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BY

ERNEST A. HODGSON

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Bibliography of Seismology

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1801. ACADEMY OF SCIENCES, U.S.S.R., "The First International Session of the Scientific Board" (in Russian), *Publications de l'Institut Séismologique*, No. 16; *Académie des Sciences, Information Bulletin*, No. 1, 31 pages. Price 75 cop. Leningrad, 1931.

The bulletin contains the theses of some of the papers read before the above-mentioned session held in Leningrad, 2–8 September, 1931. Among the foreign scientists present were Prof. E. Rothé, Prof. G. Angenheister, Prof. A. Born, and Prof. H. Stille. The bulletin contains also the thematic plan of the Seismological Institute for 1932, which was submitted for discussion by the session. N.V.R.

1802. AGAMENNONE, G., "Considerazioni sopra gli ipocentri sismici dei Colli Laziali," *Rendiconti della Real Accademia Nazionale dei Lincei, Classe di Scienze fisiche, matematiche e naturali*, **17**, Semi-fascicolo 9, 725-729, Rome, May, 1933. G.A.

1803. ARAKAWA, Hidetosi, "Love Waves in Elliptic Cylindrical Coordinates," *Proceedings of the Physico-Mathematical Society of Japan*, Third Series, **15**, No. 2, 73-85, Tokyo, February, 1933.

The author states that this mathematical treatment of Love-waves has been developed to explain certain aspects of these waves as due to the fault at which they were generated.

1804. BAUR, Franz, "Über die Notwendigkeit eines grossen Beobachtungsstoffes bei statistischen Untersuchungen," *Zeitschrift für Geophysik*, **9**, No. 1-2, 11-15, Braunschweig, 1933.

The author stresses the need for having a large volume of observational material before deductions may profitably be made therefrom by statistical methods.

1805. BORN, A., "Der geologisch Aufbau der Erde," *Handbuch der Geophysik*, Band 2, Lieferung 2, 303 pages, 221 figures, Berlin, 1932.

This section of the *Handbuch*, published by Gebrüder Borntraeger, is priced (unbound) at RM 69. The price for this section, if the entire *Handbuch* is subscribed for, is RM 46. A review, in German, appears on pages 171-172, *Zeitschrift für Geophysik*, **9**, Heft 3, Braunschweig, 1933.

1806. BROUWER, H. A., "Vulkanische aardbevingen in de Oost-Aziatische eilandenreeksen" (Volcanic Earthquakes in the East-Asiatic Ridges of Islands), *Natuurkundige Voordrachten gehouden in de Maatschappij Diligentia*, New Series, No. 5, 88-98, The Hague, 1927.

The paper deals with the causes of volcanism and earthquakes, the distribution of epicentra of earthquakes, and the relation between earthquakes and the movements of the ridges of the islands. J.F.S.

—— BUCKINGHAM, F. and FRITH, J., "Vibration in Technics." See No. 1817 of this list.

1807. BUESS, E. T., "Beitrag zur Berechnung von konstanten der Galitzinschen aperiodischen Seismographen" (in Russian), Academy of Sciences of the U.S.S.R., *Publications of the Seismological Institute*, No. 8, 1-11, Leningrad, 1930.

The author compiles special tables permitting a very quick calculation of constants of Galitzin's aperiodic seismographs, thus regulating their values according to the magnitude desired during the observation then in progress. N.V.R.

1808. DALY, R. A., "Igneous Rocks and the Depths of the Earth." McGraw-Hill, 598 pages, illustrated. Price $5. New York, 1933.

This book is a revision, completely rewritten, of the author's "Igneous Rocks and their Origin". Some of the principle features of the new book, among those indicated by the publishers, may be listed as follows:

(1) The author has taken pains to present the mass of objective facts and the theoretical deductions so as to permit the work to be used as a textbook on igneous geology, while also serving to describe, for more advanced students, a general theory of the earth's eruptivity; (2) New emphasis has been placed on the various methods of diagnosing the earth-shells in depth, and on the problem represented by the radioactivity of rocks; (3) Recent discoveries bearing on the theory of mountain making have enforced new ideas concerning the modes by which molten rock has risen into and through the earth's crust; (4) The book bears the general thesis that an acceptable explanation of igneous rocks should be consciously related to a general "theory of the earth", that is, to the best available idea of its internal constitution and store of energy. This theory is tested by systematic reference to observed results of the planet's eruptivity. McG-H.

