

ALTITUDE TABLES FOR NAVIGATORS.

*Altitude Tables, computed for Intervals of Four Minutes between the Parallels of Latitude 24° and 60°, and Parallels of Declination 24° and 60°, designed for the Determination of the Position Line at all Hour Angles without Logarithmic Computation.* By Frederic Ball. Pp. xxxvii+313. (London: J. D. Potter, 1909.) Price 15s. net.

THERE are many circumstances connected with actual navigation which tend to make calculation on board ship difficult to the inexpert, and we naturally welcome any effort intended to shorten an onerous task and to introduce greater simplicity. The substitution of tables which give an approximate solution of a spherical triangle, involving only a very easy interpolation, is the form that assistance usually takes, and the main feature in the book before us is to make tables, already published, available for wider limits of latitude and declination. As tables extend, and contrive, perhaps, to serve more than one purpose, complications are likely to arise, and however great an ingenuity is displayed in adapting trigonometrical formulæ to tabular arrangement, if simplicity is sacrificed to ingenuity, the ultimate gain is questionable.

Accuracy is as necessary as brevity of calculation, and it is possible to be so enamoured with the apparent advantages of tables that the chances of misusing them are overlooked. We have a slight fear that the author has not sufficiently considered this point. It is a mistake to cumber the work with many rules, which put too great a strain on the memory. For instance, the rules for determining the "name" of the azimuth; using different methods within ten degrees of the meridian or of the prime vertical; interchanging latitude for declination under certain conditions; all these things are apt to be a little burdensome in a moment of stress or excitement. Further than this, there must come a time when tables do not shorten the work, for the number of interpolations becomes excessive. Tables of double entry are always inconvenient to the computer, and when, as in nautical problems, we get three arguments, latitude, declination, and hour angle, for other values than those in the tables, the process becomes very laborious. In an example given, it is necessary to take out four altitudes with arguments of even degrees of latitude, and of declination, and to make three interpolations between these altitudes. Not a word is said about the signs of the corrections, and it is quite possible to use an incorrect sign. In any case, the attention is kept on the strain more than if a direct calculation of altitude was made from the ordinary trigonometrical formula.

We may ask, too, whether the use of logs. for solving the simplest question in rule of three is not a little overdone. We have a problem, in which is given the difference of altitude for 60', and it is required to find the proportional amount for 41'6". The correction is worked out by logs. involving three entries.

But these are little technical points, on which, no doubt, the author's information is a safe guide. He has actual experience to lead him aright, and we are

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prepared to surrender our opinion to his practical judgment. On a more important point we are entirely with Mr. Ball. We recognise that this is part of an effort to impress, especially, on the Mercantile Marine, the necessity and the advantage of employing modern methods of tried excellence, and the desirability of abandoning obsolete processes. In these days of rapid locomotion at sea, it is more than ever necessary to produce a correct result in the shortest possible time, and when the expenses of ship management are so enormous, it is a matter of prime importance to know the exact position of the vessel, and to ensure accurate landfall. No time must be lost in groping about to pick up a light, no hesitation must be allowed in determining the ship's course and speed. We trust the author will be successful in enforcing the lesson he has at heart.

OUR BOOK SHELF.

*Guide to the Whales, Porpoises, and Dolphins (Order Cetacea), exhibited in the Department of Zoology, British Museum (Natural History), Cromwell Road, London, S.W.* Pp. 47. (London: British Museum [N.H.], 1909.) Price 4d.

THE whale-room in the Natural History Museum is one of the most notable and interesting features of the national collection, and the publication of a new guide to its contents calls for a word of comment. Within fifty pages Mr. Lydekker has compressed not only a series of clues to the models, skins, and other preparations, but has furnished students of zoology generally with a most useful and well-illustrated summary of the chief characters of the Cetacea and of their presumable ancestors. In a prefatory note, Dr. Harmer gives reason for confining exhibits of this order to skeletons and models, but it is to be hoped that the public will always have an opportunity of seeing the skins of some of these impressive animals, in order to judge of their proportions. The only feature of this excellent guide that we could have wished more fully expounded, relates to the puzzling vernacular names of whales that are used by fishermen. The members of our own branch of the international sea investigation are often quite at a loss to know what these names correspond to in scientific nomenclature, and their experience is not unique. The matter has some importance since the cetacean fauna of the north-western seas is probably more familiar to fishermen than to naturalists, and the fisherman's records cannot be stated precisely until we are able to understand the vernacular terms in use.

*La Naissance de l'Intelligence.* By Dr. Georges Bohn. Pp. 350. (Paris: Ernest Flammarion, 1909.) Price 3.50 francs.

This book is the latest addition to the well-known series of volumes entitled the "Bibliothèque de Philosophie scientifique," and, in both matter and style, easily reaches the high standard of excellence set by its predecessors. The author restricts his attention to the psychology of the lower organisms, and has succeeded in giving an extremely interesting account of a part of modern comparative psychology hitherto rendered attractive only at the expense of truth. An implacable foe to the "anthropomorphism" of the last generation of comparative psychologists, Dr. Bohn devotes a large part of the earlier chapters of his book to a full statement and vigorous defence of Loeb's theory of tropisms, relieving it of several