Letters to the Editor.

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Giant English Oysters (*O. edulis*).

It is commonly believed that old individuals of *O. edulis* are incapable of spawning as females, and as the matter is of some importance economically, an interest is thereby added to the following observations.

On Sept. 20, 1929, Miss E. T. Nicol and Mr. W. Searle each collected a giant oyster (*O. edulis*) near low water mark on muddy gravelly ground in Salcombe Estuary, near the Salstone (east of the Salstone and south of Wareham Point). These oysters were kindly given to one of us (J. H. O.) for examination, and were kept in dishes in the hope that natural spawning might occur. Apart from size, these individuals were in all macroscopic respects similar to the common oyster (*O. edulis*). On Sept. 26, as spawning had not occurred, and observations could not be continued after the following day, the oysters were measured and weighed, and then placed in a strong solution of T.N.T. (trinitrotoluene) to narcotise them. On Sept. 28 the oysters were not sufficiently narcotised to permit careful opening, but Mr. Amirthalingam arrived at the laboratory and continued the observations on the living animal. The oysters were carefully extracted on Sept. 30 and both were found to be females. The larger oyster, B, had in fact spawned a few ripe eggs into the mantle cavity and was found to be a very fine well-fished individual with its gonad and gonoducts full of ripe eggs ready to be spawned. The eggs are of the same size, c. 150 μ ,

were very 'deep' as well as large (see Fig. 1). A large entire eating-oyster weighs 2-2½ oz. and has a sub-circular shell 8-9 cm. in diameter and depth about 3 cm. The shell A had the dimensions: Length and breadth, each = 15.8 cm., and depth = width = 4.3 cm.; B had length = 17.6 cm., breadth = 19.8 cm., and depth = 5.9 cm., as shown with other dimensions in Table I. Both individuals were therefore undoubtedly giants, and not merely large thin specimens such as are sometimes produced from a flat habit of growth—as on a flat surface of attachment.

Similar giants have occurred in other localities. On June 4, 1927, one of us (J. H. O.) examined a sample of 17 large deep oysters (4-4½ inches sub-circular) originating from Poole Harbour. These observations were made at the beginning of the breeding season, when four individuals were found

TABLE OF DIMENSIONS OF GIANT SALCOMBE OYSTERS (*O. edulis*).

	Length in cm.	Breadth in cm.	Width in cm.		Weight entire (gm.).	Weight of Dry Shell (gm.).	Weight of Oyster Meat (gm.).	Approx. Wgt. of Liquor (gm.).	Approx. Vol. of Liquor (c.c.).	Sex.
			External.	Internal.						
A	15.8	15.8	4.3	3.0	731	574	67	70	68	Maturing female
B	17.6	19.8	5.9	3.8	1265	1038	94	133	130	Ripe female

to be ripe or nearly ripe females, seven ripe or nearly ripe males, two others indifferent males and four individuals in a neuter condition. Similar large individuals are said to have been common at one time in the upper reaches of the Fal River, and fossil forms of apparently the same species are known to attain a length of about 10 inches.

It is difficult to estimate the ages of specimens A and B owing to the possibility of two increments of shell occurring in one season, but it is certain that the age would be expressed in double figures. The observations recorded above, however, show clearly that large or giant oysters do retain the capacity to function as females. From what is now known about *O. edulis*, there is therefore every probability that individuals may change sex annually from female to male and back again to female from the age of about three to at least twelve years, if left undisturbed on good oyster beds. There is also little doubt that the oyster B, mentioned above, would have produced at least 10 c.c. and possibly 20 c.c. of eggs, which if developed would have yielded a minimum of about three million larvae. Hence the value of large oysters of this kind not only for adding to the stock on good beds, but also for replenishing those beds which have apparently been fished out. It is indeed possible that the sudden repopulating of old beds may be due to a spatfall obtained under favourable conditions from relatively few giant individuals tucked away in inaccessible places. The shells of A and B are retained in the museum of the Marine Biological Laboratory at Plymouth.

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FIG. 1.—Giant oysters from Salcombe Estuary.

as those in smaller *O. edulis*. The smaller individual, A, was a well-fished maturing female and contained developing eggs 80-100 μ in diameter. The gonoducts were empty.

The flesh of each oyster was rough dried with blotting-paper and weighed: A weighed 67 gm., and B 94 gm. As a fine oyster meat weighs only 8-8½ gm. these weights offer a good criterion of size. The entire giant oysters weighed respectively 731 gm. (= about 1½ lb.) and 1265 gm. (= about 2¾ lb.), and their shells

Measurement of Space-Potential in High Frequency Discharge.

MEASUREMENTS of the space potential as well as the concentration and the average velocity of the ions and electrons in the different parts of a discharge tube have been greatly facilitated by the elegant method developed by Langmuir and Mott-Smith (*Phys. Rev.* 28, p. 727; 1926). This method has already been