1809. DAVISON, Charles, "The 42-minute Period in the Frequency of After-shocks," *Bulletin of the Seismological Society of America*, **23**, No. 2, 57-79, Stanford, April, 1933.

1810. (1) DAVISON, Charles, "On the Eleven-Year Period of Earthquake Frequency," *Philosophical Magazine*, Seventh Series, No. 102, **15**, 1085-1091, London, June, 1933.

1810. (2) DAVISON, Charles, "On the Nineteen-year Period of Earthquake Frequency and on its Connection with the Nutation Period of the Earth," *Ibid.*, 1092-1096, London, June, 1933. W.W.D.

1811. DEMARCHI, L., "Controversie sull'isostasi; Parte II," *Scientia*, Series III, No. 253-5, **53**, 309-320, Bologna, May 1, 1933.

A translation into French by H. Buriot-Darsiles, appears on pages 133-143 of the appendix to the same issue of *Scientia*, under the caption: "Controverses sur l'isostase."

1812. DERJAGIN, B., "On the Absorption and Dispersion of Seismic Waves" (in Russian), *Journal of Geophysics*, **1**, No. 1-2, 207-222, Moscow, 1931.

An abstract by W. Ayvazoglou appears on pages 839-840 of *Geophysical Abstracts*, No. 50. See No. 1838 of this list. F.W.L.

1813. EARTHQUAKE RESEARCH INSTITUTE, "Seismometrical Report of the Earthquake Research Institute; Tokyo Imperial University," 1932, Part 3 (July 1–September 30, 1932), 13-18, 1 figure, 6 plates, Tokyo, 1933.

1814. EARTHQUAKE RESEARCH INSTITUTE, "Relative Vertical Displacements of Bench Marks along Routes in Tokyo and the Environs and from Itabasi to Huzimi," *Bulletin of the Earthquake Research Institute*, **11**, Part 1, 122-123, 1 plate, Tokyo, March, 1933.

1815. FABER, F. J., "Geologie van Nederland" (The Geology of the Netherlands), G. Naeff, xii + 438 pages. Price Fl. 4.90 (unbound) or Fl. 5.90 (bound). Gravenhage (The Hague), 1933.

The second edition of the book already reported as No. 1224 of these lists. Chapter XV is devoted to Aardbevingen (Earthquakes). It covers pages 166-171 with two figures and one plate. All earthquakes which have been observed in the Netherlands since 1920 are here listed, almost all having been of tectonic type. Some historical communications concerning earlier earthquakes are also recorded. J.F.S.

1816. FEDERAL BOARD ON STANDARDIZATION OF THE STATE PLANNING COMMITTEE OF THE U.S.S.R., "Earthquake Intensity Scale Norms for Constructions, Series XIV, General Norms No. 2" (in Russian). Rationalization and Standardization Publishing Office, 7 pages. Price 8 cop. Moscow, 1931.

On March 28, 1931, the Federal Board of Standardization issued an intensity scale obligatory for all the constructions undertaken after April 1, 1931. The scale is but that of Mercalli-Cancani with some modifications in the text and completed by some data in conformity with construction types in use in seismic regions of the U.S.S.R. N.V.R.

1817. FRITH, J. and BUCKINGHAM, F., "Vibration in Technics" (in Russian). State Publishing Office, 168 pages, 41 figures. Price 1.35 roubles. Moscow-Leningrad, 1931.

A translation into Russian of the English book entitled "Vibration in Engineering." N.V.R.

1818. GEBELEIN, Hans, "Störungen von Pendeluhren durch Bodenerschütterungen," *Zeitschrift für Geophysik*, **9**, Heft 3, 137-145, 1 figure, Braunschweig, 1933.

See also No. 1723 of these lists.

1819. GEOPHYSICAL ABSTRACTS. The following patents of interest to seismologists are listed on pages 851-853 of *Geophysical Abstracts*, No. 50 (reported as No. 1838 of this list):

McCOLLUM, Burton, U.S. No. 1,899,970, issued March 7, 1933, "Seismic Exploration of Geologic Formations."

