IV. *MISCELLANEOUS :*

Humidity of the air.
Vapour pressure of the water.
Conversion of degrees Centigrade and Réaumur into degrees Fahrenheit and *vice versa.*
Temperature corrections to barometer readings.
Conversion of English inches into millimetres.
Correction of atmospheric pressure.
Conversion of millimetres into millibars.
Comparative table of the Beaufort Scale.
True force and direction of the wind calculated from the apparent force and direction relative to the ship under way.
Weight of a metre of cable, breaking strain and working load.
Breaking strain and maximum load of a joining shackle with bolt.
Maximum load of studless chain cable in kilograms.
Comparative table of the different units of length.
Conversion of English into Metric measures and *vice versa.*
Weights and measures.
Comparative table of Metric and English measures.
Measures of timber.
Weights and volumes of the principal stores.
Weights and volumes of grain.
Table of certain common numbers and units.
(Tables 32 to 58).

V. *SUPPLEMENT :*

Tables by J. Y. DREISONSTOK (Navigation Tables for Mariners and Aviators). (Tables I and II).
These tables have been included by agreement with the author.

NOMOGRAMS FOR USE IN NAVIGATION

(Publication N° 227 of the Hydrographic Department, Tokyo, 1933).

This publication of the Hydrographic Department of the IMPERIAL JAPANESE NAVY contains sixteen tabulations, each giving a nomographic abacus by aligned positions from which may be rapidly obtained the various elements most frequently used in navigation such as, for instance, distance run at various speeds during a certain number of hours and minutes, all the problems of position by dead reckoning, distance from an object by measurement of a subtended arc, correction of W/T bearings, problems relating to azimuth, altitude and amplitude, hours of rising and setting, etc.

COMPLETE 60° STAR LISTS FOR POSITION FIXING BY THE EQUAL ALTITUDE METHOD

by

WELD ARNOLD.

Publication No. 4 of the American Geographical Society School of Surveying.

(In 4to - 430 pages - New York - 1930)

The object of this book is to render unnecessary the computation of an observation programme before beginning work with the prismatic astrolabe or REEVES' prism attachment for theodolites. The range of latitude is from 60° North to 60° South. The stars used are all those in the American, British and French Ephemerides for which ten-day places are given in the edition of 1930.

These star lists are lists of stars for each degree of latitude from 60° North to 60° South with their approximate local sidereal times and azimuths of crossing the altitude of 60°, with magnitudes, names and approximate right ascensions, including all stars for which ten-day places are given for the year 1930 in the American *Ephemeris*, British *Nautical Almanac*, or the French *Connaissance des Temps*.

The objection may be raised that in the course of time the lists will become obsolete, owing to changes in the star places. While this is true enough the changes in the lists due to changes in declination are so slight that, except in extreme cases, twenty years will barely affect the list values of azimuth and local sidereal time (L.S.T.). In twenty years the average change due to change in right ascension (R. A.) will be about one minute of time. Since the tables are for "finding" purposes only, it would seem a simple matter to advance the given L.S.T. mentally by that amount.

The book also contains suggestions for the adjustment and use of REEVES' prism attachment for theodolites.

DIE ECHOLOTUNGEN DES "METEOR" (Text und Echolotprofile).

THE ECHO SOUNDINGS OF THE "*METEOR*" (TEXT AND PROFILES).

by

PROF. DR. HANS MAURER, 1933.

The INTERNATIONAL HYDROGRAPHIC BUREAU has received the second volume of the scientific results of the *Meteor* expedition. It contains a description of the sounding material and the plotting of the soundings obtained during her 1925-27 cruise in the Atlantic Ocean.

The *Meteor* was provided with four systems of acoustic apparatus :

(*i*) The dropping lead or bomb (FREILOT). (See *Hydrographic Review* No. 4, p. 177 and No. 9, p. 159) ;

(*ii*) The BEHMLOT. (See *Hydrographic Review* No. 4, pp. 166-167) ;

(*iii*) The SIGNALLOT : (described under the name of ECHOLOT in *Hydrographic Review* No. 9, pp. 161-163) ;

and (*iv*) The ATLASLOT : (See *Hydrographic Review* No. 9, pp. 153-159).

These sets are described in great detail ; the last two were those generally used during the work.

The author discusses with the greatest competence the corrections to be applied to the crude soundings, to allow for the velocity of sound without introducing the slope, a knowledge of which seems to him to be too uncertain. The velocity of sound at each position and for every depth is studied with great care, and an interesting map (page 42) shows the lines of equal mean velocity between the surface and the bottom in the region where the work was undertaken. The results of this investigation differ but little from those given in the tables of velocity of sound published by the British Admiralty, as is shown by the comparison given in Table 10 on page 47.

To obtain an estimate as to the accuracy of acoustic methods, a comparison was made at a certain number of positions between the soundings obtained by sound, by line, and by the comparison of protected and unprotected thermometers ; the latter question has already been dealt with by G. WÜST in Vol. IV of the same publication. (See also *Hydrographic Review* No. 20, pp. 28-49). This comparison leads to the conclusion that the accuracy of the three methods is approximately of the same order, and to empirical correction formulae for obtaining the most probable value of the depth according to the method or methods adopted.

Table 17 (p. 69) gives the greatest and least depths obtained during the cruise, the maximum attained being 8,264 m. (4,459 fms.) in the South Sandwich Deep.

Table 18 is a complete table of the soundings taken, both on the outward and homeward passages and on the 14 profiles made. Each depth is accompanied by the velocity of sound used in correcting it.