is rightly observed on page 698, confirmatory work is necessary to settle in how far the annual increment varies from season to season. It seems to the present reviewer that such a confirmation of the interpretation of the measurement curves should be sought by making aquarium experiments in connection with a study of the growth rings similar to FORD's investigations of the growth rings of *Syndosmya alba*, *Cardium echinatum*, and *Spisula solida*.

A noteworthy fact is the great difference in number and size between the individuals from the low-water mark and those from stations above this level. Whilst the number decreases uniformly the nearer we approach the high-water mark the size of the individuals increases. This is due according to the author to their more rapid growth here. Below the low-water mark the size of the individuals further decreases but the results from these stations are not comparable with the numbers for the stations above the low-water mark, since the collections at the latter stations were made by digging up $^1/_4$ sq. metre of the sand to a depth of 15 cm., whereas at the other stations a Robertson bucket dredge was used which collected 20 ccm. of sand or mud; it is not surprising that such a dredge with its skimming action (mentioned on page 684) mainly picks up the smaller individuals.

We get some idea of what enormous numbers of *Tellina tenuis* there must be in Kames Bay when we learn that 1897 individuals were dug up in $^1/_4$ sq. metre of sand.

The spatting season is stated to be in the summer and autumn months; in August most of the young brood was found below low-water mark, in October the spat was also found deposited in large numbers up to the half-tide mark and in lesser numbers in the higher levels.

In the winter months the food consisted solely of detritus, and, during the spring diatom increase, of diatoms, but already in the early summer detritus again constituted part of the food.

It is of interest to note that *Tellina fabula*, which is also abundant in Kames Bay, seems in its distribution to be complementary to *T. tenuis*, the latter disappearing at depths of 4—6 fathoms and being replaced by *T. fabula*, which again disappears at a depth of 11 fathoms.

As the author himself remarks, the above-mentioned results can only be regarded as of a preliminary nature since "this work was begun as part of a much larger scheme of investigation on the Clyde fauna, especially in regard to the age and renewal of certain groups of bottom-dwelling organisms, and to the numbers and season of appearance of the young broods". We can therefore look forward to several more papers on this interesting subject. H. BLEGVAD.

C. M. YONGE. The Absorption of Glucose by *Ostrea edulis*. Journal of the Marine Biological Association, New Series. Vol. XV, No. 2. pp. 643—653. Plymouth 1928.

A whole series of papers have appeared dealing with the greening of oysters. Most recently of all G. RANSON in four papers from 1924 to 1927 has sought to show that the greening is caused by the oily green pigment

(Marennin) from the diatom *Navicula ostrearia* dissolving in the water in which the oysters live and being absorbed directly therefrom by the epithelia of the gills, palps, and mantle cavities of these animals.

YONGE in the little paper under review has shown by a series of experiments that when normal oysters with openings drilled in both the inhalant and exhalant chambers were placed in sea-water containing about 0.2 per cent. of glucose, the glucose content was diminished on an average by 8.17 per cent. at the end of 36 hours. But if the same oysters were plugged by covering the mouth and palps with wax and plasticine the average diminution of the glucose content was only 1.46 per cent. after 36 hours. In two of the experiments there was no diminution at all, and in the three others there was evidence that one of the two oysters in each had been incompletely plugged, since glucose was found in their stomachs. Moreover if in the third series of experiments oysters which had been plugged for 8 days so that they were "bleeding" profusely, i.e. contained large quantities of leucocytes in the mantle cavities, were placed in the same solution of glucose the average diminution of the glucose content was 7.4 per cent.

The author concludes from these and previous experiments that the free ciliated epithelia of oysters and other lamellibranchs cannot absorb directly. Absorption takes place in the tubules of the digestive diverticula (the "liver"), and, in the mantle cavity, only through the agency of the phagocytes which are extruded in great numbers when lamellibranchs "bleed" as a result of bad conditions. RANSON'S theory cannot therefore in the opinion of the author be upheld; in greened oysters the marennin must have entered the cells through the agency of the phagocytes which either absorb it directly from the mantle cavity and gut or transport it from the digestive diverticula. He is of the opinion that it is not impossible that marennin is absorbed in the first-mentioned manner in the "claires" at Marennes "where the temperature and salinity of the water both become exceptionally high in the periods between spring-tides, thus possibly causing extensive 'bleeding' in the oysters".

This latter theory should, however, in the opinion of the present reviewer be more closely investigated by direct observations. H. BLEGVAD.