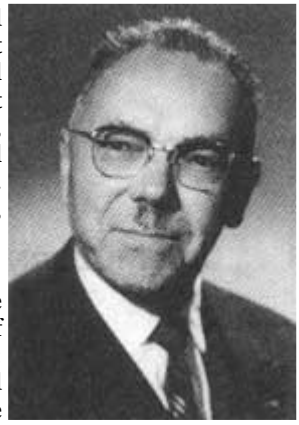
Biological Transmutations

from Adept Alchemy by Robert A. Nelson
Louis Kervran, & c.



Long before the discovery of "cold fusion" by Pons and Fleischman, other scientists had variously found phenomenal evidence of non-radioactive, low-energy transmutation of light elements in plant, animals and minerals. These reactions have come to be known as "biological transmutations" or "nuclido-biological reactions". This class of nuclear reactions is of great importance to the progress of human knowledge in the fields of physics, cosmology, biology, geology, ecology, medicine, nutrition and agriculture. The exact mechanisms of biological transmutations remain unknown, though a few theories have been proposed to explain them. Biological transmutations exist and cannot be denied; they are the very core of living nature, which could not function without them.

The study of biological transmutation can be said to have begun in the 17th century with the famous experiment by von Helmont, who grew a willow tree in a clay vase with 200 pounds of soil. After 5 years, he dried the soil and found that its weight had decreased by only 2 ounces: "Water alone had, therefore, been sufficient to produce 160 pounds of wood, bark and roots" (plus fallen leaves which he did not weigh). Presumably, there were some minerals in the water he fed to the tree. Nowadays we know that plants form carbohydrates from atmospheric carbon dioxide, but their mineral content is derived from soil, not air. It may be possible, however, that the ORMEs (Orbitally Rearranged Monoatomic Elements), discovered by David Hudson in the 1980s, exist in the atmosphere and are utilized by plants.

In 1799, the French chemist Vauquelin became intrigued by the quantity of lime which hens excrete every day. He isolated a hen and fed it a pound of oats which were analyzed for lime (CaO). Vauquelin analyzed the eggs and feces and found five times more Ca was excreted than was consumed. He concluded that lime had been created, but could not figure out how it happened.

In 1822, the English physiologist Prout studied the increase of calcium carbonate inside incubating chicken eggs, and was able to show that it was not contributed by the shell.

In 1831, Choubard germinated watercress seeds in clean glass vessels and showed that the sprouts contained minerals which did not previously exist in the seeds.

In 1844, Vogel also found evidence of biological transmutation. J.J. Berzelius reported the experiment in his *Treatise on Mineral, Plant and Animal Chemistry* (1849):

> He sprouted seeds of cress... in crushed glass deprived of sulfate or of any other sulfurous compound; he watered them with distilled water, covered them with a glass cloche and analyzed the air of the room, so as to determine the sulfur... A few months later, the adult plants with ripe seeds, were dried and burnt with a mixture of potassium nitrate and potassium carbonate; the result was that a quantity of sulfuric acid double that which was contained in the seeds was produced. These experiments demonstrate that either sulfur is not a simple element or that the source which produced the sulfur has remained unknown, despite all the care which had been taken to discover it...(1)

> Circa 1850, Lauwes and Gilbert observed an inexplicable variation in the amount of magnesium in the ashes of plants.

> From 1875-1883, von Herzeele conducted 500 analyses which verified an increase in weight in the ashes of plants grown without soil in a controlled medium. He concluded that, "Plants are capable of effecting the transmutation of elements". His publications so outraged the scientific community of the time, they were removed from libraries. His writings were lost for more than 50 years until a collection was found in Berlin by Dr. Hauscka, who subsequently published von Herzeele's findings.

> M. Baranger (Ecole Polytechnique, Paris) became intrigued with Von Herzeele's experiments, but he thought that the number of trials had been too limited and the precautions against error were insufficient. Baranger decided to repeat the experiments with all possible precautions and a very large number of cases which would allow a statistical study. His research project lasted four years and involved thousands of analyses. Baranger verified the content of P, K, and Ca of vetch seeds before and after germination in twice-distilled water to which pure calcium chloride was/was not added. Hundreds of lots of 7-10 grams each were selected, weighed to 1/100th milligram, and graded, then germinated in a controlled environment. The plants were tested by the methods described by A. Brunel-Tourcoin in his *Practical Treatise of Plant Chemistry* (1948). Baranger found a significant decrease in P in the Ca-series of tests. Non-germinated seeds and seeds germinated in the distilled water showed no significant change in their levels of K. Those seeds treated with $CaCl_2$ showed a 10% increase in their K content.

