

in crushed ice will in general maintain fish in a really fresh state for not more than 6-7 days. Important researches at the Torry Research Station, Aberdeen¹, have shown that, with care, infection of the fish after capture can be so greatly reduced that they will remain fresh in crushed ice up to a maximum of 10-12 days. By greater attention to cleanliness, therefore, a marked improvement could be brought about in the quality on landing of ice-preserved fish.

Following upon its researches along these lines, the Torry laboratory has now issued a pamphlet² directing the attention of owners, skippers, and mates to certain points of importance which should be observed in the treatment of their catches if they are to obtain maximum returns from them.

Many of the recommendations are of a purely common-sense kind, such as minimum handling of the fish and greater attention to washing with clean water of decks, pounds, baskets and fish-room fittings. Certain additional precautions are also suggested, the most important and most practicable of which are the use of town-supply or other clean water heated to 180° F. (see below) for scrubbing all fittings, boards and baskets after the catch has been landed, and the scrubbing of the fish-room with town-water to which has been added 5 parts per 100 of 40 per cent formaldehyde. The fish-room should finally be sprayed with the same solution. At sea, and before the next catch is stored, the fish-room must be again hosed down with sea-water in order to remove all traces of the disinfectant.

While the better preservation of the catch is to be sought in greater cleanliness, attention to certain details of stowage is also recommended. It is pointed out that stowed fish should be protected so far as possible from all draughts, as these hasten the melting of the ice. The use of vegetable parchment for this purpose, at least for the more valuable species, is advocated as being remarkably effective in preventing wasteful melting caused in this way.

A noteworthy and most commendable feature of the foregoing recommendations is that they require little or no outlay of extra capital or additional running expenses, and can be immediately put into practice, with, it is claimed, marked improvement in the quality of the fish landed.

Certain other recommendations are also put forward which entail the installation of special equipment and involve more radical changes in the present normal routine on board ship. At all points where the fish come into contact with the ship or its fittings, it is suggested that heavily galvanised steel be used to replace or to cover the usual wood; galvanised steel baskets should be substituted for wicker ones; additional pipes and connexions should be installed on deck to facilitate more thorough washing of the fish after gutting; and a heater is advocated for providing water at a temperature of not less than 180° F.

Although there can be little doubt of their theoretical desirability, it is not likely that these special and somewhat costly fittings will be quickly and generally installed throughout fishing fleets. But this in no way detracts from the immediate value of the other and simpler recommendations. It is to be hoped that the general distribution of these leaflets amongst them will induce deep-sea trawlermen to test out the proposals on their own vessels without any further loss of time. This result achieved, sufficiently enhanced returns will be adequate incentive to ensure the permanent and universal adoption of the improved methods. To any less practical arguments trawlermen one and all will pay but little attention. G. A. S.

¹ Food Investigation Special Report, No. 37. "The Handling and Stowage of White Fish at Sea." (London: H.M. Stationery Office.) 1s. 6d.

² Department of Scientific and Industrial Research: Food Investigation. Leaflet No. 3: The Care of the Trawler's Fish. By A. Lumley. Pp. 4. (London: Department of Scientific and Industrial Research, 1933.) Free.

Annual Gathering at Rothamsted

THE annual gathering of subscribers to the Rothamsted Experimental Station, held on June 20, had, this year, a special significance and there was a record attendance. On this occasion, the title deeds of the Rothamsted Estate, which has now become the property of the Lawes Agricultural Trust, were formally handed over to the Trustees by Mr. Walter Elliot, the Minister of Agriculture. The chairman of the Trust Committee, Lord Clinton, who presided at the meeting, announced that a telegram of congratulation had been received from Lord Bledisloe, Governor-General of New Zealand, a former chairman of the Lawes Trust. Lord Clinton then briefly outlined the reasons that compelled the Committee to issue its recent public appeal for £30,000 to purchase the estate. The land on which the building stood, and the fields containing the unique long-period experiments were threatened by building developments. He paid a warm tribute to Mr. R. McDougall and the Sir Halley Stewart Trustees, who provided £20,000, and to Sir Bernard Greenwell, Bart., whose early offer of £1,000 set a standard for the numerous private subscribers and organisations. As a result, the balance was quickly obtained, and the future of Rothamsted is secure for all time.

The director, Sir John Russell, said that the interest in Rothamsted is well shown by the wide-spread area from which subscriptions came, and by the cosmopolitan nature of the visitors at the annual meeting. He took this as evidence that the policy of Rothamsted is on the right lines: the purpose of the Station is not to teach farmers how to farm, but to give them information that they can use in solving their varied problems on their own farms.

Mr. Elliot congratulated Rothamsted on the successful outcome of the appeal. While it is a pity that an estate, which has been for three hundred years in the possession of one family, has to change hands, it is clear that no more suitable new owners could be found than the organisation Sir John Lawes set up himself. An old tradition has been broken, but a new one has begun which will produce equally great results for agriculture and England. The work of Rothamsted will go on at its present level, for the appeal fund has provided an unmistakable vote of confidence from the agricultural community.

Prof. H. E. Armstrong, vice-chairman of the Trust Committee, thanked Mr. Elliot for his remarks, and joined with Lord Clinton in congratulating the Minister on his efforts in reorganising the agricultural industry. He said that agricultural scientific workers,

thanks to Lawes, have solved one vital problem: the production of sufficient quantity of produce. The next great task is the question of quality, for if animals and human beings were properly fed there would be little or no disease.

