

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  $\frac{1}{4}$  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