NEWS and VIEWS

Carbon-13

FIVE isotopic forms of the element carbon are known, having atomic weights ranging from 10 to 14. Two of them, C^{12} and C^{13}, exist stably in Nature, while the others are radioactive, and are known to us only through their production in various nuclear reactions. The recent great development in the techniques of isotope separation have made it possible to produce substantial quantities of carbon compounds in which the ratio of C^{13} to C^{12} has been increased far beyond the 1·1 to 98·9 characteristic of natural carbon. This will be important in chemical and biological research, for C^{13}, being chemically the same as natural carbon, but distinguishable from it by the sensitive techniques of mass-spectrography, may be used as a 'tracer' to follow the history of carbon atoms in their passage through chemical and biochemical reactions. For example, if a small quantity of C^{13}-enriched sugar is eaten by or injected into an animal, the distribution and state of chemical combination of the carbon of this particular dose may be determined by measuring the C^{13}–C^{12} ratio of appropriate specimens taken from the animal at a later date. The importance of C^{13} is all the greater because two of the three radioactive isotopes of carbon decay too rapidly to be suitable tracers, while the remaining one (C^{14}) has so long a life (3,000 years) that its detection by radioactive methods is relatively insensitive.

It is understood that C^{13} is to be produced in quantity by the Sun Oil Company and the Houdry Process Foundation at plants situated near Philadelphia in the United States. The process employed will be that devised by Prof. H. C. Urey (formerly professor of physical chemistry at Colombia University, New York, and now at the Institute of Nuclear Studies, Chicago), and Dr. Allen Reid. Material will be provided free to qualified non-commercial biological and medical research organizations "which can justify such donations". The Medical Research Council is endeavouring to arrange for the supply in the United Kingdom of this and other isotopic indicators, including radioactive species of all elements of biological significance. Facilities for analysis by mass-spectrographic methods and by counter technique must be made available to workers wishing to employ isotopic tracer methods in their investigations before these can have any wide application.

British Association Secretaryship: Mr. D. N. Lowe, O.B.E.

MR. D. N. LOWE, who has been appointed to succeed Dr. O. J. R. Howarth as secretary of the British Association (as already reported in *Nature*) after the first post-war meeting of the Association, is a Scot and is thirty-six years of age. As a Kitchener Scholar he studied at the University of St. Andrews, where he graduated M.A. (literature and history) and B.Sc. with first-class honours in botany. He was president of the Union, of the Students' Representative Council, and of the Mountaineering Club of the University. After a short period of research on the marine algæ of Fife, he was appointed assistant secretary of the British Association in 1935. Shortly after the outbreak of war he was seconded for national service. On the secretariat successively of the Ministry of Supply, the Ministry of Production and the Cabinet, he has served as administrative secretary to various Whitehall committees concerned with priority and allocation of materials, and was awarded an O.B.E. in the recent New Year's Honours List.

Wool Research in Australia

THE passage of the Wool Use Promotion Act (1945) through the Commonwealth Parliament is an Australian reaction to what is commonly termed the threat of synthetic textile fibres to wool. This Act is supplemented by a Wool Tax Act (1936–1945) which imposes a levy of 2*s*. per bale, payable by the grower, on all wool received or produced by a wool-broker or dealer, or exported on and after June 1. The proceeds of the levy (estimated at £300,000 in a normal year, but considerably less in 1945–46) are to be paid into a Wool Use Promotion Fund. In addition, a Wool Research Trust Account is established into which the Treasury will pay annually from consolidated revenue a sum equal to that raised by the levy. The total available may therefore reach as large an amount as £600,000 per annum. A committee of Ministers will determine each year what sum (if any) shall be transferred from the Promotion Fund to the Research Account. The balance left in the Fund will be applied by the Australian Wool Board to promoting, by publicity and other means, the use of wool in Australia and throughout the world, and for performing such other functions for the benefit of the wool industry as may be approved by the Ministers.

The Research Account, the minimum sum in which will be the equivalent of the 2*s*. levy on the clip, is to be applied, according to the Act, for "scientific, economic and cost research in connection with the production and use of wool and goods made wholly or partly from wool; and the co-ordination and application of the results of any such research". It is understood that the Council for Scientific and Industrial Research will undertake full responsibility for all scientific work. Its present programme of investigations on the production side will be considerably increased, and it is probable that a new division will be set up to handle a wide diversity of problems associated with the manufacturing side. Detailed plans are at present under discussion.

New Method of Sound Recording

FOR many years past it has been the practice with broadcasting organisations to record sound programmes for reproduction as and when required. In some cases this technique makes use of ordinary gramophone records or of metal disks coated with a preparation of cellulose acetate. In other cases, the sound programme to be recorded is made to influence the longitudinal magnetization of a continuous steel tape which passes under the recording head. This latter process is suitable for long programmes, which can either be reproduced immediately or after an interval, the tape being rewound and passed under a suitable magnetic pick-up. The recording can afterwards be effaced or 'wiped off' the steel tape by a demagnetization or saturation process, and the tape can thus be used many times for different programmes.

