

coast-line which connected Ireland and Scotland with Norway across what is now the North Sea. Along the same line northern elements spread southwards and have left relict stations so far south as Ireland, where they mingle with Lusitanian species in Clare Island, the cliffs of which harbour *Silene acaulis* and *Saxifraga hypnoides* in intimate contact. This coast is the most westerly extension of land in this part of the Atlantic which we can safely postulate. In dealing with such problems it is necessary to consider species not only in relation to their special distribution but also to those of their nearer and wider allies.

Dr. B. P. Uvarov stated that in studying zoogeographical problems it is necessary to apply ecological methods. Orthopterous insects are particularly suitable for these studies, because of the very small number of British species. Three zoogeographical groups may be distinguished amongst British Orthoptera. The largest consists of species distributed across Siberia, northern and middle Europe. This group originated in the Angara continent of geologists. Amongst members of the Angara fauna there are some which occur in North America but they spread via north-east Siberia. The second element is the Lusitanian (Atlantic); their present distribution points to their having originated in dry rocky land at the latitude of the Mediterranean Sea and Canary Islands. The third group belongs to families and genera now widely spread in the subtropics and tropics, and they are obviously relics of an age when the British Isles together with the most of the northern hemisphere enjoyed a mild tropical climate.

Mr. A. J. Wilmott emphasised the point that, with the possible exception of *Saxifraga Geum*, no species of the Lusitanian element of the British flora

occurs in North America. These species must be relics in Ireland, since there has been no connexion southwards since the glaciation. Moreover, these species are not particularly cold-shy: they ascend to considerable elevations in Ireland. There are many species common to Europe and to North America, though the number is being steadily diminished by critical study. There are a number confined to Europe and eastern North America, and Prof. Fernald has found several restricted in America to the unglaciated parts of Newfoundland and the mouth of the St. Lawrence. We know that many species with limited distribution to-day formerly had a wider area of dispersal. There are species which are now known only in the eastern United States and Japan. It may therefore be possible that a species occurring only in Europe and the eastern States was originally connected across Asia and not across an Atlantis, and too definite an inference should not be drawn from present-day distribution alone. A proper analysis of the whole flora may give indications of the history of its development.

Dr. G. P. Bidder pointed out that the distribution of the fresh-water sponge *Heteromeyenia ryderi* given as western Ireland and eastern North America is from Hanitoch's list of Irish Fresh-water Sponges (1895), whereas the later account of Stephens shows that this is one of the commonest sponges of Ireland but restricted to non-calcareous districts and occurring in the island of Mull. Miss Stephens gives no opinion on the distribution of *H. repens*, which occurs in America over approximately the same area and has otherwise been recorded only from Galicia, though she holds that the distribution of *H. ryderi* supports Scharff's hypothesis of a land-bridge to America from Ireland.

### Forestry in Kenya Colony.

IN the previous Annual Report of the Forest Department of Kenya Colony and Protectorate, reference was made to the great drought of 1928. The recently published report for the year ending Dec. 31, 1929, states that "the drought continued with ever-increasing intensity for the first quarter of the year", but long rains followed and recovery was rapid. One of the results of the drought was rather serious forest fires, occurring principally on the Aberdares and on the Mau. The other visitation with which the Colony was afflicted was a plague of locusts, which, says this report, "showed signs of having passed its peak and being rapidly on the decrease, and a greater spirit of optimism prevailed generally".

Steady progress is being made with the work of selecting new forests for reservation and with the survey of the reserved areas. It is pleasing to note that an earnest endeavour is being made to ascertain the degree of stocking in the various forests under exploitation by sawmills. Enumeration of growing stock is proceeding apace and two working plans are in operation. It had been proposed to form a special working plans party "but no staff was available during the year".

There are several forestry administrations under the Colonial Office to which similar remarks on the subject of inadequacy of staff are to be found in the annual reports. It is to be hoped, now that prospects in those forestry services are really attractive, that young men of the right type will come forward for training. For without sufficient and efficiently trained gazetted staffs real progress is impossible. Under Financial Results, the Conservator (Mr. H. M. Gardner) writes: "With only the comparatively small local market to

depend on, it is not possible for the Department to produce a large net revenue. It can be considered distinctly satisfactory if the Department can pay its way while the forests are being explored, developed, and brought into a more productive state. As the forests are improved and communications become better, production costs will diminish, and it should be possible to develop much wider markets and to obtain a very handsome profit from the Colony's forests." The Conservator's optimism is probably quite justified; but it should be remembered that this will only be possible provided financial support is available to develop the forest estate.

As a case in point, the opinion of the Government of India at the time a forest organisation was being introduced into that country, soon after the inauguration (in 1864) of the Indian Forest Service, may be quoted; for its application to several of the colonial forest services may not be out of place. The following extract is from a Circular (Revenue—Forests, No. 24, dated 23rd November 1867) issued by the Governor-General, Sir John Lawrence, in Council, and forwarded with a covering dispatch to the Secretary of State for India. "It appears expedient to the Governor-General in Council, to state that there are certain cases in which the administration of forests must, like the Irrigation Department, undertake works of public utility the outlay on which, within one year, may not always be covered by the revenue of the year. The rule that the forest expenditure shall always be covered by the revenue can, in its very nature, only apply to ordinary expenditure."