> None of the specialists who examined Baranger's work were able to find any experimental errors. Baranger

concluded:

These results, obtained by taking all possible precautions, confirm the general conclusions proposed by V. Herzeele and lead one to think that under certain conditions the plants are capable of forming elements which did not exist before in the external environment.

[The practical consequences] cannot be underestimated... Certain plants would bring to the soil some elements useful for the growth of other plants; this would lead us especially to define and revise the current notions on fallows, rotations, mixed crop, fertilizers and the manuring of infertile soils. Nothing prevents us from thinking that certain plants are capable of producing rare elements of industrial importance....

In the sub-atomic field, the plant supplies us with an example of transformation which we are not capable of performing in the laboratory without bringing into action particles of high-energy... It seems that the theoretical consequences in the field of sub-atomic physics are not negligible.

In 1946, Henri Spindler, (Director of the Laboratoire Maritime de Dinard) investigated the origin of iodine in seaweed, and found that the algae *Laminaria* manufactured iodine out of water which contained none of the element.(15)

The next sentence is possibly not fully correct:
Prof. Perrault (Paris University) found that the hormone aldosterone provoked a transmutation of Na to K, which could be fatal to a patient; heart failure occurs when blood plasma K reaches approximately 350 mg/liter.

In 1959, Dr. Julien (Univ. of Besancon) proved that if tenches are put in water containing 14% NaCl, their production of KCl increases 36% within 4 hours.(5)

Louis Kervran (Univ. of Paris) was the most ardent researcher of biological transmutation, and his work in the field earned him a nomination for the Nobel Prize. Kervran elucidated several of these nuclear reactions and verified them:

> The vital phenomenon is not of a chemical order... The nucleus of the atom in light elements is quite different from what nuclear physics regards as the average type, the latter having value only for the heavy elements... Nature moves particles from one nucleus to another ¾ particles such as hydrogen and oxygen nuclei and, in some cases, the nuclei of carbon and lithium. There is thus a transmutation... Biological transmutation is a phenomenon completely different from the atomic fissions or fusions of physics... it reveals a property of matter not seen prior to this work. **(4, 7-13)**

Kervran found that in nuclido-biological reactions, oxygen is always in the form of O, never O_2; reactions with nitrogen occur only with N_2, insofar as is known. The following reactions (shown in simplistic form) have been observed:

$Na_{23} + H_1 \rightarrow Mg_{24}$	$Na_{23} + O_{16} \rightarrow K_{39}$	$Na_{23} - O_{16} \rightarrow Li_7$
$Na_{23} \rightarrow Li_7 + O_{16}$	$K_{39} + H_1 \rightarrow Ca_{40}$	$Mg_{24} + Li_7 \rightarrow P_{31}$
$Mg_{24} + O_{16} \rightarrow Ca_{40}$	$F_{19} + O_{16} \rightarrow Cl_{35}$	$C_{12} + Li_7 \rightarrow F_{19}$
$Cl_{35} \rightarrow C_{12} + Na_{23}$	$Fe_{56} - H_1 \rightarrow Mn_{55}$	$2\ O_{16} - H_1 \rightarrow P_{31}$
$O_{16} + O_{16} \rightarrow S_{32}$	$2\ N_{14} \rightarrow C_{12} + O_{16}$	$N_{14} + Mg_{12} \rightarrow K_{19}$
$Si_{28} + C_{12} \rightarrow Ca_{40}$	$Si_{28} + C_{12} \rightarrow Ca_{40}$	$P_{31} + H_1 \leftrightarrow S_{32}$

Costa de Beauregard (Research Director, Centre Nationale de la Recherche Scientifique, Paris) learned of Kervran's work in 1962 and began to correspond and meet with him. He offered the following observations and explanation for the processes:

