ical equipment that has been concomitant with the transition from primitive to civilized conditions. It is equally certain that many of the current notions as to the likenesses and differences of 'Naturvölker' and 'Culturvölker' rest upon presuppositions rather than upon proper observation. Such researches as this of Mr. Rivers bear the possibility of clarifying our views as to these interesting relations.

Joseph Jastrow.

Madison, Wisconsin.

*Monograph of the Coccidæ of the British Isles.* By Robert Newstead. London, Ray Society, 1901.* Vol. I. Pp. 220, Pls. A–E, and I.–XXXIV.

This is the first comprehensive work on the British Coccidæ and is the result of over ten years' study by the author, who is the foremost authority on scale insects in England. The term 'British' is permitted to have a very elastic meaning, since all species found living in Britain are included—even those on hothouse plants and on fruits in the market. Thus, the *Diaspis* of cacti is duly given a place, though nobody would think of treating the cacti themselves as members of the British flora. Indeed, of the thirty-eight species discussed in the volume, only six are genuine natives of the country. This peculiar interpretation of the term 'British' is wholly justifiable when we consider the fact that many of the most injurious coccids are those which have been introduced, and indeed those most commonly met with are found in hothouses on imported plants. If Mr. Newstead had confined his researches to the indigenous species, his volume would have been of comparatively small practical value to the British coccidologist or horticulturist; and as the mode of occurrence of each is precisely stated there need be no confusion. Of the thirty-eight species, no less than thirty-one have also been taken in America, so it will readily be seen that the work is of much importance to us in this country. Every species is carefully described, and there are beautiful colored plates of most, as well as line drawings illustrating the minute structural characters. Biological facts of the greatest interest are recorded. The genus *Aulacaspis,* of the present writer, is accepted, but defined by entirely new characters. It results from this that it includes a quite different series of species from those hitherto referred to it, except, of course, that the type species (*A. rosæ*) remains as before. I find, upon renewed study, that this new interpretation is apparently correct, and it marks a considerable advance in classification. *Aulacaspis* is now seen to be an Old World genus, while *Diaspis* is mainly American.

The common mussel-scale of the orange is referred to *Mytilaspis pinnæformis,* but I think incorrectly. The insect of this name occurs on orchids, while that of the orange (*M. beckii*) has never been seen by me on these plants, though it might be common on orange trees with plenty of orchids growing near, as is the case in Jamaica. We have to do, perhaps, with a case of 'physiological species,' and there is an opportunity for some one to try experiments in transferring the coccids from one plant to another.

Altogether, the work is a very admirable one. The only serious fault I find is that the author has not taken sufficient pains to examine the literature of his subject. Thus, he often quotes Cooley's paper on *Chionaspis,* and yet failed to learn from it that the so-called *C. salicis* of this country is not identical with the European species. The statements about the exotic distribution of the species are frequently incomplete, and sometimes inaccurate. In several cases, names are cited in the synonymy which were never printed in the places cited; thus Leonardi wrote *Aspidiotus* (*Selenaspis*) *articulatus,* but Newstead cites it *Selenaspis articulatus,* treating the subgenus as a genus in the synonymy, though he himself regards it as only a subgenus.

T. D. A. Cockerell.

East Las Vegas, N. M.

* It may be useful to state that the actual date of publication was the middle of December, 1901.

## *Societies and Academies.*

### New York Academy of Sciences.

### Section of Geology and Mineralogy.

The regular meeting of the Section was held Monday evening, March 17, with Dr. A.

A. Julien, chairman, presiding. This being the annual meeting of the Section, the first business of the evening was the election of officers for the ensuing year. Professor R. E. Dodge nominated Professor J. J. Stevenson for chairman and Dr. E. O. Hovey for secretary. On motion of George F. Kunz, W. H. J. Sieberg was directed by unanimous vote of the Section to cast one affirmative ballot for the nominees. He did so and they were declared elected.

The following program was then offered:

George F. Kunz made an exhibition of specimens illustrating the finding of epidote, grossularite, garnet and twinned crystals of quartz of the Japanese type, associated with chalcopyrite, malachite and other ores of copper in a contact vein in limestone in the Green Monster Mining Co.'s mine near Solzer, Prince of Wales' Island, Alaska.

'The Centenary of John Playfair's Defense of James Hutton's Theory of the Formation River Valley': Memorials by Professors J. J. Stevenson, J. F. Kemp and R. E. Dodge.

