

Abandonment of the aged is present in most, but one region recognises special high status for the aged. Even the potlatch is present in some regions. Perhaps most significant is the range of marriage regulations, all the way from parallel cousin through cross-cousin to no-cousin marriages.

The picture of the Athapaskan before outside contact is obscured by the fundamental changes wrought by two hundred years of the fur trade, and one hundred years of Christian mission activities. Since the end of the Second World War, education, health facilities and police administration have resulted in the development of larger population centres, the construction of many buildings, and the presence of alien supervisors in both Canada and Alaska.

The author describes in detail the settlement of Old Crow in the Yukon which exemplifies this recent change. He suggests "the community members almost never join in any work for the community as a whole because there are no leaders who can organise activity for the general welfare and improvement of the settlements" (page 117). Thus the members of Old Crow "have not been successful in developing social mechanisms to cope with the problem of living in large, permanent settlements" (*ibid.*). Although this is a general phenomenon throughout northern Canada, the author indicates the cause of failure is that "traditional social organisation emphasised the freedom of the individual family and the authority of the family head" (page 118).

Surely to seek causes in traditional culture forms is an oversimplification at best. Rather, the large permanent settlements based on imported funding and direct administration by aliens have emasculated the indigenous people. Most of Canada's indigenous peoples are in a similar position to these at Old Crow and are equally politically inarticulate. Many observers feel that the only change possible will be through the new regional organisations of Indians, Metis and Inuit (Eskimos). Dr Vanstone's views on their organised protests and negotiations with governments would have been valuable.

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## Structure of the cerebellum

*Cerebellar Cortex: Cytology and Organisation.* By Sanford L. Palay and Victoria Chan-Palay. Pp. xii+348. (Springer-Verlag: Berlin and New York, 1974.) DM156; \$64.

FOR the neuroanatomists of the nineteenth century, the cerebellum was a source of fascination, providing an unending series of vexing problems and forming the battle ground between the

neuronists, who believed that each nerve cell was a discrete entity, and the reticularists who argued that all the nerve cells in the brain were fused together into one extensive network. The reasons for the fascination and the conflict become quickly apparent to any reader of this superb book; six types of neurone, including the largest and the smallest types in the central nervous system, regularly interconnect to process the inputs conveyed by the two main afferent fibre systems. Furthermore, the modes of terminal arborisation of the fibres in the cerebellum exemplify both the simplest and the most complex types found in the nervous system.

During the latter part of the last century, the various cell types of the cerebellum were quickly recognised and, with the new staining technique, their processes were gradually characterised. All the great neuroanatomists of the past contributed to this achievement but it was Ramón y Cajal who in 1888 gave precise descriptions of all six cell types, as well as the 'climbing' and 'mossy' fibres, which form the two input pathways. But there remained a host of important questions which could not begin to be answered until the electron microscope had been developed.

This book takes up the problems Ramón y Cajal left unanswered. Starting from the Purkinje cell, the authors describe in successive chapters all the remaining cell types and afferent fibres. Each chapter begins with a brief historical account of the discovery and ensuing controversies, together with an assessment of the original descriptions. Then the up-to-date knowledge is lucidly presented. The book may be read at various levels. For the uninitiated camera lucida drawings of different neurone types and electron micrographs accompanied by detailed expositions of ultrastructural features will provide a glimpse of the basic 'wiring diagram', and of its extraordinary intricacy. For neuroscientists, it will be an invaluable source book. It provides a comprehensive overview of the important facts unravelled in the past two decades. These include evidence derived from both the optical and electron microscopes, as well as the electrophysiological techniques. In addition, numerous details of previously unpublished observations of the authors are incorporated.

This book is a credit to its senior author, whose sustained interest and imaginative application of current techniques have brought about a significant advancement in our understanding of the structure of the cerebellum. It is a worthy successor to the classic works of the Ramón y Cajal era.

SHIN-HO CHUNG

## Uncontrolled eddies

*The Analysis of Eddy Currents.* By Richard L. Stoll. Pp. xii+128. (Monographs in Electrical and Electrical Engineering.) (Clarendon: Oxford; Oxford University: London, January 1974.) £3.50.

DESPITE the crucial importance of eddy current phenomena, in devices like the induction motor, the undergraduate introduction to the subject is necessarily very limited. It depends largely on equivalent circuit concepts, and assumes that the eddy currents are confined to insulated conductors, and are under the control of the designer. Recent developments in large, electrical machines and electromagnetic devices have added to the range of problems in which the eddy current flow paths are not so clearly defined or controlled, and have provided a fresh impetus to their study. In general, the problems demand a direct solution of the underlying field equations, yet even the simple methods and solutions receive scant attention in most textbooks on electromagnetic fields, and descriptions of more recent work are confined to the original references. Dr Stoll's book fills an important gap. It combines in a condensed and convenient form a description of basic analytical methods, and an introduction to numerical techniques by which the more complex problems, including flux and current penetration into iron, can be solved by computer. It is an essential addition to the bookshelf of those faced with the need to analyse eddy current problems, particularly at low (that is power) frequencies.

Dr Stoll writes as a specialist who has made considerable contributions to his subject, and he has included a great deal of useful material in 125 pages. Yet his treatment is admirably lucid, and the relevant parts of the book are well suited to the needs of electrical engineering and physics undergraduates and others seeking an introduction. The description of numerical methods is necessarily selective, in an area which is rapidly developing, and although it is a pity that topics such as finite-element and integral methods have had to be referred to only briefly, the material is well chosen for those whose principal interest is in applying the methods, rather than developing them. The book meets admirably its intended purpose, which is to provide an understanding of the more important methods and a bridge to specialist literature. It is well produced, and is a pleasure to read, although at some points a less condensed treatment, with additional diagrams, might be helpful to students with only a limited familiarity with electromagnetic field equations.

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