283. Recent excavations for the the Milwaukee water works have made available a large quantity of loose rock, which proves to be rich in Devonian fossils. These have been identified and tabulated by the authors.

H. S. Washington, 'The Petrographical Province of Essex Co., Mass.,' pp. 284–294. This paper on the basic dikes concludes the series.

Under 'Reviews' an excellent summary by T. A. Jagger is given of the recent valuable experiments of Morosewicz in the artificial production of rocks and minerals.

American Chemical Journal, June, 1899.—'The Valuation of Saccharin,' by E. Emmet Reid. By boiling for two hours with a hydrochloric acid solution of the proper strength and then distilling with alkali, the ammonia can be collected in a standard acid solution and readily determined. It was shown that para sulphamine benzoic acid was not acted upon under similar conditions. This, therefore, appears to be a quick, accurate method for determining the amount of the sweetening substance in the commercial saccharine. 'Some Derivations of Camphoroxime,' by G. B. Frankforter and A. D. Mayo. 'Camphoroxime Derivatives,' by G. B. Frankforter and P. M. Glasoe. 'The Laboratory Production of Asphalts from Animal and Vegetable Materials,' by W. C. Day. The author has obtained substances similar to the natural asphalts by distilling animal and vegetable matter, both separately and mixed. 'The Composition of Nitrogen Iodide and the Action of Iodine on the Fatty Amines,' by J. F. Norris and A. I. Franklin. The evidence points to the fact that the compound formed by the action of iodine on ammonia is not a direct addition-product, nor do the fatty amines form such compounds. 'On the Action of Sodic Ethylate on Tribromdinitro Benzol,' by C. L. Jackson and W. Koch. 'The Action of Sulphocarbanilide on certain Acid Anhydrides,' by F. L. Dunlap. 'The Action of Ammonia and Amines on Chlorides of Silicon,' by F. Lengfeld. The chlorine is replaced by the ammonia and amine residues, forming amides of silicon.

J. E. G.

Appleton's *Popular Science Monthly* for July has as a frontispiece an excellent portrait of Professor W. K. Brooks, and the number contains a sketch of his life and scientific work. The number contains articles by President D. S. Jordan, describing the succession of fishes inhabiting a brook; by Professor W. K. Brooks, entitled 'Thoughts about Universities;' by Professor Edward Renouf, on 'Acetylene,' and by Dr. C. C. Abbott, on 'The Antiquity of Man in North America.'

We regret that the *Index Medicus* has been discontinued. It is unfortunate that the efforts for its continuation have not been successful, but the mass of medical literature has become so great, and, it must be added, in most cases so unimportant, that an index would require some form of public support.

SOCIETIES AND ACADEMIES.

THE NEW YORK ACADEMY OF SCIENCES—SECTION OF BIOLOGY.

The Section met on May 8th, Professor F. S. Lee presiding. The following program was then offered:

1. W. A. Rankin: 'The Crustacea of the Bermuda Islands, with Notes on the Collection made by the New York University Expeditions to the Bermudas in 1897 and 1898.'

2. H. F. Osborn: 'Upon the Structure of the Mule-footed Hog of Texas.'

'Upon the Structure of *Tylosaurus dyspelor*, including the Cartilaginous Sternum.'

Professor Rankin's paper gives a list of 61 recorded species of Crustacea from the Bermuda Islands. During the summers of 1897 and 1898 a party from the New York University spent a few weeks investigating the fauna of the islands, and the Crustacean collections were studied by the author.

Of the total number of species 43 were found by the expedition, and notes on their distribution are given. Eight of these species are new to the Bermudas, and two, *Nika bermudensis* and *Alpheus lancirostris*, are new species described and figured in this paper. The genus *Nika* is now for the first time recorded from the West Atlantic region.

The physical conditions of the islands are touched on, and the Crustacea are shown to be in the main similar to those found in the West

Indies and the adjacent coasts of America, though 18 have a more or less extended range over both hemispheres.

Professor Osborn reported upon the anatomy of the feet of a specimen of the well-known 'mule-footed hog' of Texas, recently presented to the Zoological Museum of Columbia, by Dr. Wickes Washburn. Externally the feet present the appearance of complete fusion of the third and forth toes. Internally, however, considerable differences are observed. In the pes the third and fourth metapodials and the first phalanges are entirely separated and normal, the second pair of phalanges are closely united, and the terminal phalanx is also closely united, so it has the appearance of a single element. The fusion is less advanced in the manus; here the metapodials, first and second phalanges are separate, one of the second phalanges being abnormally hypertrophied and a supernumerary element being inserted beneath it. The terminal phalanges are very firmly united into a single element, which holds the bones above it together. Some discussion followed, during the course of which Professor Bristol stated that a large number of experiments were being carried on at a Western ranch to ascertain the effects of breeding upon this peculiar variety. Professor Osborn remarked that this anomaly presented an interesting case of the persistence of a character which must have originated as a sport.

