the spacing of hooks 9 feet apart as compared with 13 feet. (2) That the yield of a skate is directly dependent on its length. Before going on to examine the evidence for these propositions, let us try to visualise the conditions under which they could be valid. It is, for example, clear that (1) would be invalid, were the fish so dense that there was competition among them for the bait; and, conversely, we may say that (1) is most likely to be valid when the number of hungry halibut is much less than the number of baits. The investigators say that the habit of the halibut is to take a number of baits in succession, until finally it is caught on one of the hooks, this idea being derived from the comparative frequency with which a halibut is taken with several baits in its stomach. That being the case, it is easy to understand that the number of baits is generally in excess of the number of halibut susceptible to them. Considering (2), that the catch is dependent on length of line, though independent of number of hooks, it seems that the halibut must be attractable by a certain proximity of baits to their whereabouts, so that a longer line has a greater chance of being in the proximity of a shoal.

For the sake of brevity we pass over the evidence for these two propositions, merely noting that the evidence for both of them lies in comparison of carefully selected statistics. While this method has the advantage of comprehensiveness (as compared, for example with trial fishing), it leaves room for unknown factors to enter into the explanation of the relations found. (This is recognised by the authors). Nevertheless there can be little doubt that the authors are justified in applying these two principles to their statistics.

The upshot is to demonstrate a marked decline of abundance in all the area fished. The details hardly concern us; but we shall certainly heed the broad fact that fishing with baited lines, a method that we have always regarded as harmless compared with trawling, can result in such a marked diminution, (81 per cent from 1906 to 1928 in one area). What about our European stocks? M. G.

H. Blegvad. Aerial Spotting of Fish Shoals. Danish Experiments in 1930. Rept. Dan. Biol. Stat. Vol. XXXVI. Copenhagen, 1930.

The Danish experiments carried out during 1930, although interesting, differ but little in their results from those already made in other European countries.

A seaplane equipped with wireless and with accommodation for three persons was used. Dr. BLEGVAD acted as observer.

The flights were made off the east coast of Denmark at two different periods, July 22—28 and September 4—7. Weather conditions were somewhat variable and favourable conditions for observations were obtained in 10 of the total flying time of $17^1/_2$ hours. Flying took place at altitudes between 200 and 400 metres above sea level, and under favourable weather conditions good visibility under the surface was obtained to a depth of 10 metres. During the earlier phase of the experiments no fish or fish shoals were located. In September, however, the results were slightly more encouraging. On one occasion a few large cod were observed over a shallow

area with a sandy sea-floor. On another occasion a few tunnies were recorded, while during the last flight made under favourable flying conditions a large shoal of mackerel was located. The shoal appeared as a narrow belt with a length estimated at 500 metres and a breadth of about 50 metres. Information of the location of this shoal was sent to the National Broadcasting Company. Unfortunately Dr. BLEGVAD does not state whether the information was acted upon or whether the fishermen derived any benefit therefrom.

It is clear from the gradually accumulating evidence from such experiments that the possibilities for the successful use of aircraft in the location of fish shoals is very limited in northern European waters. The chief limiting factor is, of course, the variability of the weather, but even under favourable conditions success with an air machine can be expected only in the observation and location of species which frequent comparatively shallow water or swim in the upper water layers during daylight. Dr. BLEGVAD attributes his lack of success partly to unfavourable weather conditions and partly to a scarcity of herring and mackerel in the shallow or surface water layers. Herring shoals have been located on the coastal fishing grounds at Iceland, and this success is due to a behaviour of the species peculiar to that area, the herring shoals at Iceland rising near the surface at certain periods during the hours of daylight. In European waters, however, this species tends to keep to the deeper water layers by day beyond the range of drift nets which is well beyond the range of vision from aircraft. Mackerel shoals frequently come to the surface water layers and this species may therefore offer further opportunities for search by aircraft.

Although the results of experiments for the location of fish-shoals have been somewhat disappointing it is desirable that such experiments be made, and one readily agrees with BLEGVAD's suggestion that, if the experiments cannot be carried on as hitherto, they may be combined with such fisheries duties as require the use of aircraft. HENRY WOOD.

J. le Gall. La pêche en Islande. Revue des travaux de l'Office des Pêches Maritimes. Tome III, Fasc. 3., No. 11, pp. 213—382. Paris, 1930.

The development of the sea fishery and the necessity of procuring extensive fishing areas has in recent years led to the West-European countries turning their attention, in an ever increasing degree, to the more northern fishing grounds. In the literature on the subject, this development has occasioned in recent years a series of very valuable treatises on the fishery in the northern seas. The treatise before us is an earnest appeal for the resumption of the once so important French fishery in Icelandic waters; the author deals, however, with the fishery in these waters as seen from all points of view, and in his paper he has collected a large amount of matter of value for the elucidation of the whole of this subject.

The fishery-biological conditions in the Icelandic area have, through Prof. JOHS. SCHMIDT's investigations in these extensive waters during the last thirty years or so, been elucidated in manifold ways and the basis of practically all the fishery-biological facts advanced in the present work rely, in fact, on the series of publications issued by SCHMIDT