and Behaviour" and "Evolution and Learning". It is plain from this list of chapter headings that Manning reflects the investigations of many workers today in the physiology of behaviour and draws, in his own researches, on the genetical approach. That the genes act on behaviour by changes mainly in physiology rather than in detectable macrostructure is nowadays evident, although the difficulties of genetical analysis in this field are very great.

Manning's selection of work ranges widely, as is made evident by almost 300 references listed at the end of the text, but sensibly, wherever possible, he has cited reviews rather than original papers. For the student reader, at whom the book is directed, this is the only practical approach. The book is well produced and illustrated; there is no reason why it should not be highly appreciated by its readers.

J. D. CARTHY

BOOK OF A MONKEY

Biology of the Howler Monkey (*Alouatta caraya*)

(Bibliotheca Primatologica, No. 7.) Edited by Manuel Rene Malinow. Pp. viii+232. (Basle and New York: S. Karger, 1968.) 48 Sw. francs; 88*s*.; $11.50.

PEDANTRY is a tiresome stick with which to belabour anybody but, in the name of Linnaeus, a sensitive reviewer must protest against the nomenclatural error in the title of the book. *Alouatta*, the howler monkey, is a genus containing five good species only one of which, *A. caraya*, is dealt with in this book that purports to be a "Biology of the Howler Monkey". This is most misleading.

It is also somewhat misleading to call this book a "Biology" which suggests a comprehensive, systematic approach that this eclectic compilation does not attempt to achieve. Ecology, evolution, systematics and free-ranging behaviour are either wholly omitted or, at best, perfunctorily acknowledged. One curious omission is any reference to the voice of the black howler monkey or to its extraordinary vocal anatomy; this is rather like making an apple pie without apples.

There are, however, a number of extremely useful independent chapters on the anatomy and pathology of this so far little known species. Particularly valuable are chapters on growth, age determination and pre and post-natal development, some of which have been published elsewhere. Malinow's contribution to the natural history of arterial disease in free-ranging primates is of great interest, especially his observations relating to the reduced incidence of atherosclerosis in pregnant animals. Grand's analysis of the functional anatomy of the upper limb is a careful and thoughtful contribution.

The good old-fashioned one-man monograph with its synthetic treatment of data and its total biological approach is becoming a rarity these days. Its place in scientific literature has been taken by the multi-authored volume which neither covers the field nor attempts to present an integrated, balanced picture of the central organism. Only too frequently, as in the present instance, many of the articles are reprints. One questions the value of such compilations particularly at £4 8*s*. and in paperback form.

JOHN NAPIER

CONTROLLING SPEECH

Research in Verbal Behaviour and Some Neurophysiological Implications

Edited by Kurt Salzinger and Susanne Salzinger. Pp. xvii+510. (New York: Academic Press, Inc.; London: Academic Press, Inc. (London), Ltd., 1967.) 88*s*.

WHAT goes on in the brain when we speak, or are otherwise linguistically active, is a tantalizing problem, for it bears directly on the biological status and prospects of Man. But many approaches and methods commonplace in the study of other "higher" functions of the brain are unavailable in the case of language. Animals do not speak and we cannot systematically cut away parts of the human brain to find out the effects on language. Instead we have to wait on "Nature's experiments" and her techniques are casual and unsuited to scientific convenience. Opportunities of stimulating and recording from the intact brain while it is occupied in linguistic activity are scarce, and the results so far unrevealing. Starting from the other end, analyses of language itself on its own terms, and of the human behaviour involved in its use, have made some progress. But as they become more sophisticated their conclusions all too often seem remote from the concepts of contemporary neurophysiology. Modern grammatical theory, for instance, is replete with patterned structures of one kind and another. Which of these should we pick on to lay alongside any observable pattern of functioning in the nervous system?

It is very tempting to try to bridge a gap such as this, and not always unprofitable even when there is more make-believe than masonry in the construction. As it happened, however, this symposium stopped short of any actual bridge building and devoted itself largely to laying down approach roads. The first section, "Verbal Behaviour: Facts and Theories", which occupies half the book, comprises a good deal of material familiar to readers of previous psycholinguistic symposia, though it breaks fresh ground in places. Even here, however, as for example in Staats's paper on emotions and images in language, in the two essays by Lambert and by Fillenbaum on verbal satiation or in Lambert and Preston's note on the bilingual's two languages, there is evidence of undue anxiety to force the material into preconceived theoretical or methodological moulds. But there are also examples, such as Starkweather's paper on the vocal characteristics of depressed patients, of a more straightforwardly empirical approach.

The second section, "Verbal Behaviour as a Function of the State of the Organism", concentrates very largely on the effects of drugs on verbal and vocal behaviour, and Waskow contributes a general summary of work in this field to date. Perhaps naturally, there has been much concentration of drugs in current psychiatric vogue, notably LSD, chlorpromazine and amphetamine. The outcome of this work is on the whole disappointing, but new drugs and new knowledge about their biochemical modes, and anatomical sites, of action are coming along fast, and thoughtful use of these may go far to establish some of the neural correlates of speech behaviour.

The last section, "Neurophysiological Bases of Verbal Behaviour", in which the innocent reader might expect to find some evidence of bridge building on the other side of the chasm, is short and frankly disappointing. It contains four essays, by Luria (who was unfortunately unable to be present at the symposium), Geschwind, Davis Howes and Chase. Luria's contribution, alas, contains only what he has already published in English, notably in two articles in *Word* (1959). Geschwind's paper, though mildly stimulating, is too brief and discursive to have any real hitting-power. Howes, who in an earlier paper in the symposium had presented his well known data on word-frequency distributions in aphasia, again examines the implications of these findings for a theoretical view of the language mechanisms. Chase does his best to bring the whole symposium to a focus in such a way as to catch hold of any neurophysiological implications there might be, but these remain potential rather than apparent. He is clearly hampered by the mass of doubtfully relevant material assembled by the symposiasts, and his effort only seems to reveal the marginal utility of this kind of scientific communication in a field unsuited to it.

R. C. OLDFIELD