"No such arrangement as the one under consideration exists in any other country.

"Its importance to the advancement of the knowledge of the larger marine vertebrates cannot be overrated. Hitherto zoologists have been forced to content themselves with examination of specimens of which the stranding has been reported indirectly through the newspapers or otherwise. In the majority of such cases the rapid progress of decomposition has made it impossible to preserve more than the skeleton, and so it has come about that the external appearance of many large species is quite unknown. By the present admirable arrangement, however, and the extension of our railroads, a specialist can be dispatched to almost any point on the eastern coast in time to observe in a fresh state any stranded animal which may have been reported.

"Washington, D. C., November 13, 1883."

In return for the services rendered by the Life-Saving Service, copies of the reports of the Smithsonian Institution, and the reports and bulletins of the Fish Commission, are sent to the Atlantic coast stations.

Under date of November 13, 1882, a letter similar to that addressed to the superintendent of the Life-Saving Service was addressed to Vice-Admiral Stephen C. Rowan, U. S. N., chairman of the Light-House Board. Under date of February 13, 1883, the chairman of the Board addressed a circular to all keepers of light-stations, quoting Professor Baird's letter, and saying:

"Your attention is called to the letter addressed to this office by Prof. Spencer F. Baird, U. S. Commissioner of Fish and Fisheries, and you are requested to render him all the assistance possible in furtherance of the objects specified therein not incompatible with the performance of your regular duties."

Very little has resulted from the instructions to light-house keepers, as their duties do not call them to patrol the coast.

WASHINGTON, D. C., *July* 31, 1884.

191.—USE OF LIGHT IN SEA-FISHING.*

That light exercises a certain influence on fish is an ascertained fact; but how far it operates to attract or repel is uncertain. The drag-net fishermen have learned that, when there is much phosphorescence in the sea, herring enter the nets reluctantly, as the light which the nets produce by their movement in and through the water frightens the fish away. The idea underlying the method by which light is utilized for the capture of anchovies, of which more is said further on, is that its influence is more to repel than to attract fish. It is, however, not our purpose here to pursue this question further, but only to mention some

*From *Norsk Fiskeritidende*, Vol. III, No. 2, April, 1884, pp. 114-116. Translated by TARLETON H. BEAN, M. D.

examples of the use of light in sea-fishing without regard to the mode in which it operates.

Periodically there appears in autumn, from August to the close of October, a pike-like fish, *Belone acus*, in great schools. They are captured on dark nights in the following manner:* Upon arriving at the fishing place the sail is taken in, whereupon they pull cautiously around searching for the schools. These are easily discovered, because they are constantly pursued by dolphins, which gorge themselves upon the *Belone*. As soon as a school is discovered a fire is kindled in an iron vessel which is fastened to the bow, whereupon the boat is swung noiselessly around many times in order that the light may be thrown in all directions. "Attracted by this," says the author, "the fish collect around the boat and remain near it, often even following its revolutions. Thereupon the school is decoyed literally to the shore as it follows the boat, which is rowed cautiously towards the beach. In doing this, however, care must be exercised not to touch the bottom, as the least shock will frighten the fish away. A couple of meters from the shore the headway is stopped, the oars are taken in, and the fish are scooped up from both sides with dip-nets. At first a few fish are scared off, but they quickly return and join the main school, which does not move. In this way a thousand kilograms of fish are frequently taken in the space of a couple of hours."

At many places in the Mediterranean anchovy fishing is prosecuted in a similar way. When a school has collected around the torch-bearing boat, another boat encircles it with a net, whereupon the lights are extinguished. The spell is broken; a quick stroke of an oar in the water causes the last remnant of them to disappear, and in the meshes of the nets the deluded fish must pay the penalty of their recent blindness or confusion. In your country, in Altenfjord, possibly also in other places, light is sometimes employed in the herring fishing in autumn. When the school has been brought to a standstill by the use of light, the fish are scooped up with dip-nets, and the yield is often gratifying.

During the London Fisheries Exhibition there was exhibited from Tarragona, Spain, a boat with an open well in the middle in which well could be placed a box furnished with a glass bottom and in its lower portion with glass sides, in which box lamps could be placed. The box was lowered so far that the glass sides and the flame of the lamps were below the bottom of the boat so that the light could shine in all directions. So far as I remember, it was especially intended to be used for the capture of cuttle-fish. In Newfoundland, also, light is often employed in the capture of these mollusks. The fishermen make a fire on the shore and the light so absorbs the attention of the cuttle-fish that with the incoming tide they are stranded on the beach where they are picked up. Where it frequents the deep water, and where there is a long beach, the method of fishing just mentioned as occasionally employed will be

*Nicolas Chr. Apostelides, *La pêche en Grèce*. Athens, 1883.

worthy of a trial, though in such places it is not used for the capture of cuttle-fish. Here is employed an artificial decoy fish made of wood formed nearly like a flat-bottom boat with pieces of glass set in the bottom and sides. It is of the size of the body of an average cuttle-fish, and is trolled after the boat. According to the author previously mentioned, the ancient Greeks towed after the boat a female in order to attract the males, which were then scooped up with the net. Since at the present time it is often difficult to procure a female, the modern Greeks substitute for the natural decoy an artificial one.

The capture of fish by means of light is extensively employed in shallow-water and in fresh-water fishing, but it is confined to the taking of fish singly. In the sea fishery light is employed also in some places, as we have seen, for the capture of fish in schools. The reason why this "auxiliary weapon" has not come into general use is twofold: partly because of technical difficulties, and partly because its operations with the means which people hitherto have been able to command have been confined to a very small territory in comparison with that operated upon by other means of capture. The development of the electric light will probably lead to its more extended use in the fishery service than hitherto; but we assume that its especial use must be as a means of dazzling the fish, which will arrest them until they can be caught with other implements. Its use in the purse-net and trawl-net (*Synkenot*) fishing is therefore only a question of time.

192.—THE MODE OF LIFE OF EELS.*

By HERR HINKELMANN.

When you ask fishermen how it comes that the yield of the eel fisheries on our Baltic coast varies greatly in the different years, you will always get the answer that this is owing to the direction and the force of the wind. Observations on the mode of life of eels, made by me for a number of years, have fully corroborated these statements of the fishermen.

As far as our coast is concerned, the eel fisheries are most successful in autumn, during a southeast wind, while when the wind is from the northeast, east, and south-southeast, the results of the fisheries in most places leave much to be desired. During all other winds from the west the yield of the fisheries is reduced to a minimum, so that they become absolutely unprofitable. Of less influence than the direction of the wind is its force. It may, however, be laid down as a rule that the stronger

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* *Ueber die Lebensweise der Aale.* From Circular No. 3, 1884, of the German Fishery Association, Berlin, April 4, 1884. Translated from the German by HERMAN JACOBSON.