pared by Dr. Arthur Hollick, and presented by Professor D. T. MacDougal.

Mrs. Britton gave a chronological record of the study of N. A. bryophytes since 1850, with tabulated lists of publications and exsiccatæ, illustrating more particularly with books and pamphlets the progress of the study of the mosses since the publication of Lesquereux' and James' Manual in 1884. Professor Kellerman showed a collection of mosses formerly the property of A. Schrader who made the drawings for Sullivant's Icones. Most of the specimens are European, collected or presented by Lesquereux, but there a few duplicate types of North American species accompanied by plates, among them the originals of Sullivant's species from the Survey of the 35th parallel. The collection was presented to the Ohio State University by Dr. Townshend.

Professor Underwood gave a brief account of the progress of the study of the Hepaticæ, exhibiting his own publications and those of W. H. Pearson, A. W. Evans and M. A. Howe, and a set of plates from the last volume of the Memoirs of the Torrey Botanical Club, containing the enumeration of Californian Hepaticæ and Anthocerotaceæ. Twelve new species were figured by Dr. Howe, the originals of which were exhibited for him by Professor F. E. Lloyd, who commended the morphological value of his work.

An attempt was made to secure reports from all North American bryologists. This was only partially successful, as many were away and unable to be present. Dr. Barnes showed a set of the publications of Renauld and Cardot from the *Botanical Gazette* and of Roll from Hedwigia. Dr. George N. Best sent a set of his reprints and an abstract of his work. Dr. A. J. Grout sent a set of the Bryologist and his Revisions of some genera of pleurocarpous mosses with suggestions for a more satisfactory classification. Dr. Charles Mohr sent some notes on the moss-flora of Alabama, which were read by Professor F. S. Earle. Mrs. Britton exhibited a set of maps with regions marked where mosses have been collected, and lists of stations and collectors, compiled with the assistance of Dr. J. K. Small. Reports were received from the Sullivant Moss Chapter through its secretary, Mrs. Annie M. Smith, with a list of members and of the mosses named by Sullivant. The Philadelphia moss-chapter also made a report through its secretary, Mr. Mc. Elwee, with lists of the collections and publications available for studying the mosses at the Philadelphia Academy of Natural Sciences.

At the conclusion of the exercises, Dr. C. E. Bessey spoke of the desirability of founding a bryological scholarship to be named for William S. Sullivant. This proposition was heartily commended by the chairman and the various members of the Sullivant family present. During the remainder of the day the exhibits were open to inspection and duplicate specimens of *Orthotrichum Ohioense* were distributed.

Elizabeth G. Britton.

SECTION D (ZOOLOGY) AT THE DOVER MEETING OF THE BRITISH ASSOCIATION.

The president of this Section was Mr. Adam Sedgwick, of Cambridge, and his address dealt with such fundamental questions as reproduction, variation and heredity. He considers that one of the most important results of the evolutionary change has been the gradual increase and perfection of heredity as a function of organisms and a gradual elimination of variability. This would enable evolution to be effected much more rapidly in early periods than at present, and so may enable us to bring our requirements as to time within the limits granted by the physicists.

As some of the other Sections were to receive addresses of general biological interest,

it was arranged that Section D should adjourn after Mr. Sedgwick's address until the following morning. The scheme of work for the remaining days was this: Friday morning, morphological papers; Friday afternoon, entomology and some reports; Saturday, marine biology and reports; Monday, morphology, embryology, etc.; Tuesday, sea-fishery papers and discussions.

Amongst the morphological papers on Friday were:

1. Mr. J. Lister (Cambridge), 'On *Astrosclera willeyana*,' the type of a new family of Calcareous sponges. This remarkable new form was collected by Dr. A. Willey in the Loyalty Islands. Its abundant calcareous polyhedral spicules fuse to form a continuous branched skeleton. The ciliated chambers in the canal system are very minute, and the ciliated cells have no collars round the flagella.

2. Professor S. Symington (Belfast), 'On the Morphology of the Cartilage of the Monotreme Larynx.' The author considers that both the ontogeny and phylogeny of the mammalian epiglottis support the view that it is a single median structure, and not as Gegenbaur supposed the result of fusion of two lateral elements.

3. N. Bishop Harman (Cambridge), 'The Palpebral and Oculomotor Apparatus in Fishes.' Seventy species were examined. The degree of complexity was not found to agree with the probable phylogeny, or with the scheme of classification. The source of the complex musculature of the eyelids of Selachii was traced to the branchial musculature of the spiracle, and this was also exemplified by the inverse ratio existing between the condition of the spiracle and the nictitating membrane. In those fish in which the latter shows its highest development the spiracle is absent and *vice versa*.

