

thought in the sixteenth and seventeenth centuries. He deems the modern age to have begun with the earliest conception of a 'mathematical physics' such as Bacon never anticipated but which found full expression in the work of Galileo, the seventeenth-century advances in the techniques of experiment and calculation being motivated by, and not antecedent to, the scientific revolution.

Thereafter the several branches of science, as conventionally distinguished, are separately followed along their parallel lines of development from the sixteenth century to our own day—mathematics by the late Pierre Humbert and René Taton, astronomy by Humbert and Evry Schatzman, physics and chemistry by Maurice Daumas and Rodolphe Viallard, mineralogy and geology by Arthur Birembaut, geography by Antoine Bonifacio, the biological sciences by Maurice Caullery, and the human sciences (comprising anthropology, ethnography, sociology, demography and psychology) by Paul Lester, Paulette Marquer, Alfred Sauvy, Lucien Daumas, François Le Terrier and Gilbert Simondon.

The immense scope of the work has been attained at the cost of a severe condensation of the material, and there is no detailed documentation, although most of the sections are provided with bibliographies. The book is primarily intended to serve as a work of reference; but it should also afford the general reader a useful guide to the intricate pathways by which the sciences have attained their present levels of development.

Errors have not been entirely eliminated from the text. Joseph Priestley becomes "John Priestley" in the introduction (p. xv) although not in the body of the work; and the Doppler displacement suffered by a spectral line in consequence of the recession of the luminous source from the observer should be towards the red and not the violet end of the spectrum (p. 792).

A. ARMITAGE

PARAPSYCHOLOGY TO-DAY

Parapsychology

Frontier Science of the Mind—a Survey of the Field, the Methods, and the Facts of ESP and PK Research. By Prof. J. B. Rhine and J. G. Pratt. Pp. ix + 220. (Oxford: Blackwell Scientific Publications; Springfield, Ill.: Charles C. Thomas.) 37s. 6d. net.

THIS book is by far the most convenient and well-designed summary of the present state of one branch of parapsychology that has yet appeared. The authors believe that the reality of extra-sensory perception (ESP) and psychokinesis (PK) is now fully established and that therefore it is time to take a general survey of the whole subject, indicating where progress has been made in the past and where it is likely to be made in the future.

The book is divided into two parts. In the first section an account is given of the facts as the authors see them and the main problems are discussed. Telepathy and clairvoyance are dealt with, and the case for psychokinesis concisely summarized. General research on extra-sensory perception is then related to that in other subjects, such as anthropology, psychology and psychiatry.

In the second part the most customary testing techniques are clearly described and the commonest

statistical methods briefly outlined. The book closes with a few statistical tables, a glossary of terms and indexes to both names and subjects.

As indicated in the foreword, the plan of the book is to state the facts and in the list of authorities to refer to those publications where further information is to be sought. In the opinion of the authors the time has passed when the facts can be challenged except on the somewhat extravagant assumption of what would amount to a widespread fraudulent conspiracy on the part of the investigators themselves. A rational consistency in the expanding knowledge of extra-sensory perception is becoming more and more apparent and, as this increases, what was formerly regarded as something so extraordinary as to be beyond belief tends to become more acceptable because it is more familiar. The authors insist that the phenomena are to be seen as a means of interaction between a person and his universe or, in other words, a method of subject-object interaction. The main difference between this functioning and that on which our ordinary subject-object relations through the sensorimotor system depend, is that the operation is non-physical, although to be objectively manifested it must be converted into observable physical effect. For example, in extra-sensory perception the information acquired must be converted into some conscious experience such as a dream, intuition or hallucination.

On looking back over the past twenty-five years and then consulting this book, the reader can scarcely fail to be struck by the progress that has been made. If new to the subject, he would never imagine that many of the admirable precautions herein described have only been adopted and accepted after long and bitter controversy. Indeed, it is somewhat to be regretted that the authors have seen fit to omit in their references for further reading so many of the important papers which have been published criticizing the methods and experiments of the parapsychologists, since it can scarcely be denied that to some of these critics are due the improvements in technique that have been made.

Although the authors have been mainly concerned with the evidence for and investigation of the phenomena of extra-sensory perception and psychokinesis as seen in action with human beings, they have in more than one place suggested that the phenomena of homing, migration, etc., might be more fully understood if it were recognized that extra-sensory perception occurs and might be relevant. In this connexion they point to the cases in which, it is alleged, some domestic animal, left behind by its owners in its old home, later follows them to their new location, sometimes hundreds of miles away, where it has never been before. Certainly such a case, if properly authenticated, would provide a puzzle to any zoological student; but it is interesting to note that not a single reference is given to any fully described and documented occurrence of this kind.

Apart from occasional examples of this sort, where enthusiasm has perhaps been allowed to overstep its boundaries, the book shows a moderate and restrained attitude which is to be welcomed. As a stimulating account of work in a new and extremely complex field it can be recommended to anybody who thinks of beginning experimental work on extra-sensory perception and similar phenomena.

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