The Storage of Eggs.

MORE than four thousand million eggs are consumed in Great Britain during the course of a year; but this number would probably be increased if satisfactory methods of storing eggs produced at the glut period in the spring with the view of their consumption later in the year were generally introduced, especially as the producers would be encouraged to increase their stock, since the demand and the price fetched would show less marked fluctuations. But for a stored egg to be the equivalent of a new-laid egg in all respects requires considerable attention to detail: the factors on which good results depend are discussed by T. Moran and J. Piqué in a recent publication of the Department of Scientific and Industrial Research.[1]

In the first place, only carefully selected eggs should be submitted to storage: they must be clean and should never have been exposed to a temperature greater than 60° F., otherwise a certain amount of development of an egg, if fertile, may have occurred, resulting in its decomposition later in the store. The quality of an egg can be judged by its transparency to light, this process of examination being termed 'candling.' A new-laid egg appears clear and transparent, the yolk being vaguely seen as a rosy-tinted mass: the air chamber is small. As the egg ages it becomes less transparent, appearing slightly marbled; the yolk is movable along the long axis and the air chamber is larger. Bad eggs appear opaque on candling.

In the second place, attention must be paid to the method of packing when, as is most usual, the eggs are kept in the cold store; the material used should be clean, odourless and moisture-proof, and the eggs should be so packed that a free circulation of air can occur around them. The temperature of the store should be maintained at 32-33° F. and be kept as constant as possible: the humidity of the air should be about 80 per cent.: a higher humidity favours the growth of moulds, whilst a lower humidity increases the rate of evaporation of moisture from the eggs. Under the conditions specified the loss of weight of the stored eggs is about 2·68 per cent. over a period of seven months. A free air circulation is essential to keep them in good condition and prevent the growth of moulds. The authors consider in detail the various methods of packing eggs and of obtaining the requisite temperature and humidity in the storage chamber: they suggest that the loss of weight by evaporation may possibly be prevented by wrapping the eggs in waxed papers, although this would presumably increase their cost somewhat.

Certain changes occur in the eggs during cold storage: the white becomes more viscous, losing water both to the yolk and externally by evaporation; the yolk membrane becomes more delicate, and when the egg is broken the yolk also is very liable to break, a familiar sign of age in an egg. Moreover, after about six months the eggs acquire an unpleasant taste from the packing material unless, as mentioned above, this is odourless and moisture-proof. The food value of stored eggs, however, is probably little inferior to that of new-laid: no loss of vitamin A has been detected even after long storage.

The removal of eggs from cold store requires care, since unless their temperature has risen to that of the outside air, moisture will be deposited on their surfaces, or they will 'sweat,' as it is called: and a damp egg does not fetch so good a price as a dry one. The process of 'defrosting' requires about twenty-four hours.

After a short account of the storage of eggs in water-glass or lime-water, T. Moran describes some experiments on the effects of low temperatures upon eggs. After freezing and thawing again, it is found that the liquid part of the white has increased and the viscous part decreased in amount, the extent of the change depending on the temperature reached and the time of exposure to that temperature. On the other hand, the yolk shows no change unless the temperature has fallen below −6° C., and unless freezing has actually occurred. If the egg is kept at this temperature for a sufficient length of time, on thawing the yolk is found to be in a stiff pasty condition; if the processes of freezing and thawing are carried out sufficiently rapidly this change does not occur. It appears to be due to a precipitation of lecitho-vitellin, so that re-solution does not occur on thawing: it is to be noted that simple freezing alone, at a temperature above −6° C., does not produce the change, so that it occurs at a time when the egg is frozen solid.

The effect of temperature on the life of the embryo was also studied. At −6° C. the embryo dies immediately: fertility is maintained longest at 8-10° C., up to a maximum of about five weeks. The author points out in this connexion that the embryo is cold blooded up to about the twentieth day of development.

Apart from its scientific interest, the report merits the attention of all those engaged in the commercial production of eggs in Great Britain.

[1] Department of Scientific and Industrial Research: Food Investigation. Special Report No. 26: The Storage of Eggs. By T. Moran and J. Piqué. Pp. viii+80+9 plates. (London: H.M. Stationery Office, 1926.) 1s. 3d. net.

Commonwealth Fund Fellowships.

THE Committee of Award for the Commonwealth Fund Fellowships has made the following appointments to the twenty fellowships tenable by British graduates in American universities for the two years beginning in September 1926:

Mr. A. M. Adamson, University of St. Andrews, to the University of California, in zoology; Mr. F. N. Astbury, University of Liverpool, to Columbia University, in architecture; Mr. I. W. M. A. Black, University of St. Andrews, to Yale University, in physical chemistry; Mr. F. P. Chambers, Clare College, University of Cambridge, to Harvard University, in architecture; Miss M. E. Cranswick, King's College, University of London, to Columbia University, in education; Mr. R. Fisher, Hertford College, University of Oxford, to Yale University, in economics; Miss I. Gordon, University of Aberdeen and the Imperial College of Science and Technology, London, to Stanford University, in zoology; Miss H. A. C. Green, Westfield College, University of London, to the University of Pennsylvania, in literature; Mr. D. B. Harden, Trinity College, University of Cambridge, and the University of Aberdeen, to the University of Michigan, in archæology; Mr. R. L. Lechmere-Oertel, University of Birmingham, to Columbia University, in engineering; Mr. K. A. H. Murray, University of Edinburgh, to Cornell University, in economics; Mr. E. P. Mumford, University of Manchester and Christ's College, University of Cambridge, to the University of California,

in agriculture; Mr. M. A. Peacock, University of Glasgow, to Harvard University, in geology; Mr. G. S. Pryde, University of St. Andrews, to Yale University, in history; Mr. C. B. Purves, University of St. Andrews, to Johns Hopkins University and the Bureau of Standards, Washington, D.C., in organic chemistry; Mr. R. A. Robb, University of Glasgow, to the University of Chicago, in mathematics; Mr. W. Rule, Armstrong College, University of Durham, to Cornell University, in physics; Mr. F. J. Whelan, University College, Cork, to Harvard University, in literature; Mr. H. Williams, University of Liverpool and the Imperial College of Science and Technology, London, to the University of California, in geology; Mr. N. C. Wright, of Christ Church, University of Oxford, School of Agriculture, University of Cambridge, and the University of Reading, to Cornell University, in agriculture.

