

This second volume of the treatise, which is devoted to the "compass and deviations aboard ship," can hardly be fully mastered until after reading the first volume, but it is in a great measure complete in itself, especially to those who have already some knowledge of terrestrial magnetism. All will agree with the author of this book when he insists upon the necessity for every navigator knowing as much as possible about his compass and that magnet—his ship—which is ever in antagonism to the earth, which does its best to direct the compass to magnetic north.

Of the five parts into which this volume is divided, part ii. treats of the manufacture of the liquid compass (the only kind in use in the U.S. Navy), giving in full detail the principles of magnetism and mechanics connected with its construction and use afterwards.

In part iii. the ship is shown to be a magnet by experimental magnetic surveys of ships illustrated by diagrams. The physical representation of the theory of the deviation of the compass is fully given, but decided exception must be taken to the instructions for determining the position of the compass after the ship is launched. It is then too late, and the experienced Superintendent of Compasses and the constructors should long before have agreed upon a place for it in the ship's drawings, and afterwards worked in harmony to keep iron fittings at a proper distance.

Part iv. treats of the mathematical theory of the deviations of the compass, and here, as in other of the mathematical investigations he gives, the author gives valuable assistance to those who are not skilled mathematicians by "filling up those gaps in the sequence of the formulas that often yawn forbiddingly."

On the question of compensation of the deviations of the compass, to which part v. is devoted, we have the least satisfactory part of the book. Thus the formula for correcting the heeling error with spheres in place is very convenient in practice, but not mathematically correct. The instructions for compensating the secondary part of the quadrantal deviation known as coefficient E by spheres are incorrect. Again, the residuary quadrantal deviation, after compensation, is described as "practically constant the world over"; but this is certainly not so in the example given of the "Machias," where, between Aden and Pechili Strait, the quadrantal deviation differed nearly 3° , as might be expected where soft iron correctors are placed near the long powerful needles of the Ritchie compass. Further, the Flinders bar will not compensate any important part of the heeling error due to soft iron as here proposed.

There is much to recommend this book to the student, both as regards the mathematical treatment of the subject and for its numerous explanatory diagrams. Its weak point lies in the parts relating to the application of theory to practice, which require modernising and a careful revision. E. W. C.

Comité international des Poids et Mesures. Procès-Verbaux des Sciences. Deux. Série. Tome ii. Session de 1903. Pp. 170. (Paris: Gauthier-Villars, 1903.)

THE *Procès-Verbaux* recently issued by the Comité international des Poids et Mesures refers to their meeting at Paris in April last. The committee included Dr. W. Foerster (president), Prof. P. Blazerna (secretary), Dr. Benoit (director of the bureau), and MM. Arndsten, D'Arrillaga, de Bodola, Egoroff, Gautier, Hasselberg, and von Lang. Their proceedings mainly had reference to the work at their bureau (Pavillon de Breteuil, Sèvres, Paris) for the current year, including the consideration of the annual expenses of the committee (100,000 francs).

The committee lament the death of their distinguished colleague, Prof. A. Cornu, on April 12 last, and also of Dr. H. von Wild, September 5, 1902, an honorary member of the committee. They announce the unanimous election on the committee of M. E. Mascart, and of Dr. A. Chappuis as an honorary member. Count de Macedo (Portugal), Dr. A. Michelson (United States), and Mr. H. J. Chaney (Great Britain) were unable to attend the present meeting.

During the past year the verification of length standards at the bureau included standards for the Board of Trade, the Education Department, the National Physical Laboratory, and other authorities in England. On the application of the British Government, indeed, an important work was undertaken by the committee, that of the graduation and verification of a new linear standard of the metre and yard, a standard made of iridio-platinum, X section.

Although the scientific work of the bureau last year does not appear to have covered a wide field, it has followed important paths, as in some investigations (Appendix iii.) as to the linear expansion by heat of platinum, iron, nickel, steel, glass, and quartz, and the results reported by the committee are now probably among the most authoritative of such thermometric investigations. Dr. C. E. Guillaume also adds (Appendix i.) an essay on the theory of the alloys of steel and nickel, and M. E. Sauvage (Appendix ii.) an account of an international series of screw-threads, based on metric measure, as formulated at a congress held at Zürich in 1898-1900, a series which appears to be now adopted for engineering purposes in France.

Flora of the Island of Jersey. By L. V. Lester Garland. Pp. xv+205. (London: West, Newman and Co., 1903.)

ALTHOUGH in most parts of the country a botanist can generally make a goodly collection of plants within a day's journey of his residence, there is always a desire to visit those localities in the British Isles which have a special flora of their own. Such are the Scotch mountain ranges, the counties of Devon and Cornwall, and by no means the least interesting to the southerner, the Channel Islands. On these visits it is a great boon to have a flora which will give the information where certain plants may be sought. For Guernsey and the adjacent islands of Alderney and Sark, Mr. Marquand has published records, and no less welcome is the compact little book which Mr. Lester Garland has compiled on the flora of Jersey. The book presents one essentially new feature, since the system adopted is that of Engler. Some excuse is offered for the innovation, but there can be no question that Engler's system is bound to supplant that of the "Genera Plantarum," and considerable credit is due to the author for acting up to his convictions. In conformity with this change some of the generic names have been altered, and *Erucastrum*, *Lobularia*, and *Parentucellia* take the place of others more familiar; for the same reason *Tillaea muscosa*, L., becomes *Crassula Tillaea*, Lester. No trouble has been spared to test uncertain or critical species and records, and the notes on these are sound and practical; also distinction is made between native plants and aliens. The genus *Centaurea* serves to illustrate the author's caution and care; he declines to split up *Centaurea nigra* into uncertain varieties, queries *Centaurea scabiosa*, accepts *Centaurea scabra*, and classes the species *cyanus*, *paniculata*, *calcitrapa*, *solstitialis* among the aliens. The last few pages are devoted to an account of the geographical distribution and affinities of species, and these complete a book which, in addition to its convenient form, is to be recommended for its extremely practical and scientific value.