The condition of the orbital sac of a supporting rod of cartilage in the eyes of many cartilaginous fishes, of the ligament in relation to the optic nerve in many bony fishes, and of the eye muscles and other neighboring structures, was discussed in the various groups and some species of fishes. The special condition of the obliquus superior in pleuronectids and in some mammals indicates the possibility of independent evolution of organs in widely severed types along similar lines when the conditions of use are similar. This paper will be published *in extenso* in the *Journal of Anatomy and Physiology*.

4. Several minor papers and reports were also taken.

On Saturday, when some of the zoologists from the French Association, then meeting at Boulogne, visited the Section, a few papers on Marine Biology likely to prove interesting for joint discussion were read. Mr. W. Garstang gave a report upon his periodic investigation of the plankton and physical conditions of the English Channel during 1899. They were carried out at quarterly intervals from a steamer along certain fixed lines from Plymouth to Ushant, then out to the 100 fathom line, and back to Plymouth across the mouth of English Channel. Serial observations were taken of the water temperatures of the salinity and of the contained fauna and flora. At first the plankton was collected by means of a pump and hose, but this proved unsatisfactory, and so Mr. Garstang devised a closing townet which is a modification and signification of Giesbrecht's. This new net and also that of Dr. C. G. Joh. Petersen, of Copenhagen, were on exhibition in the Section, and were also shown working in the sea to a party of zoologists on board Mr. Woodall's yacht one afternoon during the meeting. In the discussion that followed, Baron Jules de Guerne discussed the somewhat similar net he had been using on board the Prince of Monaco's yacht, *Princesse Alice*.

Reports upon the work done by holders

of the British Association tables at the Naples and Plymouth biological stations were then submitted.

On Monday the chief papers were:

1. J. S. Kerr, 'The Development of *Lepidosiren paradoxa*,' and a note on the hypothesis of the origin of the vertebrate paired limbs.

2. J. F. Gemmill, 'On Negative Evidence regarding the Influence of Nutrition in Determining Sex.' Dr. Gemmill deals with marine animals fixed in such a position that some individuals get more food than others. This seems to cause no difference in the proportions between the sexes.

3. F. P. Morena and A. Smith Woodward, 'Exhibition of Skull of Extinct Chelonian *Miolania*, and of newly-discovered *Neomylodon* remains from Patagonia,' with remarks.

4. G. E. H. Barrett Hamilton, 'The Fur Seals of Behring Sea.'

On Tuesday Sir John Murray read a paper on Dr. Petersen's experiments on plaice culture in the Limfjord, Denmark. Outside the fjord the plaice are found abundant, but small. When transplanted into the richer feeding ground they rapidly grow larger, and can be sold at such a price that it may be regarded as successful economic fish culture.

Mr. W. Garstang then gave an account of his experiments at Plymouth in rearing young sea-fish. He has used the Butterfly Blenny, kept in 'plunger' jars, not more than five larvæ to a gallon of water, and fed on plankton. The experiments have been very successful, about 50% of the larvæ being reared through the metamorphosis to young adults. Professor McIntosh finally had a paper on the occurrence of the grey gurnard (*Trigla gurnardus*) and its spawning in shore and off shore waters. He shows by a monthly examination of the statistics that this important fish does not begin to migrate in shore for spawning purposes until March, and attains its maximum in May. He does not consider that there is a second spawning migration later (August), as stated by the Fishing Board for Scotland. The spawning extends from April to September.

The reports of the committees to the sections were:

1. Naples Zoological Station, with report by Dr. Jameson on his work at Cephyrea.

2. Plymouth Biological Station, with papers on the embryology of *Polyzoa*, by T. H. Taylor, and on rearing of *Echinid* larvæ, by Professor MacBride.

3. Zoology and Botany of West India Islands, Final Report, with list of publications.

4. Zoology of Sandwich Islands, Exploration and publication both in progress.

5. Bird Migration in Great Britain and Ireland, Records now being worked out.

6. Zoological and Botanical Publication, Committee on Correspondence with Editors.

7. Index Animalium, First section (1758–1800) nearly ready for publication.

8. Pedigree Stock Records, Reliable Records by Photography of Pedigree Stock.

9. Circulatory Apparatus for Marine Organisms, Record of Color Changes in Crustacea.

Most of these committees were reappointed, with grants, for the coming year.

W. A. Herdman.

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*THE DIŒCISM OF THE FIG IN ITS BEARING UPON CAPRIFICATION.**

As is well known, the edible fruit of the fig is morphologically an enlarged, hollow, flowering branch, bearing within the nearly closed cavity thousands of minute flowers. It is therefore not a true fruit in a botanical sense, but a fleshy receptacle.

Two crops of figs are usually produced during the year; first, the *figues fleurs*, or *brebas*, which appear in March or April,

*Read before Section G of the American Association for the Advancement of Science at Columbus.