewarded through the usual channels with more initials than the average envelope is designed for. His seminal assignment was to discover the reason for carbon monoxide poisoning in workers with hot metals. After the kind of tests and reasoning that scientists like, he was forced to the conclusion that red hot iron was making carbon and oxygen out of nitrogen. Thus made receptive to scientific heresies he went on to check certain equations in nature. He wrote his conclusions in 'Biological Transmutations' and 'Biological Transformations' wherein the inviolability of the atom is seriously threatened. Inheriting a world view which says that these atoms never change, blue atoms are always blue, he postulated that some can turn pink in Nature's laboratory without apparent effort.

For instance he noted that if you took forty new laid eggs, left twenty under the broodies and burnt the other half, you would, by analysis of the ashes, find a certain amount of calcium. If you waited until the remaining eggs produced their chicks and then took the chicks and the egg shells and analysed them in the same way you would find four times the amount of calcium than the newly laid contained. Where, one might ask along with Kervran, did and does calcium come from? It hasn't blown over the hedges as

might be postulated for Newman Turner's fields. The shell would seem to be a rather effective barrier, indeed that is one of its functions. A thorough and wide ranging series of such phenomena are in these two books by Kervran. (It amuses me to think of atomic scientists searching for cold fusion whilst munching their egg and salad sandwiches and to think that the clues may be right under their noses.)

Indeed there are examples of such phenomena scattered in the literature of the life sciences. A collector of such anomalies was Ehrenfried Pfeiffer who noted the growth of certain plants that became rich in elements often in the soil and the surrounding air in minuscule amounts and perhaps even absent. He introduces a chapter titled 'The Dynamic Activities of Life, Some Unappreciated Characteristics'; 'The nourishment of plants consists in the assimilation of salts, of water, and of carbonic acid taken from the air. It's total mass is composed to the extent of 90% and more of water. Only from 2-5% of its mass comes from salts taken from the soil.'

He talks of those elements that are present in such minute quantities that they cannot conceivably be 'substantial nourishment', and prefers to see their role as functional or what he calls 'dynamic'. He demonstrates this with reference to the mosses called *tilandsia* which grow on trees and even telephone wires and he cites this as proof of plant's ability to absorb from the air highly diluted substances of which only very slight traces exist'. This was, received with great amusement at the time since the trace elements were then (1935) unrecognised outside of bio-dynamic circles. (Pfeiffer talks elsewhere of this fine dilution as being homoeopathic. Whether this is strictly the right term I cannot say.)

He broadened this distinction between substantial nourishment and dynamic nourishment to talk of those plants that grow only in the fertile soils and those which thrive in poorer and damaged soils which he called dynamic plants. These have the ability to heal the soils in which they grow. They "furnish, in organic available form, just that diluted substance which Nature needs for healing or stimulating its life processes We must study these plants very exactly in their relationship to nature, and then we shall discover one of the important secrets of biological phenomena." He talks of weeds as "warning signals of soil life "which phrase he backs up with a later book 'Weeds And What They Tell.' (Also interesting in this respect is Jacques Cocconoeur's book 'Weeds Guardians of the Soil' in which he details his repairs of destroyed lands in the Americas with such unappreciated plants.)

Pfeiffer lists plants with unexpected material make up such as the oak with its 60% of calcium even in soils very poor in calcium. Buckwheat is also rich in calcium but love silica rich soils. (Kervran notes silica and calcium are very often major players in these unexplored phenomena and Steiner his polarity of soils around these two substances.) One could see that these 'dynamic' plants play a balancing role in Nature between the cosmic and the earthly calcium. Daisies grow in acidic lawns and are rich in calcium etc etc. Pfeiffer sites the need to compost everything in the light of this outlook and one could see that the self contained organism can repair itself without the importation of exotic mineral remedies if one treats the land in the right way. The lists Pfeiffer presents are long and compelling.

A further investigator was Rudolf Hauschka who is noted for his book 'The Nature Of

Substance'. Following some interesting work in the nineteenth century by Baron von Herzelee he germinated various seeds in distilled water in hermetically sealed vessels. He analysed the results for mineral content and weight over the time of their germination. He found that elements were, it seemed, created, and in rhythmical phases. These reflected lunar rhythms.

Another researcher, Professor Pierre Baranger, repeated von Herzelee's work at the Ecole Polytechnique of Paris and confirmed the results and became convinced of transmutation.

