

no doubt that nothing is so inspiring and fascinating as the perusal of the account of a great discovery by the discoverer himself. The personal element, so conspicuously absent in current textbooks, is in this way given its opportunity, especially if the discoverer's account is read in the original language in which it was written. The series now being issued under the editorship of M. Solovine is therefore to be welcomed.

The present essay was first printed as an introduction to Laplace's "Théorie analytique des probabilités." It gives in non-mathematical language the principles underlying Laplace's methods for dealing with the theory of probability, and shows how it is applied to problems of natural science—especially the astronomical problems to which Laplace applied his genius—to sociology and other aspects of communal life. Special attention is devoted to errors in the estimation of probabilities, due to psychological causes, and there is also a brief history of the methods of probability.

Considerable modification has since been introduced into the fundamental notion of probability, but Laplace's essay should be read by all students of mathematics. In it occurs the sentence: "Une intelligence qui pour un instant donné connaîtrait toutes les forces dont la nature est animée et la situation respective des êtres qui la composent, si d'ailleurs elle était assez vaste pour soumettre ces données à l'analyse, embrasserait dans la même formule les mouvements des plus grands corps de l'univers et ceux du plus léger atome: rien ne serait incertain pour elle, et l'avenir comme le passé serait présent à ses yeux." S. BRODETSKY.

Displacement Interferometry applied to Acoustics and to Gravitation. By Prof. Carl Barus. Pp. viii+149. Publication 310. (Washington: Smithsonian Institution of Washington, 1921.)

PROF. BARUS' work is divided into twelve chapters, and occupies an intermediate position between the usual textbook dealing with routine work and the ordinary type of original research which attacks and solves some specific and definite problem. It is throughout of an exploring nature and may be said to investigate the suitability of interferometry as a method for research in various branches of acoustics and gravitation. In the first chapter the open mercury manometer, when read by interference, is discussed. In the second, the interferometer U-tube is used as an absolute electrometer. The third deals with acoustic pressures, the fifth treats of the compression of a sound wave in a pipe, and the sixth with the vibration of a telephone plate. In the eighth and following chapters various gravitational problems are approached. The book is a storehouse of unusual experimental methods and may be consulted with advantage by any one about to commence investigations along the lines indicated.

Publications of the Washburn Observatory of the University of Wisconsin. Vol. X. Part 4: *Observations of Double Stars, 1907-1919.* By George C. Comstock. Pp. 167. (Madison, Wis.: Washburn Observatory, n.d.)

THE volume under notice forms a catalogue of all the observations of double stars made with the 16-inch refractor at Washburn Observatory by Prof. Comstock

between 1907 and 1919; summaries of his earlier observations with the same instrument from 1889 to 1907 are also given, so that it is possible to detect changes. There are some 200 stars in the catalogue, including most of the well-known binaries.

The probable errors are given as $2^{\circ}.6$, $0^{\circ}.03$ for separations less than $0^{\circ}.5$, and $0^{\circ}.9$, $0^{\circ}.07$ for those between $2''$ and $4''$. Wires illuminated by red light were employed. This involves the possibility of small errors through unequal refraction of the images of wire and star in the eyepiece, unless the latter is achromatic. A list is given of the eyepieces, which are either Ramsden or Kellner, with powers varying from 196 to 1540; about 800 was commonly used. A. C. D. C.

Drugs in Commerce: Their Source, Preparation for the Market, and Description. By J. Humphrey. (Pitman's Common Commodities and Industries.) Pp. xi+116. (London: Sir Isaac Pitman and Sons, Ltd., n.d.) 3s. net.

MR. HUMPHREY has contrived to include within the moderate compass of 113 pages of text a good account of the drugs of natural origin found in commerce. The information given includes descriptions of the drugs, notes on their constituents and sources of supply, and in most cases some particulars as to their modes of preparation for the market. Great pains have evidently been taken to secure accuracy, but it should have been pointed out that the "henbane" imported from Egypt is not derived from *Hyoscyamus niger*.

The book contains six plates illustrating the more important drugs, e.g. cinchona, ergot, opium, and jaborandi, and six more showing scenes in drug warehouses at the London Docks and methods of packing and selecting the spices, such as nutmeg and cinnamon, used in medicine. The book can be cordially recommended to any one desirous of obtaining general information regarding this interesting and little-known group of commercial products.

Memoirs of the Geological Survey: England and Wales. The Water Supply of Cambridgeshire, Huntingdonshire, and Rutland from Underground Sources. By W. Whitaker. Pp. iv+157. (Southampton: Ordnance Survey Office; London: E. Stanford, Ltd., 1922.) 7s. net.

THE latest addition to the series on the underground water supplies of England deals with three counties which form a convenient unit. The counties being agricultural rather than industrial or manufacturing, very large water supplies are required in few cases. Supplies are obtained chiefly by means of wells, but some water is obtained from springs, notably the supply of the town of Wisbech, which, however, obtains its water from the county of Norfolk. At least one town of more than 5000 inhabitants seems to have no public supply. Chalk and, to a less extent, lower greensand are the sources of water in these counties. The Oolites and Lias are also of some importance. The value of chalk in this respect in the south-east of England corresponds with that of New Red sandstone in the Midlands. In addition to full details of the wells and springs in the three counties Mr. Whitaker gives some useful indications as regards enlarging and improving existing supplies.