HAYES, Harvey C., U.S. No. 1,900,015, issued March 7, 1933, "Method and Apparatus for Sound Ranging."

STANDARD OIL DEVELOPMENT Co., Canada No. 328,707, issued December 20, 1932, "Geophysical Exploration Method." F.W.L.

1820. GOLD, S., "The Earthquakes of October, 1931, in the Solomon Islands," *Journal of the Royal Astronomical Society of Canada*, **26**, No. 7, 291-295, 2 figures, Toronto, September, 1932.

The material upon which this paper is based was furnished in large part by Dr. J. Svensen of Ovi Harbour, Guadalcanal.

1821. GRÄFE, H., "Das Nordtiroler Beben vom 8. Oktober 1930. II Teil," *Zeitschrift für Geophysik*, **9**, Heft 1-2, 31-43, 14 figures, Braunschweig, 1932.

The above is the eighth number of the series: *Seismische Untersuchungen des Geophysikalischen Instituts in Göttingen.* For reference to Part I, see No. 1427 of these lists.

1822. HAGIWARA, Takahiro, "Influence of Solid Friction on Dynamical Magnification," *Bulletin of the Earthquake Research Institute*, **11**, Part 1, 14-24, 8 figures, Tokyo, March, 1933.

—— HAYES, Harvey C., "Method and Apparatus for Sound Ranging." Patent. See No. 1819 of this list.

1823. HECK, N. H., "The Seismicity of the United States," *Matériaux pour l'Étude des Calamités* No. 29, 1-22, 1 map, Geneva, 1933.

The author discusses the seismicity by sections as follows: New England and New York Section; Eastern Section; Central Section; Western Mountain Section; Pacific Coast Section. Subdivision of these sections into a total of thirty-seven regions permits of thorough analysis. The generalizations are presented in the Conclusions. A review in French follows the paper itself.

1824. HEILAND, C. A., "Über die seismische Reflexions-methode," *Gerlands Beiträge zur Geophysik, Ergänzungshefte für Angewandte Geophysik*, **3**, Heft 3, 282-336, 9 figures, bibliography, Leipzig, 1933.

The author discusses the advantages of the reflection method over the refraction method. The characteristics of the reflected phases are outlined. Particular problems arising in the application of the reflection methods are dealt with in detail. The geological possibilities and limitations of the method are reviewed, with special reference to its application to the northern German plain. The equipment now available for such work is described and a list is given of the United States patents covering such equipment. W.W.D.

—— HORNER, A. C. and WAILES, C. D., Jr., "Earthquake Damage Analysed by Long Beach Officials."

See No. 1891 of this list.

1825. IMAMURA, Akitune, "On the Tunamis of NE Japan, of March 2, 1933," *Proceedings of the Imperial Academy*, **9**, No. 4, 174-177, 2 figures, Tokyo, 1933. A.I.

1826. IMBO, Giuseppe, "Riassunto delle osservazioni meteorologiche e sismiche eseguite nel Real Osservatorio Geofisico di Catanie durante l'anno 1931, "*Atti della Accademia Gioenia di Scienze Naturali in Catania*, Series 5a, **19**, Fascicolo 1, Memoria IV, 1-6, Catania, 1932.

In 1931, a total of ninety-five earthquakes were registered, of which ten were associated with the seismic period from March 20 to August 12 in the east Aetna region. The bibilography gives references to other seismological publications by the same author. R.Z.

1827. INOUYE, Win, "Observations of Near Earthquakes on Mt. Tukuba, with an Ishimoto Acceleration Seismograph," *Bulletin of the Earthquake Research Institute*, **11**, Part 1, 69-81, 21 figures, Tokyo, March, 1933.

1828. ISHIMOTO, Mishio and OOTUKA, Minoru, "Détermination de la limite perceptible des secousses," *Bulletin of the Earthquake Research Institute*, **11**, Part 1, 113-121, 8 figures, Tokyo, 1933.

The authors have determined the above-mentioned limits by experimenting with persons seated on shaking platforms.

1829. IVERSKOY, P. N., "Lectures in Geophysics" (in Russian). State Publishing Office, 568 pages, Moscow-Leningrad, 1930.

