

body of observations, and (ii) to conduct experimental and observational inquiries so as to maximize the information obtained for a given expenditure”.

It is strange that there is not a chapter on botany, especially as that on genetics only deals with the vegetable kingdom in the early paragraphs on Mendel. It is pleasing to find essays on social medicine, social anthropology and sociology in such a work as this; but as there is a separate chapter on neurology, why not one on bacteriology and another on physiology? Two only of the later chapters have bibliographies, though Sir Cyril Burt supplies useful footnotes instead. In view of the brevity of each essay, it would have been valuable had indications for further reading been supplied by every author.

The book jacket claims that the work is intended for the “general reader”. The reviewer has some difficulty in picturing this general reader. Is he a reader with some scientific background or is he the intelligent ‘man-in-the-street’? Have men of science yet been able to appreciate his mental processes? The problem arises when such splendid passages as the following occur in the work: “Other basic principles which have been suggested are Milne’s *Principle of Impotence*, that one cannot tell where one is in the universe, and Bondi and Gold’s *Perfect Principle*—that one cannot tell the cosmic time. Older principles, such as that of the conservation of energy, turn out to be trivial consequences of these principles”; or again, in another section, “ T is a consistent estimate of a parameter θ if in large samples it converges in probability to the limit θ ”.

The painter Whistler said that his work was not to be valued at so much a square foot but in terms of the experience of a life-time. The same principle seems to apply to the present book, which costs two guineas. It is difficult not to recall the spacious days between the Wars when Mr. Gollancz was able to produce a larger and more comprehensive volume, with five or six times the amount of material of the present work, for the modest price of five shillings.

W. L. SUMNER

A PHILOSOPHER'S PHYSICS

Essays in Physics

By Viscount Samuel. Pp. vi+154. (Oxford: Basil Blackwell, 1951.) 7s. 6d. net.

AN ‘event’ has become a familiar word in philosophical literature, and for a variety of reasons. In the hands of the late Prof. A. N. Whitehead it achieved an almost æsthetic connotation among scholars. Now, the appearance of a set of essays by Lord Samuel is assuredly an event and, moreover, one to be pondered over and welcomed. Writing with the dignity and charm of an elder statesman, this slender volume of his resembles a subtle kind of tonic, to be taken with care, and perhaps not always without obtaining a prescription for it beforehand.

With justification, the author is scarcely enamoured of the tendency to confuse concepts of the mind with physical realities, and he complains that the present-day physics tends to blur the issue. The difficulty here is that Lord Samuel is an incorrigible optimist (a welcome enough quality these days), firm in his belief that there is in very truth a sharp boundary upon which to focus. It is conceivable, however, that, at any rate for some time to come, we may have to put up with a species of mental moratorium,

not in a mood of despair, but as an honest facing of the facts. All of which suggests that some bold thinking along the lines of the late Edmund Husserl’s “phenomenological bracketing” (or *epoché*) might provide a finger-post towards the solution of this particular dilemma, more especially in view of the radical *ding-an-sich* attitude inherent in it. Recollecting that Husserl started as a mathematician, and developed into an outstanding exponent of a presuppositionless philosophy, it seems by no means fantastic to propose a thorough search in that difficult terrain for some sort of a solution to this puzzle.

Lord Samuel lists three conclusions, two negative and one “more positive”, which have an important bearing. First, the impossibility of measurement must not lead to the assumption of no causes. Secondly, the cause of any event cannot be a mental concept *per se*. (Incidentally, this seems but an echo down the centuries of what St. Thomas Aquinas thought of St. Anselm’s views, or something very like it.) Thirdly, and indeed well said, is the need for speculation. Although it seems unlikely that any exception will be taken to these precepts, it is good to have them so aptly formulated.

Much of the remainder of the book is taken up with a discussion of certain lines of inquiry such as waves, particles, gravitation, and so on, followed by some observations upon quiescent energy. Lord Samuel will not expect to gather in a neat bundle of acceptances here; but his outlook is stimulating nevertheless. The collection ends with a letter from Prof. Albert Einstein, accompanied by an English translation; the German *verzicht* rendered as “resignation” is not very happy, but otherwise a sound piece of work. There is a slight misprint on p. 102 (7); but elsewhere the text is above reproach.

If two constructive hints are permissible, one is that Bohr’s principle of complementarity might help to clarify some of the more obvious anomalies; the other is that in the concept of ‘logical pressure’ envisaged by the late Prof. E. A. Milne and exemplified in his epistemological approach to physics, probably lies the best hope of advance for which Lord Samuel so eloquently pleads.

F. I. G. RAWLINS

CHEMISTRY OF PHENOLIC RESINS

Chemie der Phenolharze

Von Dr. K. Hultsch. (Organische Chemie in Einzeldarstellungen, Band 3.) Pp. vi+193. (Berlin, Göttingen und Heidelberg: Springer-Verlag, 1950.) 19.60 D. marks.

THE technical importance of phenolic resins and their industrial exploitation have not been reflected in corresponding fundamental advances. Until the late 1930’s, investigations on the basic structure of the resins were comparatively few and their results were often inconclusive, chiefly because of the complexity and difficulty of the problem. The position was markedly altered by the work in Sweden, Germany and Austria carried out by the schools of Von Euler, Hultsch and Zinke, so that at the present time a considerable amount of relevant information has been accumulated. Whereas earlier investigators largely used the analytical method—that is to say, they attempted to break