According to a recent report in *The Times*, an examination of the equipment in use at broadcasting stations in Germany indicates that the Germans were ahead of Britain and the United States of America in this technique of sound recording, in so far as a wider range of acoustic frequencies could be recorded with an absence of background noise such as hum and scratch. In the German magnetophone equipment, the recording medium is a plastic ribbon sprayed with a magnetic material in solution; this is much lighter and less bulky than the steel tape referred to above, and also has the advantage that imperfections can be removed and editing effected by cutting out the unwanted portions of the ribbon with scissors and sticking together again with a special fluid which sets almost immediately. The magnetic recording process would appear to be the same for the coated ribbon as for the steel tape, and while this magnetized ribbon can be kept indefinitely, it can as required be 'wiped clean' by passing it through a high-frequency magnetic field, after which the ribbon is ready for recording a new programme.

Manufacture of Radio Equipment in India

THE August issue of the *Journal of Scientific and Industrial Research* published in Delhi contains an article by S. P. Chakravarti entitled "Manufacture of Wireless Apparatus in India". The growth of radio in India began in 1926, when two low-power broadcasting stations were set up in Bombay and Calcutta. In the following seven years radio telegraph and telephone beam stations were installed linking India with Great Britain and later with Japan. Since 1936, a broadcasting service has been operated on progressive lines under a separate department known as All India Radio. In spite of these developments, however, the production in India of radio equipment, including broadcasting receivers, prior to the outbreak of war in 1939, was confined to the assembly of sets from imported parts and components. In the following years these imports became increasingly difficult to obtain, and many firms had to abandon the manufacture of radio sets. In 1942, a systematic examination of the manufacturing position was carried out by the Government of India in connexion with the development of military radio sets. Investigations leading to the development of certain components from materials available in India have since been carried out under the auspices of the Radio Research Committee of the Board of Scientific and Industrial Research. It is now known that sufficient facilities for the manufacture of all components except valves exist in India, and that the organisations—some twenty in number—possessing manufacturing facilities are in urgent need of special basic materials and appliances.

The article referred to above gives details of these materials, and also a summary of the present manufacturing position of such components as carbon resistors, fixed and variable condensers, loudspeakers, transformers and vibrators. The need for the production of valves in India is stressed; and it is suggested that two factories, in the north and south respectively, should be immediately established for the production of valves with the aid of machinery imported from the United States or Britain. The number of radio receiving sets in India in 1944 was about 0·5 per 1,000 persons, and it is proposed that this should be increased to two sets per 1,000 persons during the next five to ten years by a production of about 100,000 sets a year. This is additional to the manufacture of large quantities of parts and replacements needed for maintaining and servicing about 200,000 broadcasting receivers and a number of communication receivers already in use in the country. In addition to the home consumption, the neighbouring countries—Burma, Malay States, Ceylon, China, Afghanistan and Persia—all of which have their own broadcasting stations, and also receive transmissions from India, may buy annually a total of 50,000 sets and a large number of components for their maintenance.

A New Gem Stone

A NEW mineral, brazilianite, which has possibilities as a gem stone, has just been announced jointly by Edward P. Henderson, of the Smithsonian Institution, and Frederick H. Pough, of the American Museum of Natural History. Obtained by Dr. Pough in Brazil from the owner, who thought it was chrysoberyl, the mineral on examination proved to have a different crystal habit from chrysoberyl, or from any other mineral. Brazilianite, which has been named after its country of origin, is a new monoclinic phosphate mineral, $Na_2Al_6P_4O_{16}(OH)_8$. It is a yellowish-green, glass-like mineral sufficiently good in colour and physical perfection to make it suitable for cutting into gem stones, although it is believed that it is not likely to become a popular gem because of its scarcity and lack of sufficient hardness to enable it to withstand much wear. Brazilianite is believed to be the first new mineral with gem-stone possibilities to be discovered since 1909, when benitoite was found in California. Messrs. Pough and Henderson have described brazilianite in a paper, with an illustration in colour, in the *American Mineralogist* (30, 572; 1945).

Dutch Pharmacy under the German Occupation

PHARMACEUTICAL conditions in Holland under the German occupation were reviewed in a lecture given before the Pharmaceutical Society of Great Britain on December 13 by Dr. C. J. Blok, chief pharmacist to the University and municipal hospitals of Amsterdam. About 1943, said Dr. Blok, many articles became so scarce that the General Office of Public Health found it necessary to limit the prescribing of the doctors. Cod liver oil was only to be prescribed for tuberculosis; atropine only for Parkinsonism and eyedrops; pilocarpine only for eyedrops; luminal only for epilepsy; pepsine for serious stomach cases; dermatol only for epilepsy. After the Germans had robbed the safe of the Organon factories, insulin also became very scarce. Dr. Blok went into considerable detail regarding the means taken to economize alkaloids for eye treatment, including the use of ointments instead of solutions. In September 1944 came the loss of gas and electricity, which meant that sterilization in operating rooms by heat had to be reduced to a minimum as the spirit and petrol which might have been employed were very scarce. Fortunately he himself had steam autoclaves by which sterile injections could still be prepared. Operating rooms had to resort to chemical sterilization with 4 per cent 'Lysol', or a mixture of borax carbol-formalin with a little sodium nitrite against rusting; a very stable solution with quite effective sterilizing powers was 2 per cent formalin, 2·5 per cent phenol, 1·5 per cent borax. Another difficulty was the impossibility of melting ampoule glass, due to lack of gas. This was overcome by using an acetylene lamp made from an ordinary bottle; the temperature obtained was enough to melt glass, and the apparatus was used at home as a lamp.