The book is practically the only Russian text in Geophysics. Chapter IV, "Seismic Phenomena," deals with seismology and contains general information on earthquakes, principles of the theory of elasticity and their application to the study of the propagation of seismic waves, the theory of instruments, and so on. The chapter ends with an extensive bibliography of seismology. In addition, the *Lectures* examine the properties of the earth, its origin, its magnetic and electric fields, as well as atmospheric magnetism and electricity. Chapters X to XIII were written jointly by the above author and A. M. Troitzk. They deal with the thermal state of the atmosphere and soil and the dynamics of the atmosphere. N.V.R.

1830. JUNG, Heinrich, "Die Schattenwirkung des Erdkerns für die seismischen Raumwellen," *Nachrichten der Gesellschaft der Wissenschaften zu Göttingen, Mathematisch-physikalische Klasse*, Fachgruppe II (Physik, Astronomie, Technik) No. 37; Fachgruppe V (Geographie und Geophysik) No. 4, 42-80, 15 figures, Göttingen, 1933.

The above is No. 9 of the series "Über Erdbebenwellen." The paper by Witte, reported as No. 1600 of these lists, is No. 8 of the series. For a list of the earlier papers see No. 1393 of these lists.

1831. KARATYGIN, P. M., "Average-speed Method in Seismic Prospecting" (in Russian), *Transactions of the United Geological and Prospecting Service of the U.S.S.R.*, No. 213, 9-13, Leningrad, 1932.

The method is to be used in calculating depths in seismic prospecting on the basis of average speed and is applied particularly to a three-layer structure in which the speed in the upper layer is less than that in the third but greater than that in the second. The reduction has been tested with known conditions and found to yield correct results. The author's summary is quoted on page 812 of *Geophysical Abstracts*, No. 49. See No. 1838 of this list. F.W.L.

1832. KEMMERLING, G. L. L., "De aardbeving van Bali op 21 Januari 1917" (The Earthquake on the Isle of Bali on January 21, 1917), *Jaarboek van het Mijnwezen: Verhandelingen*, **46**, No. 1, 1-49, Batavia, 1917.

A paper by the same author, entitled "De aardbeving van Bali dato 21 Januari 1917" appeared in *Natuurkundig Tijdschrift voor Nederlandsch-Indië*, **77**, 172-179, Weltevreden (Isle of Java), 1918. J.F.S.

1833. KISHINOUYE, Fuyuhiko, "Measurement of a Land-creep in Wakayama Prefecture," *Bulletin of the Earthquake Research Institute*, **11**, Part 1, 38-45, 10 figures, Tokyo, March, 1933.

1834. KOCH, H. W. and ZELLER, W., "Die Genauigkeit von seismographischen Messungen nichtstationärer Vorgänge," *Zeitschrift für technische Physik*, **14**, No. 4, 162-165, Leipzig, 1933. W.H.H.

1835. KOMOROWICZ, Maurice von, "De aaedbevingen in de residentie Menado op 14 Maart 1913" (The Earthquakes in the *Residentie* of Menado on March 14, 1913), *Jaarboek van het Mijnwezen: Verhandelingen*, **42**, 39-50, Batavia, 1913.

J.F.S.

1836. KUNITOMI, S. I. and SHINOHARA, S., "The Diurnal Variation of Seismic Frequency in the Kwanto District," *Geophysical Magazine*, **7**, No. 1, 31-35, Tokyo, April, 1933.

W.W.D.

1837. LANDSBERG, H., "Beitrag zum Thema: Seismische Bodenunruhe," *Zeitschrift für Geophysik*, **9**, Heft 3, 156-161, 5 figures, bibliography, Braunschweig, 1933.

1838. LEE, Frederick W., "Geophysical Abstracts," United States Bureau of Mines: No. 49, 806-828, May; No. 50, 829-855, June; Washington, 1933. F.W.L.

1839. LIFSHITZ, Samuel, "Acoustics of Buildings and Their Prevention from Vibration and Noise" (in Russian). State Scientific and Technical Publishing Office, 236 pages, 121 figures. Price 3 roubles. Moscow-Leningrad, 1931.