> All transmutations proposed by Kervran have two traits in common: (1) The initial and final nuclei differ by the addition or subtraction of a piece of matter, e.g., a proton (a hydrogen nucleus...), an alpha particle (a helium nucleus), a nucleus of oxygen or one of its isotopes, or perhaps some other familiar nuclei; (2) There is an energy excess or deficit in the order of 0.01 atomic mass units (a.m.u.)... or 20 electron masses, or 10 MeV, or 1.6 x 10^{-12} joules. The mass equivalent of this energy gap is of course needed in order to have the Lavoisier principle safe... This energy gap is very much larger than those occurring in chemical reactions. For example, if ... hens are indeed transmuting potassium into calcium (which is an exo-energetic reaction), the power they are radiating is so huge that it would, if in the luminous (electromagnetic) form, set everything on fire all around! [In energetic terms, such flux would be equal to 10^{15} MeV/cm^2/second, or 160 watts/cm^2.] Can we then imagine some sort of quasi-occult form into which the 'Kervran power gap' may be radiated (or from which it may be absorbed in the case of endo-energetic reactions)? No reasonable answer

was available until... a bold theoretical assumption, due to Weinberg in 1967, turned out as experimentally true. Due to this 'neutral current hypothesis' we are allowed to write such nuclear reactions as:

$$p + v \leftrightarrow p' + v' ; \qquad \text{or: } p + \underline{v} \leftrightarrow p' + \underline{v}' ; \qquad \text{or: } p \leftrightarrow p' + v + \underline{v}$$

where p denotes a proton, v a neutrino, and $\underline{v}$ the anti-neutrino. We even have two sorts of neutrinos to play with: the electronic and the muonic one.

With this we can in principle handle the proton type of Kervran's reactions (and also the other one in analogous fashion. One of the two protons in the reaction would be a quasi-free one, that is one with only the trivial, chemical binding. The other one would be bound inside the nucleus. Of course we then have the problem of getting the proton, with its electric charge, through the potential barrier of the nucleus, by the so-called 'tunnel effect' (a typical effect of wave mechanics). But this is part of a problem already mentioned: Life playing the information game, the field being the nucleus, and the rules being those of the wavelike probability calculus... If the Kervran hen does radiate the power gap in the form of neutrinos and/or anti-neutrino, this will be done in the quietest fashion, and go on completely unnoticed.

Can we also handle in this way the endo-energetic reactions? Fortunately Nature provides us with an appropriate supply, because there are quite a few neutrinos and anti-neutrinos flying around us as part of the so-called cosmic rays. By another chance the upper limit of the energy per cosmic particle is so high that the 0.01 a.m.u. Kervran needs are very easily available.

Finally, like the proton or the a -particle, the neutrino or anti-neutrino is something abundantly available... which makes it convenient for use by Life.

On the other hand, the extremely 'weak interaction' of the neutrino with other particles, which we have just found so convenient for avoiding the adverse effects of the Kervran power gap, now... faces us with great hostility. For how are we to reconcile this with the hypothesis that the hen is a furious neutrino source...? How can we simultaneously explain that the poultry keeper, and indeed the hen itself, do not feel the neutrino Niagara and that the source of it is inside the egg factory of the hen?

This is the very Gordian knot of the information game problem, the nuclear physics analogon, if you like, of the so-called catalysis problem of ordinary bio-chemistry. The only tentative answer that I can think of, one I deem quite acceptable in principle, is that what looks like a flat self-contradiction in the physical realm of 'blind statistical prediction', retarded waves and causality, is no more a contradiction at all if we assume that Life is playing with finality, advanced waves, and 'blind statistical retrodiction'... Life knows how to... induce probability decreasing processes. **(2)**

Kervran commented on that opinion in an unpublished manuscript:

For Costa de Beauregard, the apparent discordance with the postulate of the equivalence between mass and energy can be replaced by the postulate of emission-absorption of an occult mass bound to a particle of complete spin; it is thus that the neutrino with a 1/2 spin was invented... you would need a particle of complete spin with normally very weak interactions with matter, but 'catalyzed' biologically; it would not displease me, within this perspective, to try the classic 'graviton' with spins 2 or 0, or a non-classical neo-graviton with spins 2, 1, and 0...

