was probably not obvious at the time. Only four pages are devoted to the ionization detectors and only four to capillary columns. The Golay equation is not mentioned and there is little in the way of practical information on the operation of capillary columns. There is only the briefest of sections on temperature-programmed gas chromatography and nothing on preparative gas chromatography. Recent work on the improvements in efficiency of packed columns is treated rather sketchily and the katharometer theory remains unaltered in spite of the realization that forced convection is important in determining both the sensitivity and the stability of katharometers. Most of the theoretical sections are still first class, but even here one feels that an improvement could have been effected by more concise presentation now that the initial barriers to the mathematics have been broken down.

My chief impression of the second edition is therefore that modern developments, major and minor, have been given too little space. I am disappointed that so eminent an authority should have failed to make the same mark with his second edition as with his first.

Nevertheless, Keulemans' book is still the best on the subject and can be warmly recommended to those who do not possess the first edition. Those who do must still await an up-to-date account of recent work.

JOHN H. KNOX

LIPIDS AND LIPOPROTEINS

Lipide Chemistry

By Dr. Donald J. Hanahan, Dr. Frank R. N. Gurd and Prof. Irving Zabin. Pp. ix+330. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1960.) 80*s*. net.

AFTER a short introduction, the main chapters have the following sequence: isolation and purification, phosphoglycerides, phosphoinositides, sphingolipids, minor phospholipids, simple lipids, association of lipids with proteins, some naturally occurring lipoproteins. The chapter on sphingolipids is by Prof. Zabin, the last two chapters by Dr. Gurd, and the rest of the book by Dr. Hanahan. Each is an acknowledged authority in his field. Discussion is limited essentially to the chemistry of the lipids present in mammals, while lipid metabolism is the subject of a companion volume.

The three authors differ greatly in style and in approach to their topics. Dr. Hanahan mentions that much of his material has been used for graduate lecture courses, and his chapters gave the reviewer an impression of expanded lecture notes with rather slipshod continuity. On the general level, it is curious to find simple glycerides discussed after the more complex phosphoglycerides, while the minor phospholipids described are all phosphoglycerides and their inclusion with these would have facilitated orderly development. On a more detailed level, there are many points at which the reader is halted by an apparently unjustified conclusion from the preceding argument, later to find the missing material. Two examples must suffice. Near the top of p. 51 "convincing evidence" of optical activity is mentioned, but the relevant data are given near the bottom of the page. About the middle of p. 188 reference is made to "the above chromotropic acid method", which leaves the reader guessing until the top of p. 189. Sometimes there is discrepancy with what has been said earlier; for example, on p. 44 it is reported that β-glycerophosphoric acid is converted quantitatively into the α-form by boiling acid, but on p. 45 we learn that an equilibrium mixture results. A section on p. 73 opens with the words "When confronted with the information cited in Chapter 1". This so-called information is simply a generalized statement repeated almost word for word on p. 73. The whole of Dr. Hanahan's material would benefit from careful editing, even to the reference points in the text for the footnotes on pp. 78, 88 and 91. It is, nevertheless, a valuable source of up-to-date information in a rapidly developing field.

The other contributions are superior in orderly approach and clarity of expression. Presumably they were specially written and not adapted from lecture material. The chapter on sphingolipids is agreeably concise. The two chapters on lipoproteins make up more than one-third of the book and are wholly admirable. Indeed, they redeem this beautifully produced book from the level of the adequate but uninspiring.

J. A. LOVERN

SCIENCE IN THE PRIMARY SCHOOL

Approaches to Science in the Primary School

Edited for the New Education Fellowship by Evelyn Lawrence, Nathan Isaacs and Wyatt Rawson. Pp. xiii+143. (London: Educational Supply Association, Ltd., 1960.) 10*s*. 6*d*. net.

WITH the recent increasing development of science in the secondary school, a growing need has been felt to prepare the way in the primary school. A committee was appointed by the New Education Fellowship to "consider the place of direct observation and experiment in the primary school".

This committee felt that the introduction of science to the curriculum could cause difficulties for the teachers, either through a feeling of inadequacy in themselves or through lack of ideas of approach, so this book was compiled for the teacher. It is not a suggested syllabus, nor is it merely a collection of articles, even though each chapter is written by a different author, including practising teachers who have contributed articles on their own approaches and experiences with different age-groups.

The book deals with the aims and the objects of starting science in the primary school. It explains that such teaching is a necessity not only for the scientifically minded but also for any child who is to grow up in this day and age.

Two chapters are entitled "Diverse Roads to Diverse Sciences": these titles speak for themselves. A further chapter deals with making the most of what one has, whether in the town or the country. Another deals entirely with teachers' needs and difficulties, and suggestions on how to overcome them. One section of a chapter offers leads for science lessons from the children's own, very commonplace, questions. There is a bibliography both for the teacher and the pupil.

The book makes interesting reading, and should act as a helpful guide to the teacher with any doubts.

B. J. G. MAITLAND