Chapter VII (187-234) deals with the question of protecting buildings from vibration. It discusses: (1) sensibly-felt vibrations; (2) instruments for measuring vibrations; (3) vibrations in buildings; (4) vibrations in towers; (5) the problem of insulation. N.V.R.

—— LOOS, P. A., "Las posibles causas del terremoto Sudmendocino del 30 de Mayo de 1929." See No. 1840 (2) of this list.

1840. LÚNKENHEIMER, Federico,

(1) "Resultados sismométricos del año 1927," *Publication of Observatorio Astronómico de la Universidad Nacional de La Plata, Contribuciones Geofísicas*, Tomo III, No. 3, 157-238, La Plata, September, 1931.

(2) "El terremoto Sudmendocino del 30 de Mayo de 1929," *Ibid.*, No. 2, 85-156, 12 plates, La Plata, September, 1930.

On pages 143-154 of the last-listed article appears an appendix by P. A. Loos, entitled: "Las posibles causas del terremoto Sudmendocino del 30 de Mayo de 1929". W.W.D.

1841. MACELWANE, James B., S.J., "A Preliminary Table of Observed Travel Times of Earthquake Waves for Distances between 10° and 180° Applicable Only to Normal Earthquakes," A mimeographed set of ten pages, issued from the Geophysical Laboratory, Saint Louis University, June,1933.

The above tables are based on the readings obtained by Hodgson for the Tango earthquake; those obtained by Dahm for the Hawke Bay earthquake, and those obtained by Wood for the Long Beach earthquake. The author has amended the mimeographed set of tables which he issued in April, 1933, based on the readings for the first two earthquakes mentioned above, to conform to the requirements of the readings for the Long Beach earthquake, which have since become available. These later readings supply data for a section of the curves for which readings from the records of the other earthquakes were lacking.

1842. MALINOVSKI, N. V., "Submarine Eruptions in the Caspian Sea" (in Russian with a brief summary in German), *Transcaucasian Regional Magazine*, Series A, Natural History, **1**, 192 202, 3 figures, Tiflis, 1930.

The author describes two submarine eruptions (May 1, 1927 and November 7, 1928) on the Kuman bank (Baku archipelago) which caused the formation of an island. During the former, the seismic station Baku recorded 41 shocks (April 30-May 7, 1927). N.V.R.

—— MASUDA, K., WADATI, K., and SAGISAKA, K., "On the Travel Time of Earthquake Waves: Part I." See No. 1890 of this list.

—— McCollum, Burton, "Seismic Exploration of Geologic Formations." Patent. See No. 1819 of this list.

1843. Meinesz, F. A. Vening, "The Mechanism of Mountain Formation in Geosynclinal Belts," Proceedings: *Koninklijke Akademie van Wetenschappen te Amsterdam*, **36**, No. 4, 372-377, Amsterdam, 1933.

1844. Michael, Wilhelm, "Die Erde, gebremst, beschleunigt, abgelenkt,—erlebt Erdbeben, Taifune, Tornados, usw.," *Zeitschrift für Geophysik*, **9**, Heft 3, 165-167, 4 figures, Braunschweig, 1933.

1845. Migliorini, Elio, "Bibliografia geografica della regione Italiana," *Bollettino della Real Società Geografica Italiana*, Series 6, **9**, No. 12, 819-962, Rome, December, 1932.

On pages 853-857 are given the data regarding twenty-four Italian publications on earthquakes. R.Z.

1846. (1) Montoulieu, E. I., "Sismologia mundial en 1931 y notas sobre el terremoto de Santiago de Cuba de Febrero 3 de 1932," *Revista de la Sociedad Cubano de Ingenieros*, **25**, No. 1, 196-252, 1933.

Brief discussion of causes of earthquakes, their registration on seismographs and of the phenomena accompanying strong shocks; followed by a list of earthquakes registered in 1931 and a brief note on the earthquake of Santiago de Cuba, February 3, 1932. S.T.

1846. (2) Montoulieu, E. I., "Informe de la comision nombrada para el estudio del terremoto de Santiago de Cuba de Febrero de 1932," *Ibid.*, No. 1, 1-79, 1933.

Following the earthquake at Santiago de Cuba, February 3, 1932, a commission was appointed by the Society of Cuban Engineers to study the earthquake. The first section of the report, which covers the geographical, geological, and seismological aspects of the disturbance, was written by Sr. Montoulieu. Other aspects of the earthquake written by different members of the commission will appear in succeeding numbers of the *Revista*. S.T.