Henri Spindler observed the algae saccharina in sealed vessels varied their iodine level 100% over a day or so and concluded that organic matter might not be derived from inorganic matter but that minerals are excreted from organic processes rather as bark is excreted from trees. Indeed I was interested to find out that it is an old debate - whether soil creates plants or plants create soils.

And this takes us on to the scientist who was proclaiming such things in his own way at the beginning of the twentieth century and whose theories were, I expect, those that Newman Turner hesitates to use since they are far from the orthodox. Rudolf Steiner inspired both Hauschka and Pfeiffer in their works and presented a more complete and unusual (and ancient) idea of what matter is. We are not simply facets of a big physico-chemical reactions as materialists, when consistent, believe. Life is not a special case of matter. Indeed, matter is a special case of life, and of greater processes in the Universe. For Steiner there are processes in nature and the cosmos to which matter is subordinate. These processes are the creative formative processes of life and exist independent of matter, or can animate and even create matter. Indeed matter is the result of these processes. The material appears as the process shatters or subsides. Material is the enchanted form of these processes, its residue left with only its physical and chemical properties. Steiner talked of the 'salt' process, the 'warmth' process, the 'phosphorus' process and so on. The matter formed by different processes can retain varied degrees of connection with these processes.

The science of alchemy knew this and named the elements accordingly, Phosphorus is the carrier of the light process, sulphur the carrier of the sun's forces. Such knowledge carried on through folk language when Nature's forces and substances were experienced as the work of the elemental beings, Cobalt is named after the mischievous gnome Tolly Cobbald who made the iron splutter in the smelter, Nickel is named after the nixies for similar reasons. Perhaps the industrial chemist is sitting in the canteen next to the nuclear physicist unaware of the hocus pocus that goes together with his trade. When Nature was seen to be animated with elementals, matter and the creative and destructive aspects of life were seen as a totality interpenetrating in form and function, freed or enchanted.

In his course of lectures known as the Agriculture Course Steiner said; 'I know quite well, those who have studied academic agriculture from a modern point of view will say; "You have still not told us how to improve the nitrogen content of manure." On the contrary, I have been speaking of it all the time, namely, in speaking of yarrow, chamomile, and the stinging nettle. For there is a hidden alchemy in the organic process.

This hidden alchemy really transmuted the potash, for example, into nitrogen, provided only that the potash is working properly in the organic process. Nay more, it even transforms into nitrogen limestone, the Chalky nature, if it is working rightly. 'Silicon, too, is transmuted in the living organism - transmuted into a substance of great importance, which, however, is not yet included among the elements at all.' Furthermore, in a series of lectures collected as 'Man as symphony Of The Creative Word' he makes a distinction between earthly substance which is being spiritualised and spiritual substance which is materialising. The former include the dust on the wings of butterflies, the plumage of birds, and the physiognomy of a person who has lead a life of virtue. The latter are new substances never before on the earth such as mother's milk, egg yolks, and cow shit!

I can write this now without feeling that my sanity is compromised but these ideas aren't easy for the western mind to take on since they are such uneasy bedfellows for the ideas our education presented to us. But by looking clearly and with a refreshed sense of enquiry at those dilemmas in the orthodox explanations of the world that we might begin to overcome our first reactions to these ideas and come to some view of matter and our universe unprejudiced by either our upbringing or assumptions. Perhaps a new model, a hypothesis, will emerge until it is superseded or refined beyond recognition.

We can be fertility farmers and see if the observations of Newman Turner are ours too. Or we can repeat the experiments of von Herzelee, Hauschka, Kervran, Spindler et al and find out for ourselves. We can use our gut reactions to answer if we are chemical reactions derived by trial and error from some primal soup. And whether that soup really did emanate from some big bang. Or we can be active and see if soils might not be repaired in the way of Pfeiffer and Cocconoeur. If matter is really processes in chains can we not liberate them, can we be the prince that kisses sleeping beauty and brings here back to greater activity. A rhythmical grinding might be more to the point if you'll forgive a smutty reference to the process of trituration at the heart of the homoeopathic preparation of insoluble matter. Where do the findings of Schauberger fit? In which world view does your experience feel most at home?

Any change of model would need to be able to explain all those things for which the materialistic model has proved itself to be so appropriate and enlightening. In the realms of mechanics, inorganic chemistry, and the bulk of our technologies the view that sees material as the last word is quite sufficient. It is when it is out of its realm that the model is inadequate; in the realms of the soul, of life, of consciousness.