The purpose of the Commonwealth Fund is to promote mutual amity and understanding between Great Britain and the United States by offering opportunities for education and travel in the United States to young British graduates of character and ability. By terms of the Foundation it is necessary to effect a geographical distribution of Commonwealth Fund Fellowships among the universities of the United States from the Atlantic to the Pacific, without handicapping any individual in the advanced work on which he will be engaged. There were 178 applicants this year for fellowships, offering in all twenty-nine different subjects.

University and Educational Intelligence.

ABERDEEN.—The University Court has appointed Dr. Allan W. Downie to the Georgina M'Robert lectureship in pathology, with special reference to malignant diseases.

CAMBRIDGE.—The University has been officially informed that the Statutes recently made by the University of Cambridge Commissioners have been approved by the King in Council, no petition or address having been presented against them, while they were laid before both Houses of Parliament.

The members of the University Automobile Club, which has now been wound up, have offered to the University the sum of 450*l.* to endow an annual Ricardo Prize in thermodynamics.

The report of the Committee for Geodesy and Geodynamics contains some interesting references to Dr. Vening Meinesz's method of determining the value of g; based on g at Potsdam 981·274 cm./sec.^{2}, he obtained a value for Cambridge 981·265; independent observations made by Sir G. Lenox-Conyngham and Mr. Manley with the Science Museum pendulums gave the value 981·266. These pendulums are being taken by Mr. Manley this summer to Eastern Greenland in order that he may make a gravity determination near "Pendulum Islands," where General Sabine made observations in 1823 in latitude 74° 32′ 19″ N. During the absence of Sir Gerald Lenox-Conyngham in Japan at the Pan-Pacific Science Congress, Lieut.-Col. J. E. E. Craster will act as his deputy.

The report of the Director of the Solar Physics Observatory records the safe return of the instruments taken to the Crimea in 1914 to observe the total eclipse of the sun. A 6½-inch achromatic object-glass which used to belong to Sir George Stokes has been presented to the Observatory by Mrs. Laurence Humphrey.

Dr. A. C. Haddon is retiring from the readership in ethnology, and the General Board of Studies will proceed shortly to appoint a successor. The stipend is 660*l.* per annum, with an allowance of 200*l.* per annum if the reader is not a fellow of a College. The appointment will in the first instance be for three years from October 1. Applications should reach the Vice-Chancellor on or before Wednesday, July 14.

DR. W. EITEL has been nominated professor of mineralogy at the Technische Hochschule in Charlottenburg.

VACATION courses for mechanics and glassblowers, under the auspices of the "Vereeniging tot Bevordering van de Opleiding tot Instrumentmaker" (Society for the Advancement of the Training of Mechanics), Leyden, Holland, are to be held in August in the workshops of the Physical (Cryogenic) Laboratory of the University of Leyden. Particulars may be obtained from Dr. C. A. Crommelin, the Physical Laboratory, Leyden, Holland.

THE University of London Club, which was founded in 1914 for members of that University, and has its Club House in Gower Street (London, W.C.), has recently undergone a complete reconstruction. One feature of the reconstruction has been the widening of the basis of membership, so as to include graduates of other universities besides London, holders of certain diplomas granted by the University of London or its colleges, and persons who hold certain professional qualifications. A pamphlet giving an account of the Club, and of the facilities provided for the promotion of the social life of graduates can be obtained from the honorary secretary, 19 Gower Street, W.C. The chairman and members' committee of the Club will be At Home on June 22 at 8.30 P.M. to meet the Vice-Chancellor of the University of London (Prof. Gardner) and members of the Senate. The president of the Club is the Chancellor, the Earl of Rosebery.

THE sixth and last of the Watson Chair Lectures for 1926 will be delivered on Monday next at the University of Bristol at 5.30 P.M., the subject being "A Vision Postponed; Grover Cleveland's British-American General Arbitration Treaty killed by the Senate." The holder of the chair this year, Dr. Robert McElroy, professor of American history in the University of Oxford, is the authorised biographer of President Cleveland. The chair was founded in 1919, on the return of the Prince of Wales from his American tour, with the object of "knitting more closely together the bonds of comradeship between the two great English-speaking democracies, upon whose goodwill and friendship the peace of the world depends," and is of interest in connexion with the articles on "The Universities and International Peace," and on the recent awards of Commonwealth Fund fellowships, appearing elsewhere in this issue. The Watson chair has been held in succession by the late Viscount Bryce, Ex-President Hadley of Yale University, President Nicholas Murray Butler of Columbia University, Prof. A. F. Pollard of University College, London, and Sir Robert Falconer, President of the University of Toronto. Prof. McElroy's general subject is "Some British-American Crises: an Interpretation." He has delivered five lectures at London, Cambridge, Manchester, Leeds and Edinburgh respectively, and in addition an address, broadcasted by the B.B.C. on May 27, on "The International Mind in the Making."