and their relation to appendicitis, and C. C. Macklin with the macrophages of the lung alveoli. C. M. Fraser discussed the ecology of the butter clam, F. C. Gilliatt the bionomics of the tortracid moth *Eulia mariana* (a new orchard pest which has developed in Nova Scotia), while S. Hadwen dealt with colour changes in animals, Miss H. I. Battle with the development of structural anomalies in the four-bearded rockling due to unfavourable temperatures and salinities during early stages, and J. M. D. Scott with pregnancy anæmia in rats.

Monseigneur Camille Roy, of Laval University, Quebec, was elected president, and Prof. A. S. Eve, of McGill University, vice-president, for 1928–29.

## Kiln-Seasoning of Timber.

THE natural seasoning of timber by allowing it to remain stacked or otherwise for a varying period of time was well understood in Great Britain, and seasoned timber, especially for the better class of work, was in common use. During the progress of the War the stocks of seasoned timber were utilised, and kiln-seasoning, where seasoned material was indispensable, as, for example, for aircraft work, came to be relied on more and more. Experiments were also inaugurated in other parts of the British Empire with the object of endeavouring to place upon the market kiln-seasoned wood of some of the broad-leaved soft-wooded species from the tropical and sub-tropical forests which had previously been unmarketable. Kiln-seasoning thus began to assume an important position, where timber was in question, in commercial centres. So much so that repeated inquiries for advice have been addressed to the Director of the newly established Forest Products Research Laboratory at Princes Risborough. With the view of making public the research work being carried out in this direction, a report entitled "The Principles of Kiln-Seasoning of Timber" (*Special Report No. 2*) is being prepared, of which Part I., "Types of Commercial Kilns in Use," by Mr. S. T. C. Stillwell, has been issued.

In an introduction the troubles attendant on drying timber are discussed. A correct appreciation of these difficulties is necessary in order to estimate the value of the use of the kiln method. "If we consider a board of green timber," says the writer, "which is allowed to dry freely, the surface layers quickly lose their free moisture; this is followed by evaporation from the cell walls, and a corresponding shrinkage then takes place in the surface structure. In the meantime, though there is a tendency on the part of the moisture in the centre portion of the board to move towards the surface layers as soon as these become drier, the amount of moisture so moving is much smaller than the amount evaporated from the surface. It is inevitable, therefore, that the surface layers will tend to shrink before the centre portion is ready to do so, and, as a result, tension is set up in these layers." Regulation of the rate of drying from the surface is therefore essential and requires to be under control. This control involves the regulation of humidity, temperature, and the circulation of air, and that the latter should be changed regularly and frequently in the kiln.

Before dealing with the types of kilns, kiln treatment is briefly discussed. It may be mentioned that almost invariably the timber placed in the kiln is first warmed up by a circulation of saturated or nearly saturated air, driven through it by various devices, to a temperature slightly higher than that at which drying is to commence. This is said to be doubly advantageous since it both warms the timber in the centre, thus afterwards assisting in the transfusion of moisture from the centre to the surface, and also relieves any existing stresses in the surface layers.

Five different types of kiln are fully described and clearly illustrated in the report, these kilns being known as (1) natural circulation ventilated kiln, (2) tunnel or progressive kiln, (3) water-spray kiln, (4) external fan kiln, and (5) internal fan kiln. For their varied features and uses the report should be consulted.

The writer concludes with some brief notes upon lay-out, equipment, and kiln staff. A subsequent Part II. is promised, dealing with the field of kiln instruments, which is said to be both wide and important. Mr. Stillwell emphasises the importance of employing a good man, with scientific and engineering training, to supervise the seasoning operation. "Practically," he says, and the point is worth stressing, "all the prejudice which at present exists against kiln-seasoned timber can be attributed to the short-sighted policy of many commercial firms in putting their kiln plant in charge of men of little education and no experience as kiln operators."

The important work upon which this report is based can be safely recommended to all those in the British Empire who deal with timber in its many aspects.

## Flowering Plant Hybrids.

THE Masters Lectures for 1927, delivered by Dr. C. H. Ostenfeld of Copenhagen on "The Present State of Knowledge on Hybrids between Species of Flowering Plants," have been published in the *Journal of the Royal Horticultural Society*, vol. 53, Part 1. Dr. Ostenfeld reviews past and present concepts of species, but finds it no more possible now than it was forty years ago to formulate a definition of a 'species' which possesses at the same time practical advantages and scientific accuracy. Any definitions which embody such modern concepts as 'microspecies,' 'ecospecies,' or 'genospecies' are for practical purpose useless. On the other hand, a practical definition which satisfies all minds and all ideas must necessarily possess a somewhat vague connotation.

In spite of the lack of a definition which is at once apt and generally applicable, species in Nature are rather well-defined, a characteristic which their ability to hybridise fails to modify. This is explained either by the sterility of the hybrids themselves, or by the ease of back-crossing with one or other of the parents as against 'selfing.' Any external sign of hybridity is thus quickly effaced.

Dr. Ostenfeld discusses some of the most recent work on the formation by hybridisation of new types which fail to segregate and are thus wholly or partially stable. Related species with the same number of chromosomes usually produce fertile hybrids, while sterile hybrids are usually produced when the parents have different chromosome numbers. The Japanese botanist Kihara has, however, succeeded in obtaining fertile hybrids in a cross between two species of *Triticum* with different chromosome numbers. The offspring with chromosome numbers the same as either of the parents were most fertile, while those with the intermediate number were very much less so. Thus a selective process goes on, resulting in the disappearance of intermediate forms.

