JONATHAN DWIGHT, JR.: 'Wear in its Relation to Subspecies.'

WM. R. LORD: 'The Psychological Conditions of Bird Study.'

E. H. FORBUSH: 'Some Disappearing Birds and Suggestions for their Protection.'

FRANK M. CHAPMAN: 'Florida Notes.' Illustrated by lantern slides.

WM. L. FINLEY: 'The Land Birds of Oregon and California.' Illustrated by lantern slides.

C. F. HODGE: 'Experiments in Rearing Ruffed Grouse in Confinement.' Illustrated by lantern slides.

HORACE G. SMITH: '*Cyanocitta cristata*, and other Eastern Birds, at Wray, Yuma County, Colorado.'

A. H. CLARK: 'The Birds of the Southern West Indies.'

B. S. BOWDISH: 'Ornithology of a Churchyard.'

FRANK M. CHAPMAN: 'The Nesting Habits of the Flamingo.' Illustrated by lantern slides.

WM. L. FINLEY: 'The Sea-Birds of the Oregon Coast.' Illustrated by lantern slides.

H. W. GLEASON: 'Illustrated Readings from Thoreau's Journals.'

WM. DUTCHER: 'Report of the Chairman of the Committee on the Protection of North American Birds.'

ROBERT H. WOLCOTT: 'Observations on the Birds of the Sand-hill Region of Nebraska.' Illustrated by lantern slides.

HERBERT K. JOB: 'The Season's Experiences with Shore-birds, Herons and Water-fowl.' Illustrated by lantern slides.

The next annual meeting will be held in New York City, in November, 1905.

JOHN H. SAGE,
*Secretary.*

## SCIENTIFIC BOOKS.

*The Jurassic Flora.* By A. C. SEWARD, F.R.S. Part I., *The Yorkshire Coast,* London, 1900. Part II., *Liassic and Oolitic Floras of England (Excluding the Inferior Oolite Plants of the Yorkshire Coast)*, London, 1904. Catalogue of the Mesozoic Plants in the Department of Geology, British Museum (Natural History). Parts III., IV.

The first two parts of this important catalogue were reviewed at considerable length in SCIENCE of June 12, 1896 (N. S., Vol. III., pp. 869–876). These relate to the Wealden flora, and their great value to science was fully set forth. The third part, dealing with the Jurassic flora of Yorkshire, appeared in 1900, and now the fourth part, embracing the remainder of the Jurassic material in the British Museum is out, and these two parts may be conveniently treated in a second review, as were the first two in the previous one.

The Jurassic flora of Yorkshire is one of the oldest and best known fossil floras of the globe. It was to it that Williamson first gave his attention more than seventy years ago. His first contribution to science consisted in 'an excellent drawing and description' of the plant first called *Cyclopteris Beanii,* since referred to *Otozamites,* collected by his father at Gristhorp Bay. He sent the drawing and description to Messrs. Lindley and Hutton, who were then at work on their 'Fossil Flora of Great Britain,' and they were embodied with commendation in the second fascicle of that work (pp. 127–129, pl. xliv.), which bears date 1833. Between thirty and forty species from the Oolite of Yorkshire are published in that work, most of which were contributed by Williamson. Earlier work in this line had been done by Young and Bird (1822, 1828), by Brongniart (1828) on material sent to him, and especially by Phillips (1829). Of course, only a small part of this rich material is in the British Museum, but Mr. Seward visited many other museums where it is deposited and he reviews the literature of the whole subject. Indeed, as is his custom in these catalogues, he goes over the whole ground not only of the Jurassic flora of Yorkshire, but of that of other parts of Britain and, in a comparative way, of other countries, especially the continent of Europe, but also of Asia (Siberia, Persia, China, Japan, India), of North America and of Australia, even mentioning discoveries in Franz Josef Land and in Argentina. This preliminary correlation of the data of the whole world is an important feature of these catalogues and greatly increases their value. This value is still further enhanced by his critical analysis of the species, in which his latest decisions as to their affinities, and what he considers to be their proper designations, are given.

The bulk of the volume is naturally devoted to a detailed treatment of the material in the British Museum, in which the museum number of every specimen is recorded. But the 'catalogue' becomes, at the hands of Mr. Seward, a systematic treatment of the flora, which attains great importance from the adoption of the latest botanical classification. The Jurassic flora is thus found to embrace Bryophyta (Hepaticæ), Pteridophyta (Equisetales, Lycopodiales, Filicales) and Spermatophyta (Cycadales, Ginkgoales, Pinales). The evidence for the alleged existence of algæ (fucoids) is examined and found wanting, such forms being either referred to the genus *Marchantites* of the Hepaticæ, or rejected as probably not organic. Of these the Cycadales predominate even over the ferns, which latter contribute the largest contingent to the Wealden flora, the conifers occupying the third place in both floras, and the lower groups a very subordinate position. The total Jurassic flora counts 55 species, as against 59 from the Wealden, which contains many more conifers. Every important specimen is fully treated and usually figured either in the text or on one of the twelve plates. Proofs of these plates had been received in advance of the text at the time of my visit to Cambridge, in 1900, and Mr. Seward kindly permitted me to examine them and take notes upon them for use in preparing my paper on the Jurassic flora of Buck Mountain, Oregon, which I had recently collected, and later he had the further kindness to send a set of them at my request to Professor Fontaine to aid him in his elaboration of that flora. They were of great assistance, although, as might have been expected, very few species are common to the two floras. The work in which the Oregon Jurassic flora is treated is now in press.