During the day the visitors were conducted around the farm and the laboratories. The classical experiments on grassland, wheat, and barley were inspected, and special attention was also given to recent experimental developments.

There is on the farm a number of half-bred ewes with four well-developed teats. These are being mated to a young half-bred F_2 ram, bred on the farm, also with four teats, to ascertain whether ewes with this characteristic are better mothers than those with two teats.

An important investigation on the technique of animal feeding experiments was also demonstrated. Its purpose is to reduce the variations hitherto associated with this type of experiment, by applying the modern statistical methods of design already worked out at Rothamsted for experiments on crops. An interesting feature of this experiment, which is devoted to pig-feeding, is that each animal is fed individually in its own trough enclosure opening off the main pen. In this way all types of rations can be distributed equally over all groups of pens, in contrast to the usual practice in which all pigs in a group are on the same ration.

The investigations on the use of electricity in farm buildings attracted much attention. Numerous farm and barn operations can conveniently be performed by electrical power, and measurements are taken of the number of electrical units required, as compared with the amounts of fuel consumed by internal combustion engines doing the same work. This information is not, at present, available for the farmer who contemplates employing electrical power, and it is the purpose of the experiments at Rothamsted to supply it.

In the afternoon the work of the laboratories was inspected, and demonstrations were given of certain investigations which have reached the stage of practical development. Among these were the inoculation of lucerne; the purification of effluents from sugar beet and milk factories; methods of measuring the properties of flour-doughs; and a number of problems associated with bee-keeping and the grading of honey.

University and Educational Intelligence

GLASGOW.—The honorary degree of LL.D. has been conferred on the following, among others: W. R. Cunningham, University librarian and keeper of the Hunterian books and manuscripts; Prof. H. M. Macdonald, professor of mathematics, University of Aberdeen; Sir Harry McGowan, chairman of Imperial Chemical Industries, London; Prof. Frederick Soddy, professor of inorganic and physical chemistry, University of Oxford.

LIVERPOOL.—Dr. G. C. McVittie has been appointed to a lectureship in applied mathematics rendered vacant by the election of Mr. R. O. Street to the chair of mathematics in the Royal Technical College, Glasgow. Dr. Mary W. Parke has been appointed algologist at the Marine Biological Station, Port Erin, for the coming year, and Mr. R. G. Bruce naturalist-in-charge of the Station.

LONDON.—Prof. L. N. G. Filon has been re-elected vice-chancellor for the year 1934–35, and Dr. George Senter, principal of Birkbeck College, deputy vice-chancellor for the same period.

On the occasion of the celebration of Foundation Day 1934, the honorary degree of D.Sc. will be conferred on Prof. Karl Pearson and the honorary degree of D.Litt. on Dr. A. F. Pollard.

A university postgraduate travelling studentship of the value of £275 has been awarded for one year to Arthur Herbert Cook (Impérial College—Royal College of Science). Mr. Cook proposes to carry out chemical research in the Universities of Zurich and Heidelberg.

OXFORD.—In presenting Prof. A. V. Hill for the honorary degree of D.Sc. at the Encaenia held on June 20, the Public Orator, Mr. Cyril Bailey, spoke of his singular devotion to the study of physiology, and especially of his most accurate investigations of the conditions of muscular activity. As a Balliol man he regretted that Prof. Hill, his fellow-scholar at Blundell's, had preferred to go to Cambridge; "but sometimes gifts were to be given to the Danaï". In conferring the degree, the Chancellor, Lord Halifax, addressed Prof. Hill as "most exact of men, who have dealt so acutely with physiology, that we account scarcely any of the secrets of the human frame as foreign to you".

Among the other honorary degrees conferred was that of D.C.L. on Sir Henry Miers.

A SCOTTISH National Conference on the "Place of Biology in Education" has been arranged by the British Social Hygiene Council to be held in City Chambers, Edinburgh, on October 19. The president will be the Right Hon. Sir Godfrey Collins, Secretary of State for Scotland, and among the speakers will be some of the leading Scottish biologists, who will deal with biology in the school and university and in its relation to man. Further information can be obtained from the Secretary-General, British Social Hygiene Council, Carteret House, Carteret Street, Westminster, S.W.1.

Science News a Century Ago

Colonisation of South Australia

The colonisation of Australia owed much to the writings of Edward Gibbon Wakefield (1796–1862) who, it has been said, "brought to the subject for the first time the mind of a philosopher and statesman, equally fitted for framing a comprehensive theory and for directing its working in practical detail". Wakefield's book, "Letters from Sydney", published in 1829, was followed by the formation in 1830 of the National Colonisation Society, while his book, "England and America", 1833, which contained a chapter on the art of colonisation, was followed by the inauguration of a company with the title of the South Australian Association. On July 1, 1834, this company held a public meeting in Exeter Hall, at which its aims were set forth, and soon afterwards the matter engaged the attention of Parliament. Later in 1834, the Colonisation Commissioners for South Australia were appointed and under their auspices the first settlers left England in 1836, arriving in Australia on December 26, Capt. (afterwards Rear-Admiral Sir John) Hindmarsh being the first Governor of the Colony.