Simply put, if an occult particle is emitted or absorbed in Kervran-type reactions, the conservation of angular momentum would require that it have a complete spin.

In letters to de Beauregard (20 January and 17 October 1873), Kervran noted:

This particle seems to have a mass of 0.011 a.m.u. or 1.8×10^{-26} gram in reactions with $\pm H^+$...

I had not been speaking of energy, for here it was a question of an equivalence, not an identity... I prefer to hold to the notion, as measured at the mass spectrometer, of a difference of masses, for the problem of energy, in my reactions, can be written only in a very simplistic way by application to Einstein's law. There is certainly something else here, and therein lies the whole problem.

De Beauregard later noted:

In the terrestrial atmosphere there exists a particle in abundance with a rest mass m, and a maupertusien mass (or kinetic mass)... which is more than sufficient to assure the Kervran balances: the mu meson of

> cosmic rays...
>
> It is quite admissible to conceive of it as absorbed, then, re-emitted during the course of a nuclear transition of the Kervran type which, moreover, implies a 'virtual neutrino' (emitted, then reabsorbed).

He also offered the logical possibility of a reaction with $^{i}N + {}^{1}H + nu = {}^{p}N + nu'$. In a letter of 31 December 1973, de Beauregard wrote:

> There is a second important problem to solve. To get the H to fuse with the N there is an enormous barrier of repulsing electric potential to pass through. Evidently this is by the tunnel effect. The theory which I am working up ... thus unites aspects of the theory of beta disintegration... and the theory of alpha disintegration... Like you, I believe that the configuration of an atomic or molecular electron cloud has a real word to say on the subject.

In his response (7 January 1974), Kervran attributed the transmutations in plants in part to the power of enzymes:

> In a Petri dish 9 cm. in diameter I started germinating 50 oat seeds. The culture continued for 6 weeks or 3.6 million seconds give or take a few ten thousands of seconds... The area of 'cosmic interaction' was 63 cm^3... During this time on this surface 3.9 mg of K were transmuted into Ca; this must be ~ 6 x 10^{19} atoms of K transmuted in 3.6 x 10^6 seconds or 1.8 x 10^{13} atoms per second or 2.6 x 10^{11} per cm^2/second. The proportion of K transmuted was ~ 46% in 6 weeks. This integration of results for the phenomenon is not constant: it is imperceptible during the first days when one witnesses the synthesis of enzymes which will provoke the transmutations; even at the end of a week the effect is hardly to be noticed. It develops rapidly during the 2nd and 3rd weeks, then slows down during the 4th week... The phenomenon seems to be asymptotic and at the end of the 6th week transmutation progresses only very slowly.. Which demonstrates yet once again that the action of the ambient is insufficient, that there is an energy regulated by the metabolism of the germination and growth which is at the origin of these transmutations... Obviously this calculation was one for a macro-section and not for the effective section... Moreover, there is in biology an important phenomenon which must not be overlooked: some molecules assemble in helix shapes (DNA and RNA for example). There are also some oriented assemblages which polarize light, most often to the left. These oriented constructions have an oriented electromagnetic field, and a molecule such as DNA can be compared to a solenoid in which charged particles (mu^- for example) are somehow partly channeled in the interior, and thus concentrated...

De Beauregard made a suggestion:

> The microorganisms responsible for the phenomenon would find in the natural radiation a sufficient store of neutrinos of 10 MeV and more than they need... A diminution of this alimentation would consist of an equal numerical flux of neutrinos of very low energy to be put in the free interstices of the natural distribution. It is a problem of the symmetric information... in which (in thermodynamic terms) the difference between the 'heat' gained from the hot source (high energy neutrinos) and that given to the cold source (low energy neutrinos) is converted not into work, but into internal energy, or into the rest mass of the machine, which is not cyclical... Analogous comments apply to the case... implying an absorption of a pair, neutrino and anti-neutrino, of an average energy of 5 MeV... [The reactions] avail themselves of an abundant hot source like a geyser (the neutrinos of average energy of the cosmic radiation within the atmosphere) and of an immense cold source like an ocean, 'Fermi's lake' of very low energy neutrinos.

