

way his appreciation of the work of the association and the honour done him in electing him the president for the year, and he thought he could do this by offering to defray the cost of the die of a suitable medal for the purpose suggested by Mr. Lowden. On the proposal of Mr. Innes, seconded by Dr. Juritz, it was resolved to accept this offer with many thanks, and to name the awards the "Goold-Adams" medals.

The Bloemfontein Museum deserves an article to itself; the members of the association were shown over the collections, and from cupboard and cranny objects of the utmost value were unearthed, including meteorites, stone and iron ones, Karroo fossils, early printed books, engravings, manuscripts, Bushmen implements, and a complete quagga skin. The collections urgently need proper accommodation, and it is hoped that the visit of the association brought home to the authorities some realisation of what a valuable asset for the town they had in their museum.

Dr. R. T. A. Innes was elected honorary secretary for the Transvaal and Free State, and Dr. C. F. Juritz for Cape Colony and Rhodesia, Dr. R. T. Lehfeldt honorary treasurer.

At the close of the meeting forty-five members left for a train and wagon trip to Basutoland, the railway authorities having placed a special train at the disposal of the association.

AMERICAN CAVE VERTEBRATES.¹

PROF. EIGENMANN has brought together in an attractive and copiously illustrated quarto volume the results of his investigations on the cave fauna of America, upon which he has been engaged for many years. He points out that each cave is a separate environmental unit requiring special consideration, but all share to a greater or less extent certain common features, viz. the reduction or total absence of light and the relative constancy of other physical conditions, such as temperature.

The blind cave vertebrates form a very mixed faunistic group, derived from a variety of epigeal ancestors. It appears, however, that "a certain predisposition in habit and structure must be present to enable a species to dispense with light and to live in caves." No mammals appear to have become especially adapted for permanent cave life, though, of course, many spend a large part of their lives in such situations. They may be "twilight animals," but they still have normal eyes. The same is the case with birds, and there are also no cave reptiles, which is remarkable when we consider that many snakes and lizards are blind, and burrow underground.

It is amongst the amphibia and fishes that true cave vertebrates are to be found. Two of the North American salamanders, of the genus *Spelerpes*, which habitually live in caves, still possess what appear to be normal eyes, while two others, of the genera *Typhlotriton* and *Typhlomolge*, have their eyes quite degenerate, resembling in this respect the European *Proteus*. The *Amblyopsidæ* are the typical North American cave fishes. "All the members of this family, eight in number, have degenerate eyes; five have mere vestiges; six permanently live in caves; one is known only from a spring, and another from open streams." More remarkable is the fact that in Cuba two sightless fishes, *Stygicola* and *Lucifuga*, belonging to a marine family many of which are blind, have become adapted to the fresh waters of caves.

¹ "Cave Vertebrates of America. A Study in Degenerative Evolution." By Prof. Carl H. Eigenmann. Pp. ix+241. (Washington: Carnegie Institution, 1909.)

Space forbids us to follow the author in his detailed and interesting discussion of the origin of the cave fauna. We may note, however, that he seems inclined to regard blindness as an antecedent rather than as a consequence of cave life, for it is only animals which are already accustomed to find their food by the sense of touch or smell which could ever establish themselves in complete darkness. In *Amblyopsis*, and other blind fishes, great numbers of special tactile organs are developed, especially about the head, and these serve for ascertaining, by disturbances in the water, the whereabouts of prey.

