

*Oceanography.* British ships have observed directly the deep ocean currents of the North Atlantic using the 'Swallow' acoustic signalling float which can be set to drift at the required depth. One of the currents measured was a southward one below the Gulf Stream.

*Nuclear radiation.* The existence of the International Geophysical Year network of nuclear sampling stations in Europe permitted a detailed study to be made of the diffusion of radioactive material released by the Windscale nuclear reactor accident in November 1957.

The full prescribed observational work ceased with 1958 and the main task of the present and future is the study of the observations made during the

year. It is, however, planned to continue some observations, apart from those which are part of regular meteorological, etc., services, during 1959 under the title "International Geophysical Co-operation 1959".

The International Council of Scientific Unions has formed special committees to co-ordinate further international work in antarctic research, oceanic research and space research.

A further possibility is the making of a magnetic survey on a world-wide scale during the next sunspot minimum for comparison with the magnetic observations made during the maximum period with which the International Geophysical Year was timed to coincide.

## RADIO FIELD-STRENGTHS IN THE TROPICS

IT is well known that radio-communications conducted by waves which are propagated by reflexion from the ionosphere are critically dependent on the properties of the layers of ionized gas which transmit and attenuate the signals. The regular observation of the characteristics of the ionosphere at stations distributed widely over the Earth's surface has made it possible to understand and explain many phenomena which were obscure even ten years ago. The International Radio Consultative Committee has, among its other studies, been investigating many technical problems involving the propagation of radio-waves by way of the ionosphere; and of these a most important one is that of tropical broadcasting, for which high-frequency waves are much more effective than medium waves on account of the very high atmospheric noise-level present in most tropical regions. Unfortunately the attenuation of the signals in the higher-frequency bands is much greater during the day than is usual at higher latitudes and the reflecting layers are also less stable. Thus the problem of providing an adequate signal-to-noise ratio is considerably more difficult in the tropics.

The past studies of the International Radio Consultative Committee had shown that the standard methods of computing the field-strength of sky-wave signals were considerably in error at low latitudes;

but it also became clear that the additional basic data obtained in recent years provided an explanation of many of the discrepancies disclosed. In a report\* by W. R. Piggott, recently published by the Department of Scientific and Industrial Research, Radio Research Station, this subject is reviewed with the aid of an analysis of the problem of identifying the most effective type of ionospheric reflexion for particular circumstances. This report shows that some of the difficulties in interpreting the results of field-strength measurements at low latitudes have been due to changes in the dominant mode of ionospheric propagation, and the consequent variations in the attenuation of the waves, and the angle of elevation at which they arrive at the receiver. The rate of advance of knowledge of this subject depends on the continual interplay of practical observations with theory; and it is hoped that the publication of this report, together with its presentation at the Plenary Assembly of the International Radio Consultative Committee recently held in Los Angeles, will encourage radio research workers in low latitudes to investigate their wave-propagation phenomena in more detail.

\* Department of Scientific and Industrial Research. Radio Research. Special Report No. 27; The Calculation of the Median Sky Wave Field Strength in Tropical Regions. By W. R. Piggott. Pp. 38. (London: H.M. Stationery Office, 1959.) 2s. 6d. net.

## BRITISH BOOKS AND FOREIGN MARKETS

IN reply to a series of questions in the House of Commons on June 22 regarding the supply of British books and periodicals overseas, Dr. C. Hill, the Chancellor of the Duchy of Lancaster, made a long statement which was circulated in Hansard. The study of ways and means of increasing the flow of British books and periodicals overseas has now been completed. Recognizing that British books can do much to help other peoples to understand our way of life and that they make a very real contribution to the life and thought of other nations, the statement points out that there is an ever-increasing demand for reading-matter in English, and we must do more to promote the flow of British reading-matter overseas. Other countries are already producing large amounts of well-produced attractive literature which

is easy to read and inexpensive and is aimed particularly at Asian and African countries. Although in 1958 exports totalled nearly £24 million, or almost two-fifths of the turnover of the United Kingdom book trade, several countries impose, for currency reasons, substantial restrictions on imports of British books and periodicals and our exporters cannot make further headway in these markets. Low individual incomes in many countries and the lack of effective library and other distribution systems are also major difficulties.

Accordingly, the Government has decided to take five steps to promote the export of British books and periodicals:

(i) To enter into negotiations with various countries with the aim of establishing schemes operating

broadly on the lines of the British book export schemes which were established during the War and in the immediate post-War period.

(ii) To promote the production of low-priced editions of a range of British books for sale in certain countries where there is a large unsatisfied demand for such books. This will call for substantial Government expenditure.

