

of Aneityum (Loyalty Islands, Melanesia) with focus 0.09 of the earth's radius below normal. The fifth was on December 4 with epicentre in the Sea of Okhotsk to the east of Odomari with focus 0.040 of the earth's radius below normal. In continuation of the "Catalogue of Earthquakes 1925-1930", by Miss E. F. Bellamy, it has been decided to publish annually indexes to the International Seismological Summary. The first three of these for the years 1931, 1932 and 1933 arrived with the International Seismological Summary for the last quarter of 1933 and they form a very valuable addition to the summary for quick reference. The indexes are on a time basis, whereas Miss Bellamy's Catalogue 1913-1930 was on a geographical basis. The geographical basis is in many respects the better owing to the tendency mentioned above for earthquake shocks to recur from the same epicentre.

#### 'Vibrated' Concrete

It is generally known that within certain limits the drier the concrete when it is mixed, the stronger it is when set. But it is not generally known, even among engineers, that it has been the practice for some years to contrive by mechanical means to produce super-compacted and hence super-strong concrete from materials which, treated in the normal way, would give normally strong results. A paper by R. F. Irving in the *House Journal of the Bournemouth Gas and Water Company* of October 2 gives the history and methods of manufacture of 'vibrated' concrete. In 1917, vibration of concrete was started in France on a commercial scale, and these machines have been extensively developed in America. Originally, the machines were driven by compressed air. The vibrating unit consisted of a freely moving piston, reciprocating as a shock producer, striking blows at a speed of 5,000-9,000 blows per minute. More modern machines, driven either by electric or petrol motors, have a rotor shaft provided with an unbalanced weight producing vibrations from 6,000 up to 21,000 per minute, the size of the motor unit varying from  $\frac{1}{2}$  to  $1\frac{1}{2}$  h.p. With the construction of No. 5 Reservoir at Alderney, the opportunity arose of taking advantage of the great developments in concrete construction. Preliminary tests of the relative strengths of unvibrated and vibrated concrete fully justified this procedure. Further, the vibration method led to a shortening of the time required for setting of the concrete and the consequent rapid release of the shuttering for use on new sections.

#### Earthquakes registered at Kew during October 1939

FOURTEEN earthquake shocks or earth tremors were registered on the seismographs at Kew during the month of October 1939. Four of these are reported to be very small, and some others have been confused by microseisms. The best seismograms obtained were for the earthquakes of October 10 and 17. That on October 10 had a probable epicentral distance of  $88^\circ$  from Kew and a depth of focus of 75 km. The earthquake of October 17 was again a deep focus shock, being thought provisionally from

Kew records to have had a focal depth of about 150 km. It was probably situated in the New Hebrides and was strong enough to give a full complement of pulses, including *ipPPP*, a longitudinal body-wave reflected three times at the earth's surface, coming to the surface for the fourth time at Kew where it was registered.

#### Earth Tremor in New England

AN earth tremor was felt on Tuesday night, November 14, in the New England States of Pennsylvania, New Jersey, Maryland and Delaware. The epicentre of the shock was probably very close to Philadelphia, and in Baltimore pictures were knocked off walls and furniture overturned, which indicates at this place a probable intensity of IV on the Rossi-Forel scale. Damage was not serious and there were no casualties. Although earth tremors are not unknown in New England, it is unusual to have one so strong as this. California and the western States are much more liable to shocks than the eastern States.

#### Earthquakes in Central America and Canada

USING instrumental reports from Georgetown, Fordham, Philadelphia, Weston and Guatemala, the United States Coast and Geodetic Survey in co-operation with Science Service and the Jesuit Seismological Association has determined the epicentre of the earthquake of September 20, 1939, to be between Corquin and Ocotepeque on the mountainous border between Honduras and Guatemala in Central America. From readings of seismograms obtained at Pittsburg, Tucson, Ottawa, St. Louis and Fordham, the provisional epicentre of the earthquake of October 23, 1939, has been determined to have been some twenty miles south-west of Tadoussac in the Province of Quebec. Both districts are liable to small earthquake shocks, though those in Central America are usually somewhat more intense than the Canadian shocks. Further news of these shocks is awaited from the observatories at Guatemala and Ottawa.

#### The Polarograph

FIFTEEN years ago Prof. J. Heyrovský, of the Charles University of Prague, described a polarographic apparatus with the dropping mercury cathode which he used for showing the presence of certain metals in solution by the position of 'waves' produced in the deposition potential curves automatically recorded as 'polarograms'. Since that time, Heyrovský and his co-workers have carried out many academic physico-chemical researches with the polarograph, and in recent years it was beginning to find application for other purposes in pure and applied science, ranging from its use in examining sera for the diagnosis of cancer (*NATURE*, 142, 316; 1938) to, say, the estimation of iodine in Chile saltpetre. The genuine apparatus has hitherto been difficult to obtain, since it was only made in Czechoslovakia, and research workers and others will be interested to learn that although instruments are no longer obtainable from Czechoslovakia, an improved model, complete with

self-contained recording equipment, of British design, is now being manufactured by the Cambridge Instrument Co., Ltd.; it is anticipated that the polarograph will find still wider uses in the near future, especially in analytical and electrochemical work.

