

it proceeded on the assumption that railways are permanent and can always be made profit-earning by regulating rates. In Great Britain, road finance has proceeded on sounder lines, as highway expenditure has been met largely out of current expenditure. The ill-conceived legislation which has introduced rigidity into railway rates, wages, hours and conditions of labour has hindered progress to recovery. Co-operation between all kinds of transport is necessary, and rigidity is fatal to it. The closing down of non-paying railways and their conversion into roads should be encouraged. In the discussion, Mr. C. Erlund stated that an enormous saving could be effected so far as goods are concerned, by electrifying several of the main-line railways. This makes electrification a far more attractive proposition than it appears in the Weir Report.

A Modern Japanese Power Station

SINCE the inception of the Kyushu Hydro-Electric Railway Co. Ltd. about twenty years ago, the policy of using steam power in Japan as distinct from hydro-electric power has thoroughly justified itself. A description is given of their new 50,000 kilowatt steam generating station, in the *Metropolitan Vickers Gazette* for October. It was completed in September 1931 having taken little more than a year to construct. The total cost of this station is much lower for its output than any station previously built in Japan. The main buildings are heavy steel structures designed with a view of resisting earthquakes and the walls of the building are of corrugated sheet steel. The chief coal supply is transported by land, the power station being quite close to the main railway line. Special arrangements have been made to minimise the labour and time involved in handling coal. The flue gases are thoroughly cleansed before emission into the air. The larger particles of grit are caught in mechanical collectors and the fine dust and fumes are washed by high-pressure water sprays. The molten slag is tapped from the furnaces, broken into fine pieces by strong water jets, and removed by pump sluicing. The two steam turbine generating sets having outputs of 25,000 kw. at 11,000 volts were made by the Metropolitan-Vickers Electrical Co. Ltd. Electroflo steam instruments are used and Kent, Negretti, Siemens, Kelvin, Cambridge and Bailey boiler instruments have been installed. It is interesting to notice that power is transmitted to a substation at 22,000 volts by cables of the Emanuelli oil-filled type, paper insulated with a double sheathing of lead.

Fur-bearing Animals in Michigan

REFERENCE to some results of Dr. Ned Dearborn's investigation into the food of predatory fur-bearing animals in Michigan has already been made in these columns (Dec. 17, 1932, p. 905). The pamphlet (52 pp.) in which the results appear, initiates, with the title of *Bulletin I*, a series of publications by the School of Forestry and Conservation in the University of Michigan, which will contain for the most part the results of studies by the Bureau of Forest

Research. Conditions as regards the fur-bearing animals have changed much since the early days of colonisation, and although Michigan still ranks third amongst the States in fur production, the destruction of the forests—hard-woods and soft-woods in the north, nut-trees in the south—and the draining of the swamps, have vastly reduced the numbers of fur-bearers. It is said that the numbers are not half what they were twenty-five years ago; even the weasel (*Mustela noveboracensis*) is no longer common in many localities, and the only upland fur-bearer which has held its own is the skunk. It may seem strange that while in Britain we are engaged in a war of extermination against that new invader, the musk-rat, Dr. Dearborn should regret its disappearance with the draining of Michigan marshes for agricultural purposes. He says that in some cases marshes are now more profitable for the musk-rat fur they produce than they would be for agriculture if drained, and cites the case of a drained marsh near Athens in Calhoun County which to-day is said to be worth no more than a single crop of musk-rats would be were it still undrained. "As matters now stand," he writes, "it behoves the owners of marshes to consider well before attempting to drain them". Other conditions, other advice!

Preservation of Fossil Bones

THE difficulty of preserving fossil bones found in deposits of the later phases of the Ice Age or more recent beds is known to collectors and museum curators; often enough the bones crumble to dust after a night's exposure to the air. Much can be done by immediate attention to preserve such relics for examination and permanent exhibition, and a paper on the "Bakelite Impregnation of Fossil Bones" by H. W. Nichols and Phil C. Orr, of the Field Museum of Natural History in Chicago, ought to be widely known (*Museums J.*, vol. 32, p. 47, May 1932). In the Field Museum, most of the older impregnating materials have been tried, paraffin, glue, gum arabic, shellac, wolffite and several mastics. In some respects these are all deficient. Of the older materials, shellac was found to be the most satisfactory, but Dr. Case's bakelite process is better than any other. Broken bones are cemented with a mixture of plaster of Paris and dextrin, and when the cement is dry, the bone is placed on a screen and lowered gently into a tank of bakelite reduced to a suitable condition of fluidity by the addition of bakelite thinner. The bones thus treated are allowed to dry and the surface cleaned. The greater number of bones require no further treatment, but if a specially strong surface is required the bones may be baked at a temperature of about 208° F. or more, when the bakelite, undergoing polymerisation, gains full strength and becomes no longer soluble in the thinning solution.

