

existing knowledge of its biology, to provide a basis for measures which would eliminate this pest or at any rate reduce its numbers to insignificance. The damage to oyster beds on the Atlantic coast attributed to this drill is estimated at millions of dollars annually. It attacks other molluscs also, but the results are not of economic importance. The outcome of this work is of practical interest to oyster growers and planters in Europe also, for this same drill has already reached England, where it was reported in 1928 to have done great damage on beds in the Thames estuary.

The author deals with the effect of salinity on distribution, with the effect of temperature, current, and pH, and with tropisms, migration, feeding and breeding habits. He found that the salinity death-point varies with the salinity to which the drills are habituated, but is high enough to render feasible a method of "floating" oysters from infested beds for about ten days in brackish water, which destroys the drills without injury to the oysters. As the drill is practically non-migratory and has no free larval stage, the chief distributing agent is the oysterman. Measures to prevent transfer of the pest along with oysters to new grounds during planting operations are of course no less important than those for trapping and removal of the drills from grounds already heavily infested. The latter include use of the trap dredge designed to retain drills but to allow the escape of oysters taken in it, use of small concrete pillars or sand-filled buckets by which advantage is taken of the drill's propensity for climbing, the pillars being connected by buoyed wires and hauled up regularly for removal of the drills, and use of covered oyster-dredges which retain both oysters and drills. Measures recommended for freeing oysters from drills before planting include the "floating" method already mentioned, screening the oysters with suitably meshed wire-netting, and before putting them overboard during planting, dropping them on the deck from forks used for the purpose instead of shovels. Of these methods all appear to be applicable, if necessary, where beds of *edulis* may be concerned, except probably that of floating, for *virginica* will stand salinities somewhat lower than the minimum for *edulis*. Quite apart from the practical value of this paper, the observations and experiments described in it are of great interest and form a fairly comprehensive account of the biology of the species. H. P. S.

**J. Hjort, J. Lie and J. T. Ruud.** Norwegian Pelagic Whaling in the Antarctic. I. Whaling Grounds in 1929—1930 and 1930—1931. Hvalrådets Skr. Nr. 3. Oslo, 1932.

The regulations of the Norwegian Government concerning the hunting of whales require the managers of factory ships to record various details of the whales caught. The information thus acquired in the seasons 1929/30 and 1930/31 is here used by Messrs. HJORT, LIE and RUUD in a brief analysis of the stock of whales in different parts of the Antarctic, mainly in connection with the distribution of mature and immature whales. It is a short paper, but it brings forward several important facts.

The whaling grounds are considered as including five extensive areas: —  
1) The sphere of the land stations in the Falkland Is. Dependencies. 2) The Weddell Sea area. 3) The "Bouvet" area. 4) The "Kerguelen" area. 5) The

Ross Sea area. Area no. 1 is that in which whaling has been prosecuted during a considerable number of years, while the exploitation of the other four areas was begun a comparatively short time ago.

A decrease in the average size of individuals in a stock of animals is generally regarded as a sign of a reduced duration of life such as might be caused by excessive hunting. The essence of the paper lies in the production of figures which show that in all five areas there is no appreciable difference between the average lengths of mature Blue whales or between the average lengths of immature ones. On the other hand area no. 1 (the old whaling ground) shows a much higher percentage of immature whales than the other four. The suggested explanation of the latter point is that the area of the Dependencies happens to lie more in the migration routes of the young whales than the newer and more southerly areas, and this is almost certainly correct. It is admitted, however, that the fact that the average length of mature and immature whales is not greater in the new than in the old grounds, does not necessarily mean that whaling has not already reduced the average length of life of the whales. This is true enough, for there is no evidence to show that the whole area covered by the land stations is inhabited by a stock of whales which do not also visit the other areas in the course of their migrations.

The records from which the authors have drawn their material are also used by the committee appointed by the Norwegian Government to compile the "International Whaling Statistics". Valuable as the latter are, it is unfortunate that they do not give more precise information as to the localities in the Antarctic from which the pelagic factory ships have taken their catches. The extra space which such material would occupy in the published statistics would not be wasted. The present paper is particularly valuable in that it summarises much of this kind of information.

N. A. M.

**R. W. Butcher, F. T. K. Pentelow and J. W. A. Woodley.** An Investigation of the River Lark and the Effect of Beet Sugar Pollution. Ministry of Agric. and Fish., Fish. Invest. Series I, Vol. III, No. 3, 1930. London, 1931.

The paper falls naturally into three sections in which the effects of the pollution are considered from the chemical, botanical and zoological aspects. The chief results are collected into a summary, pp. 62—65, where, in addition, the inter-relation of chemical and physical causes with biological effects is discussed. In attempting to review a work of this kind the lack of comparative data constitutes a serious handicap. It is really surprising how little attention has been paid to the study of rivers, and particularly of small rivers, especially when one considers their importance to the general public. This lack of data from similar environments has naturally greatly increased the difficulties of these investigators; not only have they had to develop their special technique, which they have done with conspicuous success, but also they have found themselves with no information by which to gauge the normal condition. Their attention was first directed to the problem some six months after the factory had begun to discharge its wastes,