

FISHES NEW TO THE FAUNA OF SOUTHERN
NEW ENGLAND RECENTLY COLLECTED
AT WOODS HOLE.

DURING the past four years a rather large number of fishes, chiefly sub-tropical, have been collected by the U. S. Fish Commission at Woods Hole; some of these were not previously known on the Middle Atlantic and New England coasts, some had not before been detected in United States waters, one was new to the western Atlantic, and two were undescribed. Notwithstanding the continuous systematic collecting which has been carried on at this place for more than a quarter of a century, nearly every season yields unlooked-for additions, the present year being no exception. There are now known from the immediate vicinity of Woods Hole 222 species of salt-water and fresh-water fishes; this is a much larger number than has been reported from any other single locality in the United States except Key West, or, in fact, from any State north of Florida. Going back only to the fall of 1894, the record of additions to the local fish fauna comprises 12 species belonging to 10 teleostean families; most of these are so interesting that they will be separately referred to, 5 being new to United States waters.

The mackerel family (*Scombridae*), which was already very generously represented at Woods Hole by 10 species, added another member in 1895, when a specimen of long-finned albacore (*Germo alalunga*), 3 feet in length, was taken in the harbor. This pelagic fish is known from the Pacific, the eastern Atlantic and the Mediterranean, but has apparently not been met with elsewhere in the western Atlantic.

Three species of 'butterfly-fishes' (*Chaetodontidae*), a brilliantly colored family of the tropical seas, have been taken at Woods Hole. One of these, the 'parche' (*Chaetodon ocellatus*), is not rare, being observed here nearly every year and also occurring

in New Jersey and Rhode Island waters. The 'Portuguese butterfly' (*C. striatus*) is a straggler met with in 1894, one specimen being taken in October; it is not known elsewhere outside the West Indies. In 1897, in August and October, 6 examples of a strikingly beautiful new chaetodont (*C. briceii*) were obtained.

Five species of the typical sub-tropical family of snappers (*Lutianidae*) are now known from Woods Hole as stragglers, two being noticed for the first time in 1897. Besides the red snapper (*Neomænis aya*), the schoolmaster (*N. apodus*) and the mutton-fish (*N. analis*), there were taken last year in September young specimens of the gray or mangrove snapper (*N. griseus*) and the dog snapper (*N. joco*). The first of these has been recorded from New Jersey, but is not found in any abundance north of Florida; the second has not been previously reported north of the Florida Keys.

One of the most noteworthy captures was a small trigger-fish of the genus *Canthidermis*, taken in 1897; this is referable to Cope's *Balistes asperimus* from the Isthmus of Panama, the type of which, in the Philadelphia Academy of Natural Sciences, has been compared with the Woods Hole specimen. No other examples are known, unless these prove to be the young of *Balistes sobaco* of Poey, from the West Indies.

In 1895 a porcupine-fish (*Diodon hystrix*) was taken in Buzzards Bay near the station. The only other specimens known to have been found north of Florida were taken on the shores of Maryland many years ago.

The family of marine gars (*Esocidae*) has three members on the New England coast, one of which (*Athlennus hians*) is represented by a large specimen taken at Woods Hole in 1895. This species normally ranges from the West Indies to Brazil, and is not elsewhere recorded north of Florida.

The 'permit,' or black-finned pompano (*Trachinotus goodei*), described in 1896 from

the West Indies and southern Florida, was first taken at Woods Hole in 1894, and has since been found on several occasions. The species attains a weight of over 25 pounds, but only small specimens (3 inches or less) have up to this time been obtained here.

One species of half-beak (*Hyporhamphus roberti*) is common at Woods Hole, and in the current year another species (*Hemirhamphus brasiliensis*) was found for the first time. The latter is reported from Chesapeake Bay, but from no other localities north of Florida.

In August, 1898, there was taken a small file-fish of the genus *Alutera*, which resembles a fish known from Asiatic waters since pre-Linnæan times and described by Osbeck in 1757 as *Balistes monoceros*. It also has some points of similarity to the Cuban fish described and figured by Parra in 1787 under the vulgar name of 'lija barbuda,' which was subsequently identified by Poey and called by him *Alutera guntheriana*; the latter is regarded by some recent authorities as identical with *A. monoceros*, but the lack of specimens has prevented a settlement of the question. The Woods Hole fish differs in a number of important features from the foregoing, and apparently represents an undescribed species.

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NOTES ON INORGANIC CHEMISTRY.

UP to the present time there has been little experimental evidence of the trivalence of the so-called rare earths. They form no volatile compounds in which the density can be determined. The single proof of the correctness of the formulæ Ce_2O_3 , La_2O_3 , etc., has been the determination of the specific heat of the metals by Hillebrand, which would give the atomic weights of the metals as about 140. This has been generally accepted by chemists, but from time to time

certain French chemists, notably Wyruboff, have questioned the trivalence. This has been largely on crystallographical grounds. Wyruboff shows that the silicotungstates of cerium, lanthanum and didymium are isomorphous with that of calcium, and argues from this that these metals must be bivalent. It is also stated that these metals in their compounds have certain strong resemblances to the alkaline earths. The whole subject is taken up by W. Muthmann, of Munich, in the *Berichte* and very fully discussed. He finds that many of these supposed resemblances do not exist in reality and that others do not substantiate the inference drawn from them. Particularly he shows that the fact that metals replace one another in isomorphous salts by no means proves them to have the same valence. By this argument a large share of the metals would be made bivalent. Especially in salts of high molecular weight, as in the salts of complex acids, the negative complex is the dominating influence in determining crystallographic form. This important principle is well sustained by Muthmann. To settle the matter of the valence of these metals beyond controversy, he has determined the valence, by the conductivity of solutions of lanthanum nitrate, sulfate and chlorid of different strengths, and the molecular weight of cerium chlorid by the boiling-point method. In every case a trivalent formula is obtained, and the correctness of the usually-given formulæ for compounds of these metals may be considered as finally established.

THE work of Professor Jörgensen, of Copenhagen, on the cobalt-ammonia bases is well known. It has continued over many years, following the work of Gibbs and Genth, which was published in the *Smithsonian Contributions to Knowledge* in 1856. In the last number of the *Zeitschrift für organische Chemie*, Jörgensen gives a most