

of the train by means of a token which he carries through the section. In Great Britain, tablets, staffs and keys are used as tokens, but the ball token is often used elsewhere. Every single track section equipped for token operation has installed at each end of the section a token instrument containing a supply of tokens. By means of a wire the two instruments are electrically connected and so interlocked that only one token at a time can be inserted, thus ensuring absolute safety. The tokens used in adjacent sections are of different type, and this provides an additional safeguard. When single line sections have outlying sidings or branch lines into which trains can be moved, it is sometimes necessary, and during operation it may be desirable, to clear the section for traffic; in this case a subsidiary instrument is placed at the siding into which the section token can be placed after the section has been cleared and the siding points reset for the main line.

#### Reworking Gold Mines

THE high price of gold has had the effect of causing rapid development of the gold mining industry. In many mines it has been found highly profitable to re-treat old tailings and to mine a much larger proportion of low grade ore. This is illustrated by the Champion Reef Mine situated in Mysore, one of the principal goldfields of India. The finding of ancient workings led to the discovery of the field in 1882. The ancients with crude appliances got to a depth of about 200 ft. When they raised the ore they heated it and threw cold water on it, rendering it friable so that the gold could be extracted by hitting it with a piece of hard rock. The water that accumulates at the bottom of the mine must have been baled out by large gangs of workmen carrying it in vessels. An account of an electric winder for this mine is given in the *G.E.C. (General Electric Co.) Journal* of November. It is capable of hoisting a load of 5,300 lb. of ore from a vertical depth of 3,633 ft. with a rope speed of 1,910 ft. a minute. The winding motor is rated at 1,150 horse-power. Very complete safety arrangements are made to safeguard the working of the winder. Compared with the steam engine it replaced, a substantial saving has been effected in hoisting costs. The saving is at the rate of £8,000 a year and this compares very favourably with the total all-in costs of the new electric winder, which was less than £28,000.

#### Medical Uses of Radium

In a report issued by the Medical Research Council (Special Rep. Series, No. 204. London: H.M. Stationery Office. 1s. net), an account is given of the research work done during 1934 with radium and radium emanation distributed to selected centres in Great Britain and Ireland, and it continues the accounts given in the twelve previous similar reports. In the earlier pages, the experimental work carried out at the Imperial College of Science and elsewhere is summarised. Then follow the clinical reports upon the treatment of various forms of cancer and also of some non-malignant conditions. In addition,

statistical data are given relating to the after-histories of patients treated in previous years for cancer of the breast, uterus, rectum, mouth and adjacent structures. These data are somewhat depressing, for they show a large mortality; for example, of 169 cases of cancer of the rectum treated in the six years, 1925-30, only 21 are now living. It must be remembered, however, that most of the cases were at an advanced stage, and the data are also incomplete in that they do not indicate the number of patients who may have died as a result of disease other than an extension or recurrence of the cancer.

#### Vital Statistics for the Year 1934

WE have received the Registrar-General's Statistical Review of England and Wales for the Year 1934 (Tables. Part 1. Medical. London: H.M. Stationery Office. 6s. net). The estimated population for the mid-year was 40,467,000, females exceeding males by nearly a million and a half. Data are given for the last ten years, and in the case of diabetes and pernicious anaemia, the medical treatment of which has made great progress in the last few years, the death-rates per million living were respectively 110 and 65 in 1924, and 160 and 59 in 1934. The death-rate from pernicious anaemia has, therefore, declined, but not that from diabetes, which now appears to be more particularly fatal among elderly females. The death-rate from cancer and tumours was per million 1,363 in 1924 and 1,635 in 1934, the increase being more marked in the male sex. Motor-vehicles accounted for 7,156 deaths, of which nearly one third occurred at the age 20-30 years.

#### National Institute of Industrial Psychology

IN the fifteenth Annual Report of the National Institute of Industrial Psychology, the problem of vocational guidance is given prior place, and evidence is produced of the increasing recognition by bodies concerned with the placing of young people of the desirability of using scientific knowledge when advising them, instead of leaving the choice to chance or the vagaries of people ignorant of the problem. Recent developments indicate a growing interest in this aspect of the Institute's work. In addition, investigations have been continued for a number of firms into problems concerned with factory and office organisation, selection of staff, marketing and the standardisation of tests. Lectures have been given in different towns in order to interest and inform industrialists about the importance of the workers of the machines as well as of the machines. The Report concludes with an account of the Institute's financial position.

