

## SHORTER NOTICES

*Hydrodynamics*. By Horace Lamb. Fifth edition. Cambridge, University Press, 1924. xvi + 687 pp.

This work reached its fifth edition in the forty-fifth year after its original publication in 1879, the successive editions having appeared at intervals of sixteen, eleven, ten, and eight years. In passing from the first edition to the second it was largely remodeled and extended, but since then there has been no change in general plan and arrangement. As it now appears it has again been carefully revised, several passages having been rewritten and some considerable additions having been made. It has, however, not undergone extensive enlargement. In his preface the author observes that "the work has less pretensions than ever to be regarded as a complete account of the science with which it deals," owing partly to the difficulty of doing justice to the growing literature. He adds: "Some memoirs deal chiefly with questions of mathematical method and so fall outside the scope of this book; others though physically important hardly admit of a condensed analysis; others, again, owing to the multiplicity of publications, may unfortunately have been overlooked. And there is, I am afraid, the inevitable personal equation of the author, which leads him to take a greater interest in some branches of the subject than in others." Though the book is extensive and important it is clear from these remarks that there are important aspects of the subject which it does not adequately treat — a fact which is stated without any implication of criticism, since it did not fall within the author's purpose to treat them and since the book probably serves better a large majority of its readers on account of the omission of certain subjects and the consequent fuller treatment of others.

The principal single increase in the scope of this work occurred in passing from the first to the second edition. The interpolations and additions incorporated in the third edition amounted to about one-fifth of the whole and thus required a renumbering of the sections. There was considerable increase in size in the fourth edition even though a few investigations of secondary interest were condensed or omitted. There are no omissions of consequence in passing from the fourth edition to the fifth; and there are several additions. Of the latter some are of the nature of interpolations (mostly short) inserted in the sections which are reproduced from the earlier edition, while the others treat new topics in the form of additional articles of which there are fourteen scattered through the volume. Throughout the whole work there

is repeated evidence of careful revision both in the addition of new matter and even in the smaller details of phraseology. The printing in the fifth edition, at least in the case of formulas, is a little more compact than in the fourth, and there is a considerable increase in the amount of matter in smaller type so that there is a reduction of twenty-one pages in size of the volume while there is an actual increase in matter.

As is to be expected in a fifth edition, the author adheres closely to the terminology which he had previously adopted. The most considerable change which came to the reviewer's attention is in the usage of the words "stream-line" and "stream-tube" as set forth in Sections 19 and 21; and even this is not of great importance.

In its new edition the book will continue to hold, and a little more effectively than ever before, the important place which it has now held for a generation.

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*Geschichte der Elementarmathematik.* By Johannes Tropfke. Bd. 7: *Stereometrie, Verzeichnisse.* Berlin and Leipzig, Walter de Gruyter & Co., 1924. iv + 128 pp.

The seventh and last volume of Tropfke's revised *History of Elementary Mathematics* maintains the high standard of the preceding volumes, and completes a work that is invaluable to the teacher of elementary mathematics, as well as to the student of the history of the subject. That the revision has been thoroughgoing is shown by the fact that the 35 pages of the first edition on solid geometry have been increased to 52 pages, while the number of references to the literature has been increased from 145 to 309. The very complete index covers 74 pages, and is arranged in two alphabets, under the headings "Names and Writings" and "Subject-matter".

Two items may be singled out for special mention, among the numerous improvements over the first edition. First, the additional information given concerning the history of technical terms is of great interest and value, especially for teachers, who will find such facts as are here to be found adding materially to the interest of many students in the subject-matter itself. Secondly, the history of the regular solids is enlarged and brought into line with the latest historical researches. The fact may be of general interest that the dodecahedron was known to the ancient Etruscans, who found it in natural form, in the crystals of iron pyrites that abound in northern Italy.

One error was noted. It is stated on page 32 that the theorem, "Sections of an oblique circular cone parallel to the base are circles", although known in antiquity, is first found explicitly proved in the *Book of the Three Brothers* in the 9th century. As a matter of fact, the proof occurs in Apollonius, along with that of the theorem that