

Pressure in Relation to the Diurnal Winds,' 'A System of Fundamental Constants and Formulæ and Reduction Tables,' 'The Theory of Cyclones and Anticyclones,' 'Discussion of the Cumulus and Cumulo-Nimbus Clouds,' 'Reduction of the Pressure and Temperature Maps at Sea-level, 3,500-foot Level, and 10,000-foot Level,' 'The Amount of Heat that would Convert an Adiabatic Atmosphere into the State Actually Existing.'

The reading of this report cannot be lightly undertaken. Indeed, the very completeness of it and the elaborate mathematical discussions which find a place in it, will undoubtedly prevent many persons from attempting to find out what the volume really contains. We do not wish to be understood as saying that work of the sort that Professor Bigelow has here given us is unimportant, or out of place in a thorough study of the observations with which he has had to deal. Far from it. But we cannot help feeling, and feeling strongly, that the observers of the Weather Bureau, both regular and voluntary, and the public generally, should have the chief results of the international cloud observations in this country put before them in a simple, compact form. We hope that the chief of the Weather Bureau may look at this matter in the same light, and may perhaps sanction the publication of a Weather Bureau *Bulletin*, of say 100 pages, in which the results of Professor Bigelow's painstaking research, which are of most general interest, may be set forth.

Professor Bigelow is to be congratulated on the completion of this report, which stands on a far higher plane than most of the meteorological work published in this country.

R. DEC. WARD.

Plane Trigonometry. By DANIEL A. MURRAY, Ph.D., Instructor in Mathematics in Cornell University. New York, London and Bombay, Longmans, Green & Co. 1899. Pp. xiii + 301.

The author has aimed to 'avoid the extremes of expansion and brevity.' Only such topics are fully treated as make up the usual course in plane trigonometry. The thickness of the volume is largely due to the presence of an

appendix of historical and other notes, a long list of exercises for practice and review, a table of answers, a four-place and a five-place table of logarithms of numbers, a five-place table of logarithms of the sine, cosine, tangent and cotangent, a four-place table of logarithms (augmented) of trigonometric functions, and a four-place table of values of trigonometric functions. These components constitute little less than half of the book. The other and larger half contains an unusually full exposition of principles. The composition is throughout careful and scholarly. While acquiring a knowledge of the elements as here presented, the student can hardly fail to become aware of the larger aspects of the science.

As regards arrangement and disposition of matter, there is, of course, always room for difference of opinion. Doubtless many teachers would for example prefer to have the notion of the radian introduced at an earlier stage; and there are not wanting reasons of some weight for preferring to present the general ratio definitions of the functions in connection with the conventional system of coordinate axes boldly in the *beginning*, instead of reserving this most commanding point of view, as is here done, for so advanced a stage as Chapter V. However, in things pedagogical, *quot homines, tot sententiæ*.

It remains to say that while paper and typography are good, the book deserves to be more substantially bound.

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BOOKS RECEIVED.

A de Bary's Vorlesungen über Bakterien. Edited by W. MIGULA. Leipzig, W. Engelmann. 1900. Pp. vi + 186. M. 4. 60 Pf.

Outlines of Human Physiology. F. SCHENK and A. GRÜBER, translated by Wm. D. ZOETHOUT with a preface by JACQUES LOEB. New York, Henry Holt & Co. 1900. Pp. viii + 339.

Leçons de physiologie expérimentale. RAPHAEL DUBOIS. Paris, G. Carré and C. Naud. 1900. Pp. vi + 380.

SCIENTIFIC JOURNALS AND ARTICLES.

THE *Journal of the American Chemical Society* for December contains the following articles: 'The Production of Alloys of Tungsten and of