#### Petroleum

THE first number of *Petroleum*, a monthly magazine "devoted to the essential interests and needs of the petroleum industry", was published in October (Leonard Hill, Ltd., 17 Stratford Place, London, W.1. Annual subscription, 10s. post paid. Abroad, 12s. 6d.). The sponsors of this journal are to be congratulated on launching this new venture scarcely a month after the beginning of war, and on the way in which they have interpreted the Prime Minister's admonition to carry on. Naturally the outbreak of war materially upset carefully laid plans for the first number. Highly specialized articles had to be omitted and photographs discarded lest they should fall into enemy hands. Moreover, many potential contributors were called away on national service and were accordingly not in a position to submit articles. Nevertheless, in spite of these handicaps, the first number is full of interest and it may be its lack of too highly technical contributions will prove an asset in the long run. The question raised as to whether concrete or steel should be used for underground storage, the description of some lesser known uses of petroleum and the notes on petrol rationing in Great Britain and other countries, to cite a few examples, should appeal not only to petroleum technologists but equally to a far wider public.

#### Entomology in South Africa

THE appearance of volume 2 (dated October 30, 1939) of the *Journal of the Entomological Society of South Africa* will be welcomed by workers in this branch of zoology. Some seventeen papers are included within a compass of 262 pages and their great diversity of character may be gathered from the fact that they include descriptions of new Thysanoptera, a study of body temperature in *Samia cecropia* and an investigation of the chromosomes in some of the Transvaal Acrididæ. We wish every success to this new periodical and trust that it will be assured of adequate support during these critical times. The price of the volume is £2, and European readers may obtain it from N. V. Swets and Zeitlinger, Keizergracht 471, Amsterdam, Holland.

#### Books on Gardening and Botany

MESSRS. DULAU AND COMPANY, LTD., of 29 Dover Street, London, W.1, have issued a catalogue of books on botany and gardening. Several volumes of standard journals, many of which are out of print, are offered, notably *Curtis's Botanical Magazine* (1-42), the R.H.S. Daffodil Year Book for 1913-15, the first 22 volumes of the *Transactions of the Edinburgh Botanical Society*, the *Journal of Botany*, and the *Kew Bulletin*. The remainder of the list covers the better-known classics of a wide range of horticultural activities. Seventeenth-century herbals

appear to be represented mostly by later reprints, though one or two originals are also offered. A number of first editions and association books of general literary significance occupy the main part of the catalogue.

#### Centenary of Pulkovo Observatory

THE centenary of the Pulkovo Observatory, one of the oldest scientific institutions in the U.S.S.R., will be marked by a special jubilee session of the Academy of Sciences to be held in Leningrad on December 25. The papers of a scientific and historical character to be read at the session will show in historic retrospect the century of endeavour of the Pulkovo Observatory and its role in world science. The centenary will also be marked by the issue of a comprehensive symposium and the opening of an exhibition dealing with the work at the Observatory.

#### Announcements

PROF. E. D. ADRIAN, professor of physiology in the University of Cambridge, has been appointed a member of the Medical Research Council in the vacancy caused by the death of Prof. John Mellanby.

THE following officers for 1940 of the Institute of Metals have recently been elected: *President*, Lieut.-Colonel the Hon. R. M. Preston; *Vice-Presidents*, Dr. S. F. Dorey, Engineer Vice-Admiral Sir George Preece, Mr. A. J. G. Smout; *Honorary Treasurer*, Lieutenant-General Sir J. Ronald E. Charles.

THE Institution of Automobile Engineers is holding a special general meeting to which other institutes have been invited on December 12, at the Institution of Electrical Engineers, Victoria Embankment, W.C.2, at 6 p.m., when Dr. J. S. Clarke of the City of Birmingham Gas Department will read a paper entitled "The Use of Gas as a Fuel for Motor Vehicles".

THE Hunterian collection of surgical specimens at the Royal College of Surgeons of England has been removed to a bomb-proof vault in the College basement. All the more important manuscripts, books, and pictures in the College library have been moved to the country.

The Universities of Breslau, Erlangen, Marburg and, with the exception of the medical faculty, Königsberg, which were closed at the beginning of the war, have reopened.

PROF. GERMANO SOLLAZZO has been nominated director of the new hospital at Milan named Ospedale del Perdono, which is to take the place of the famous old Ospedale Maggiore.

THE second Argentine Congress of Ophthalmology will be held at Rosario in October 1940, under the presidency of Prof. Esteban Adrogué. Further information can be obtained from the Sociedad Argentina de Oftalmología, Santa Fé, 1,171.