1847. (1) Muller, J. J. A., "De verplaatsing van eenige triangulatiepilaren in de residentie Tapanoeli, Sumatra" (The Dislocation of some Triangulation Pillars in the *Residentie* of Tapanoeli, Isle of Sumatra), *Verhandelingen van den Koninklijke Akademie van Wetenschappen*, 1e Sectie, **3**, No. 2, 1-26, Amsterdam, 1895. J.F.S.

1847. (2) Muller, J. J. A., "Nota betreffende de verplaatsing van eenige triangulatiepilaren in de residentie Tapanoeli, tengevolge van de aardbeving van 17 Mei 1892" (Remarks concerning the Dislocation of some Triangulation Pillars in the *Residentie* of Tapanoeli, Isle of Sumatra, Caused by the Earthquake of May 17, 1892), *Natuurkundig Tijdschrift voor Nederlandsch-Indië*, **54**, 299-307, Batavia and The Hague, 1895. J.F.S.

1847. (3) Muller, J. J. A., "Door meting bepaalde horizontale bodembeweging op Sumatra" (An horizontal Earth Movement on the Isle of Sumatra, as Ascertained by Measurements), *Tijdschrift van het Koninklijk Nederlandsch Aardrijksk Genootschap*, Second Series, **33**, 582-584, Leiden, 1916.

The report of a lecture and the following discussion. J.F.S.

1848. MUSHKETOFF, D. T., "The Irpinian Earthquake in Italy on July 23, 1930" (in Russian), *Academy of Sciences of the U.S.S.R., Publications of the Seismological Institute*, No. 14, 1-21, 17 figures, Leningrad, 1931.

The paper is accompanied by a summary in Italian with the title: "Il terremoto Irpino del 23 luglio 1930". The author, who visited the region of the earthquake, gives a general description of the destruction and of the geological conditions of the region. Using Oldham's terminology, the author is led to the conclusion that the earthquake is "episeismic" in character, having a very shallow hypocentre. N.V.R.

1849. NAGAOKA, Hantaro, "Variation in the Effective Rigidity of the Earth," *Proceedings of the Imperial Academy*, **9**, No. 4, 166-169, Tokyo, April, 1933. W.W.D.

1850. NAGAOKA, Hantaro, "Volcanic Eruptions, Earthquakes, and Pole-shift" (second communication), *Proceedings of the Imperial Academy*, **9**, No. 4, 170-173, 2 figures, Tokyo, April, 1933. W.W.D.

1851. NAGAOKA, Hantaro, "Ellipsoidal Geoid and the Distribution of Seismic Centres and Volcanoes" (first communication), *Proceedings of the Imperial Academy*, **9**, No. 5, 207-210, 1 map, Tokyo, May, 1933.

1852. NAKANO, Masito, "Die Seiches in gekoppeltes System formenden Buchten," *Geophysical Magazine*, **5**, No. 2, 163-170, 3 figures, Tokyo, September, 1932. T.O.

1853. NAKANO, Masito, "Possibility of Excitation of Secondary Undulations in Bays by Tidal or Oceanic Currents," *Proceedings of the Imperial Academy*, **9**, No. 4, 152-155, 4 figures, Tokyo, April, 1933. W.W.D.

1854. NATURE. The following short notes of interest to seismologists have appeared recently in *Nature*, London, 1933:

(1) "Hydraulic Seismographs," No. 3311, **131**, 547.

(2) "Earthquakes in the Holy Land: a Correction," No. 3311, **131**, 550.

(3) "California Earthquake of March 10," No. 3315, **131**, 686-687.

(4) "Alaskan Earthquake of April 26," No. 3318, **131**, 757.

(5) "Geophysical Prospecting," No. 3318, **131**, 791.

(6) "Thickness of Greenland Ice," No. 3318, **131**, 807.

(7) "Earthquakes of Northern Africa," No. 3318, **131**, 807.

(8) "Distribution and Frequency of Earthquakes in Italy," No. 3322, **132**, 32.

(9) "Sea-waves of the Japanese Earthquake of March 2, 1933," No. 3323, **132**, 58.

