the remainder in County Cork. The remaining 18,000 acres under acquisition are in Scotland. Planting is proceeding at thirteen centres—six in England and Wales, six in Scotland, and one in Ireland. Statistical work is being carried out and preliminary surveys are being undertaken.

The scheme for advances under the Forestry Act will be published after the consultative committees which have just been set up have considered the proposals.

Forest apprentices are receiving a two-year course in the Forest of Dean, the New Forest, and in Chopwell Woods, near Newcastle, and additional schools will be opened during the year. A special course for men with previous forestry experience is being conducted at Marischal College, Aberdeen.

An Imperial Conference to consider the forest resources and policy of the Empire is being organised for July, when a number of persons interested in forestry are expected in this country for the British Empire Timber Exhibition. The conference is expected to lead to the establishment of an Imperial Bureau of Forestry Information.

The Commission has published Bulletin No. 1, "Collection of Data as to the Rate of Growth of Timber" (which can be obtained post free for 4½*d.* on application at the headquarters of the Commission, 22 Grosvenor Gardens, London, S.W.1); also Leaflet No. 1, "Pine Weevils" (free). Other publications will follow at an early date.

The four consultative committees under the Forestry Act have been appointed, and consist of the following members:—

England.—Lt.-Col. G. L. Courthope (chairman), Col. M. J. Wilson (vice-chairman), Sir J. Ball, Lord Henry C. Bentinck, E. Callaway, the Earl of Chichester, M. C. Duchesne, J. H. Green, W. A. Haviland, Sir Edward Holt, Bart., E. C. Horton, A. F. Luttrell, W. Peacock, Major Harold Pearson, Col. B. J. Petre, Thomas Roberts, Sir William Schlich, W. R. Smith, Charles Stewart, Sir Lawrence Weaver, Col. J. W. Weston, and Leslie S. Wood.

Wales.—The Lord Kenyon (chairman), Col. F. D. W. Drummond (vice-chairman), C. B. Bovill, Major David Davies, Alderman T. W. David, Col. J. R. Davidson, Capt. J. D. D. Evans, Col. W. Forrest, Vernon Hartshorn, G. A. Humphreys, C. Bryner Jones, J. Jones, Lt.-Col. W. N. Jones, Col. C. V. Llewellyn, F. J. Matthews, the Earl of Powis, L. R. Pym, D. C. Roberts, J. Roberts, Major-Gen. A. E. Sandbach, J. I. Storrar, the Lord Tredegar, H. C. Vincent, P. Wilkinson, and Col. Sir H. L. Watkin-Williams-Wynn, Bart.

Scotland.—Sir Hugh Shaw-Stewart, Bart. (chairman), Gen. Stirling of Keir (vice-chairman), the Right Hon. William Adamson, Sir Isaac Bayley Balfour, F. R. S. Balfour, Wm. Black, Gilbert Brown, J. C. Calder, Sir Isaac Connell, J. A. Duthie, G. Fraser, R. Galloway, S. J. Gammell, Sir Robert Greig, J. H. Milne Home, G. Leven, Sir Robert Lorimer, H. L. Macdonald, Sir Kenneth J. Mackenzie, Bart., J. T. McLaren, J. Matson, D. Munro, Major W. Murray, J. Scott, and J. Wight.

Ireland.—T. B. Ponsonby (chairman), H. De F. Montgomery (vice-chairman), E. M. Archdale, J. Bagwell, the Lord Osborne Beauclerk, R. Bell, R. Bradley, S. Brown, J. R. Campbell, St. Clair M. Dobbs, Sir Henry Doran, J. Everett, V. C. Le Fanu, Wm. Field, A. C. Forbes, J. Calvin, the Earl of Granard, Prof. Augustine Henry, Wm. Kirkpatrick, A. E. Moran, the Viscount Powerscourt, the Viscount de Vesci, A Vincent, Capt. R. H. Prior Wandesforde, and the Right Hon. F. S. Wrench.

