

The pamphlet also contains a paper by Professor Ch. Richet on the physiological schedule, and reprints from this JOURNAL Dr. H. H. Field's article on the catalogue.

PROFESSOR ROWLAND'S table of solar spectrum wave-lengths originally printed in the *Astrophysical Journal* has been reprinted in a single volume containing 225 pages, and is offered for sale by the Press Division of the University of Chicago. The table gives the wave-lengths of nearly 20,000 lines measured from photographs made with the concave grating of the Johns Hopkins University.

BOOKS RECEIVED.

Descriptive General Chemistry. S. E. TILLMAN. New York, John Wiley & Sons; London, Chapman & Hall, Ltd. 1899. Pp. x + 429.

Elementary Studies in Chemistry. JOSEPH TORREY, JR. New York, Henry Holt & Co. 1899. Pp. viii + 487.

Insects; Their Structure and Life: A Primer of Entomology. London, J. M. Dent & Co. Pp. xi + 494.

SCIENTIFIC JOURNALS AND ARTICLES.

THE *American Naturalist* for August opens with an article by Vernon L. Kellog on 'The Hopkins Seaside Laboratory,' calculated to make Eastern naturalists envious of the advantages enjoyed by their friends on the Pacific coast. J. A. Allen discusses 'The North American Arboreal Squirrels,' in view of Mr. E. W. Nelson's recent revision of the Southern species of the group. William Trelease gives a brief biographical sketch of 'Alvin Wentworth Chapman,' and Thomas H. Montgomery, Jr., continues the 'Synopsis of North American Invertebrates,' with a short account of, and key to, the Gordiaceæ. An interesting account of 'An Abnormal Wave in Lake Erie' is given by Howard S. Reed. There is an unusually large number of reviews of zoological publications, and in the correspondence Dr. Alex Hrdlicka considers 'The Needs of American Anthropologists,' the greatest of which he believes to be the establishment of an Anthropological Institute to form a common, independent center.

The *American Journal of Science* for September contains the following articles:

Gas Thermometer at High Temperatures, by L. Holborn and A. L. Day.

Flicker Photometer, by O. N. Rood.

Quantitative Investigation of the Coherer, by A. Trowbridge.

Double Ammonium Phosphates of Beryllium, Zinc, and Cadmium in Analysis, by M. Austin.

Separation of Iron from Chromium, Zirconium and Beryllium by the Action of Gaseous Hydrochloric Acid on the Oxides, by F. S. Havens and A. F. Way.

Albertite-like Asphalt in the Choctaw Nation, Indian Territory, by J. A. Taff.

Notice of a New Meteorite from Murphy, Cherokee Co., N. C., by H. L. Ward.

Separation of Alumina from Molten Magmas, and the Formation of Corundum, by J. H. Pratt.

It will be remembered that a department of agriculture for the British West Indian Islands was created last year with Dr. Morris, of Kew Gardens, as Director. We also called attention at the time to the agricultural conference held at Barbados in January. A further step in advance has now been taken by the establishment of a *West Indian Bulletin*, containing a number of articles on the agricultural problems of the islands. Like our agricultural bulletins, it is sent without charge to residents.

DISCUSSION AND CORRESPONDENCE.

DARK LIGHTNING.

TO THE EDITOR OF SCIENCE: I have been greatly interested by some photographs showing the rare phenomena of dark lightning, which have recently been sent to me. So far as I know, the only explanation that has ever been offered to account for them is photographic reversal, due to extreme brilliancy. This appears to me to be wholly out of the question for two reasons. In the first place, a dark line on the picture, resulting from over-exposure of a very brilliant line, would be surrounded by bright edges, due to the lesser photographic action in the halation region. This is never present, so far as I know, the dark flashes being minute dark lines ramifying from or in the neighborhood of the main discharge. Secondly, from what evidence I can gather, the dark parts of the flash are not the which appear most brilliant to the observer. Mr. Jennings, of Philadelphia, who in 1890 secured a remarkable picture, reproduced in *Photographic Times Annual* for 1891, showing a very brilliant flash with