

proper measures, when carefully timed, reduced the menace to manageable proportions. The deterioration of strawberries has greatly concerned growers, and the discovery that the disease known as 'yellow edge' is carried by a prevalent species of aphid has added to the importance of the latter as a pest. Among glass-house troubles, the record of damage to tomato seedlings by a species of the order Symphyla during

the three successive years under review is of interest. Much damage has been claimed as being due to such creatures in America in recent years, but the status of this species as a pest is not as yet universally accepted.

The report concludes with a useful bibliography of publications bearing upon the subjects dealt with.
A. D. I.

The Marine Steam Boiler

IN a recent note on "The Future of Steam Propulsion", reference was made to a paper on the relative merits of steam and oil engines for ships (*NATURE*, 137, 267; 1936). The subject is one of considerable importance at the present time, when a period of increased ship construction is imminent, and a new and different 'battle of the boilers' such as occurred at the time of the introduction of the water-tube boiler into H.M. Navy may be anticipated. Two papers dealing with the matter were read before the spring meeting of the Institution of Naval Architects in April last. In one of these, a "Review of the Present Position of Marine Steam Boilers", Eng.-Rear-Admiral W. M. Whayman dealt with large high-speed ocean-going mail steamers and passenger liners; he holds that these services constitute practically an exclusive field for steam machinery. Asserting that oil is, at present, the only suitable fuel for such installations, he points to the fact that, where speed and passenger comfort are the main consideration, oil-fired water-tube boilers have been adopted for ocean liners in all countries, and he gives details of the boiler equipment of many well-known ships. Whereas pressures on shore approach 1,500 lb. per sq. inch at 900° F. the tabulated figures show that 400-450 lb. per sq. in. and 650°-740° F. constitute the generally accepted limits for high-class sea installations at present. It is suggested that by reason of the more severe conditions of sea service, these pressures and temperatures may be expected to remain fairly steady. It should, however, be recognized that since these special sea conditions must always exist, marine practice, while necessarily following land practice at a safe distance, will steadily advance as quickly as new methods, machinery and

means of operation have been proved to be sufficiently reliable for service at sea.

The water-tube boiler, by reason of the much smaller diameters used as compared with the Scotch type, has enabled pressures to be nearly doubled, and the present tendency towards the elimination of the drum makes possible further advances in working pressures. Towards this end also the use of higher tensile alloy steels, the adoption of welding processes, the provision of air heaters, and the introduction of forced circulation, of pure feed supply and of methods of treating the steam between the turbines either by re-heating or by extraction of moisture, indicate the lines on which improvements may be anticipated.

In "Naval Water-tube Boilers", Eng.-Capt. S. R. Dight gave particulars of tests and experiments which have been carried out at the Admiralty Fuel Experimental Station, Haslar, with the object of obtaining more intimate information regarding the internal working conditions, and so enabling further improvements in efficiency and reliability to be made. Circulation was tested by means of Pitot tubes, and marked variations were noted between differently placed tubes, with occasional reversals occurring in fire-row tubes when sudden changes took place in the feed supply.

A device described as a circulation augments was introduced to enable the feed supply to assist circulation, and proved advantageous. The overheating of fire-row tubes, the use of air pre-heaters and of automatic feed regulators were among the subjects of test, and the general conclusion was that increase of output for the same space and weight was possible. The application of forced circulation is stated to be under consideration.

Breeding of Arctic Marine Prosobranchs*

DR. GUNNAR THORSON accompanied the Danish Three-Year Expedition to East Greenland in 1931-34 under the leadership of Dr. Lange Koch, and made extensive and regular collections of plankton from the southern main station of Ella Island during the period from January until September 1932. Later, these samples were supplemented by others collected by a Greenlander, Benjamin Samuelson; thus giving a whole annual cycle of East

* "Studies of the Egg-Capsules and Development of Arctic Marine Prosobranchs" by Gunnar Thorson. *Treaars Expeditionen til Christian den X's Land 1931-1934 under Ledelse af Lange Koch. Medd. om Gronland*, 100, No. 5 (1935).

Greenland plankton. In none of these samples and in none previously examined from these regions were there any prosobranchiate gastropods. This remarkable fact was partially explained by the large number of different prosobranchiate egg capsules with big embryos in the bottom samples and dredged material.

In order to investigate further, Dr. Thorson continued the collecting of gastropod egg-masses in 1932 and during the cruise of the *Godthaab* in the summer of 1933, and in addition examined material from other expeditions. By carefully studying the species in their various habitats and their distribution, and