Recent Fishery Investigations.[1]

FIVE years ago the pivot round which fishery investigation turned was the question of the productivity of the North Sea grounds. It was agreed that the enormous development of catching power since the last third of the nineteenth century had produced no apparent change in the abundance of herring, haddock, whiting, and possibly some other species, but that, on the other hand, plaice, sole, turbot, and some other edible fishes had been affected. In January, 1913, the Plaice Committee of the International Fishery Council stated that it then had evidence that large plaice were becoming scarcer in the North Sea, and that small plaice were becoming more abundant, and this was taken to be proof that there was "impoverishment," or excessive exploitation of a natural resource. The conclusion is not free from ambiguity, for, on the whole, the *total quantity* of fish landed increased up to 1913; what had happened, it appears, was a reduction in the average expectation of life of a plaice living in the North Sea. Now if that change was a result of "intensive" fishing up to 1914, what has been the result of the very great decrease in fishing during the years 1915–18? Drs. A. C. Johansen and Kirstine Smith seek to answer this question by discussing measurements of plaice landed from a Danish North Sea area which was tolerably free from military restrictions during the period of war. They find that the pre-war tendency has been reversed; that large plaice are now relatively much more abundant than they were, but that their rate of growth has decreased—a curious result. We were justified, they say, in concluding that intensive fishing could reduce a natural stock of fish, and we are also justified in expecting that a slackening of this intensity of fishing, even for a relatively short period, will have the opposite effect.

The method by which the latter conclusion is made is indirect, and one is scarcely convinced that it is beyond doubt. It seems easy to show whether or not a natural fishery is stationary or declining. It would be easy and the conclusions certain if the systems of collecting statistics were adequate and well planned and if there were good scientific investigations that enabled one to interpret the statistical data. But the statistics are not adequate, and the scientific investigations have been neither well planned nor properly supported, and therefore the methods are roundabout ones and the conclusions do not carry absolute conviction We do not know, for instance, that there is not a natural periodicity of abundance and that the results noticed do not simply represent phases in a cyclic change. It is quite likely that they do.

The last report of the Dove Marine Laboratory (at Cullercoats, Northumberland) contains an account (by Mrs. Dorothy Cowan and Mr. B. Storrow) of investigations into the local herring fishery. This and former reports contain a very rich series of data with regard to the biology of the herring on the North East coast, and apparently not all the results obtained have been published—the present report, for instance, deals only with age-determinations (by means of "scale-readings"), while biometric measurements made as part of the Board of Agriculture and Fisheries scheme of racial investigations have also been accumulated. Prof. Meek, in editing the report, points out that extensive accumulations of data have not yet been analysed, and that such treatment is advisable before further investigations are planned. His discussion of some of Mr. Storrow's results gives point to an expression of dis-

1 "Meddelelser fra Kommissionen for Havunder sogelser; Ser Fiskeri," Bd. v., Nr. 9. (Copenhagen, 1919.)

appointment that the numerous inquiries and conferences held during the past year have not yet had any result. Local investigation with regard to the movements of herring shoals is insufficient. In this case the shoals leave Northumbrian waters and appear later on off the Firth of Forth, where, apparently, they are not sampled or investigated. It is therefore regrettable, Prof. Meek suggests, that reconstruction should have been a departmental rather than a national affair.

J. J.

Flora of the Hawaian Islands.

THE natural history of the Hawaian Islands has been well worked as regards both the flora and the fauna. Generally speaking, there is an extraordinary degree of endemism in the plants and animals, associated with a strong Southern Pacific or Australasian and Indo-Malayan affinity and a weak Northern Pacific or American affinity. The islands are extremely isolated, being further removed from any continental area than is any other region of equal size upon the globe. The nearest continent is North America, two thousand miles away, and the nearest islands of any importance, the Marquesas, are 1860 miles distant. Within forty miles of the shores the ocean exceeds 10,000 ft. in depth, and between the islands and the American coast reaches in places more than 20,000 ft. The most commonly accepted view of the origin of the archipelago is that the islands, which are entirely volcanic, were raised by volcanic activity, and that they have always been completely isolated.