In the second part, which has recently appeared, dealing with the remainder of the Mesozoic floras of Great Britain, the treatment follows the same lines, but there is no extended introductory survey of the corresponding floras of other countries. The classification, however, is here primarily geological, each horizon being treated systematically. Scarcely any Triassic plant-bearing beds exist in Britain, and the only plants of that age seem to consist of a few indistinct and practically indeterminable specimens from the Keuper beds of Bromsgrove and Pendock in Worcestershire and from Rowington in Warwickshire. A few specimens from both these localities occur in the museum, but only one fruit (*Carpolithes*) could be even generically determined.

The Rhetic is included by Mr. Seward in the Jurassic, but it is very limited in Britain and no such rich plant-bearing beds of it occur as those of south Sweden and Franconia. But there is a thin belt of this age extending from the Yorkshire coast to the cliffs of Dorsetshire, and they are also found near Carlisle and in the northeast of Ireland and north of Scotland. Fossil plants have been found at Ashelworth and Brockeridge; in the East Somerset and Bristol coalfields; at Pylle Hill, Totterdown and Bristol; at Strensham, Worcestershire; and at Binton, Warwickshire. Only three species are described from the material in the British Museum. These are all pteridophytes, but a winged seed (*Carpolithes*) and an imperfectly preserved cone (*? Araucarites*) occur, which are probably gymnosperms. The supposed monocotyledon (*Naiadita*) figured by Buckman, proves to be a lycopod, and the dicotyledonous wood described by Sorby, upon which Dr. Asa Gray laid so much stress as proof of the antiquity of the higher plants, is stated to have been purchased of a dealer, the locality (Lias of Keynsham, near Bristol) being only conjectural.

The Liassic flora is much better represented. This formation stretches across England from the mouth of the Tees to the coast of Dorsetshire, with patches in Shropshire, Cumberland and Sutherlandshire, as well as in the west of Scotland and on the Antrim coast in Ireland. Among the important localities for plants of this age are Lyme Regis, Memburg and Polden, in the southern section, and Whitby on the Yorkshire coast. There are also Liassic plant beds in the interior of England. The great majority of the specimens in the British Museum are from Lyme Regis and Whitby, especially the former. The flora

described embraces nine species, including one fern, three cycads and three conifers. The remaining species belongs to a genus he now calls *Ctenopteris* and regards it as of uncertain systematic position, although, in the preceding part ('Jurassic Flora of Yorkshire,' p. 237) he referred Saporta's *Ctenopteris* to *Ptilozamites* of Nathorst and treated it as belonging to the Cycadales of doubtful affinity. In this I have followed him for the Jurassic plant *P. Leckenbyi,* which is common to the Yorkshire flora and that of Oregon. As Saporta's name has priority it should stand, provided it is really the same genus as the Ptilozamites of Nathorst.

Both fronds and trunks of recognized cycadean plants occur in the Lias of Britain, and Mr. Seward puts both these into what he calls a class, the *Cycadophyta.* This term he attributes to Nathorst, but the latter did not use it in Latin form. I was, perhaps, the first to call attention to the inconsistency of applying the term Cycadales to the foliage of such plants and the term Bennettitales to their trunks, when both kinds are found at practically the same horizon and often in the same beds, with every probability that the leaves were borne on the trunks, but no means of determining which leaves belonged to which trunks.* The dilemma is one existing in the nature of things and can only be escaped through further discovery. We certainly do not escape it by multiplying classes. But as the Cycadales and Bennettitales are already recognized classes, a group that embraces them both can not be a class. It may be called a superclass. Mr. Seward's name has the form given to much higher groups, such as the Pteridophyta and Spermatophyta. It is included under the latter, and, therefore, should have a different termination. The reasons for such a group given by Nathorst and Seward are not sound, and the group name seems useless.

Much the largest number of species are from the Oolite, viz., 42, as against 12 from the Lias, and 5 from the Rhetic, and as these are all additional to the 65 described in the first part from the Oolite of Yorkshire, it is evident that this is the great Mesozoic flora of Britain, and that the floras of other Mesozoic beds are comparatively insignificant. But this is largely the case in other parts of the world. The greater number are from the Great Oolite of Oxfordshire (Stonesfield), Wiltshire (Sevenhampton and Eyeford), Gloucestershire (Chedworth) and Northamptonshire (Kingsthorpe and Leckhampton). The Inferior Oolite yielded nine species, the localities being in Gloucestershire, Northamptonshire and Somersetshire. Five species are from the Oxfordian, which is represented in Wiltshire (Christian Malford), Cambridgeshire (Chippenham) and Northamptonshire (Peterborough), as well as at Scarborough in Yorkshire. Mr. Seward includes the Corallian and Kimeridgian in the Oolite. The former is represented at Malton in Yorkshire, and has yielded three species, the latter at Weymouth and Sandsfoot in Dorsetshire, and contributes two species.

The Jurassic flora described in Part II. contains 18 conifers, 15 cycads, 2 Ginkgoales, 11 ferns, 1 lycopod, 2 Equisetales and 4 thallophytes. Besides these there are described and figured two leaves from Stonesfield which seem to be dicotyledonous. As we can not question the fidelity of the figures, and as these, so far as the material shows, have every appearance of dicotyledonous plants, the doubts must be as to the source of the specimens, but Mr. Seward says that the records clearly state that one of the specimens at least is from Stonesfield, and that 'the rock appears to be identical with that in which the majority of the Stonesfield plants are found.' He inclines to think that the record is reliable, and that we actually have 'a dicotyledon from rocks of the Great Oolite Series.' This seems incredible *a priori,* as thus far no dicotyledonous plant has been discovered lower than the Lower Cretaceous (Older Potomac) of Virginia. The figures recall those of *Populus primæva* of Heer from the Kome beds of Greenland (Urgonian), which was long the earliest dicotyledonous plant known. They differ, however, considerably from that type, and as the lowest veins are not shown, there

* Nineteenth Ann. Rep. U. S. Geol. Surv., 1897–98, Washington, 1899, p. 665.

can be no certainty whether these leaves belong to the genus *Populus*. Mr. Seward is content to place them in the general group Phyllites. It is greatly to be hoped that the Stonesfield beds may be more thoroughly searched for further material of this class.

Lester F. Ward.

*Geology of the City of New York, with a geological map.* By L. P. Gratacap, A.M., of the American Museum of Natural History. Second edition. 1904. Privately issued. Royal 8vo. Pp. 119; 35 figs., 3 plates.

Interest in nature-study has become of great and increasing importance in our general system of secondary schools. Both teachers and pupils are being led to observe more clearly the world about them, and are coming to know the plants, animals and rocks. In a great center of population like New York city the teachers and pupils make up a well-nigh countless multitude, and as regards the local geology the call for a book of instruction and reference is very urgent, as is the need for good but elementary lectures. The latter need, the authorities of the American Museum of Natural History with their rich equipment in specimens, lantern slides and charts, have met; and the former need, the author of the work before us has satisfied in a very interesting and attractive way. Congratulations are due him that the book has reached a second edition.

The work opens with a brief geographical outline and takes up next the topographical features of the four constituent boroughs. The original outlines of Manhattan Island have of course suffered great modification and a very interesting and detailed record of these is given. The matter is timely, because the tendency to remove and forget the ancient landmark, is all too great in American cities and an interest in early local history and a fondness for one's home and dwelling place are all too slightly developed.

A discussion of the rock formations follows with some very good pictures illustrating their mode of occurrence and structural features. The author is almost ultra-conscientious in his endeavor to give due credit to the several writers who are cited. The topic of the waterways receives attention, as does that of the bibliography and of the minerals. Following these the other boroughs than Manhattan are passed in review and a discussion of the glacial geology closes the work.

Mr. Gratacap still adheres to the Archæan age of the metamorphic rocks of Manhattan Island (p. 45) as against the Palæozoic determinations more especially of Professor J. D. Dana and Dr. F. J. H. Merrill, and as the latter's views have been fully set forth it would be of interest to hear the other side defended at length.

Mr. Gratacap ought to have included in the preparation of his work a table of contents and an index. It is a great handicap to the usefulness of a book of 119 pages, with many figures and a map, to lack these essentials.

J. F. Kemp.

*Materialen der Stereochemie, in Form von Jahresberichten.* Edited by C. A. Bischoff. Vols. I. and II., pp. cxxvi + 1978. Braunschweig, F. Vieweg und Sohn.

This comprehensive work consisting of two large volumes aggregating over two thousand pages, is a continuation of the well-known work on the same subject, published in 1894 by the same author in company with Professor P. Walden. This collaborator has also assisted occasionally in the new compilation, but the great bulk of the work has been done by Professor Bischoff. The matter is developed year by year, each yearly section being divided into four subdivisions, namely:

I., General Stereochemistry; II., Optical Isomerism; III., Geometric Isomerism of Optically Inactive Bodies; IV., Relations Between Space-distribution and Chemical Reactions.

Obviously the form of arrangement demands elaborate indexing; hence the editor has prefaced his work by a table of contents of 126 pages, and given it an index of 99 pages as epilogue. Even as it is, the table of contents almost needs an especial index of its own.

The work is characterized by the qualities which are already familiar in the earlier work.