

incomplete list of errata, all the more important because Barlow is a standard work, and the constant companion of the practical man. By the very nature of my original inquiry, I only examined one entry in each double page of Barlow, that is, one out of a hundred. These were 1300, 1400, 1500, etc. Out of 87 entries examined after 1250, 19 are wrong by one in the last place. A little further investigation, too, soon showed that in certain parts of the table the error is continued throughout a series of consecutive entries.

The conclusion is irresistible that in no case throughout this portion of the table can the last figure of the square root be depended upon. Of course the average man feels very happy if he has the perseverance to push his results to five, six or even seven figures. But there are some who have need of all the figures that existing tables give them, who sometimes wish, indeed, that more were available. For such the warning conveyed by this note is intended. It is a matter for surprise that 5000, 7200, 7500 and 9800, in particular, are in error, since the figures of the roots are those of  $\frac{1}{\sqrt{2}}$ ,  $6\sqrt{2}$ ,  $5\sqrt{3}$  and  $7\sqrt{2}$  respectively, and  $\sqrt{2}$  and  $\sqrt{3}$  have long been known to a very large number of places. The list of errata is subjoined, the correct result being in each case given.

Number.	Square Root.	Number.	Square Root.
1400	37.4165739	6100	78.1024968
2000	44.7213595+	6600	81.2403840
4300	65.5743852	6900	83.0662386
4697	68.5346628	7100	84.2614977
4698	68.5419580	7200	84.8528137
4699	68.5492524	7500	86.6025404
4700	68.5565460	7800	88.3176087
4701	68.5638389	8600	92.7361850-
4702	68.5711310	8700	93.2737905+
4703	68.5784223	9100	95.3939201
4704	68.5857128	9800	98.9949494
4705	68.5930026	9896	99.4786409
4998	70.6965346	9897	99.4836670
4999	70.7036067	9898	99.4886928
5000	70.7106781	9899	99.4937184
5001	70.7177488	9900	99.4987437
5600	74.8331477	9901	99.5037688
5700	75.4983444	9902	99.5087936

+ or - after final 5 or 50 means that the correct square root is greater or less than the result exhibited. Such a convention minimises the risk of error when the decimal is curtailed.

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### Can Portuguese Oysters be produced on English Oyster Beds by Artificial Fertilisation in the Sea?

DURING a visit to the Blackwater oyster beds in the summer of 1925, I had reason to open 100 Portuguese oysters (*Ostrea (Gryphæa) angulata*), and found them, as on previous occasions, practically all sexually mature. It occurred to me at the time to try an artificial fertilisation in the sea with the view of increasing the stock of oysters on the beds. As, however, the beds were private ones, it was thought inadvisable to take the risk without consulting the

owners, and the opportunity of trying the experiment did not again arise. It has been recorded in NATURE (August 12, 1922, p. 213) that Portuguese oysters have spatted in the waters of the river Blackwater, Essex, on experimental shells put out for the definite purpose of catching young oysters, and also (*loc. cit.*) that artificial fertilisations of the Portuguese oyster can be easily made.

The experiment would not have suggested itself but for the fact that on English oyster beds the Portuguese oyster spawns naturally only rarely, due no doubt to the relatively low temperatures occurring normally in English waters compared with those found in south European waters where the Portuguese oyster reproduces very abundantly. Nevertheless, there is no doubt that shelled larvæ can easily be produced artificially at temperatures which occur on English beds, but it is doubtful whether these temperatures are ordinarily high enough to ensure fixation of the shelled larvæ when the latter are ready to settle. The success of the experiment will depend partly on the occurrence of suitable conditions for fixation of the larvæ in the year of the experiment—and high temperatures and clean shell for attachment are probably the critical factors concerned in the sea,—partly upon the production of sufficient larvæ to leave a balance for settling after the enemies of the larvæ have had their fling, and partly upon the larvæ being reared in a body of water which will not carry them away from suitable places of attachment.

As a provisional experiment it is suggested that a thousand Portuguese oysters be cut into rather thick shreds and shaken in the sea over the oyster beds at half tide at the beginning of the neap tides. From 60 to 90 per cent. of the oysters would be female (see *J.M.B.A.*, vol. 14, p. 230, 1926), and from each would be released in this way an *estimated* average of at least three million eggs for medium-sized oysters. A plentiful supply of sperm would be available from the smaller number of males. If a thousand oysters were disintegrated in the sea on five successive days, there would be a greater chance of sufficient larvæ being produced to give a spatfall, other conditions being favourable. The time most likely to be favourable for the experiment may be fixed in the neighbourhood of the end of June in a normal year.

The experiment itself is so simple that it could be carried out by the normal summer staff at work on an oyster bed, but practical difficulties, such as the attraction of shoals of fishes and other marine animals to the locality of the experiment, might have to be obviated.

The creeks bordering on the Thames Estuary, north and south, and creeks and estuaries on the southern coast, such as occur at Salcombe and the Fal (River and Upper Estuary), and no doubt elsewhere on this coast where this oyster is unknown, would be suitable places to attempt the experiment.

A warning is, however, needed: the Portuguese oyster may procreate on some southern beds so well as to oust the native European, and it is not so valuable. At Arcachon (France) the Portuguese oyster was accidentally introduced on the fine beds of European oysters there and was regarded for decades as a pest, though at the present moment it is the salvation of many oyster-cultivators in that region.

I should be willing to give further suggestions on the method of carrying out the experiment to any oyster-producer who may desire to try the experiment.

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