Dr. Arnold Berliner

A SPECIAL issue of *Die Naturwissenschaften* for December 16 celebrates the seventieth birthday on December 26 of its founder and editor, Dr. Arnold Berliner. It extends to 73 pages, includes scientific

contributions from more than forty authors and a frontispiece portrait of Dr. Berliner. Prof. Einstein in a short note recounts how twenty years ago Dr. Berliner saw that a periodical was wanted in Germany which would give accurate information on all branches of science and thus enable research workers in special fields to form their own opinions of advances in other fields. That his periodical has succeeded so well in this object is due to the catholicity of his interests and to his insistence that his contributors should express themselves in concise and clear language which could be understood by non-specialists. His fights to secure well written articles led him to say that a scientific author should be "a cross between a mimosa and a porcupine".

Spread of Influenza

ACCORDING to Science Service, Washington, D.C., the influenza epidemic appeared to have reached its height in the United States at the end of December; for the week ended December 24, 123,138 cases were reported to the United States Public Health Service. In England and Wales a large increase in the number of deaths from influenza is shown in the Registrar-General's return for the week ended January 14, the figures being 1,041, compared with 681 the previous week. Greater London was the worst affected area, though considerable outbreaks are reported in many parts of the country.

Wensleydale Earthquake

FATHER J. P. ROWLAND, S.J., has given in the *Times* of January 21 his determination of the epicentre of the earthquake of January 14. The records at six observatories, from Stonyhurst (34 miles) to Oxford (187 miles), agree fairly well with a position half a mile to the north-east of Hawes Junction and a time at the origin of 8h. 30m. 20s., G.M.T. The shock was also observed at Felton in Northumberland, 70 miles from the above epicentre.

Cerebro-Spinal Meningitis

THE period of the highest incidence of cerebro-spinal fever in Great Britain is approaching and it is clearly desirable to secure accurate observation on the efficiency and potency of all the serums in use. Since the most valuable test of the efficiency and potency of serums is clinical and it rarely happens that any one hospital has sufficient cases for useful differential study, the Ministry of Health is now endeavouring by means of individual case inquiry to collect and examine all evidence on serum treatment and the co-operation of medical officers of health, hospital medical officers and medical practitioners is invited. Forms for the purpose can be obtained on application to the Senior Medical Officer, Med. I., Ministry of Health, Whitehall, S.W.1.

Guide to the British Pharmacopœia

THE British Drug Houses, Ltd., Graham Street, City Road, London, N.1, have issued a "B. D. H.

Guide to the B. P. 1932", which will be of use to all who are interested in drugs, chemicals, galenical preparations, and the standards of the new British Pharmacopœia. The volume contains xvi+122 pages, and, like the similar guide to the British Pharmacopœia of 1914 (of which a few copies are still available), is published at 2s. 6d. It is pointed out that the new "B. P." contains 128 articles and preparations which become official for the first time; while there are 357 deletions. Special attention is directed in the Guide to the former, and to innovations and alterations in general.

Announcements

MR. LL. B. ATKINSON, a past president of the Institution of Electrical Engineers, has been elected an honorary member of the Institution.

THE annual congress of the South-Eastern Union of Scientific Societies will be held at Norwich on June 7-10, under the presidency of Prof. E. J. Salisbury, Quain professor of botany at University College, London. Further particulars can be obtained from the secretary, Mr. Edward A. Martin, 14 High View Close, London, S.E.19.

THE following have been elected officers of the Royal Microscopical Society for the present session: *President*: Mr. Conrad Beck; *Hon. Treasurer*: Mr. C. F. Hill; *Hon. Secretaries*: Mr. J. E. Barnard and Prof. R. T. Hewlett; *New Members of Council*: Dr. E. Hindle, Dr. J. E. McCartney, Mr. E. K. Maxwell, Mr. J. Rheinberg, and Mr. E. A. Robins.

THE inquiry organised by the Inter-Parliamentary Union of Geneva and published in 1931 by P. S. King and Son, Ltd., at 16s., under the title "What Would be the Character of a New War?" has been re-issued by Victor Gollancz, Ltd., at 5s. net. The original publication was reviewed at length in *NATURE* of February 13, 1932 (p. 219).

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—A member of the scientific staff of the Radio Research Station, Slough—The Secretary, Department of Scientific and Industrial Research, 16, Old Queen Street, Westminster, S.W.1 (Jan. 30). Assistant civil engineers for the Civil Engineer-in-Chief's Department, Admiralty and H.M. Naval Establishments—The Civil Engineer-in-Chief, Admiralty, London, S.W.1 (Feb. 18). A male assistant superintendent of traffic in the London Telephone Service and a male assistant traffic superintendent in the provinces, General Post Office—The Secretary, Civil Service Commission, Burlington Gardens, London, W.1 (March 2). A technical assistant in the Directorate of Technical Development, Air Ministry—The Chief Superintendent, Royal Aircraft Establishment, South Farnborough, Hants. A research assistant in mycology in the Department of Agriculture, University of Cambridge—The Secretary, School of Agriculture, Cambridge.