Professor Stevenson, after speaking of the conditions prevailing in British geology prior to the publication of Hutton's memoir in 1785, gave briefly the characteristic features of Hutton's doctrines, and accounted for the ease with which his work could be misunderstood and misinterpreted. He described the conflict to which the memoir led, and emphasized the bitterness of those who opposed the doctrine on theological grounds. The preparation of Playfair's work was due as much to a desire to defend Hutton as to support his theory. Playfair appealed to those opponents whose knowledge of the theory had been derived chiefly from attacks made upon it. For them he showed that the theory was beautiful, symmetrical and in no sense inconsistent with the Scriptures. In dealing with the other class of opponent, led by Kirwan and DeLuc, he used vigorous language exposing their ignorance and insincerity, and denouncing the virulence with which they had given a theological turn to the controversy. In defending Hutton's theory, Playfair brought his own great resources to bear, now correcting errors, now elaborating the doctrine, and in some places hardly anticipating some of the great works of later days.

The inviting style gained many readers for Playfair's book, among them Greenough and his associates, who founded the Geological Society of London, that theory might be replaced by observation. Hutton's theory obtained final triumph in 1830, when Lyell published his 'Principles.' Playfair's work hastened the birth of geology as now understood by a full quarter of a century, and finally divorced our science from cosmogony.

Professor Kemp's memorial was more in the nature of a review of Hutton's personal history. He said in part: James Hutton was born in 1826, and, after his school and university course, entered a lawyer's office to prepare for the bar. He disliked the law, however, and gave up the study after a year. Being greatly interested in chemistry, he took up the study of medicine, attending lectures at Edinburgh and Paris and taking his degree at Leyden in 1749. The career of a physician did not attract him much, after all his preparation, and in 1752 he went to Norfolk to learn agriculture. There his mind first turned definitely to mineralogy and geology. In 1754 he settled on his ancestral estates in Berwickshire, where he remained fourteen years, with occasional visits to Edinburgh and more distant parts of the kingdom. In 1768 he gave up country life and removed to Edinburgh to devote himself entirely to the study of geology and kindred sciences. His untiring industry enabled him to accomplish a marvelous amount of work in chemistry and finally to elaborate his essays in geology, revolutionizing that science and, with the elucidation given his work by Playfair's 'Illustrations of the Huttonian Theory of the Earth,' raising it to the high plane which it has occupied ever since. Modern geology dates from the publication in the spring of 1802 of John Playfair's explanation, elaboration and defense of Hutton's theories.

Professor Dodge, in his memorial of Playfair, said in brief:

To James Hutton we owe many fundamental truths now recognized in physiography,

and to John Playfair we owe the elucidation of these ideas, and their amplification.

The doctrine that rivers are the cause of their valleys, and the proof thereof is perhaps the most important foundational idea that we owe to the combined labor of these two geological worthies. Playfair's clear exposition of the possible origin of river terraces, his acute description of the relation of lakes to rivers, his analysis of the varied forms of shore lines, and his emphasis of the importance of initial shore lines, all clearly exploited in his illustrations, deserve to take rank with the much-quoted passage on rivers and their valleys, as being accepted geographical truths far in advance of their time.

After the reading of these memorials the Section listened to two papers by Professor R. E. Dodge and one by Gilbert van Ingen, all of which were illustrated by means of the lantern.

Professor Dodge's first paper was entitled 'An Interesting Landslide in the Chaco Cañon, New Mexico,' and he said in brief:

On a high mesa to the southeast of the Chaco Cañon, and about four miles below Putnam, New Mexico, is a series of stone monuments about five feet high and four feet in diameter. These monuments stand on the edge of rim rocks of an old escarpment three hundred feet high. The rim rock of the escarpment is a coarse brown sandstone capped by about two feet of thin-bedded dark brown sandstone containing sharks' teeth. The face of the escarpment has recently slipped along a series of joints running approximately parallel to face of escarpment, and in a general direction of S. 30° E. The recesses between slipped blocks can be sounded to a depth of over fifty feet, and are wider at base than at top as a rule.

In the slipping an ancient rock hogan twenty feet in diameter has slid 2.5 feet vertically and 8.3 feet horizontally without displacing the rock walls to any serious extent.

The second paper by the same author was on 'Arroyo Formation.' An arroyo is a steep-sided, narrow gulch cut in a previously filled gravel and adobe valley in the arid West.

The study of the process of formation of arroyos, some of which have been under observation for several years, seems to show that the work has changed from aggradation to degradation because of some influence that has caused the focusing of the running water. Such a concentration of water is made possible by over-grazing of the land, which removes the help of roots in holding soil particles, combined with the habit of cattle to move in processions along trails that make a natural channel for water.

