

forests form an almost continuous belt of varying width running parallel to the coast. They are said to hold great timber wealth of large dimensions. They have not been exploited, however, to anything like the extent of the rain forests owing to their geographical position, which places them outside the zone of streams and rivers suitable for floating timber.

The object of Mr. MacGregor's memoir is to record all the experimental and research work in connexion with the silviculture of the mixed deciduous forest type upon which he has been specially engaged; or on which other officers have obtained some experience of, for example, plantation work. In the latter work, fuel plantations have formed an important branch. Large areas of indigenous species have been planted at Akilla, Ondo Circle. At Mamu and Olokemeji teak has been successfully grown—but almost, until recently, at the expense of good local indigenous species. Latterly, however, research work in the nursery and plantation has been devoted to the study of the requirements of indigenous species with the view of replacing exotic species when possible.

It is a curious anomaly that here in the West African tropical forests, with a plethora of magnificent timber trees of which almost the only one known, during the past century at least, was mahogany, the first commencements of forest plantation work on a scientific basis should have been made with teak in several colonies to the neglect of some of the, admittedly little-known, indigenous species. The research work with the latter undertaken by Mr. MacGregor and ably depicted in this memoir proves that West Africa has timbers which will probably, in the future, be able to hold their own on any timber market in the world.

In addition to the nursery and experimental plantation work undertaken with indigenous species, silvicultural experimental work in connexion with both artificial and natural regeneration has been commenced with considerable success.

Chapters are devoted to the description of the silvicultural characters of a number of species, indigenous and exotic, and some excellent descriptions of seedlings. Finally, there is a report on the soils at Olokemeji by Mr. H. C. Doyne, senior agricultural chemist, and Mr. W. A. Watson, agricultural chemist, Ibadan.

Although perhaps it is too early to accept the mass of detail recorded in this important memoir as actually proved, without further check, yet Nigeria may be complimented on the methods upon which the work has been carried out.

### The Broadcasting Wave-Lengths of Europe

THE plan for allocating the wave-lengths of the broadcasting stations in Europe published in 1934, and known as the Lucerne plan, is getting more and more difficult to work. The trouble arises mainly from the fact that the full range of frequencies available for the carrier waves is 1,350 kilocycles per second, and in order to prevent serious overlapping, each station requires a width of about 10 kilocycles per sec. In order to secure agreement between the various nations concerned, it was necessary to allocate 133 channels to 170 working stations, so that some had to work at the same frequency, care being taken to give these frequencies to small stations at a great distance from one another.

Unfortunately, little attention had been given to

limiting the power of large broadcasting stations, and so there are now thirteen in Europe which work at 100 kilowatts or above, eighteen with powers not less than 50 kw. and twenty with powers not less than 20 kw. Many of these stations are transmitting through the same zone of darkness, and it follows that the spectra of the waves radiated by powerful stations in contiguous channels will overlap. The overlapping sidebands of these unwanted stations produce serious interference.

In a paper on broadcast transmission read to the Institution of Electrical Engineers on May 1 by Mr. P. P. Eekersley, it is pointed out that at the present time the designer of a receiver capable of reproducing distant as well as local programmes is forced to cut off the upper audio frequencies of modulation, and this deleteriously affects the quality of the reproduction. The ordinary commercial receiver sold to-day to the public cuts off the audio frequencies above 3,500 cycles per second.

The only way to get over this difficulty is to change radio technique. It is improbable that European nations will agree to limit either the existing power or the number of their working stations. But if it were possible to modify transmitters so that the spectra of the waves radiated contained the carrier wave and only one set of sidebands, spectrum overlap could be minimised and in some cases entirely eliminated. If a frequency band of 2,000 cycles per second could be added to the ordinary breadth, a great improvement would result. The introduction of high-fidelity broadcasting would undoubtedly stimulate the industry of radio broadcasting.

Mr. Eekersley has recently been to the United States and has inspected the apparatus developed by Wired Radio Inc. for use in connexion with their high-frequency broadcasting system. He found that several of the methods he recommended were similar to their methods, and that a very high quality of reproduction was achieved.

### University and Educational Intelligence

CAMBRIDGE.—The sixth course of Scott Lectures will be given by Prof. G. Hevesy in the Cavendish Laboratory at 4.30 p.m. on May 13, 15 and 17. The subject of the course will be "The Terrestrial and Cosmic Abundance of the Elements".

An election to the Isaac Newton Studentship will be held in the Michaelmas Term 1935. These studentships are for the furtherance of advanced study and research in astronomy and physical optics and are open to those members of the University who have obtained a degree in the University and were less than twenty-five years of age on January 1, 1935. Candidates are invited to send in their applications to the Vice-Chancellor between October 8 and 14, 1935. The emolument of the student will be £250 per annum.

EDINBURGH.—Mrs. Stewart Hall has given £15,000 for the endowment of a lectureship in the pathology of the diseases of children.

On the recommendation of the Joint Committee of the University Court and the managers of the Royal Infirmary, Dr. A. E. Barclay, lecturer in medical radiology, University of Cambridge, has been appointed lecturer in radiology in the University, on his appointment as radiologist to the Royal Infirmary from May 1, 1935.