SOCIETIES AND ACADEMIES.

NEW YORK ACADEMY OF SCIENCES.

THE Section of Geology and Mineralogy met March 18, and after electing as officers for the ensuing year, Prof. J. J. Stevenson, chairman, and Prof. J. F. Kemp, secretary, listened to a lecture by Prof. J. J. Stevenson on 'The Origin of the Pennsylvania Anthracite,' of which the following is an abstract:

Long ago H. D. Rogers showed that the coal regions of Pennsylvania are divided into longitudinal basins or troughs. The first series embraces the area between the Great Valley and the Alleghany Mountains and contains the several anthracite fields as well as the semi-bituminous fields of Broad Top and the Potomac River. Beyond the Alleghanies are six well marked basins containing bituminous coal.

Along a line from central Ohio, eastward to the Potomac coal field, one finds noteworthy variations in dip, the amount being insignificant in Ohio, but very great in the first series of basins. The increase is not regular, there being no change practically from the coke basins of eastern Pennsylvania until within three or four miles of the Potomac field, where the dip becomes very abrupt. This line shows the extremes of variations, for further northward there is in all of the basins a diminution of disturbance, even in the anthracite areas, while southward there is a similar decrease, except in the last.

Analysis of coal samples from the Pittsburg bed, in the several basins, show a progressive decrease in proportion of volatile matter toward the east or southeast. H. D. Rogers regarded this decrease as due to influence of steam or other gas escaping from crevices made during the folding of the rocks, for he asserted that the volatile increased as the flexures diminished in strength. Stevenson in 1877 showed that no such relation exists. Lesley in 1879 thought that earth-heat might have caused the change, as coals in the anthracite region were buried under a very deep covering of rocks; but there is no evidence that the coal measures were thicker at the east than in western Pennsylvania, while there is every reason for supposing that the coal measures were thinner there than at the southwest. There is therefore no good ground for supposing that the earth-heat would be effective, for in Virginia, where the thickness is very great, the coals at the bottom of the column are very rich in volatile matter.

Professor Lesley has suggested that the change in the coal might have been due to oxidation. The rocks of the anthracite region are consolidated gravels with little of argillaceous matters, whereas those of the bituminous area are largely argillaceous, which, being undisturbed, lute down the coals, preventing percolation of water and the escape of gases. But in fact the bituminous fields afford all types of coal from highly bituminous to hard anthracite, and sections in many portions of the anthracite fields show more clay beds than do those in S. W. Virginia where the coal is highly bituminous.

It is not necessary to regard metamorphism as the sole cause of anthracite. It is not called in to explain a variation of ten per cent. in the same beds within short distances, and it cannot explain the occurrence of bituminous in one bench and of anthracite in another in the same opening in Sullivan County, Pa., or equally of semi-bituminous and dry anthracite in different benches of the Mammoth. It does seem as though the conversion of the coal must have been practically complete before entombment; otherwise the variations of coal of the same age in different areas would seem to be inexplicable.

In Pennsylvania the decrease in volatile bears no relation to the extent of plication, but it bears close relation to the thickening

of the coal. The decrease in all of the areas is toward the old shore line at the north and northeast. In the anthracite area it is very gradual until one passes the prongs in the southern field, where the thickness of coal increases abruptly. With that abrupt increase in thickness is an equally abrupt change in the amount of volatile. It seems probable that the anthracite of Pennsylvania is due to the long continuance of coal-making periods during which the chemical change was unchecked, leading eventually to complete loss of the hydrogen and oxygen.

At the conclusion of the paper, discussion followed, but failed to shake the speaker's main points. A paper by J. E. Wortman, on 'The Geology of the Bad Lands,' was postponed until the next meeting.

J. F. Kemp,
Secretary.

SCIENTIFIC JOURNALS.

BULLETIN OF THE AMERICAN MATHEMATICAL SOCIETY, MARCH.

Arthur Cayley: Professor Charlotte Angas Scott.

The Theory of Functions: Professor W. F. Osgood.

On the Introduction of the Notion of Hyperbolic Functions: Professor M. W. Haskell.

Notes; New Publications.

THE JOURNAL OF THE AMERICAN CHEMICAL SOCIETY, APRIL.

The Superiority of Barium Hydroxide Solution as an Absorbent in Carbon Determinations in Steel: James O. Handy.

The Contributions of Chemistry to the Methods of Preventing and Extinguishing Conflagration: Thomas H. Norton.

Note on the Estimation of Iron and Alumina in Phosphates: K. P. McElroy.

Some Practical Points in the Manufacture of Nitroglycerol: J. E. Blomén.

Methods for the Examination of Glycerol for use in the Nytroglycerol Manufacture: G. E. Barton.

Estimation of Tellurium in Copper Bullion: Cabell Whitehead.

The Use of Sulphurous Acid ($HNaSO_3$) in Manufacture of Glocose Syrup and Grape-Sugar: Horace E. Horton.

The Furfurol-Yielding Constituents of Plants: C. F. Cross, E. J. Bevan and C. Beadle.

The Separation of Solid and Liquid Fatty Acids: E. Twitchell.

Improved Methods of Water Analysis: Irving A. Bachman.

A Cheap Form of Self-Regulating Gas Generator: W. W. Andrews.

Some of the Properties of Calcium Carbide: F. P. Venable and Thomas Clarke.

Note on the Determination of Zinc: P. W. Shimer.

On the Determination of Cane-Sugar in the Presence of Commercial Glucose: H. A. Weber and William McPherson.

On the Action of Acetic and Hydrochloric Acids on Sucrose: H. A. Weber and William McPherson.

Method of Determining Chromium in Chrome Ore: Edmund Clark.

New Books; Notes.

NEW BOOKS.

Manual of Geology. James D. Dana. Fourth Edition. New York, American Book Co. 1895. Pp. 1087.

A Course of Elementary Practical Bacteriology. A. A. Kanthack and J. H. Drysdale. London and New York, Macmillan & Co. 1895. Pp. xxii+181. $1.10.

Elementary Biology. Emanuel R. Boyer. Boston, D. C. Heath & Co. Pp. xxi + 235.

The Geological and Natural History Survey of Minnesota. N. H. Winchell. Minneapolis, Harrison & Smith. 1895. Pp. 254.