

In this region, the most important sea fishes (from an economic point of view) are the cod and halibut, the herring and mackerel. The first two of these feed for the most part at the bottom, and the last usually at or near the surface of the sea.

There are many points in connection with the natural history of the cod fish (or fishes) of the St. Lawrence which require elucidation. Whether there are one, two, or even more species is not very clearly ascertained. Dr. Gunther says that the European cod (*Gadus morrhua*, Linn.) ranges from the "coasts of northern Europe, Iceland and Greenland, southwards to New York." On the other hand, Mr. Putnam and Professor Gill state that the cod of the Labrador coast is the American cod, *Gadus arenosus* of Mitchell, the *Morrhua Americana* of other writers. If the European and American cod are distinct species—a point which, we think, has yet to be decided—it is probable that both are to be found in the Gulf of St. Lawrence.

A few experiments made on the spot, *in the depth of winter*, would throw much light on what becomes of the cod, and of other kinds of fish also, in the cold months. Whether this species is migratory or not in its habits is quite an open question, so far as facts are concerned. We now know something of the animal life of the deep-sea mud, though not so much as could be wished. Although the invertebrate fauna of the deep sea is tolerably varied, there is a far larger number both of species and individuals in the zone between low-water mark and from sixty to seventy fathoms water, than there is between 100 and 300 fathoms. Such, at least, is my experience, so far. But in Canada it is by no means improbable that many species, especially among the higher crustacea, may live in shallow water in the summer and retire to deeper places in winter. As it is not possible to dredge at this season, we cannot tell whether such is the case or not. The evidence in our possession is at present insufficient to shew more than that a certain amount of food for cod does unquestionably exist in the greatest depths.

The dates at which cod spawn vary much in different seasons and at different places. No kind of animal food seems to come amiss to this fish. It devours greedily herring, capelin, mackerel, lance, squids, crustaceans, mollusca, brittle stars, and even, as Dr. Fortin and others assure me, young individuals of its own species. After the spawning season is over, the adult cod (the "mother fish" of the fishermen) congregate mostly on banks, where they devour crustaceans, mollusca, &c. The young fish, on the other hand, live and feed in shallow water, near the shore. The cod which feed on banks, take only, or almost only, *full-grown* specimens of crabs, shells, &c. and leave immature ones. As these fish rarely visit the same feeding ground two years in succession, a constant supply of food is thus ensured. The natural enemies of the cod are, fortunately, not very numerous, nor do they seem to affect the value of the fisheries in an appreciable way. The grampus and the various kinds of seal, the osprey, bald eagle, and various sea birds, together with sharks and some other large fishes, undoubtedly destroy great numbers of cod. Far more to be feared than these are the results which can hardly fail to ensue from a wasteful and improvident system of fishing.

The practice of manuring the ground with capelin, herrings, &c. (and doubtless often with young cod also), has often been complained of: it should be discouraged and if possible put a stop to. From the Appendices to the last Report of the Fisheries branch of this Department, I learn that in the year ending 30th June, 1871, 1,457 barrels of herring, 7,848 of capelin, and 260 of smelts, were used as manure!

In Gaspé Bay, complaints have often been made in my hearing of the use of seines along shore (by Americans), for the purpose of catching mackerel or bait. Large quantities of young cod are said to be caught in these seines with the mackerel, and the former are thrown away as useless. It seems desirable to prevent, as far as possible, the capture of cod of a size too small to be of any value for food. Crews of United States' schooners, &c., fishing outside the three-mile limit, clean and salt the fish caught on board their vessels, and almost invariably throw the offal overboard upon the fishing grounds. It is said that this latter proceeding has an injurious effect, and that it tends to drive the cod away from its spawning grounds. This, however, may be local prejudice merely; and in justice to the Americans it must be added, that the law does not, at present, allow