

# Life, Life, Life . . .

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A report on gamma ray photosynthesis from University of Missouri Emeritus Professor T.D. Luckey raises afresh the crucial question of the relationship among the three ontological domains of living, non-living, and noetic, first clearly identified by Academician V.I. Vernadsky in the early decades of the 20th Century.

Dr. Luckey's communication, to appear in full in our Fall issue, reports on experiments exposing a *Pseudomonas* bacterium and *Anacystis* alga to continuous gamma rays from a cobalt-60 source at the University of Missouri Research Reactor. In the absence of any visible light, both organisms remained green and increased in mass, up to a limit, in proportion to the radiation flux.

The exact mechanism by which gamma rays, orders of magnitude more energetic than visible light photons, might trigger a photosynthetic reaction is not known. As Dr. Luckey notes, low-energy gamma rays can transfer energy to an atomic electron, either by the photoelectric or the Compton effect, in the process producing a photon of visible light. Whatever the means which Nature has chosen to accomplish this feat, the results suggest that radiation from decay of natural radioactive elements in the Earth's crust may play a role in encouraging the growth of subsurface microorganisms, which we now know make up the vast bulk of living matter on the Earth. One can only speculate on the possibilities for the development of life in the radiation-rich environment of an early planet.

### The Tyranny of Reductionism

However, it is not the attempt to aduce a credible mechanism, but rather the understanding of the process within the whole of universal creation, which must guide us in the search. And it is here, that a break with currently accepted modes of intellectual behavior is most urgently required. As our feature on the work of Carl Woese, et al. indicates, the

tyranny of reductionism, a self-imposed mental enslavement, but one which is enforced by raw power, must end. So, too, must the insistence that physical science be restricted to the rules imposed by the cult of entropy.

The resolution of the impasse which has engulfed physics since the 1927 Solvay Conference requires a real revolution in science, a rebirth of a universal view of man and nature of a sort which modern empiricism claims is impossible. That means that physics must recognize its subsidiary role within the scheme of human knowledge as a whole. The actual ordering of human knowledge, which, when understood, has always led to true and revolutionary advance in science, has always been the same: First the immortal soul (human creativity), then living processes, then the non-living. Presently neither the so-called "life sciences," nor the "physical sciences" have got it right.

Photosynthesis, the conversion of solar, and perhaps even cosmic, radiation into living tissue, is an obvious candidate for study. One of the first applications of analysis by radioactive isotopes was to the study of photosynthesis in the period immediately preceding World War II. A process that had, until then, been represented by a single chemical equation turned out to be one of extreme complexity; even the apparently obvious assumption of the conversion of carbon dioxide into oxygen proved wrong in detail, as it turned out that there was first an exchange of the oxygen in the carbon dioxide with that in water.

Yet, even after decades of study it can hardly be said that the book is closed on the subject, as the Luckey study, among others, shows. LaRouche's entry in this issue on "The Subject of Principle: 'Project Genesis'" should clarify some fundamental issues of method which will help to set matters such as these straight.

—Laurence Hecht