fascinating aspects of developmental physiology and a very important one for survival in some species. There are 600 references, which, in a book of this length, gives cause for reflexion.

The rat has been a very productive animal in this field, for it is normally born in an immature state. Thus, many developmental changes, which cease long before birth in a sheep or a guinea-pig, take place after birth in the rat, and are consequently open to similar experimental investigation. The authors therefore did well to choose it and, short of marsupials, which have so far scarcely been studied from this point of view, they could hardly have chosen better. Perhaps the authors, with all their experience and access to a literature which is difficult for the rest of us to enjoy, could have made the book a little less factual and objective, and given us more of their own judgments and criticism. This, however, is becoming a more and more difficult thing to do, and the more literature one sets out to quote the more difficult it tends to become.

The ability to write books of this kind and to sponsor small conferences on subjects of international interest are two of the privileges of Czechoslovakian scientists, and they are making the most of them.

R. A. McCance

CEREBROSPINAL TREATISE

Physiology of the Cerebrospinal Fluid

By Hugh Davson. Pp. vii+445. (London : J. and A. Churchill, Ltd., 1967.) 84*s*.

It is rare to find a book which can be said to be faultless, but it is almost true of Dr Davson's book, which has been eagerly awaited and now is found to fulfil all expectations. The only fault I could find was a transposition of figures 46 and 47, on pages 76 and 77.

Although the present work is based on Dr Davson's original book *The Physiology of the Ocular and Cerebrospinal Fluids* published in 1956, it shows so few traces of the old that it can justly be regarded as a new book devoted to the cerebrospinal fluid. If this should seem too narrow a field, a few minutes looking through the pages will disprove it. Pharmacology, electron microscopy, brain metabolism, renal and respiratory physiology are all included, so that the cerebrospinal fluid becomes integrated with other body fluids and processes in a concise and sparkling style.

Although designated as an introductory account of the physiology of the cerebrospinal fluid, it is very much more and must surely be regarded as the authoritative text. The author is world renowned for his experimental work on the cerebrospinal fluid and this experience is evident in his lucid explanations and critical analyses of the vast mass of experimental work on this subject. The production, composition, pressure and absorption of cerebrospinal fluid naturally occupy a good deal of the text, most of it referring to experimental work. There are, however, intriguing references to clinical material, largely gathered into the last three chapters, concerned with blood brain barrier, acid base characteristics of respiration and the cerebrospinal fluid pressure. The illustrations are clear and well placed with regard to the text, while there are more than 1,000 references from a wide range of sources.

Dr Davson's book arrives opportunely at a time when a great deal of interest is being focused on the cerebrospinal fluid, especially among clinicians, who will find in this work the answers to many of their queries and, perhaps even more important, will find that a large number of questions are raised. Dr Davson is to be congratulated on a work of scholarship and this book can be recommended unreservedly.

Edward Hitchcock

OBITUARIES

Professor J. A. Chalmers

John Alan Chalmers, who died on March 14, was born in 1904 within the sound of Bow Bells and was a Foundation Scholar of Highgate School, from which he won an open scholarship in natural sciences to Queen's College, Cambridge. He went up to Cambridge in 1923 and in the course of a distinguished undergraduate career gained first class honours in parts one and two of the natural sciences tripos. He then did research in radioactivity under Rutherford, but left in 1928 to take up a lectureship in physics at the University of Durham, where he spent the remaining thirty-eight years of his academic life. In 1932 Chalmers took up the study of atmospheric electricity, a subject which became his dominant research interest and to which he and his research students made many contributions. Those who knew Chalmers best can see how perfectly his chosen research fitted his love of the open air and his intense interest in natural phenomena. Chalmers' lively mind ranged over a wide field—point discharge phenomena, precipitation electricity, atmospheric ionization, and the Earth's electric field. Athough at first he enjoyed only limited resources of money and equipment, by his persistence and enthusiasm he gradually built up a large research group with well equipped field laboratories at the department of physics in Durham and at the university observatory. With Pasquill he measured the electrical charges carried by raindrops, and with Whipple he worked out a theory of the capture of ions by falling drops, a theory later extended to ice crystals. With Hutchinson he investigated the mechanism of the charging of drops and ice crystals. He worked extensively on natural objects and, for example, demonstrated the part played by living trees in transferring electrical charge from clouds to the Earth. He also investigated the electrical field conditions of artificial points on masts and tethered balloons in various meteorological conditions. Some of the problems chosen were not perhaps the most fruitful because of their inherent complexity and the vagaries of the weather, but Chalmers made them challenging and stimulating, and as his resources increased he developed more powerful instrumentation. His more recent work was concerned with a theoretical analysis of the electrode effect at the Earth's surface and the identification of an unexpected negative potential gradient in conditions of mist and fog as the secondary product of corona discharges from distant electrical power transmission lines. His researches were not confined to atmospheric electricity; early in his career he wrote a series of papers on contact potential, and throughout his life he worked on problems in classical electricity and magnetism. He also gave vigorous support to the M.K.S. system of units. His output of papers was prolific, and he published about a hundred papers and two books on atmospheric electricity, the second of which is probably the best treatment of the subject in English.

Chalmers served Durham well in teaching and administration. He was well known to generations of students and his feats of memory were legendary. His detailed knowledge of degree regulations and his work on the modernization of first degree courses made him an almost automatic choice for dean of the faculty of science in 1965, an office which he held until his death. The university recognized his many contributions to its work by electing him to a personal chair.

In the wider life of the city and county, Chalmers' name was synonymous with scouting. He devoted all his spare time to this work, and at weekends and in vacations could be seen leaving Durham for a camping or climbing holiday with his touring car, or in later years his van, bulging with boys.

G. D. Rochester
W. C. A. Hutchinson