#### Register of Tuberculosis-free Herds

THE first "Register of Attested Herds" under the Tuberculosis (Attested Herds) Schemes for England and Wales and for Scotland has been issued jointly by the Ministry of Agriculture and Fisheries, London, and Department of Agriculture for Scotland, Edinburgh. The issue of a certificate of attestation is

evidence that the owner of the herd has taken steps to eradicate tuberculosis from the herd and that, as a result of a tuberculin test made by a veterinary inspector of the Department concerned, the herd has been found to be free from tuberculosis. The present register comprises thirty-one herds in England and Wales, and twenty-seven herds in Scotland, attested up to August 31, and includes names and addresses, general description of breeds, and numbers in the herd. Further issues will be made from time to time, and copies may be obtained from the offices of the two departments at London and Edinburgh.

#### Medical Services in the British Colonies

THE fifth annual issue of the "Medical and Sanitary Reports from British Colonies, Protectorates and Dependencies for 1933" (*Trop. Diseases Bull.*, 32, Sup. Nov. 1935. H. Harold Scott. 7s. 6d. net) gives an account of the activities of fifty-five medical services within the British Colonial Empire. Medical departments are making their contribution towards the general economic advancement of native communities by providing medical facilities for preventing and curing disease, and by developing health services and training for natives. The table of vital statistics appended is most useful, but shows the lack of reliable data for many parts of the Colonial Empire.

#### Bibliography of Seismology

WE have received the last two numbers (for April–September 1935) of the *Bibliography of Seismology* compiled by Mr. E. A. Hodgson and issued by the Dominion Observatory of Ottawa (*Publications*, 12 (1935)). The number of memoirs included (234) is about the same as usual; but there is a tendency to omit abstracts except of those works that are not very accessible. One useful change is that lists are given of the notes on earthquakes and allied subjects that have appeared in *NATURE* and in the *Science News Letter* (U.S.A.) and also of the articles in the *Bulletin* of the Seismological Society of America.

#### Announcements

M. RAMON, assistant director of the Pasteur Institute, Paris, has been elected member of the French Veterinary Academy in the Section of Zootechnics and Animal Industry.

THE German Society of the History of Medicine, Science and Technology has elected Dr. Arthur Meiner, J. A. Barth, C. Kabitzsch, H. Meusser and L. Voss to honorary membership in recognition of their services to the history of science.

THE British Chemical Plant Exhibition, organised by the British Chemical Plant Manufacturers' Association, will be held in the Central Hall, Westminster, London, S.W.1, on June 22–27. The Exhibition is being arranged in connexion with the International Chemical Engineering Congress of the World Power Conference. A research exhibition is also being organised by the Department of Scientific

and Industrial Research. Further information can be obtained from the Secretary, British Chemical Plant Manufacturers' Association, 166 Piccadilly, London, W.1.

THE following appointments have recently been made by the Secretary of State for the Colonies: W. Pulfrey to be assistant geologist, Kenya; H. Service to be geologist, Gold Coast; J. A. Craig (principal agricultural officer, Kelantan) to be agricultural education and research officer, Department of Agriculture, Palestine; W. M. Robertson (senior assistant conservator of forests, Nigeria) to be conservator of forests, Sierra Leone; G. N. Sale (conservator of forests, Mauritius) to be conservator of forests, Palestine; N. W. Eades (superintendent of education) to be assistant field geologist, Tanganyika; A. F. Nichols (agricultural assistant, St. Lucia) to be assistant director of agriculture, Seychelles; L. H. Saunders (stockman, Veterinary Department, Nigeria) to be agricultural superintendent, Gambia.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:

A principal of the Rochdale Municipal Technical School—The Education Secretary, Technical School, Rochdale (Jan. 21).

A mechanical engineer to the Safety in Mines Research Board—The Under-Secretary for Mines, Establishment Branch, Mines Department, Dean Stanley Street, Millbank, S.W.1 (Jan. 25).

Two lecturers in mechanical engineering in the Portsmouth Municipal College—The Registrar (Jan. 25).

A district lecturer in agriculture and an assistant lecturer in agricultural economics in the University of Leeds—The Registrar (Jan. 28).

An engineering assistant (III) at the Building Research Station, Garston—The Establishment Officer, Department of Scientific and Industrial Research, 16 Old Queen Street, Westminster, S.W.1 (Jan. 29).

A horticultural instructor for West Norfolk—The Horticultural Superintendent, 30 Cattle Market Street, Norwich (Jan. 31).

A teacher of electrical engineering and mathematics in the Watford Technical and Art Institute—The Principal (Jan. 31).

A junior assistant in the Library of the Science Museum, South Kensington, S.W.7—The Director (Feb. 1).

A director of antiquities in the Colonial Service, Cyprus—The Director of Recruitment (Colonial Service), 2 Richmond Terrace, Whitehall, London, S.W.1 (Feb. 15).

A professor of pathology in the University of Sydney—The Secretary of the Universities Bureau of the British Empire, 88A Gower Street, W.C.1 (April 15).

Examiners for the Aeronautical Inspection Directorate—The Secretary, S.2.D., Air Ministry, Adastral House, Kingsway, W.C.2.