Professor Osborn's second paper included a description of the remarkably complete skeleton of a Mosasaur, recently mounted in the American Museum of Natural History. The skeleton was procured two years ago from the famous Smoky Hill Cretaceous beds of Kansas, through Mr. Bourne, and has been worked out with the greatest care. It is practically complete as far back as the 78th caudal, and the bones are approximately in position, including the fore and hind paddle and, what is more remarkable, the almost complete cartilaginous sternum, sternal ribs, epicoracoids. The species represents the largest type of American Mosasaur, *Tylosaurus dyspelor* Cope. As illustrated by numerous photographs and drawings, the specimen throws a flood of new light upon the structure of the Mosasaurs. The principal characters are the following: 7 cervicals, 10 dorsals connected with the sternum by cartilaginous ribs, 12 dorsals with floating ribs, one sacral and 72 caudals (out of a total number of 86), coracoids connected by broad epicoracoids having a transverse diameter of 22 cm. The sternum is triangular in shape, tapering posteriorly and having the general form of that in *Trachydosaurus;* there is no evidence of an episternum, the shoulder girdle in general being more degenerate than Platecarpus, in which an episternum has been observed. The fore paddles are smaller than the hind ones and include two co-ossified carpals. The fifth digit is somewhat enlarged and set well apart from the others. The hind paddle is slightly larger and very completely preserved. The tail is remarkable in presenting an upward curvature in the mid-region, which probably supported a prominent caudal fin, but it is not angulated as in *Ichthyosaurus.* The skull shows the presence of epipterygoids. The total length of the skeleton as preserved is a little over 270 feet; the estimated total length of the animal is 30 feet. In mounting, a single large panel has been used, the animal lying upon its ventral surface, with the paddles outstretched, the sides of the back bone curved in a graceful manner, exactly as originally imbedded in the matrix.

FRANCIS E. LLOYD,
Secretary.

THE NEW YORK SECTION OF THE AMERICAN CHEMICAL SOCIETY.

THE regular meeting of the New York Section of the American Chemical Society was held on Friday evening, the 9th inst., at the Chemists' Club, 108 West Fifty-fifth street, Dr. William McMurtrie presiding. The following papers were read: 'Apparatus for testing the Density of Cements,' by Morris Loeb, Ph.D.; 'The Determination of Sulphur in Bitumens,' by S. F. and H. E. Peckham.

The apparatus described by Dr. Loeb is a modification of the well-known method for determination of the density of powders by displacement of liquid contained in a flask, but by the system of calibration adopted and the use of a specially graduated burette the volume of liquid displaced is obtained by difference

between the amount added from the burette and an arbitrary volume contained between two marks on the neck of the flask.

Drawing out the liquid to the zero mark by a pipette enables one to make another and several successive determinations without cleaning out the apparatus until the flask is actually almost filled with the powdered cement, so that three or four determinations may be made in about ten minutes.

Messrs. Peckham's paper recommended the deflagration method for determining sulphur in bitumens, using about two parts bitumen to thirty parts of mixed sodium carbonate and potassium nitrate. Some discussion followed as to the possible loss of volatile sulphur compounds—mercaptans, mercaptids and sulpho ethers—but the amounts of these forms of sulphur were conceded to be extremely small and probably without appreciable effect on the behavior of an asphalt.

A report by the Committee on Patent Legislation was read by Major C. C. Parsons, with the recommendation that it should be brought before the members of the Society at large.

A report by Durand Woodman, Secretary and Treasurer, stated that nine regular and two special meetings had been held, at which thirty-seven papers were read. The average attendance at these meetings was sixty-five.

The expenses of the Section had been $1.19 per member for the year. The membership numbers about 305.

The election of officers for the ensuing year resulted as follows: Chairman, C. F. McKenna; Secretary-Treasurer, Durand Woodman; Executive Committee, William McMurtrie, E. G. Love, G. C. Stone; delegates to the Scientific Alliance, E. E. Smith, M. T. Bogert.

A special meeting of the Society was held on Saturday, May 27th, at 8:45 p. m., in the Assembly Room of the Chemists' Club.

Announcement was made by Dr. C. A. Doremus of the preliminary program of the Fourth International Congress of Applied Chemistry, to be held at Paris next year. The meetings will be held in the halls and amphitheatre of the new Sorbonne, and every important branch of applied chemistry will be covered.

The feature of the evening was a paper by Dr. H. W. Wiley on 'The Chemistry of Nitrification,' fully illustrated by lantern slides.

Durand Woodman,
Secretary.

THE WASHINGTON BOTANICAL CLUB.

Regular meetings of the Club were held on May 3 and May 30, 1899. At the former the members participated in a symposium on the topic 'The Origin of Insular Floras.' Discussion was opened by Professor E. L. Greene, Dr. F. H. Knowlton and Mr. O. F. Cook. In the short notes which preceded attention was called to the discovery of *Asplenium ebenoides* in the District of Columbia, and proof sheets of Professor Bailey's 'New Encyclopædia of Horticulture' were exhibited.

The meeting of May 30th was devoted to a discussion of the more salient features of the District flora, several specimens being exhibited. The Club held a most enjoyable excursion on Decoration Day, to which other botanists were freely invited, visiting Plummer's Island, in the Potomac, and the neighboring Virginia shore.

Charles Louis Pollard,
Secretary.

PROFESSOR DEWAR ON LIQUID HYDROGEN.

The second lecture in connection with the Royal Institution's centenary was given by Professor Dewar on June 7th. Professor Dewar said, according to the report in the London *Times*, that he did not intend to take any long flight into the great work of the Royal Institution in the past, since that had already been done by his colleague. His object was rather to introduce his audience to a new instrument of research—that was to say, to liquid hydrogen. This he exhibited boiling gently in a vacuum tube immersed in liquid air, the access of heat being, by this precaution, greatly impeded. They would notice it was a transparent liquid, in which there appeared a whitish deposit. This consisted of solid air, and it was impossible to avoid its presence, because immediately the cotton-wool plug was removed from a vessel of liquid hydrogen the air of the atmosphere came under the influence of so low a temperature as to be at once frozen