todus, and South Africa has 1 species of Protopterus: in all not a dozen species of a tribe that was once very prominent. Pelagic fishes occur at all depths to nearly 18,000 feet. The "Albatross" brought up a Cyclothone from a depth of 17,694 feet (Agassiz). The species of the deeper waters are described as having the bones feebly calcareous, being slender and loosely connected, and some species will take in a fish for food three times as large as themselves. Many kinds are phosphorescent.

Cestraciont Sharks, once very numerous in species, are now but 4 in number, and all are of one genus, Cestracion. These are confined to the coast regions between Japan and Australia or New Zealand. The type has therefore nearly reached extinction.

From the facts reviewed with regard to marine life, it is apparent that the knowledge of depths and temperatures of living species affords little help for conclusions about the habits of ancient species. Many of the tribes that were represented by warm-water species and those of shallow seas, have now species that have become accustomed to great depths and cold temperatures. Modern Brachiopods are no criterion for the ancient; nor modern Crinoids, nor modern Corals.

Hot-water Life.

In the north point of Owen's Valley, California, according to Dr. H. C. Wood (*Am. Jour. Sci.*, 1868), at 120° F., and also at 160° F. (as learned from Mrs. Partz), occur Algæ, some growing to a length exceeding 2 feet. The species is named *Nostoc calidarium*. At the Hot Springs ("Geysers"), on Pluton Creek, California, Professor William H. Brewer observed Confervæ in waters heated to 140°–149° F., and simpler Algæ where the temperature was 200° F. At the same place, Dr. James Blake found 2 kinds of Confervæ in a spring of the temperature of 198°, and many Oscillatoriæ and 2 Diatoms, in one of 174°. In the waters of Pluton Creek, of 112° F., the Algæ formed layers 3 inches thick. Dr. Blake also collected 50 species of Diatoms from a spring in Pueblo Valley, Nevada, the temperature being 163° F.; and they were mostly identical with those of beds of infusorial earth in Utah. At San Bernardino, California, William P. Blake found living Confervæ in water at a temperature of 130°. At Camiguin Island, east of Cebu, Moseley found living Algæ at 113½° F.; and W. T. T. Dyer has reported that Oscillatoriæ have been observed growing at 178° to 182° F.

The various hot springs of the several Geyser Basins, in the Yellowstone National Park, contain very various Confervoid forms. The hottest springs, up to 200° F., contain numerous long, slender, white and yellow vegetable fibers, of undetermined relations, waving in the boiling eddies, and becoming buried in the siliceous deposits over the bottom, where they often form layers several inches thick. The bright green forms appear to be confined to lower temperatures. W. R. Taggart reports that, at the vents on the shores of Lewis's Lake, *leafy* vegetation is limited to temperatures below 120° (Hayden's Reports, 1871–2). Dr. Josiah Curtis found, in these hot springs, siliceous skeletons of very numerous Diatoms; but the *vegetable matter was wanting* in all cases where the temperature exceeded 96° F. So many different causes might introduce these skeletons to the hotter pools, that their presence has not necessarily any more significance than that of the Grasshoppers and Butterflies which are frequently found in the same pools. — Of animal life, living larves of *Helicopsyche* were found, by Mr. Taggart, in a spring having the temperature of 108°, into which, however, they might have crawled from the river, which was close by; so that the eggs were not necessarily laid at the temperature given.

At Baños, on Luzon, Philippine Islands, the author observed feathery Confervæ in waters heated to 160° F. In springs in the Pass of Chivela, having a temperature of 98° F., the United States Exploring Expedition of 1872 found Fish; and, according to Mr. James Richardson, Fish occur in springs in Marocco having a temperature of 75° F.

On the subject of the geographical distribution of animals, the most important works are Wallace's work in 2 volumes under this title, and his *Island Life;* and on North America, J. A. Allen, 1892, Bulletin American Museum, New York.