The item last above is covered also in the note referred to in No. 1870 of this list. W.W.D.

1855. NAVARETE, Julio Bustos, "Étude séismologique du Chili," *Union Géodésique et Géophysique Internationale, Section de Séismologie*, Series B, Monographies, Fascicule No. 4, 3-40, Strasbourg, 1933.

1856. NAZAREVSKY, N. V., "The Earthquake in Hermab (May 1, 1929)," *Bulletin de la Société des Naturalistes de Moscou*, Geological Section, New Series, **40**, 113-123, 5 figures, 2 plates, Moscow, 1932.

The paper is in Russian with an abstract in English. It deals with the earthquake of the above-mentioned date in the mountain range of Coppet-Dag on the Persia-Turkey border. It was of intensity 9 to 10 in the Rossi-Forel scale. Many changes in ground water resulted, some sources drying up or diminishing, others increasing. The epicentre was found to lie in Persia. R.Z.

1857. NIKIFOROFF, P. M., "Earthcrust and Deformation Therein" (in Russian). State Scientific and Technical Publishing Office, 12 pages. Price 20 cop. Moscow-Leningrad, 1931.

A report by the Director of the Seismological Institute delivered before the extraordinary session of the Academy of Sciences of the U.S.S.R. in Moscow, June 21-27, 1931. N.V.R.

1858. NOPCSA, Franz Baron, "Beziehungen zwischen Luftdruckänderungen und Erdbeben in südeuropäischen, und zwar besonders italienischen Erdbebengebieten," *Gerlands Beiträge zur Geophysik*, **39**, Heft 1, 37-57, 1 map, Leipzig, 1933.

The author's abstract reads: "Studying the relationship of earthquake frequency and the changes of air pressure of the two foregoing days it was discovered that, in Italy and on the borders of the Adriatic Sea in some epicentral regions, earthquakes are more numerous when the barometric pressure rises for two days; in other ones, however, when it falls. These two types of epicentra are not dispersed irregularly but arranged in what is called *isoesthetic* regions. In some cases the origin of these regions is due to tectonic movements (overthrust and continental drift); more frequently, however, to the disturbance of isostasy by erosion and sedimentation. Details are visible on the map." W.W.D.

1859. NOTO, Hisashi, "Some Studies on Antenna—Earth Current (I)," *Proceedings of the Physico-Mathematical Society of Japan*, Third Series, **15**, No. 3, 135-147, 9 figures, 2 tables, Tokyo, March, 1933.

In the concluding summary, the following appears, "The relation between electric disturbance and the occurrence of earthquakes seems to exist in some measure". W.W.D.

1860. NUMEROV, B. V., "Application of Geophysical Methods of Prospecting in the Oil Fields in America" (in Russian), *Bulletin of the Geological and Prospecting Service in U.S.S.R.*, No. 11-12, 16-29, Moscow-Leningrad, 1930.

A very interesting report on geophysical work carried out in America during prospecting for oil, as observed by the author during his visit to America (1929-XI-7 to 1930-III-27). Besides a general review, the paper describes the application of geophysical methods in Pennsylvania, Oklahoma and Arkansas, East and West Texas, and California, giving some numerical data referring to parties and the cost of the work. He also dwells upon the value of aero-photo-survey work for prospecting. Finally, he proposes a scheme for a general plan of prospecting for U.S.S.R. (The above reference is furnished by E. A. Koridalin.) N.V.R.

—— OOTUKA, Minoru and ISHIMOTO, Mishio, "Détermination de la limite perceptible des secousses." See No. 1828 of this list.

1861. ORDONEZ, Ezequiel, "Seismic Activity in Mexico during June, 1932," *Bulletin of the Seismological Society of America*, **23**, No. 2, 80-82, Stanford, April, 1933.

1862. PAFFENHOLZ, K. M., "On the Earthquake of April 27, 1931, in Ordubat and Gherussi Districts, Transcaucasia—Armenia and Azerbaidjan S.S.R." (in Russian), *Bulletin of the Geological and Prospecting Service of U.S.S.R.*, **50**, No. 60, 1-3, 1 figure, 1 map, Leningrad, 1931.