In the case of the loss of colour, however which is such a general character of animals living in perpetual darkness, it is different, and Prof. Eigenmann regards this character as due in the first place to the direct influence of the environment upon the individual. To quote his own words, "The bleached condition of animals living in the dark, an individual environmental adaptation, is transmissible, and finally becomes hereditarily fixed." This conclusion is based upon the fact that in *Amblyopsis* the bleaching takes place even when the young are reared in the light. "Natural selection cannot have affected the coloration of the cave forms, for it can be of no consequence whether a cave species is white or black. It could only affect the coloration indirectly in one of two ways: first, as a matter of economy, but since the *individual* is in part bleached by the direct effect of the darkness, there is no reason why natural selection should come into play at all in reducing the pigment as a matter of economy; second, Romanes has supposed that the colour disappeared through the selection of correlated structures, a supposition he found scarcely conceivable when the variety of animals showing the bleached condition was considered." It appears to us that these conclusions are of great interest and importance, and that Prof. Eigenmann has made out a strong case for the inheritance of acquired characters in this instance. In the case of *Proteus* it appears that the bleached condition has not yet become hereditarily established, for this animal becomes darker when exposed to the light. Possibly, after all, the inheritance or non-inheritance of acquired characters is largely a question of time, or, perhaps better, of the number of successive generations which have responded ontogenetically to the particular stimulus which evokes the character in question.

A great part of the volume is devoted to the consideration of the structural changes which accompany the degeneration of the eyes, and the author has given us a large amount of very valuable information on this difficult subject, including a detailed account of the development of the eye of *Amblyopsis*. From many points of view this interesting work will well repay a careful perusal.

ARTHUR DENDY.

THE PRESERVATION OF NATURAL MONUMENTS IN GERMANY.¹

THE German Government has been, for the last two years, organising a national system for the preservation of the natural monuments of the country. During the last year the scheme has developed in comprehensiveness, and has produced gratifying results. There are now forty local committees, and at the end of last year the first Congress for *Naturdenkmalpflege* in Prussia was held at Berlin. A considerable number of valuable reports has been issued; the present volume, edited by the energetic Government Commissioner for the Care of Natural Monuments, Prof. Conwentz, contains a report of the con-

¹ "Beiträge zur Naturdenkmalpflege." By Prof. H. Conwentz. Hef 3. Pp. 157-296. (Berlin: Gebrüder Borntraeger, 1909.) Price 2 marks.

gress, and a general report on the work of the past year up to March 31.

The whole matter is another triumph of German organisation. Throughout the committees, which are interacting, are zoologists, ornithologists, botanists, geologists, and archæologists. The useful term "natural monument"—Alexander von Humboldt seems first to have employed it—includes practically everything indigenous which possesses scientific interest. In this report, for instance, which is well illustrated, there are accounts, not only of the *Porta Westfalica*, a human monument, but of interesting trees, "erratic" blocks of stone, moraines, diluvial sandstone formations, many characteristic specimens of the flora and fauna of the country, including various subdivisions, such as lichens and Lepidoptera. The term and the whole conception of the scheme are absolutely comprehensive. Many charts have already been prepared showing the local distribution of the "monuments"; such publications are of the highest scientific interest, especially when their subjects may still be counted on by the observer as existing in actuality.

It is to be hoped that this report may find its way to the hands of some English statesman. It gives an object-lesson of what can be done, and of how it may be done, to preserve the natural character of a country. In England the enclosure of sites and preservation of scenery too often result in the destruction of both fauna and flora. Where are the denizens, vegetable and animal, of White's Selborne? The present writer for many years had the privilege of research in a certain wild corner of Wensleydale which was as rich in rare plants and birds as any district in Great Britain. The ownership changed hands, and the whole of the wild life of the place was destroyed, first, by drainage for the purpose of making a coursing-ground, and later by operations connected with the water-supply of a great manufacturing town. This was vandalism no less brutal than the destruction of an exquisite statue.

It would be a profound satisfaction to lovers of nature if our country could be preserved in an efficient and comprehensive way. It is a work that could well be initiated by the Board of Agriculture. Dr. Conwentz, by the publication last year in English of his book "The Care of Natural Monuments, with Special Reference to Great Britain and Germany," has already given us a guide to both principle and execution. The present report—which can be read at one sitting—justifies his guidance.

A. E. CRAWLEY.

THE MIGRATIONS OF PLAICE.¹

THE marking of plaice was commenced on the east coast of Ireland in August, 1905, and in a recent report Mr. G. P. Farran deals with such recaptures as have been made up to the end of 1907.

