



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