

versed sines, external secants, chords, circular arcs, and miscellaneous tables, formulæ and appendices of interest mainly to surveyors and railway engineers. It is rather difficult to see any reason for tabulating external secants ( $\sec x - 1$ ) in a book which already contains a table of secants. No differences are given, and this, together with the closeness of the printing, makes the tables somewhat difficult to use.

L. M. M.-T.

*Field Book of Marine Fishes of the Atlantic Coast from Labrador to Texas; being a Short Description of their Characteristics and Habits, with Keys for their Identification.* By Charles M. Breder, jr. (Putnam's Nature Field Books.) Pp. xxxviii + 332 + 16 plates. (New York and London: G. P. Putnam's Sons, 1929.) 15s. net.

THIS little volume, more or less of pocket size, is designed primarily to meet the needs of the amateur outdoor naturalist, its main purpose being to enable a worker with the minimum of technical knowledge quickly and easily to identify any species of fish likely to be found in the area treated. The author therefore begins by defining what is meant by the term fish, and describes briefly their general manner of life. A short chapter is devoted to descriptions of the various types of environment included in the region under survey, which extends from the cold boreal waters of Labrador through the temperate seas of the Atlantic seaboard of America down to the warm tropical waters of the Gulf of Mexico. An offshore limit has been set at the twenty-five fathom line, and the brackish water zone marks the shoreward limit up streams and estuaries. The greater part of the book is devoted to analytical keys and descriptive matter. Keys are given to enable the worker to place his fish successively in its correct order, family, genus, and species. Further to facilitate identification, an outline drawing of nearly every species is given, with an appended short note on its range, habits, relative abundance, and average adult size.

There is a fairly comprehensive glossary of technical terms and a short bibliography.

*Leçons sur la théorie des tourbillons.* Par Prof. Henri Villat. (Institut de mécanique des fluides de l'Université de France.) Pp. v + 300. (Paris: Gauthier-Villars et Cie, 1930.) 65 francs.

PROF. VILLAT'S treatment of vortex motion has both the virtues and defects which are usually found in French treatises on mathematical physics. The mathematical treatment is clear and logical, and presented in an attractive style. On the other hand, although the lectures on which the book is based were delivered at an institute founded by the Ministry of Air, we have scarcely any reference to experimental data. There is one oasis in the desert of mathematical symbols (p. 80), where we read that a cylinder moving in liquid is really found, in certain circumstances, to set up two series of vortices closely conforming to those calculated by Bénard. With this exception, the book suggests that the author cares much for mathematical analysis and little, if at all, for real

fluids. However, if we accept his point of view, there can be no question as to the quality of the work. After an exposition of the classical results, we have a good account of more recent work, in particular that of Bénard, Synge, Rosenhead, Caldonazzo, Riabouchinsky, and Lichtenstein. The last chapter uses Oseen's integral equation to discuss vortices in a viscous fluid.

H. T. H. P.

*Opera.* By Richard Capell. Pp. 80. *Libraries and Museums.* By Sir Frederic Kenyon. Pp. 79. *Banking.* By W. W. Paine. Pp. 80. (Benn's Sixpenny Library, Nos. 99, 100, and 108.) (London: Ernest Benn, Ltd., 1930.) 6d. each.

THE provision of inexpensive 'libraries' is not a new feature in England. Prof. Henry Morley long years ago edited a 9d. library of classical literature and a 3d. library of general literature; in each case the volumes issued were standard works, mostly of earlier date than the nineteenth century. The present library proceeds upon a different basis, seeking individual authors to deal with some special subject. Mr. Capell in "Opera" has an interesting theme, which in the earlier portion of the book is overloaded by a flamboyant style of writing which detracts from the pleasure that a reader may experience. Sir Frederic Kenyon's remarks upon libraries and museums are well worthy of attention, and his rapid survey of the centuries is alluring. But he is mistaken in stating that Merton College Library, Oxford, is a fifteenth century building, as it is fourteenth century. Perhaps Mr. Paine's "Banking" is the most engaging of the books under notice; his treatment is masterly in its presentation—in a manner truly captivating—of what might easily prove dry-as-dust to the lay public. P. L. M.

*Horological Hints and Helps.* By F. W. Britten. (Lockwood's Manuals.) Pp. xi + 327. (London: Crosby Lockwood and Son, 1930.) 7s. 6d. net.

THIS volume is addressed more to the young practitioner than to the novice, as it assumes a certain minimum of actual acquaintanceship with horology, in the absence of which the book would prove difficult to follow. That the author is proud of being his father's son is made pleasantly clear from the reference on the title page. After dealing at sufficient length with general horological work, the remaining pages are distributed between watches and clocks. That Mr. Britten understands his subject from the dial plate and hands down to the very least screw is abundantly evident, but the book is entirely lacking in any graces of literary style. It may be granted that knowledge is the quality to be preferred, but a work of art exhibits something more than mere technique; in truth, the latter is better shown by concealment. There are numerous diagrams, and these would have been better had some idea of limiting dimensions been given, or had the amount of magnification been stated. It would be difficult to select any one part of the book as being more valuable than any other, where all is so practical and masterly.

P. L. M.