

plants known to M. Adolphe Brongniart in 1836 had been 527, in the new list they amounted to 1,792; and as in the 80,000 plants now known to exist in different parts of the globe, a large proportion consists of fucoids and fungi, which would disappear in the process of fossilization, it would be seen that the total number of known fossil species bore a considerable proportion to those now existing. Their numerical distribution in the different rocks is stated by M. Göppert to be as follows:—

|                     |     |
|---------------------|-----|
| Palæozoic .....     | 52  |
| Carboniferous ..... | 819 |
| Permian .....       | 58  |
| Triassic .....      | 86  |
| Oolitic .....       | 234 |
| Wealden .....       | 16  |
| Cretaceous .....    | 62  |
| Tertiary .....      | 454 |
| Unknown .....       | 11  |

Total..... 1,792

From this table it appeared that the carboniferous group contained more than half the known species of fossil plants, a remarkable circumstance when it was considered that the great herbivorous land quadrupeds had no existence before the tertiary period. The small number of plants in the cretaceous system was, no doubt, owing to the depth of the sea in which those formations were deposited.

Mr. GREENOUGH stated that an enumeration of all the known fossil plants had been published by M. Keferstein, arranged in the same manner as that proposed by M. Göppert. He warned geologists against drawing any inferences from the numerical proportion of plants in different strata, since their preservation would depend more upon the nature of their matrix, the depth of the sea, and other circumstances, particularly the nature of the plants themselves; for it appeared from Dr. Lindley's experiment that some plants entirely disappeared in water, whilst others remained for a considerable time.—Mr. C. J. BUNBURY said that too much importance had been attached to Dr. Lindley's experiment; the preservation of plants in water was stated to depend upon the nature of their tissue and consistency, the more robust plants best resisting decomposition; yet the *Equisetum hyemale*, a plant containing an unusually large proportion of silex, disappeared entirely. In this experiment the large and robust ferns were amongst those plants which best resisted the action of water, but in the coal measures many extremely well preserved species resembled in their consistency the recent *Trichomanes* and *Hymenophyllum*, which are as delicate and fragile as mosses. Again, it was evident that the plants preserved in the coal measures had not merely been subjected to maceration in water as in Dr. Lindley's experiment, but also to pressure, for the largest stems of *Sigillaria* and *Lepidodendron* were pressed flat, and it was probable that vegetable matter could not be converted into perfect coal without pressure, otherwise the volatile constituents would have escaped. The proportion of fossil plants in each formation must depend on other circumstances besides their power of resisting decomposition, and the experiment required to be made over again, with various modifications. It was a singular circumstance that no mosses had been discovered in the older rocks, and only two species in the tertiary; for although the terrestrial species employed in Lindley's experiment disappeared entirely, this would scarcely happen to the numerous species which live habitually in water and marshy situations.

'On the Structure and Relations of *Cornulites* and other allied Silurian Fossils,' by Mr. J. W. SALTER.—The singular fossil named *Cornulites serpularius* is well known as characteristic of the Silurian rocks of Gothland, Britain and North America, and its affinities have been the subject of much conjecture. Mr. Salter's investigations proved that it differed essentially from any crinoidal animal or coral, and was most probably an ancient form of the *Serpulinae*. From a similarity of structure in the *Tentaculites*, another abundant fossil of the Silurian rocks, Mr. Salter is disposed to refer it to the same group with *Cornulites*.

#### SECTION D.—ZOOLOGY AND BOTANY.

Dr. RICHARDSON read a Report, which had been called for by the Section, 'On the Ichthyology of China.' Till within a recent period, little was known of Chinese fishes. Linnæus was acquainted with

about a score of Japanese fish; and a few were afterwards added to the list by Langsdorff, who accompanied the Russian admiral, Knesenstiern, in his voyage to the Isles of Japan and the South Sea. With these exceptions, the fish of the eastern coasts of Asia, from the Sea of Ochotsk down to Cochin China, were, till very recently, known to European naturalists only from Chinese and Japanese drawings, several collections of which are to be found in the Paris and British libraries. Yet the fish of the coasts of China are abundant, and the fisheries extensive and important. Materials for the description of these fishes were not wanting. Mr. John Reeves had beautiful coloured drawings, mostly of the size of life, made of no fewer than 340 species of fish which are brought to the markets in Canton. Copies of these drawings now exist in the British Museum. Some fishes have been recently sent from Chusan; other Chinese fishes have been described in the account of the voyage of the *Sulphur*. A collection of 100 fishes made at Canton exists in the museum of the Philosophical Society of Cambridge. From these and other recent sources, the present report was drawn up. The author concluded from his researches that the existence of chains of islands or of continuous coast having an east and west tendency promotes the range of a species or of a group of species. Thus, to take the intertropical zone of the ocean, we find very many fish common to the Red Sea, the coasts of Madagascar, the Mauritius, the Indian Ocean, the southern parts of China, the Philippines, the whole Malay Archipelago, the north coasts of Australia, and the entire range of Polynesia, including the Sandwich Islands. In the generic forms of its freshwater fish, China agrees closely with the peninsula of India. If we could suppose that the extensive belt above alluded to, enclosing more than two-thirds of the circumference of the globe, to be suddenly elevated, we should find the remains of fish scattered over it to be everywhere very nearly alike,—the species having a local distribution being comparatively few and unimportant. These spoils of fish would, of course, in accordance with the observation of Prof. E. Forbes, be associated with very various assemblages of mollusks and other marine animals, according to the depth at which the deposit took place. This was an important fact for the science of Geology.

