

PERCEPTION AND COMMUNICATION

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By D. E. Broadbent. Pp. v+338. (London and New York: Pergamon Press, 1958.) 55s. net.

BROADBENT has written what is in many ways a most admirable book. Those who are interested in the analysis of human performance in the artificial environments created by technological advance will find in it a valuable and intelligent summary of the various subjects which have been investigated, many at the Medical Research Council Applied Psychology Unit at Cambridge of which Broadbent is the director. However, it would be misleading to suggest that he has given us a mere factual digest. He performs the difficult and unusual task of relating these findings in the applied fields to the problems which have traditionally been regarded as more fundamental, and shows with great skill that applied research does have theoretical importance. The field he covers in this process ranges from the effects of noise on human skill to latent learning in rats. Regarded as a review and a stimulant to thought, the book is first-rate. However, it can also be read as a theoretical contribution to general psychology. Here, Broadbent has many provocative and interesting suggestions. But there are various places where it seems that a more serious intellectual effort might have led the author to theories of greater depth. He tends to treat theories merely as different jargons; and this is what one might conclude from the way he uses them. His use of the terms of information theory, highly precise in their own context, is somewhat loose and without any clear purpose. His own filter theory is rather like the Freudian theory of memory. It accounts only for our failures while our successes continue by the same obliging miracle which has always served. One fears also that logically the filter theory resembles in many ways the explanations of faculty psychology. The abilities or properties of the whole man are explained by postulating entities each of which displays one of those abilities or properties. The statements of such theories are simple translations of the generalization which they are invoked to explain.

The interpretation of the experimental evidence necessarily precedes the framing of theories, as many results are not what they seem. Theorizing, particularly in psychology, is made difficult because the skill and hunches of experimentation are virtually impossible to convey to those who have not had practical experience. It is very easy to get the accent wrong. Animal experimentation is especially hard to evaluate. Though incomparably better than some of the engineers who have attempted to frame theories of animal behaviour, Broadbent's reviews and suggestions in this field are less felicitous than elsewhere. In his chapter on extinction the important problem of latent extinction is left untouched. Whatever the reason for this omission the experimental data in this field invalidate any such approach to learning or extinction as Broadbent's or Uttley's. The question of goal-extinction has been brought into prominence recently by Moltz, who attempts to solve it in Hullian terms.

Nevertheless, the shortcomings on the animal side are not serious for Broadbent's main thesis of filter theory, which must be judged by its usefulness in thinking about human performance. It might

therefore be regarded as curious that no time is spent on the clinical material relevant to such subjects as attention or memory. A much firmer case could be made for the relevance of psychopathology rather than of animal psychology to Broadbent's ideas. Indeed, many of his problems are posed in an acute way in clinical psychology and the brilliance of Breuer's speculations concerning their solution has not been surpassed.

But perhaps these criticisms are not entirely fair. Broadbent in the book does concentrate mainly on the fields where he himself has made important contributions (with the exception of animal work). We cannot therefore reproach him too much for not attempting more. Secondly, it is not entirely clear for whom this book is written. The criticisms would apply in their full force if the book was meant to be a technical contribution. But taken as a more popular volume the force of any of the above strictures is largely lost, and we read with interest a scientist of imagination and intelligence writing about the many subjects to which he has made outstanding contributions.

J. A. DEUTSCH

EVOLUTION OF THE HUMAN MIND

Man's Emerging Mind

Man's Progress Through Time—Trees, Ice, Flood, Atoms and the Universe. By Dr. N. J. Berrill. Pp. xii+308. (London: Dennis Dobson, Ltd., 1958.) 21s. net.

THE Primates, feeding in the high, evergreen trees of warm, wet lands, could produce young at any season, but only one, or sometimes two, babies could cling to the mother as she climbed. They could make noises and groom themselves or one another without too much fear of the great cats below, ready to pounce. Swinging arms left legs freer for occasional and, eventually, persistent ground-walking, and the growing head and diminishing snout made this easier as the skull came to rest on the backbone—a very important matter as the brain grew towards its weight of 1,300–1,400 gm. The genes for snout-reduction seem rather specially linked with those for forward-looking eyes, and all these changes were such as Nature would select among groundlings. Development of hair is late in pre-natal life, and its competition with brain-development helped to make men's bodies almost hairless, with advantages in increased sensitivity and decreased parasites. The maintenance of hair on the head has proved valuable in protecting the brain from short-wave radiation, which would otherwise penetrate the thin skull of youth. Maintenance of head-hair led to its development as an ornament in women.

The decrease of body-hair helped, and was helped by, brain growth, at first subject to limits set by the birth-process, but, later, with fetalization of the skull, continuing through an elongating infancy. Berrill hopes that further elongation of infancy, the trailing clouds of glory, as Wordsworth has it, is in store for mankind, and certainly the age of marriage has risen since Tudor times in Western Europe, and this has been a factor in intellectual activity and diversity of views.

The author might have further expanded the idea of skull growth to show that a decrease of ruggedness, and the early fixity accompanying that ruggedness,