(iii) To authorize a further expansion of the British Council's library services in several centres and of the Council's resources for presentations of books and periodicals abroad on which the Council this year expects to spend in all about £650,000.

(iv) To assist, through the British Council, in the development of library systems in some Colonial territories, including the establishment of central libraries, regional branches, book vans and book boxes.

(v) To co-operate with publishers in measures to enable them to increase their circulations in some of the more difficult markets overseas.

Parliamentary approval for the expenditure involved will be sought at the earliest convenient

opportunity and it will be necessary to proceed in consultation with the Governments of the Commonwealth and foreign countries concerned, and Dr. Hill promised to inform Parliament as soon as agreements had been concluded. In reply to a further question Dr. Hill said that the increase in the British Council's resources would be concentrated on scientific and technical books, but the schemes to be negotiated with countries where import restrictions prevent the flow would cover a wide range of books. He hoped that in the next year it would be possible to reach up to 2 million copies of low-priced books. This would be done in association with the publishers who own the copyright of the books concerned and would involve Government aid to narrow the gap between the economic price and what could be paid in the countries of reception. Replying to specific questions, Dr. Hill said that British book exports in 1958 to India were recorded in the Trade and Navigation Accounts as £424,427, to Pakistan £39,950, to Ceylon £15,732 and to Israel £9,473. Dr. Hill estimated the increased expenditure as about £500,000 next year.

## FORESTRY IN NEW ZEALAND

THE annual report of the director of forestry of New Zealand for the year ending March 31, 1958, is of more than usual interest in that it includes a general historical review of both departmental activities and general land use and administration, covering the past forty years. The need for such a review had been particularly stressed by the Minister of Forests (Mr. Tirikatene) and was prompted also by the meeting of the British Commonwealth Forestry Conference which had been held in the country during September–October 1957. The Minister himself (a Maori) contributes a prologue recognizing that the great forestry effort involved in creating a very large acreage of exotic softwood plantations, mainly of *Pinus radiata* from California, by the quick production of an alternative supply of essential timber, has saved a large remnant of the native forest: at the same time he calls for much greater attention to the maintenance of this forest, especially for its value in protecting soil and conserving water. The disastrous consequences of the denudation of the hillsides in the form of soil erosion and then extensive floods are all too widespread and serious to be ignored any longer. Quoting two specific examples, he suggests that the Urewera indigenous forests in North Island, largely in Maori ownership, might in the national interest have to be managed primarily for soil stabilization and water retention, not timber, while in the hills behind Canterbury, all land more than 3,000 ft. high might have to be taken out of pastoral use; even the city itself is now threatened by flood devastation. It must be encouraging to the Forest Service to have this official backing, which is combined with full recognition of the essential need of stable finance for the necessary research work and for remedial measures.

The visit of the Commonwealth Conference stimulated the preparation of a number of research papers covering many of the lines of activity which have called for special attention of recent years. Some of the topics dealt with are also currently prominent elsewhere, especially where softwood plantations play an important part; such are problems in genetics, and the relation between silvicultural treat-

ment and market requirements in respect of both dimensions and quality (whether for timber or pulp). There are also problems of the later management and regeneration of the plantations, as in the United Kingdom. During recent years, a good deal of thought has been given to the management and regeneration of the native forests, both those with important softwoods, notably kauri (*Agathis australis*) and the various species of *Podocarpus*, and the 'beech' forests (*Nothofagus* spp.). Encouraging progress is being made but rates of development are, of course, very slow compared with those of the introduced conifers, and, as already noted, these forests have other functions to fill as well as timber production.

The Commonwealth Conference appointed a special committee to report on New Zealand forestry. In the report, as Resolution 6 of the Conference, alarm is expressed at the poor condition of the remaining indigenous forest as a result of past exploitation, and expansion of research programmes is urged; the publication of Volume 1 of the "National Forest Survey of New Zealand" for these forests in 1953 is commended, as is also the extension of the survey to protection forests.

It may be noted that damage to the native forests by introduced animals, above all red deer and opossums but also wild goats and pigs, is still a really serious problem, so much so that there is a special division to deal with 'noxious animals'. To reinforce shooting operations in the natural forests, bounties are paid for animals killed outside. The numbers killed in the year in what do not claim to be more than 'holding' operations are striking, namely, 55,000 deer, 28,000 goats, 4,000 pigs and 4,000 chamois by the State alone. The opossums are mostly killed outside the reserves, 900,000 in the year (after more than a million in 1956).

The control of noxious animals was only taken over by the Forest Service two years ago and there is a strong case for a similar taking over of soil conservation and river control, so that the troubles can be dealt with at their source instead of trying to remedy them after the damage has already been done, as is currently happening.