

W. C. SMITH. A Study of the Manx Herring Shoals during the Period 1923—1928. Report for 1928 on the Lancashire Sea-Fisheries Laboratory. No. XXXVII. Liverpool, 1929.

Biometric and age data obtained from bi-weekly samples of herrings from commercial landings, supplemented by close personal observation of the landings themselves, form the raw material for Mr. SMITH'S studies of the Manx herring shoals. In the month of May shoals of herrings in their third and fourth years of life, with smaller quantities of fifth-year fish, begin to move into Manx inshore waters; and the numbers increase weekly until the end of July when the concentration is usually completed. A migration offshore then takes place to the spawning area which is situated, presumably, somewhere off the Calf of Man. Older fish, of five years and upwards, do not appear in Manx waters until the middle of August, when they are almost exclusively in "full" condition, with little intestinal fat. They are taken on the Calf of Man offshore ground until the middle of September, and begin to spawn about the first week of that month. These older fish do not move into the inshore area.

Mr. SMITH infers that the inshore fish are recruit spawners assembling for their first spawning which will take place off the Calf of Man in the autumn, and he advances evidence to show that the first spawning occurs rather later in the season than subsequent ones. In his opinion the Manx herring first shoals for spawning during its fourth year of life in the majority of cases, although many individuals join the spawning shoals one year earlier, while a few may have reached their fifth year before gonad development begins. Certainly at the end of the fifth year practically all Manx herrings have spawned at least once.

The conclusions reached regarding the growth of the Manx herring, as compared with that in other areas, are rather less convincing. In the absence of contemporary data on the length of the fishes at the formation of the first winter ring on the scales, observed differences in total length between Manx herrings and those of a similar age from the North Sea, English Channel, Cardigan Bay and other districts are not easily interpreted in terms of relative growth-rates. Thus, although it is probably true that the herrings which live nearest to the open Atlantic are enjoying the most favourable conditions for growth, and that Manx fish, after spawning, migrate south to the Atlantic, the evidence offered in this instance is not in itself entirely conclusive. The same may be said concerning the reason why Manx herrings caught offshore are slightly larger than those of the same age taken inshore. Comparisons of growth between fishes of the same age-group must take fully into account the absolute size at the end of each annual growth increment, including the first.

Mr. SMITH'S contribution is a valuable one in that it gives assurance that in Isle of Man, as in other parts of British waters, continuous and detailed study of the local herring fisheries is being maintained.

E. F.