The principal plaice grounds on the coast of Ireland considered are within the areas prohibited to steam trawling, and the recaptures have been chiefly made by the local sailing trawlers and by line fishermen. In these circumstances it seems possible that here, as in other "prohibited" areas, some cases of recapture by steam trawlers may, for obvious reasons, be suppressed by the fishermen concerned.

Omitting certain fish liberated under unfavourable conditions, the total proportion of recaptured marked plaice stands at 46 per cent., from which Mr. Farran concludes that the local fishermen remove no considerable portion of the stock of plaice on their fishing

grounds. As an instance of how heavily a small area can be fished may be noted an experiment made in Skerries Bay. One hundred and eighty plaice were marked in April, 1906, out of which number no fewer than one hundred and nineteen, or 66 per cent., had been reported before the end of 1907.

In contrast to the long migrations which have been observed in the North Sea and at Iceland, very little tendency to extensive wanderings is shown by the plaice in these experiments. The majority were retaken within ten miles of the position of liberation. It is interesting to note that an inshore movement in the Dublin Bay area was evident in the autumn. A similar tendency has been noticed at this time of the year in some other parts of the British Isles, and is a well-known feature of the small plaice grounds off the Danish coast.

The choice of a suitable label for these experiments seems to have presented some difficulty. The German pattern of Dr. Heincke was found satisfactory for the size of fish most frequently met with, but unsatisfactory experiments were made with one or two other kinds. It seems curious that no attempt was made with the Petersen form of label, which has been successfully employed in the Danish, English, and other investigations, and, in Dr. Schmidt's classic experiments at Iceland, continued to be returned with the fish more than three years after their liberation.

Mr. Farran's mode of tabulating his data has certain disadvantages. The usual method adopted in recording recaptures is to take them in chronological order. Had this plan been followed instead of taking the consecutive numbers of the labels (an arrangement which seems to have little to recommend it), reference and comparison with the experiments of other investigators would have been facilitated.

NOTES.

POLITICAL, municipal, industrial, and philanthropic activities are liberally represented in the list of Birthday Honours published on Tuesday, but science and other intellectual interests receive scant recognition. There are six new privy councillors, six new baronets, and thirty-two new knights in the list. Among the privy councillors is Sir Henry Roscoe, F.R.S., and among those who have received the honour of knighthood are Prof. W. A. Tilden, F.R.S., and Mr. E. H. Shackleton, the leader of the recent Antarctic expedition. Prof. A. H. Church, F.R.S., has been appointed a Knight Commander of the Royal Victorian Order (K.C.V.O.). Mr. T. L. Heath has been promoted to be Knight Commander of the Bath (K.C.B.), and Dr. Sven Hedin has been appointed an honorary Knight Commander of the Indian Empire (K.C.I.E.).

THE following is a list of fellows who have been recommended by the president and council of the Royal Society for election into the council for the ensuing year:—*President*, Sir Archibald Geikie, K.C.B.; *treasurer*, Mr. Alfred Bray Kempe; *secretaries*, Sir Joseph Larmor, Prof. J. R. Bradford; *foreign secretary*, Sir William Crookes; *other members of the council*, Dr. H. B. Baker, Dr. W. H. Gaskell, Prof. E. H. Griffiths, Prof. Horace Lamb, Prof. H. M. Macdonald, Major P. A. MacMahon, Dr. C. J. Martin, Sir Andrew Noble, Bart., K.C.B., Prof. W. H. Perkin, Prof. E. B. Poulton, Prof. J. H. Poynting, Lieut. Colonel David Prain, C.I.E., Prof. R. A. Sampson, Dr. A. E. Shipley, the Right Hon. Sir James Stirling, Dr. A. Strahan.

WE regret to see the announcement of the death of Dr. W. H. Dallinger, F.R.S., on Sunday, November 7, at sixty-seven years of age.

¹ Department of Agriculture and Technical Instruction for Ireland. Fisheries Branch. Scientific Investigations, 1907, No. iii.

"Plaice Marking Experiments on the East Coast of Ireland in 1905 and 1906." By G. P. Farran. Pp. 86+xxxiii plates. (Dublin, 1909.)