

Naturally these works have brought out some new results and have emphasized some fresh points of view, at least in particular parts of the theory. But Czuber has not found it necessary to recast his treatise in order to take account of these. It retains the same general form and arrangement as heretofore. But in many places there are minor alterations and improvements and occasionally a new portion of several pages. In addition there are a few minor rearrangements of old matter. On the whole the work is considerably improved. The printing is well done, no typographical errors of importance having been found. On account of its great importance in the theory of probabilities one desires a more satisfactory account of Stirling's formula for the asymptotic character of the gamma function than that given in § 14.

The following is a list of the principal additions: an elegant section (pages 72-80) on the theory of mean value and various applications of it throughout the book; a discussion (pages 83-89) of the use of continuous variables in the theory of probabilities; derivation of formulas (pages 119-128) for the product of binomial factors; a section (pages 239-249) on "Spielprobleme"; an important chapter (pages 273-286) on continuous probabilities in which are developed the fundamental ideas about continuous probabilities in the sense of Bachelier's use of this term; additional matter (see especially pages 413-423) containing a selection of typical problems illustrating the applications in this direction of the analytical representation of arbitrary distributions.

Besides these larger sections, which may be singled out as distinct additions, there are many of less extent scattered throughout the whole volume and contributing essentially to its improvement. As an example of these one may mention the theorems of Bernoulli and Poisson which are now treated from various points of view and illuminated by various analytical lemmas. Through these several improvements the author has accomplished his purpose "den Inhalt nach manchen Richtungen zu erweitern und zu vertiefen."

R. D. CARMICHAEL.

Annuaire pour l'An 1916 publié par le Bureau des Longitudes.

Paris, Gauthier-Villars, vi+502 pp., with two appendices.

AN excellent "Notice" by M. G. Bigourdan on the mean barometric pressure and law of the winds in France is the chief

feature of the *Annuaire* for 1916. This title is amply fulfilled in the text of the article with its full explanations and in the numerous diagrams. As with so many French writers, the author does not hesitate to start with a brief but clear explanation of the fundamental principles of meteorology, gradually carrying the reader towards the special line of thought which he is investigating, so that the whole constitutes an elementary treatise on the subject. There is also a sympathetic account of Commandant Guyou by M. Emile Picard. M. Guyou had long been connected with the naval activities of France and more particularly with various problems of navigation. He had taken an active part in the publication of the *Annuaire*.

The body of the publication is kept up to date in the usual manner. A useful novelty, and the only one noticed, is a supplement containing the chief astronomical events for the year 1917 compressed into eighteen pages.

ERNEST W. BROWN.

NOTES.

AT the meeting of the London mathematical society held on April 27 the following papers were read: By H. S. CARSLAW: "The Green's function for the equation $\nabla u^2 + k^2 u = 0$, II"; by S. CHAPMAN: "On the uniformity of gaseous density, according to the kinetic theory"; by J. HODGKINSON: "The nodal points of a plane sextic"; by P. A. MACMAHON: "Some problems of combinatory analysis"; by S. POLLARD: "On the deduction of criteria for the convergence of Fourier's series from Fejér's theorem concerning their summability"; by Mrs. G. C. YOUNG: "On the derivatives of a function"; by W. H. YOUNG: "Note on functions of upper and lower type."

AT the meeting of the Edinburgh mathematical society on May 12 the following papers were read: By S. BRODETSKY: "The linear differential equation of the second order"; by D. M. Y. SOMMERVILLE: "A new nomogram for the cubic equation"; by G. PHILIP: "On a group of parabolas associated with the triangle"; by F. G. TAYLOR: "Birationally related cubics."

THE National bureau of the census has recently published a bulletin on the United States life tables prepared by Professor