The volume is an excellent summary of the present state of play in the field, and would provide a good entry for anyone wishing to join in. There are one or two notable absentees from among the contributors, but readers will soon be led to their work through the references. It is difficult to escape the impression, however, that genetical anthropology is at a somewhat adolescent stage, reflected by methodological controversies about matters of no great moment, and by the fact that in all that has been written one can discern nothing that is really surprising, no great contribution to knowledge or understanding that takes the subject beyond the merely documentary. It is possible, indeed probable, that once the field has settled down something will be forthcoming, and this book may serve as a useful appetiser.

A. W. F. EDWARDS

Pharmacology of neurones

Transmitters and Identified Neurons in the Mammalian Central Nervous System. By Andris K. Tebécis. Pp. xvi+340. (Scientechnica: Bristol, May 1974.) £11.50.

MANY books and symposia have appeared in recent years on the subject of neurotransmitters in the mammalian central nervous system, but Dr Tebécis's monograph deals with the topic in a highly original manner.

One of the most powerful techniques for studying the actions of transmitter substances on neuronal receptor sites in the brain or spinal cord involves the recording of the electrical activity of single neurones while applying transmitters and other drugs in a highly restricted manner on to the surface of the cell from which such recording is being made. Such micro-applications are achieved by the electrophoretic ejection of minute quantities of chemical from the fine tip of a glass microelectrode situated near the cell surface. The effects of several different substances may be tested on the electrical activity of a single neurone by using multibarelled arrays of such microelectrodes. Such studies allow one to define the neuropharmacological properties of individual neurones in the CNS; that is, whether they are capable of responding to various possible transmitters, and if so to define what particular type of transmitter receptor is involved. This approach can be used to determine which transmitter when applied to a neurone most closely mimics the response seen when transmitter release is induced naturally by stimulating one or other of the neurone's presynaptic connections. In this way one may determine the identity of the transmitters used by various neuronal pathways in CNS. These experimental approaches have been widely used in recent years, and a bewildrering plethora of results is available in the literature.

Dr Tebécis has undertaken the Herculean task of collating much of this information into a meaningful pattern. He has been helped in this by the novel approach he has taken. It has become increasingly clear that the neuropharmacological properties of different types of neurone in the CNS can vary widely. Results obtained by the microiontophoretic application of drugs and transmitters to randomly selected single neurones in any given region of the brain are thus likely to be extremely difficult to interpret, since several different neurone types are likely to be recorded from. Far more consistent results are obtainable, however, if recordings are made selectively from only one type of neurone in any given brain region. This may be done, for example, by using only neurones which can be identified as responding to antidromic stimulation of their axonal bundles at some remote site in the nervous system. For example, spinal cord motor neurones may be identified by their antidromic response to the electrical stimulation of motor nerves.

Dr Tebécis reviews what is known from neurophysiological studies of the pharmacological properties of "identified" neurones in various areas of the CNS. Successive chapters deal with the spinal cord, brainstem, cerebellum, diencephalon, basal ganglia, limbic system, cerebral cortex and retina. In each chapter detailed discussion is given of the results available for each of the various identifiable neurone types from which single unit recordings can be obtained. In the brain stem, for example, fifteen different categories of neurone are described. In each case any biochemical or histochemical data that are available concerning the distribution of transmitter-specific neuronal pathways are also reviewed. The emphasis is on the actions of acetylcholine, the excitatory amino acids, GABA, glycine, catecholamines and 5-HT. The author, however, also indicates the large gaps in our knowledge of the pharmacology of cerebral circuitry, pointing out the many instances in which the identity of the transmitters used at CNS relays remains unknown. The book is well illustrated, and very up to date. The bibliography is extensive and will be a valuable collection of source material for those interested or involved in this field.

The organisation of material in the book means that it has more the nature of a catalogue of useful information than a monograph, but the catalogue will nevertheless prove very useful to many neuroscientists. The author assumes that the reader has a fairly high level of knowledge of the physiological and pharmacological workings of the nervous system, so the book will appeal mainly to a small number of scientists or graduate students with this necessary expertise and interest. They will, however, be grateful to Dr Tebecis for his critical and authoritative review.

LESLIE IVERSEN

Science lessons

Science for the People: The Origins of the School Science Curriculum in England. By David Layton. Pp. 226. (Allen and Unwin; London, January 1974.) £3.55.

PROFESSOR LAYTON'S well-written book ought to be made compulsory reading for all those scientists, administrators, civil servants and politicians who have anything to do with science education.

By looking at the Victorian roots of the "Science for the people" idea, Layton has exposed many of the fundamental tensions in science curricula which still plague us. From the beginning there were clashes in attitudes towards both method and ideology of science teaching. What was science education for? Should it teach the "science of common things", or be more concerned with "applied" goals? Each viewpoint was intimately connected with political and social ideas. Through studies of Richard Dawes, J. S. Henslow, Henry Moseley and other educationalists, and through curriculum analysis, plus some good political history, Layton has been able to synthesise a view of the past which has direct relevance today.

There are, however, several things in the book which indicate a slight historical amateurishness. Anachronistic social theory is one. The book claims, for example, that amongst some educationalists of the 1850s, "Elementary schools were conceived primarily as instruments of social control". Possibly true, but this is much too theory-laden for the historian's palate. The general aim of the book is unhistorical, too. Layton has written the first seven "historical" chapters largely as a background to an almost totally theoretical chapter 8.

But this is no more than a professional quibble. The book itself has a value far greater than that of most historical works. And Professor Layton has done science education an extremely important service.

JAMES FRIDAY