Mr. W. THOMPSON expressed his surprise at the number and apparent completeness of the lists given by Dr. Richardson.—Mr. OGILBY thought the views of the reporter of the greatest importance in a geological point of view. It opened up a new field for both zoological and palæontological inquiry. As far as the geographical distribution of fishes was concerned, those of the freshwater offered the greatest facility for study, as they could not pass from one point to another, on account of the ocean.—The BISHOP of NORWICH related several facts, showing that the spawn of fishes may be conveyed from one country to another over the sea. He knew an instance in which the ova of the pike were deposited in the thatch of a cottage, and after having remained there for years, on the thatch being thrown into a dry ditch, which afterwards became filled with rain, young pike appeared.—Dr. RICHARDSON stated that, in many zones of the earth, the same fishes appeared in the same parallels. It was not so over the Atlantic, where a deep sea intervened. The two sides of the Atlantic contained different fishes.

The Secretary, Mr. WOLLASTON, read a paper 'On the Periodical Appearance of certain Birds in North Wales.'

Dr. MACDONALD read a paper 'On the Unity of Organization as exhibited in the Skeletons of Animals.'

The SECRETARY read a paper from Mr. Bonomi, 'On a gigantic Bird sculptured on the Tomb of an Officer of the Household of Pharaoh.' "In the gallery of organic remains in the British Museum are two large slabs of the new red sandstone formation, on which are impressed the footprints or tracks of birds of various sizes, apparently of the stork species. These geological specimens were obtained through the agency of Dr. Mantell from Dr. Deane, of Massachusetts, by whom they were discovered in a quarry near Turner's Falls. There have also been discovered by Capt. Flinders, on the south coast of New Holland, in King George's Bay, some very large nests measuring twenty-six feet

in circumference and thirty-two inches in height; resembling, in dimensions, some that are described by Capt. Cook, as seen by him on the north-east coast of the same island, about 15° south latitude. It would appear, by some communications made to the editor of the *Athenæum*, that Prof. Hitchcock of Massachusetts had suggested that these colossal nests belonged to the Moa, or gigantic bird of New Zealand; of which several species have been determined by Prof. Owen, from bones sent to him from New Zealand, where the race is now extinct, but possibly at the present time inhabiting the warmer climate of New Holland, in which place both Capt. Cook, and recently Capt. Flinders, discovered these large nests. Between the years 1821 and 1823 Mr. James Burton discovered on the west coast or Egyptian side of the Red Sea, opposite the peninsula of Mount Sinai, at a place called Gebel Ezzeit, where for a considerable distance, the margin of the sea is inaccessible from the Desert, three colossal nests within the space of one mile. These nests were not in an equal state of preservation; but, from one more perfect than the others, he judged them to be about fifteen feet in height, or, as he observed, the height of a camel and its rider. These nests were composed of a mass of heterogeneous materials, piled up in the form of a cone, and sufficiently well put together to insure adequate solidity. The diameter of the cone at its base was estimated as nearly equal to its height, and the apex, which terminated in a slight concavity, measured about two feet six inches, or three feet in diameter. The materials of which the great mass was composed were sticks and weeds, fragments of wreck, and the bones of fishes; but in one was found the thorax of a man, a silver watch made by George Prior, a London watchmaker of the last century, celebrated throughout the East, and in the nest or basin at the apex of the cone, some pieces of woollen cloth and an old shoe. That these nests had been but recently constructed was sufficiently evident from the shoe and watch of the shipwrecked pilgrim, whose tattered clothes and whitened bones were found at no great distance; but of what genus or species had been the architect and occupant of the structure Mr. Burton could not, from his own observation, determine. From the accounts of the Arabs, however, it was presumed that these nests had been occupied by remarkably large birds of the stork kind, which had deserted the coast but a short time previous to Mr. Burton's visit. To these facts," said Mr. Bonomi, "I beg to add the following remarks:—Among the most ancient records of the primeval civilization of the human race that have come down to us, there is described, in the language the most universally intelligible, a gigantic stork bearing, with respect to a man of ordinary dimensions, the proportions exhibited in the drawing before you, which is faithfully copied from the original document. It is a bird of white plumage, straight and large beak, long feathers in the tail; the male bird has a tuft at the back of the head, and another at the breast: its habits apparently gregarious. This very remarkable painted basso-relievo is sculptured on the wall, in the tomb of an officer of the household of Pharaoh Shufu (the Suphis of the Greeks), a monarch of the fourth dynasty, who reigned over Egypt, while yet a great part of the Delta was intersected by lakes overgrown with the papyrus,—while yet the smaller ramifications of the parent stream were inhabited by the crocodile and hippopotamos,—while yet, as it would seem, that favoured land had not been visited by calamity, nor the arts of peace disturbed by war, so the sculpture in these tombs intimate, for there is neither horse nor instrument of war in any one of these tombs. At that period, the period of the building of the Great Pyramid, which, according to some writers on Egyptian matters, was in the year 2100 B.C., which, on good authority, is the 240th year of the Deluge, this gigantic stork was an inhabitant of the delta, or its immediate vicinity; for, as these very interesting documents relate, it was occasionally entrapped by the peasantry of the delta, and brought with other wild animals as matters of curiosity to the great landholders or farmers of the products of the Nile,—of which circumstance this painted sculpture is a representation, the catching of fish and birds, which in these days occupied a large portion of the inhabitants. The birds and fish were salted. That this document gives no exaggerated account of the bird may be presumed