The Danish geneticist, Winge, has advanced a theory that a new stable type could be produced by hybridisation of two species, if the chromosomes of

the hybrid were split longitudinally and thus doubled. This hypothesis explains many cases which cannot otherwise be understood, particularly the cases of some of our cultivated plants, which are obviously hybrids but yet breed true to type without showing any segregation in the offspring. Longley (1926) has advanced some definite data in the case of *Fragaria*, and in crossing two species with the same number of chromosomes, got in one case an individual with double that number of chromosomes which was morphologically distinct and bred constant.

## University and Educational Intelligence.

ABERDEEN.—At the summer graduation the honorary degree of LL.D. was conferred on Emeritus Prof. J. D. MacWilliam, formerly Regius professor of physiology in the University. The degree of D.Sc. was conferred on Miss I. Gordon for a thesis entitled "Studies in the Development of the Skeleton in Echinoderms," and on Mr. E. V. Laing for a thesis entitled "Studies on Tree Roots: their Action and Development, with special reference to Mycorrhiza and Tree Growth on Peat Soils."

BRISTOL.—At a congregation held on June 30, the degree of D.Litt. was conferred upon Mr. E. J. Holmyard, head of the Science Department at Clifton College.

MANCHESTER.—Applications are invited for two Grisedale scholarships for biological research, tenable, respectively, in the botanical and zoological departments of the University. Each scholarship is of the yearly value of £100, and the award is open to graduates in botany and zoology, with some experience of research. Applications must reach the Registrar by July 29 at latest.

ST. ANDREWS.—Viscount Haldane of Cloan has been elected to the office of Chancellor of the University.

Prof. John McGibbon, professor of obstetrics in the University of the Witwatersrand, Johannesburg, has been appointed professor of midwifery and gynæcology in succession to Prof. Kynoch, who has recently resigned the chair.

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MR. WASHINGTON SINGER, formerly of Paignton, has presented a sum of £25,000 to the University College of the South-West, Exeter, for the building of a chemistry laboratory. It had been decided to build a new physics laboratory on the recently acquired 100-acre site on the Streatham Estate, Exeter, and the cost of that building will be met with moneys raised by the general appeal. The welcome and generous gift of Mr. Washington Singer will enable the Council of the College to provide for the Departments of Chemistry and Physics in the same block. The building will be the first contribution to the University building scheme, and will be a considerable relief to the growing congestion in the present buildings.

THE Air Ministry announces that six hundred aircraft apprentices, between fifteen and seventeen years of age, are required by the Royal Air Force for entry into the Schools of Technical Training at Halton, Bucks, and at Flowerdown, near Winchester. They will be enlisted as the result of an open competition and of a limited competition held by the Civil Service Commissioners and the Air Ministry respectively. The apprentices are given a thorough training in their trade by qualified technical instructors, and their general education is also carried on simultaneously by a staff of graduate teachers. Full information can be obtained on application to the Royal Air Force, Gwydyr House, Whitehall, London, S.W.1.

THE Royal Commissioners for the Exhibition of 1851 have made the following appointments to senior studentships and overseas science research scholarships for 1928:—*Senior Studentships*: Dr. T. E. Allibone, for research in pure and applied physics, and Mr. L. S. B. Leakey, for research in archæology and physical anthropology, on the recommendation of the University of Cambridge. Dr. G. F. J. Temple, for research in mathematics and mathematical physics, on the recommendation of the Imperial College of Science and Technology. Mr. B. Cavanagh, for research in physical and analytical chemistry, on the recommendation of the Victoria University of Manchester. Mr. C. E. Wynn-Williams, for research in experimental physics, on the recommendation of the University College of North Wales, Bangor. *Overseas Science Research Scholarships*: Canada, Mabel A. Borden (Dalhousie—zoology), D. R. McCullagh (Manitoba—biochemistry), and B. W. Sargent (Queen's, Ont.—physics); Australia, H. C. Webster (Melbourne—physics) and J. D. M'Gee (Sydney—physics); New Zealand, W. A. Macky (New Zealand—physics); South Africa, Evlyn Boyd (South Africa—zoology); Irish Free State, H. S. Boyd Barrett (National University — organic chemistry).

THE first Pan-Pacific Conference on Education, Reclamation, and Recreation, called by the President of the United States, was held at Honolulu on April 11–16, 1927. The United States Department of the Interior has now published a full report of the proceedings. In addition to the United States, represented by the Secretary of the Interior, the Commissioner of Education, and 25 other officials of various departments, the following countries were represented by official delegates: Australia (5), Fiji Islands and Western Pacific, Great Britain (British Consul at Honolulu), New Zealand, Chile, Peru (2), Colombia, Mexico (3), Nicaragua, France, Japan (9). There were no representatives of Canada, China, India, Siam, or the Dutch East Indies. Opportunities for the establishment of friendly personal relations were amply provided by giving up to excursions and social functions the week preceding and half of the week following the actual sessions of the conference. The addresses and discussions contain much of educational and scientific interest relating to the following, among other topics: the educational systems of the United States, Australia, Japan, Mexico, New Zealand, Peru, Hawaii, and American Samoa; exchange of lecturers, teachers, students, research workers, etc.; centres of educational information; evaluation of student credentials; vocational education; infant and child welfare; conservation and use of water; land-settlement; opportunities for scientific research and education presented by national parks; the uses of museums; wild life conservation; bird-migration. Resolutions adopted for submission to the various interested governments dealt with proposals for: introducing into the curricula of secondary schools courses in maternal and child hygiene, inviting the attention of government educational officials to the desirability of uniformity in educational terminology, and the appointment by the several governments of a pan-Pacific committee on co-operation between museums with special reference to the exchange of personnel, research students, publications and exhibits, and co-operation in exploration and scientific research. It was suggested that another conference should be held within two years.