The study of the rate of valley-filling or erosion is difficult, because of the tendency of arroyos cut in adobe to maintain nearly vertical walls, and because a fallen block of adobe may be sealed over in the next flood, so that it looks in place. This problem is of especial importance, because the adobe deposits in some places contain relics of human occupation to a depth of many feet. The exact or even the approximate antiquity of the deposits cannot be definitely determined, because of the several ways in which the order of events in such a case may be interpreted.

Mr. van Ingen's paper was on 'The Ausable Chasm,' and gave a description of the geology and physical features of this celebrated locality which incorporated the results of the author's own observations with those which had been arrived at and published by others.

Edmund O. Hovey,
*Secretary.*

BIOLOGICAL SOCIETY OF WASHINGTON.

The 354th meeting was held on Saturday evening, April 19.

Barton W. Evermann and E. L. Goldsborough presented 'Notes on Some Mexican Fishes,' based upon collections made in Mexico and Central America by Mr. E. W. Nelson, Dr. J. N. Rose and others. Attention was called to the occurrence of a species of Cichlid (*Heros urophthalmus*) in the cenotes or natural wells of Yucatan. These wells occur in a region where there is no surface water, and it is difficult to account for the presence of fish in them.

Mr. Nelson found this same species in salt water at Progreso and Mujeres Island, on the

Yucatan coast. The Cichlidæ are a family of fresh water fishes much resembling superficially our sunfishes (Centrarchidæ), and their occurrence in salt water had not been previously noted.

The discovery of a new species of catfish belonging to the genus *Conorhynchos,* in the Rio Usumacinta was also reported. No species of this genus was previously known from any point north of Brazil.

But the most interesting thing in connection with this bagre was the discovery that it has the habit of oral gestation, a curious habit not previously known to be possessed by *Conorhynchos,* though long known among species of South American and Ceylonese catfishes of the genus *Arius.*

When the eggs are laid they are taken up by the male catfish, who retains them in his mouth until they are hatched.

In the mouth of one of these catfish Mr. Nelson found thirty-nine eggs many of which readily rolled out when the fish was held up by the tail.

The eggs are quite large, measuring about three-quarters of an inch in diameter, and the embryos are well developed.

Another important discovery was the fact that *Girardinichthys innominatus* is ovoviviparous. This is a species of Pœciliidæ (killifishes) and was found by Dr. Rose to be an abundant inhabitant of the Rio Lerma. Its viviparity had not been noted before, nor was the species known to occur elsewhere than about the City of Mexico.

W. W. Cooke spoke on 'Some Untenable Theories of Migration,' stating that there were two theories as to the relative positions held by the individuals of a given species of bird in their winter home as compared with their positions during the breeding season. According to one theory the relative positions were the same, the birds moving southwards as one body, while according to the other theory the relative positions were reversed, those individuals which bred at the extreme north of the breeding range passing over the others, thus becoming the southernmost birds during the winter.

The Maryland yellow throat was given as an example of this latter method of migration, those individuals that breed farthest north going the farthest south in winter while the southern breeding birds remained almost stationary. But even here a complete reversal of position does not take place, for the intermediate breeding birds do not winter so far south as the southern breeder.

The red-winged blackbird, it was stated, did not follow either of the so-called rules and, in fact, each species seems to have a method of migration peculiar to itself, so that no general rule could be laid down that would cover even a large proportion of the different species. In most species, however, a reversal of position does occur during the early spring migration, but this condition does not last long.

F. A. LUCAS.

THE ELISHA MITCHELL SCIENTIFIC SOCIETY.

AT the 141st meeting of the Society, at the University of North Carolina, on April 15, the following papers were read:

'Arsenic Pentachloride': Mr. H. H. BENNETT.

'Copper Deposits of North Carolina': Dr. J. H. PRATT.

'Price of Chemicals': Dr. CHAS. BASKERVILLE.

'Non-cellular Differentiation in Embryos': Dr. H. V. WILSON.

CHAS. BASKERVILLE,
*Secretary.*

## *DISCUSSION AND CORRESPONDENCE.*

### SCIENTIFIC TERMINOLOGY.

THE word 'ecology' is not to be found in recent English dictionaries, no doubt because such dictionaries do not profess to include every vagary of incorrect spelling that may find its way into print. But had Mr. Horace White looked up 'œcology,' he would have found it in the best dictionaries of the last fifteen years at any rate. He would not, however, have found the definition that is now given by you, but—to quote the 'Century Dictionary'—"The science of animal and vegetable economy; the study of the phenomena of the life-history of organisms, in their individual and reciprocal relations; the doctrine of the laws of animal and vegetable activities, as manifested in their modes of life. Thus, parasitism, socialism, and nest-building