Kervran also proposed a revolutionary theory about the genesis of coal and oil:

> Coal comes from schists, fabricated *in situ*, by high compression that produced the reactions: Si → C + O. If O could not escape, and was compressed as well, one would have O + O → S, from which one gets sulfurous coals. If there was no deformation, the coal remains mixed with argil to produce ampelite.

The presence of carbon in metamorphic and silicate rocks, formed long before there was any vegetation on Earth, is a clear demontration:

> Graphite cannot be of vegetal origin, in which case another origin must be found for it, and I propose the silicium of these Archaean rocks. As for diamonds... here, too, one observes the presence of silicates, thus of silicon... In this way one can explain why all coal deposits contain silicon (up to 20%, or even 40%, and more) which form 'ashes'. The great amounts of silicon might be an indication that the transmutation from Si to C + O was imperfect, incomplete.

Kervran claimed that petroleum was not formed from flesh or plants, but from the reaction Mg → C + C at great depth. If water is present, the hydrogen combines with carbon, and the oxygen forms sulfur (O + O → S), giving sulfurous oil. The Mg can come from a pocket of saline water when Na + H → Mg. Otherwise, Mg also can come from Ca or from adjacent layers of dolomitic rock. Oil deposits in the Sahara have been found in pre-Carboniferous

rocks (Devonian and Cambrian-Ordovician) and in dolomite. Usually there is no communication between layers of petroleum deposits of different composition which are widely separated by hundreds of meters of impermeable rock. Kervran concluded:

The whole problem of prospection should be thought out all over again.

In 1965, H. Komaki (Prof. of applied microbiology, Mukogawa Univ., Japan), published the results of his research, and suggested the probable occurrence of a nuclear reaction in the cells of *Aspergillus niger*, *Penicillium chrys*., *Saccromyces cerv*., and *Torula utilis* grown in potassium-deficient medium. His experiments revealed that P can be formed through the pathway: N + O in some two dozen strains of microorganisms cultured in P-deficient medium. (14)

In 1971, the Laboratory of the French Society of Agriculture sprouted rye seeds under controlled conditions, with these results:

	Total Input in Seeds & Water	Output	Difference	
Mg :	13.34 mg	3.20	-10.14	(-335%)
K :	7.36	16.67	+9.31	(+133%)

In 1971, J.E. Zundel studied the utilization of Ca by germinating grains and observed 54-616% augmentation of Ca. In another experiment, he grew 150 grains of oats in a controlled environment for 6 weeks. 1243 sprouts were analyzed by atomic absorption spectrophotometry for Mg and Ca. Potassium was analyzed by flame emission. The K was deficient by 0.033%, the Ca was 0.032% in excess, and Mg was 0.007% deficient. The variation of Mg was not significant, but the decrease in K equaled the increase of Ca. The increase in Ca was far greater than the margin of experimental error. (16)

In February 1977, Prof. J.A. Jungerman (Univ. of California, Davis) reported the results of an experiment with 4 growths of oat seedlings under carefully controlled conditions. Random samples of germinated seeds were analyzed by atomic absorption and X-ray fluorescence for Ca and K. He found no evidence of transmutation.

In 1978, Carolyn E. Damon (U.S. Customs Tech. Service Div.) ran tests for biological transmutation with *Aspergillus terreus* and *Rhizopus nigricans*, with negative results.

In 1978, Solomon Goldfein (U.S. Army Material Tech. Lab, Ft. Belvoir) studied the biological transmutation of $^{39}K + {}^{1}H \text{ ® } {}^{40}Ca$. His analysis of thousands of references led him to conclude that the most promising approach to testing the theory of biological transmutation would involve an organic molecule with a central metal atom: the chelate Magnesium Adenosine Triphosphate (Mg-ATP). Goldfein postulated a conformational structure of a stack of Mg-ATP molecules forming a helical chain. The Mg-ATP chelate produces oscillating electrical currents which act as a micromini-cyclotron that accelerates hydrogen ions to relativistic speeds with sufficient potential to transmute an element to the next higher number. (3)

Research into the phenomenon of biological transmutation continues in obscurity, practically unknown to most scientists. It is to be hoped that the subject will become established as a popular, legitimate field of research which will yield rich harvests of knowledge.

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Also see http://www.kervran-info.de/ and http://www.levity.com/alchemy/nelson_contents.html

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