On the land we know that the addition of compost is beneficial to the ability of that land to bear crops that are tasty and healthy. To suggest that the reason is that the right atoms are in the way of the roots is not sufficient. For a more satisfying explanation we need to embrace the fact that the compost helps, and though it is material, it is not just material. it is material in a special form. Through the addition of compost the conditions for the healthy growth are created.

How then do we deal with the evidence that the Chilean cormorant shit first presented and which is in the experience of many farmers who try a year without fertilizing their fields? The experience is not in doubt. The facts are not under question but the facts are

also incomplete. That plants become bigger is obvious. That they became better for us as food, that they became able to fulfil their role as parents of another healthy generation, and that they were uncompromised in their own health is not so obviously true and also belongs to the story of agriculture and thus to the introduction of soluble inorganic fertilizers. If we want to restrict our view of plants to their size then we can say that there has been a triumph for materialism in the realm of agriculture to add to its achievements in the material sciences. If we look at the totality then we must be more cautious.

Dwelling on the real nature and origins of matter would not be a helpful exercise unless it helps us in our struggle to become human in all our fields of endeavour. If it brings us to an encompassing and faithful model of the world complete with a consistent philosophy and guide for our actions it will not be a head trip and time wasted. (The same test applies to all world views including the tattered and patched one under which our technologists labour at the moment.) If we can find a phenomenology of matter complete with its supporting processes and properties which provides a consistent framework for such fields as ecology, agriculture, medicine, sacred art, dance, world history, social ills, speech, and pedagogy then one would begin to feel a certain confidence in that model. The one with which I am familiar is the spiritual science of Rudolf Steiner but if the inconsistencies in the current world view are seen then another does begin to present itself and it doesn't matter what you call it. Steiner's spiritual science, aka supersensible science, or Anthroposophy admits to being far from complete as written since the words need to be considered and made our own, checked with our hearts, with our experiences, and with the results of our actions.

To bring us back to our original subject, if fertility doesn't fall with cropping of land but actually increases under good management (Newman Turner) then we must reject the materialistic theory that vindicates the fertilizer industry. If life processes create their material from alien building blocks (Kervran) or by taking highly diluted substance from the air (Pfeiffer) then one must postulate a new theory that challenges the inviolability of matter.

And if we suggest that these life processes produce matter that didn't exist before and wouldn't exist without that organic process (Hauschka and Steiner) we must reevaluate the place of material in the whole of nature.

And the repercussions of this reevaluation are enormous. We have a new model of how matter and higher aspects of life are related to each other. This rescues science from the material blinkers which infect it even into the changes in the particle accelerators which, ironically, also challenge the supremacy of matter. And it rescues spirituality from its haughtiness in relation to matter. Some vapid religions see matter as unfit for it and waft around with benign smiles and for their blindness they may as well sit next to the atomic physicist, and the industrial chemist in the canteen. A bridge between science and the spirit begins to form as a result of simple investigations. If we are serious about the spirit we want to know how it is related to matter for if matter can get along fine without it who needs the spirit? And if the impostor which calls itself science in the present cannot take on life, or even the full story of matter on which its reputation is founded, then it should not put itself forward as the litmus of reality and tell us that because heresies cannot be true they are not true. Prove that the observations are distorted, the explanations flawed, and the emerging world view inconsistent and I will be quiet.

I am quite prepared to find that I am sitting alongside the physicist, chemist, and wafty spiritual seeker in the canteen for the partially sighted. As a homeopath I am a sucker for explanations that challenge the orthodox and this may now be a blind spot. I would be happy for anyone with a considered opinion on these matters to get in touch and put me right or add more evidence. In particular I would be grateful if anyone would repeat the experiments of Kervran, Hauschka et al, because I have no more reason to believe them than the scientists of materialism or an in-house enquiry of the nuclear industry. Got a gas chromatograph?

Newman Turner wrote, when he dipped his toes into the subject; 'I am only concerned with the strictly orthodox established explanations established by research stations, mainly Rothamsted; it makes no difference to my results which are the right reasons'. One can only agree. If, and that's not the least 'if' in this article, if we are doing the right thing, that would certainly be enough for me.

Fertility Farming Newman Turner
Culture And Horticulture. Wolf D Storhl,
Biological Transformations and Transmutations. C Louis Kervran
The Nature of Substance. Rudolf Hauschka
The Agriculture Course. Rudolf Steiner
Biodynamic Farming And Gardening. E Pfeiffer
The Living Earth - The Organic Origins Of Rocks And Minerals. W Cloos