On the plantation work in Kenya being carried out the report is most informative: 4000 acres were

undertaken during the year—the largest area so far accomplished in any one year; and this in spite of the fact that a large number of blanks, due to the drought of 1928, had to be filled up in the existing plantations before any new work could be commenced. This afforestation work is undertaken in several different ways. (1) The greater part of the plantations are made on land that has been clear-felled for timber and fuel and then cleaned up and cultivated by forest squatters. The work, in spite of difficulties, is cheap and efficient. The method is analogous to the *toungya* method employed in Burma and elsewhere in India. (2) When squatters are not available and when the Department is afforesting grasslands, the area is either ploughed and cultivated by contract or a small sum is paid for ploughing and the contractor is allowed to have the use of the land for two to three years before planting; or again, bush-covered land is being afforested by planting trees in lines cut through the bush, the growth being slower, but the bush acting as a nurse to the young trees and keeping down weed growth. Of the 4000 acres planted, 1063 acres were afforested by this method. This represents an addition to the Colony's forest capital. (3) In certain types of forest, for example, *Brachylaena*, *Ocotea*, and some *Podocarpus* forests, natural regeneration, with assistance, is sufficient to replace the timber cut. (4) Special attention is being concentrated upon fuel plantations and various exotics are being experimented with, and private planting is being encouraged. Both railway and public take large amounts of fuel; the former utilised from all sources, Government and private lands, 13,867,025 cub. feet during the year. As private resources are cut out, the demands will fall increasingly heavily on the Government forests. Fuel is now being supplied in large quantities from *Eucalyptus* plantations formed on the sites of natural forest cut for railway fuel. The demand for fuel for domestic and industrial purposes is increasing rapidly round Nairobi and is becoming more and more difficult to supply. In a few years, however, large areas of plantations will be maturing, as well as large plantations of black wattle, which is being planted on private land for the production of tanning bark.

Kenya is so much before the public at the present time that the operations of the Forestry Department, so far as they affect the future well-being of the Colony, appear to merit some prominence.

### Marine Research in the Mediterranean.

THE fisheries of Egypt, though small in comparison with the vast fisheries of the northern waters of Europe, are varied and interesting. They comprise the sea fisheries along the northern coast of Africa in the Mediterranean, and in the Red Sea; the Nile and delta lake fisheries, the latter of which in 1928 supplied about three-quarters of the whole weight of fish landed in Egypt; and also the valuable sponge fisheries of the North African coast lying in territorial waters between Alexandria and Sollûm, which furnish sponges unrivalled in the world for their excellence of quality.

We have received the report of the fisheries for the year 1928,\* and amongst other items of interest are given comparative figures of the yield in kilograms per unit area of fish from the delta lakes. These lakes are of exceptional interest, extending over huge areas and never exceeding much more

than a metre in depth; they form a link between the Nile and the sea, for into their southern margins empty the drains of fresh water that have been drawn from the Nile to irrigate the land, while all but one are connected with the sea. The lakes are thus stocked both by fresh-water fish and by fish entering from the sea. By far the most important fish, however, are the grey mullet, which grow and flourish extremely well under the conditions existing in the lakes, and which, at certain periods of the year according to the species, leave on their spawning migrations for the sea. Figures are given to show that during the last eight years the average yield of fishes from lakes Menzaleh, Brullos, Maryût, and Edkou together amounted to so much as 142 kgm. per hectare. Parallel figures are given for the North Sea as 17.3 kgm. per hectare, and for cultivated carp ponds as 65.5-165 kgm. For a natural fishery these delta lakes are therefore extremely rich.

In 1924 the Office of Fisheries Research was closed down; it was reopened towards the end of 1927 by the appointment of Mr. R. S. Wimpenny as Director of Fisheries Research. In the report under review there is little of scientific work published, but it is evident that movements are on foot to establish a department sufficient to attack a few, at any rate, of the many problems of interest that Egyptian waters afford, not the least of which from a biological point of view would be a thorough survey of the conditions in the delta lakes themselves.

The Government has ordered a small motor Danish seiner to explore the possibilities of the fishing grounds on the Egyptian coasts, and a plea has been put forward for a marine laboratory and necessary scientific assistants, and also for a steam trawler for oceanographic research. It is to be hoped that this will soon materialise. The knowledge of the fundamental problems underlying the productivity of the sea is essential to fishery research, and, while to administrative officials the immediate gain may appear to be insignificant, it is certain that in the long run such work will prove its value. It is to be hoped, therefore, that the Egyptian Government will see its way clear to supply the means for the establishment of an active marine biological laboratory; situated as it would be amid surroundings of absorbing interest, with problems such as the interchange of faunas between the Red Sea and the Mediterranean and the effects of the Nile flood, it is certain that information would be forthcoming that would add much to our knowledge of life in the sea.

F. S. R.

### University and Educational Intelligence.

CAMBRIDGE.—Smith's prizes have been awarded as follows:—Mr. H. S. M. Coxeter (Trinity), Mr. H. R. Hulme (Gonville and Caius). Rayleigh prizes have been awarded as follows:—Mr. H. Davenport (Trinity), Mr. B. Kuttner (Christ's), Mr. J. C. P. Miller (Trinity).

LONDON.—The following doctorates have been awarded: *D.Sc. in Physics* to Mr. J. P. Andrews, East London College, for a thesis entitled "Investigation into the Elastic and Plastic Behaviour of Materials" (*Proc. Phys. Soc.*, 1925, 1931; *Phil. Mag.*, 1925, 1928-29, 1931). *D.Sc. in Geology* to Mr. E. Spencer for a thesis entitled "A Contribution to the Study of Moonstone from Ceylon and Other Areas and of the Stability-Relations of the Alkali-Feldspars", and a subsidiary contribution. *D.Sc. in Physics* on Mr. H. Shaw for a thesis entitled "Interpretation of Gravitational Anomalies", and fourteen subsidiary contributions.

\* Ministry of Finance: Coastguards and Fisheries Service. Report on the Fisheries of Egypt for the year 1928. By R. S. Wimpenny. (Cairo: Government Press, 1930.) P.T.5.