Of the Thallophytes the mosses are few, as only 50 species are known to occur in the State and 16 liverworts; lichens number 157. Of the Fungi, those growing on wood number 266, those on living plants 445, those on decaying matter 75, aquatic parasites on fishes, etc., 18, and on insects 9. The Algæ number 438. The chapter concludes with a discussion of the various biological characters, including protective devices, periods of flowering, seed production and dissemination.

The fourth chapter treats of the relations of the natural group of plants dividing them into six groups according to habitat, and giving tables for each of the natural families showing the numbers of species in each inhabiting the different regions. This represents an immense amount of local work, and it is impossible to give any adequate conception of the careful tabulation which it necessitates. The last chapter treats of the plant formations showing that the floral covering of the earth is not homogeneous, but presents great differences in the kinds and abundance of species as well as variations in the size, habit and habitat of individuals. Such diversities are the direct result of physical and climatic conditions peculiar to more or less restricted areas, hence the vegetation of the earth's surface is arranged into groups of definite constitution and more or less definite limits, known as plant formations. Such formations are invariably complex and more or less difficult to determine, yet they represent a biological community resulting from the forces induced by physiographical and meteorological phenomena, and may be defined as a piece of the floral covering, the extent of which is determined by a characteristic association of vegetable organism forming a stretch of land whose limits are biological and not physiographical, but often having the delimitation of some natural boundary. The topics are treated under the following heads: Forest, Meadow, Prairie, Sand hill, Foot hill, Salt marsh, Water plant, Culture and Waste formations. This chapter constitutes perhaps the most readable portion of the book, summing up the results and effects of all previous observations.

In the appendix certain corrections are made in elevations of various points, and the nomenclature is made to correspond with that of Britton and Brown's illustrated Flora. The four maps show the political boundaries of the State, its topographical characters, the river systems and the natural regions. The index is extensive, including both topics and species.

It will thus be seen that this work indicates the progress of biological studies in recent years, and the long distance from which it is removed from mere lists and catalogues, yet at the same time it emphasizes the importance of thorough systematic and morphological studies, and proves the necessity of broad and correct training in order to be able to accomplish such a task creditably. That this has been so ably done not only reflects credit on its authors, but also on the faculty under whose guidance the work has been accomplished.

ELIZABETH G. BRITTON.

SCIENTIFIC JOURNALS.

The American Naturalist for May opens with a paper on the origin of the mammalia by Professor Henry F. Osborn, presented first at the Toronto meeting of the British Association. The paper especially considers the evidence supporting the hypothesis that the mammals spring from the theriodont reptiles, knowledge of which has been so greatly increased by Professor Seelye's explorations in the Karoo beds of South Africa. The third chapter of the treatise, on the wings of insects, by Professor J. H. Comstock and Mr. J. G. Needham, treats of the Diptera. Mr. O. P. Hay writes on the classification of Amoid and Lepisosteoid fishes.

THE July number of *Appleton's Popular Science Monthly* opens with the first of a series of articles on the evolution of colonies, by Mr. James Collier. Mr. E. J. Prindle contributes an elaborately illustrated article on the methods used by the Weather Bureau in forecasting the weather. Professor S. W. Williston writes on saber-toothed cats. The frontispiece is a Portrait of Maria Agnesi, who was in 1750 nominated professor of mathematics in the University of Bologna.

THE *American Anthropologist* for June contains the following articles: An Ancient Human Effigy Vase from Arizona, by J. Walter

Fewkes; Use of Rubber Bags in Gauging Cranial Capacity, by Washington Matthews; Ojibwa Feather Symbolism, by W J McGee. The Girl and the Dogs—An Eskimo Folk-tale with Comments, by Signe Rink.

THE July *Monist* opens with an article by Professor C. Lloyd Morgan on 'The Philosophy of Evolution,' which seeks to reconcile metaphysics with science. Professor Jacques Loeb has a brief discussion of 'Assimilation and Heredity,' maintaining that, since any theory of heredity must be based upon the mechanics of assimilation, we are consequently forced to supplement our purely morphological hypothesis of heredity by a chemical theory. Dr. Paul Topinard devotes some forty odd pages to the treatment of the 'Social Problem,' which he reviews in the light of natural history, anthropology and sociology proper. In 'Gnosticism in Its Relation to Christianity,' Dr. Paul Carus seeks to show that gnosticism, far from having been a heretical Christian sect was a general religious movement of pre-Christian times, and that Christianity sprang from it and survived it by the law of the survival of the fittest.

SOCIETIES AND ACADEMIES.

ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA, JUNE 21.

MR. LEWIS WOOLMAN described a series of well-borings from Rock Hall, Maryland, indicating the depth at which forty-one forms of diatoms occur. The deposit resembles that for 80 to 100 feet at Wildwood, Maryland. He regarded the deposit as much more recent than miocene. A small bed of the latter is placed between it and the Eocene. There is a considerable mixture of fresh-water diatoms with the marine forms.

MR. D. S. HOLMAN described the fission of three forms of infusorians generated in putrifactive solution.

MR. PHILIP P. CALVERT recounted his recent studies of dragon-flies from tropical America and dwelt on his mode of determining averages of variations in extensive groups. Much the largest proportion of such variation is atavistic, illustrations being given from the genera described.

A paper entitled 'A New Chipmunk from Northeastern China,' by Gerrit S. Miller, Jr,. was presented for publication.

EDW. J. NOLAN,
Recording Secretary.

TORREY BOTANICAL CLUB, APRIL 27, 1898.

THE first paper, by Mr. Tracy E. Hazen, was entitled 'Notes on the Life History of *Hæmatococcus* and other Fresh-water Algae.' He exhibited a dried specimen of *Hæmatococcus* from Vermont, consisting of a dull red incrustation on rock, from which some of his own cultures had been made. The paper, which will soon be published, described the stages of its life history, and was illustrated by colored drawings. Discussions by Professor Lloyd, Dr. Townsend, Dr. Britton and others followed. The Secretary referred to a gathering of Red Snow made at the Crimson Cliffs of North Greenland by the Peary party two years ago, which exhibits a much more brilliant red than the *Hæmatococcus* of our own neighborhood.

The second paper, by Mrs. Elizabeth G. Britton, was entitled 'An account of the Mosses collected by Mr. Pierre Jay in Peru and Bolivia in 1893.' She exhibited about 60 sheets of these mosses, the specimens shown forming, however, only a small part of the entire collection, which include many species of tropical American genera like *Hookeria* and *Meteorium*, not yet determined. The Bolivian specimens were collected in June and July near La Paz and Yungus, and are largely species of high altitudes and exposed localities. The Peruvian specimens were collected in the vicinity of Cuzco and the tributaries of the Madre de Dois, and and are mostly forest species, including showy *Phyllogoniums* and *Porotrichums* and various species of *Entodon* and *Rhizogonium*. The collection promises to be very interesting and will be compared with Dr. Rusby's collections of 1885 and M. Germain's, both of which have recently been enumerated and described by Dr. C. Müller in his Prodromus of the Mosses of Bolivia in the Nuovo Giornale Botanico Italiano for 1897.

EDWARD S. BURGESS,
Secretary.