

because it purposely omits discussion of bacteriology and the important problems of immunity, which are discussed in other works. An adequate discussion of these aspects of parasitology would, indeed, have been impossible in a book of this size and would have defeated the author's admirable purposes. In symbiosis the problems requiring investigation are, in some respects, even more interesting. The pages of the book that deal with symbiotic organisms associated with insects—for example, with the possible part played by photogenic bacteria in the production of luminescence and with symbiosis among plants—provide fascinating material for extensions of research designed to settle the controversies discussed.

I have not noticed any misprints and only one important error has been noted, namely, the statement on p. 189 that the warble fly penetrates the host "under the same conditions as" the bot fly. This error dies hard. It has been clearly shown that the warble fly larva penetrates the skin of cattle and does not enter through the mouth, as do the larvae of the bot fly.

A word about the bibliography is necessary. This, the author explains, is not meant to be comprehensive and, indeed, it could, in a book of this size, scarcely be so. The list of 598 references, to which the translator has added nine more, refers to work cited in the book, and this part of the bibliography is valuable. Two other brief sections of it, however, refer to general works and to special periodicals. Both refer chiefly to parasitology, and neither gives an adequate idea of modern parasitological literature. Of the nine general works cited, seven refer to parasites and, with one exception, they were all published in or before 1936. Of the meagre list of special periodicals, eight of the nine given deal with parasites, and many important parasitological journals are omitted. No one would expect a book of this kind to give a comprehensive list of works on parasitology, but, if any list at all is given, the reader is entitled to a modern and representative one.

The book is not, however, injured by this bibliographical fault. Its distinctive merit is its comparative study of parasitism, commensalism and symbiosis, and all students of these modes of life will read it with pleasure and profit.

G. LAPAGE

## TEMPORARY REVERSAL ON BIFROST

### The Bridge of Life

From Reality to Mystery. By Dr. Augusto Pi Suñer. Pp. vii+270. (New York: The Macmillan Company; London: Macmillan and Co., Ltd., 1951.) 28s. 6d. net.

THE only bridge remotely resembling the one with which Dr. A. Pi Suñer is concerned, and like it mythical, is Bifrost. When last seen, the old Gods were moving steadily along it—out of the world and into Valhalla. This has led most men of science to assume that the process would continue and that the advance of knowledge would automatically restrict the area in which the gods could operate. We have preferred not to discuss whether Nature would ever be totally comprehensible, or indeed whether such a phrase can have any meaning, but have assumed that in our limited fields the gods

were in retreat and materialist interpretations were extending.

This complacent attitude suffers jolts from time to time. There is a certain regularity in the process. As a new field of knowledge begins to be co-ordinated, some mystically minded pseudo-scientist thinks of a phenomenon in the middle distance and announces "You have explained so-and-so but you will never explain this". In this book the warnings are issued about instincts, consciousness and a curious mixture of life and time that obtrudes itself here and there. These are referred to as irreducible, and about them it is asserted that science cannot, and never will, tell us anything.

The best part of the book is a survey of various odd pieces of behaviour in animals and odd associations between them. This is interesting and lucid; but the choice of authorities is capricious. It is surprising to find Kipling's "Jungle Book" among them. The treatment of inheritance deals sympathetically with Lamarck and Lysenko; but on the basis of the rather dubious experimentation that held the stage in the 1930 period of this perennial wrangle rather than on the basis of more recent bacteriological evidence. There is some interesting backhanded Marxism in a section here in which the views of Cuvier and Linnæus are associated with their respective modes of acquiring titles. But much of this section is sketchy; it is a series of hints to the expert and confusions to the lay reader.

An examination of the borderland between two accepted and well-established disciplines—for example, between biology and chemistry—is always profitable if made by an expert, and even when it is made normally it is sometimes profitable. But an examination of all the borderlands at once needs more justification. *A priori* it is not likely that the same man could contribute usefully to each periphery. Experience with this book confirms the *a priori* judgment: not only does Dr. Pi Suñer meditate on most of the edges that exist, but he also considers some in which there seems to be little promise. There is, for example, a discussion about the biological significance of the probable use in the solar energy cycle of the biologically important elements hydrogen, carbon, nitrogen and oxygen.

It would be charitable to assume that some of the confusion is due to the translator, for the author has not been too well served by him. There are many infelicities of phrase and some scientific words are given wrong, or at any rate unusual, translations. But most of the fault lies with the author: he pays lip service to the scientific method and comments adversely on vitalism, metaphysics and "word-spinning"; but when the far side of his own medical speciality appears, we find as usual the ugly head of an ineluctible, irreducible god. Dr. Pi Suñer is not building a new bridge, he is simply repairing Bifrost and urging some of the gods to creep back. He may be successful in this, for irrationalism is now rife and books that encourage awe rather than curiosity spread it. We are given a medley of information and many quotations from the writings of the eminent; but the material is not arranged so as to bring out any clear principle. Instead, arbitrary assertions of inexplicability are made about some, at present unexplained, phenomena, and even these are not put very clearly. Such lack of clarity suggests that we may get warning of the return of the gods; the rout will be led by Loki, whose speciality was confusion.

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