

As before, the author finds that *Tellina tenuis* shows no growth during the winter months, and that the growth at L.W.M. was less than that near H.W.M. Taken as a whole, the rate of growth during 1928 was of the same order as that of 1927; yet one of the stations above L.W.M. showed less growth in 1928 than in 1927; in 1927 also the rate of growth from March to June was greater than that from June to the beginning of October, but in 1928 the position was reversed.

From a study of the size-frequency curves for 1928 the author finds his view of a missing year-group (1925) on the curve for 1926 to be confirmed.

It is a curious fact that there were no signs of any growth or of year-groups at the stations below L.W.M. There had, however, been a very heavy mortality from September, 1926, to September, 1928. This is explained by the author in the following way. Huge numbers of the spat of the rich year-group 1926 settled on this ground during the summer and autumn of 1926, causing overcrowding to such an extent that the food supply proved insufficient. Therefore the growth became slight, the mortality high, and the year-group 1926 is now dying off.

On Hunterston Sands at Perch the 1926 spat still dominated in the samples of April and June, 1928, but in the samples of September, 1928, this year-group had gone; only the empty valves were found in large numbers; they were whole and therefore not taken by fish, but what was the cause of the mortality here, was not apparent.

By an examination of the modes of the 1926 spat on the different size-frequency curves the author found the yearly increment for this year-group at two stations to be 4 and 6 mm., respectively, in 1927 (the I-group), but only the half (2 and 3 mm., respectively) in 1928 (the II-group). This result is in accord with that which ORTON has found for *Cardium edule*; the author points out that if it holds good for all Lamellibranchs that each annual increment is approximately half of the preceding year, we have a means of estimating the age of the numerous small, but from the economic point of view important, species, when only the first full year's increment is known. In the opinion of the present reviewer the matter is, unfortunately, not so simple; the growth rate of several of the Danish Lamellibranchs seems, at all events, not to follow this rule.

H. BLEGVAD.

K. ALTNÖDER. Untersuchungen an den Heringen der westlichen Ostsee und Bericht über die Untersuchungsfahrt zur Feststellung des Vorkommens von Herbstheringslarven in der Laichperiode 1927. Berichte d. deutschen Wiss. Komm. f. Meeresforschung, Neue Folge, Bd. IV, H. 3. Berlin 1928.

The author deals with a large number of herring samples from the German coast of the western Baltic from Rügen Island to the Danish frontier. He studies especially the spring spawners in regard to their racial characteristics, state of gonads, size and spawning places, and he has obtained a number of valuable results.

He gives the characteristics of the spring spawning herring which are taken with the purse seine in Lübeck Bay. The main characteristics are:

Vert. S.	Vert. praeh.	$K_2$
55.42	23.38	13.87.

In the spring this herring migrates to the Dassow Sea (an enlargement of the lower part of the river Trave) to spawn in shallow water of salinity 9 to 10 ‰ and at a temperature of 11° C. The first larvae were caught on the 30th April. By the 14th June most of the larvae had reached a length of 3 cm., by the 29th July 4 cm., and by the 30th August 4.5 cm. During September these young herrings disappear into the Baltic. In June the following year the average length is 10—11 cm. The majority of these herrings at a length of 21 and 22 cm. were three years old.

A sample of the spring spawning herring from Schley, a brackish-water bay North of Kiel, shows differences from the Dassow Sea herring.

The author is further of the opinion that the spring spawning herring from Fehmarn Island is different from the brackish-water herring referred to, but identical with the spring spawning race from the Great Belt. This race also is perhaps distributed as far to the East as Rügen.

The author gives an interesting report on the purse seine herring fishery in Lübeck Bay, which started in 1918. He points out that the decrease in the total catch during recent years is not caused by any sort of overfishing, but by the fact that the fishing is not being carried on so intensively as during previous years.

These herrings taken with the purse seine consist of spring and autumn spawners, and the author has studied many samples from the catches, but has not quite succeeded in defining all the races. He says himself that many questions concerning the purse seine herring are still to be solved.

Furthermore, the author gives a report on the catches of herring larvae during the cruise in October 1927 from Travemünde northwards to Flensburg, thence eastwards to Stralsund and round Rügen, and he discusses the possibility of locating the spawning places from a consideration of the catches of young larvae. In conclusion, from the occurrence of larvae with yolk-sacs he supposes that the autumn spawning herring have their spawning places in the regions West of Fehmarn, and from Travemünde to Rügen and round this island.

The author also deals with certain other larvae, which were collected during the cruise.

K. A. ANDERSSON.

A. BÜCKMANN. Die Methodik fischereibiologischer Untersuchungen an Meeresfischen. Aus: Handbuch der biologischen Arbeitsmethoden, her. von Prof. E. ABDERHALDEN, Abt. IX, Teil 6. Berlin 1929.

The daily work of the fishery biologist consists in the treatment of data which are of a statistical nature. An isolated observation scarcely matters; it is the mass of observations collected at the same time and the same locality, and repeated observations at that, which we have to deal with. How this extensive material, constantly accumulated, might be treated was first indicated by HEINCKE who introduced the methods of mathematicians such as QUETELET, FECHNER, PEARSON and others into biology. It is by no means easy to explain the different formulae used (and the