In a paper entitled "The Derivation of the Flora of Hawaii" (Leland Stanford Junior University Publications, University Series, 1919) Prof. D. H. Campbell gives a *résumé* of the composition of the flora and its relations to American and Southern Pacific floras generally, and criticises unfavourably Guppy's view of its origin and distribution. Guppy accepts the view that the archipelago has always been completely isolated, and that air-currents and birds have been the agents concerned in its population. The predominantly Australasian and Indo-Malayan element was, he suggests, introduced largely by birds, especially fruit-eating pigeons, but Prof. Campbell finds a serious objection in the absence of such birds from the present fauna, as, apart from a number of American migratory shore-birds, practically all are endemic. Prof. Campbell strongly supports the view taken by Mr. H. A. Pilsbry, based on the study of the molluscan fauna. The land-snails are all ancient types the modern representatives of which are largely confined to Polynesia, and they represent, it is contended, an ancient fauna which has survived from a time when Hawaii was part of a continental area connected to the south-west with that of Polynesia. A study of the insects leads to a similar general conclusion, namely, that while the ancestors of some of the species may have been introduced through the agency of wind- or ocean-currents or by migratory birds, there are many more species of both plants and animals the presence of which can best be explained by a former more or less direct land-connection between Hawaii and the Indo-Malayan region.

The multitude of islands constituting Polynesia are, on this hypothesis, the remains of a once extensive land-mass, either a single continent or several large continental islands like Australia. This great area has been subsiding since Early Tertiary times, and the existing islands are the tops of mountain masses, often volcanic, superimposed upon this submerged continental area. A serious objection to this theory is the absence in Hawaii of certain types of vegetation characteristic of Southern Pacific regions, such as the conifers, aroids, and figs, and it is suggested that these forms became extinct after the isolation of the islands. Similar examples of such disappearance of plants are afforded by Sequoia, Liriodendron, and other genera, which had once a wide distribution, but are now represented in many regions only by Tertiary fossils.

University and Educational Intelligence.

DR. J. B. CLELAND, of the Health Department of New South Wales, has been appointed to fill the newly constituted chair of pathology in the University of Adelaide, South Australia.

APPLICATIONS for grants from the Dixon Fund, of the University of London, for assisting scientific investigations, are receivable by the Academic Registrar, University of London, South Kensington, S.W.7, until May 14 next. They must be accompanied by the names and addresses of two referees.

THE MARQUESS OF CREWE, chairman of the governing body of the Imperial College of Science and Technology, and Sir Alfred Keogh, Rector of the college, will attend the annual dinner of the Old Students Association of the Royal College of Science, to be held at the Café Monico on Saturday, April 24. Other distinguished guests will be Prof. W. H. Bragg, Dr. W. Garnett, Sir Richard Glazebrook, Mr. W. McDermott, and Sir Ronald Ross. Tickets (price 10*s.* 6*d.*) may be obtained from Mr. C. S. Garland, acting secretary, Old Students Association, Royal College of Science, South Kensington, London, S.W.7.

AT a general meeting of old students held recently at King's College, Strand, it was decided to form a King's College, London, Old Students' Association for the purpose of promoting social intercourse and of keeping the members in touch with their old college. The association hopes to include students from all faculties, and the subscription of 10*s.* 6*d.* per annum will include the *King's College Review*, published once a term, and a list of members with their addresses (and possibly the work on which they are engaged). Further particulars and forms of application for membership may be obtained from Miss M. A. V. Fairlie, hon. secretary, 3 St. Julian's Farm Road, West Norwood, S.E.27.

Societies and Academies.

Faraday Society, March 1.—Dr. T. Martin **Lowry** and F. C. **Hemmings**: The properties of powders. The caking of salts is, in general, dependent on the presence of a solvent, usually water. The following cases have been studied: Nitrates, other anhydrous compounds, hydrated salts, loss of sulphur dioxide during caking, and contraction during caking of copper sulphate.—Dr. T. Martin **Lowry** and S. **Wilding**: The setting of dental cements. Phenomena of caking or setting may be divided into five classes:—(1) Recrystallisation of anhydrous or hydrated salt without change of chemical composition. (2) Formation of hydrates. (3) The hydrolysis of complex salts by water. (4) The formation of new salts, such as the magnesium oxy-cements and the zinc oxy-phosphate cements used in dentistry, and "silicate" cements. (5) Amalgams in which mercury takes the place of water.

Zoological Society, March 16.—Prof. E. W. MacBride, vice-president, in the chair.—R. I. **Pocock**: