

to terminate Mr. Graham's engagement, and gave him notice to that effect, fixing the 20th December as its closing date. This arrangement was conditional on the position of its finances at that date. At the close of the financial year no finality had been reached, and the Board renewed his engagement till the 20th April.

During the early portion of the past financial year correspondence from your Department, on the suggestion of the Treasury, made it a condition of the continuance of the annual grant to the Station that the Board should impose an admission charge to visitors. In the chairman's reply of the 20th June to the Secretary's letter, it was pointed out that such a scheme was not workable. The charge could not be collected. It was pointed out, *inter alia*, that most of the visitors from Dunedin come by way of Port Chalmers and it costs them 2s. or 2s. 6d. a trip, of which 1s. 3d. or 1s. 9d. goes to the Railways Department, and the balance to the Ferry Service. Students and school pupils simply could not come to the station if a charge were made, and the great educational value of the place would be lost, thus at a time when the chairman and others are striving to get more natural science taught in our schools.

The following suggestions were made :—

(1) That the biologist give demonstrations or talks on Saturdays and public holidays and make a charge of 1s. on these occasions. The collection of such fees would always be a matter of difficulty, as the station is open to every passing boat on the one side, and to every one who walks over the hill from the land side. (This proposition has not been given a trial so far, but it is hoped to carry it out in some modified form in the future).

(2) That a definite charge be made for all biological material supplied to museums and to the biological departments of University colleges for teaching purposes. A list of such material has been drawn up by Dr. Benham, with the assistance of Professors Kirk (Victoria College) and Percival (Canterbury College), and has been issued. A copy of this list, which covers forty items, is appended herewith.

(3) A proposal made by members of the Board has also been given effect to. A collection-box, with a notification that contributions from visitors will be welcomed, has been placed in the aquarium, and has already received a certain measure of support.

BIOLOGICAL WORK.

Owing to Mr. Graham's prolonged absence, no attempt could be made to ascertain the conditions under which the groper (*hapuka*) and red cod spawn, which is the first stage in their life-histories. Their ova ripen about July, when the fish mostly cease to take bait, and probably move into deep water. Apparently the only way to solve these interesting problems would be to go out with the steam trawlers during the spawning season. Males of both species have been taken with milt flowing from them, but females with ripe ova have very seldom been met with by fishermen, and then only at depths of 40 fathoms or more. This information has been obtained from several fishermen of Otago Harbour. Mr. Howes has made an interesting suggestion which may prove of value in future investigations. In European seas it has been stated that at the spawning season the female cod (*Gadus morrhua*) are only found in very deep water, while the male fish occur at a much higher level in the sea. If this is really the case then the ova liberated at these considerable depths float up and are fertilized at the higher levels, and the fertilized eggs float to the surface where with the brighter light and increased oxygen-supply the larvæ are hatched out. We have no records of the egg-production of the red cod. But female groper are known to produce two or three million eggs or more, and if these fish congregate in certain areas about spawning-time, as is probably the case, the first question is to discover these areas and then endeavour to arrive at some knowledge of their spawning-condition.

Rearing of Native Species of Fish.

Green-bone or Kelp-fish (*Coridodax pullus*).—Continuous attempts were made by Mr. Graham to obtain fertilized eggs of this species, but so far without success. On the 9th November numerous nearly mature females were secured, but no males appeared ripe enough to produce milt. Similarly fish brought to the station by local fishermen were in the same immature condition. On 3rd, 12th, 15th, and 24th December female fish with mature eggs were secured, but no ripe males. "Ripe eggs were placed in the glass tanks and ponds with male fish in the hope that they might be fertilized, but with negative results. While the nets were set we used the launch for tow-netting in the hope of obtaining fertile eggs." One ripe female specimen had about 70,000 eggs. "Ripe eggs that were stripped from the female fish were brought in, males were opened and the milt taken out and macerated in water, and placed in the jar with the eggs, but fertilization did not take place. Measurements and drawings were made of the eggs."

Garfish (*Hemiramphus intermedius*).—The first garfish were taken on the 19th November, the females being almost ripe, but the males not nearly so. On the 23rd another haul was made, when large numbers were netted, containing many almost ripe females. Bad weather prevented a further catch till the 8th December, when numerous ripe fish, both males and females, were secured. The fertilized eggs were placed in containers and supplied with water through the iron pipes, but all died within eight days. On the 11th and the 18th December further nettings were carried out, but neither the males nor females which were obtained were mature. On the 22nd "a splendid haul was made of ripe males and females. The eggs were quite ripe and males fully ripe enabled us to secure quantities of fertilized eggs. These were placed in glass containers under iron pipes, also in glass jars and hatching-boxes with water direct from the main tank, eliminating the iron pipes. Those placed under the iron-pipe water all became covered with rust and died. In the hatching-boxes the eggs twined about each other with the long filaments and formed balls which had to be shaken to remove as much