

BOOK REVIEWS

UFO Phenomena – An International Annual Review Devoted to the Scientific Study of UFO Phenomena, Vol. I No. 1 (1976).

Unidentified Flying Objects or ‘UFOs’ – particularly in the context of their possible relation to contact with extraterrestrial (intelligent) life – have captured the interest of a very substantial segment of the population. I believe that in excess of five percent of the American public would claim to have seen a UFO and virtually everyone holds an opinion about the subject. All types of people do have ‘UFO experiences’. On the other hand, the reaction of the scientific community has been anything but receptive. UFO phenomena are among the group of nearly scientifically intractable subjects, largely because of the lack of hard evidence – the data are almost totally anecdotal in character. Furthermore, the association of UFOs or ‘flying saucers’ with possible contact with extraterrestrial intelligence arouses unscientific emotional responses in many generally open-minded scientists. The spectrum of attitudes that I have experienced among colleagues ranges from “I’ll wait till you show me something solid” to “Giordano Bruno got what was coming to him”. How, then, would one launch an “international journal devoted to the scientific study of UFO phenomena”?

The first real attempt – the present 1976 annual volume of *UFO Phenomena* – must surely represent as great a frustration for the editor-in-chief, physicist Roberto Farabone to prepare as it has been for the present reviewer to read. Both editor and reviewer are in favor of creating a climate in which scientists may feel free to follow their curiosity and investigate UFO phenomena – regardless of where it all may lead.

The journal solicits *original* papers – to be refereed by a competent editorial board – in five major areas of research:

- (1) Physical aspects of UFO phenomena.
- (2) The gathering and processing of data.
- (3) The ‘CE III’ – ‘Close Encounters of The Third Kind’ UFO experiences – usually involving claimed contact with ‘humanoid’ creatures.
- (4) Psychological and perceptive aspects of the UFO experience.
- (5) Epistemology of the research on UFO phenomena.

The response for the first issue was five contributions, two of which are reprints from other sources. Two papers discuss statistics, two explore perceptual aspects, and one deals with data analysis – all are far from what one would hope to see in the best of all possible worlds. No papers of sufficient quality on individual UFO cases, in particular the close encounter cases, were submitted.

Rather than dwell on the negative aspects of these first five papers, their lack of substance or scientific merit, I would prefer to take the only positive course I see. On page 117, in a ‘State of the Art?’ editorial, managing editor Francesco Izzo expresses his dismay at “an almost general lack of cooperation from the most distinguished members of the UFOlogical scientific fraternity”. This is clearly a major part of the problem. A journal is only as good as the contributions and contributors. *UFO Phenomena* has had a slow start. It has largely failed to realize its lofty expressed goals and failed to attract high-quality original contributions. Quality work *is* being done and such material should be submitted by the responsible persons. I would suggest that this brave but struggling attempt at a forum for responsible UFO-related research be given the support it requires and deserves, and I look forward to seeing a healthy second (1977) volume and a long active life to come.

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JOHN B. CARLSON

E. Broda, *The Evolution of the Bioenergetic Processes*, Pergamon Press, Oxford, 1975. 211 pp., illus.

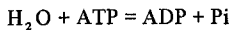
This volume is a very well-balanced source of information about our knowledge concerning the evolution of the bioenergetic processes. Its 25 chapters give the reader a broad view both of many fundamental facts and concepts from physics, chemistry, geology and, of course, biology, and of many less well-established ideas, often from border areas of current progress. As far as I am aware, it is the first major attempt to put together a comprehensive treatment of this rather new but very rapidly developing area of research.

Professor Broda from the University of Vienna is eminently qualified by his strong background in physical chemistry to provide the solid groundwork of the book from which the more speculative considerations emerge. He has also put in an impressive amount of work to cover subjects such as, for example, palaeontology and developmental biology, which are more distant from his own field. The close to 2000 references, alphabetically ordered at the end of the book, bear witness to this.

The prerequisite characteristics and the general theme of stepwise chemical and biological evolution of energy transformation and conservation are described in what I would like to call a quite classical and general, very factual but nevertheless most entertaining and personal style. This is a great asset, in my opinion.

The speculative departures, which are of necessity numerous, are usually well-founded logically. In Chapter 16, Broda discusses in detail the hotly debated question of whether nitrate respiration or oxygen respiration emerged first. His own view that oxygen respiration evolved first is not easy to accept, although he has a point that there is a dilemma concerning the nitrate content of the early, anaerobic atmosphere. Maybe oxidation data from Mars can help solve this dilemma. Evolutionary links from photosynthesis to respiration are extensively and well discussed in Chapter 14. It remains an open question whether all respiration evolved from photosynthesis. This proposal by Broda, as extreme as it is, is worth considering.

Organizational problems arising from the fact that the theme of the book is interdisciplinary are mastered through the well-chosen sequence of the chapters. There are good reasons to accept, for example, the separation of bacterial (Chapter 8) and plant (Chapter 12) photosynthesis, which seems unusual at first sight. The many figures, schemes and tables are enjoyable and useful. However, the fundamental bioenergetic reaction describing the equilibrium between adenosine triphosphate, adenosine diphosphate and phosphate is written on page 38 as $\text{ATP} = \text{ADP} + \text{P}_i$. One reason why I prefer



is that it helps one to remember why hydrophobicity may be so important in the membrane-bound electron transport coupled phosphorylation processes of cellular photophosphorylation and oxidative phosphorylation.

Being a pioneering work written in a coherent style, this volume can be strongly recommended to a broad audience, starting from the undergraduate level. It should serve to stimulate the interest of the beginner and in addition to underline the attractiveness and usefulness of the evolutionary approach for the more advanced reader. Although progress is fast in the field, now especially with respect to protein molecular evolution, Broda's monograph can be expected to remain a unique source of reference, as well as a point of departure for going deeper into more special problems for a long time to come.

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