The author suggests that the earthquake was caused by block movements of Eocene masses trending northeast. N.V.R.

1863. PONTOPPIDAN, H., "Verslag over de aardbeving op 26 Juni 1914 in de residentie Benkoelen" (Report on the Earthquake on June 26, 1914, in the *Residentie* Benkoelen, Isle of Sumatra), *Jaarboek van het Mijnwezen in Nederlandsch Oost-Indië, Verhandelingen*, **43**, 78-85, Batavia, 1914.

In a postscript appearing on pages 86-89, S. Snuyf deals with: "De meest geteisterde plaateen in verband met de terreinformatie" (The Most Devastated Places in Connection with the Character of the Soil). J.F.S.

1864. RAMSPECK, A., "Versuche über Boden- und Gebäudeschwingungen," *Zeitschrift für Geophysik*, **9**, Heft 1-2, 44-59, 12 figures, Braunschweig, 1933.

The above is No. 9 of the series: *Seismische Untersuchungen des Geophysikalischen Instituts in Göttingen.* The author shows how the amplitude of the oscillation of a building, caused by the oscillation of the ground, can be calculated for the amplitude and period of the latter, if the function of the magnification of the particular building is known. This magnification is to be obtained experimentally by methods outlined by the author.

1865. REPETTI, William C., S.J., "Philippine Earthquakes: Marine Epicenters, 1920-1929," *Publications of the Manila Observatory*, **3**, No. 9, 199-203, with chart, Manila, 1931.

This paper is one of a series comprised in the Report of the Subcommittee on Physical and Chemical Oceanography of the Philippine Islands to the International Committee on Oceanography of the Fifth Pacific Science Congress. See further reference to this report in No. 1872 of this list.

1866. ROTHÉ, E., "Migration des épicentres," *Union Géodésique et Géophysique Internationale, Section de Séismologie*, Series B, Monographies, Fascicule No. 4, 41-73, 1 plate, Strasbourg, 1933.

The study is made with respect to the region of Chili for the years 1913 to 1930.

1867. ROTHÉ, E., "Projet d'ordre du jour; Association de Séismologie de l'Union Géodésique et Géophysique Internationale: Cinquième conférence réunie à Lisbonne le 17 septembre 1933," Annexe I, 1-15, Strasbourg, 1933.

A total of 43 items, papers or subjects for discussion, appear in the program of the Lisbon meeting, for the attention of the Section of Seismology of the International Geodetic and Geophysical Union.

1868. RUTTEN, L. M. R., "Voordrachten over de geologie van Nederlandsch Oost-Indië" (Lectures on the Geology of Dutch East-India), J. B. Wolters, x + 839 pages. Price Fl. 15. Copenhagen and The Hague, 1927

This book contains some general and local remarks on earthquakes and, besides, the following chapters devoted specially to seismology: "Earthquakes in Dutch East-India," 171-182, figures 57-60; "The Seismicity of Borneo," 300-303, figure 86; "The Seismicity of Sumatra—Recent Fractures," 468-469; "Earthquakes in the Minahassa—Their Tectonic Origin," page 588.

The same author published recently the book entitled: "De geologie van Nederlandsch Indië (The Geology of Dutch East-India), N.V.v.h.W.P. van Stockum and Zoon, 218 pages. Price Fl. 2.75 (unbound), Fl. 3.75 (bound). The Hague, 1932.

Chapter V (145-179) deals with: Recent Geological Forces in the Archipelago; Upheavals and Subsidences; Bradyseisms; The Velocity of Denudation; Earthquakes; Volcanism. It contains also some communications on the geographical distribution and the origin of earthquakes. J.F.S.

—— Sagisaka, K., Masuda, K., and Wadati, K., "On the Travel Time of Earthquake Waves: Part I." See No. 1890 of this list.

1869. Salvatori, Henry, "Correlation of Reflection Seismograph Records in California," *Bulletin of the American Association of Petroleum Geologists*, **17**, No. 3, 257-268, Tulsa, 1933.

Reflection records in California cannot always be correlated on the basis of character, interval, etc. In those areas where the reflecting strata are not persistent or are subject to lateral changes in physical character a knowledge of the slope of the strata is essential for the proper interpretation of the records. A brief outline of a method for determining the dip of a reflecting surface is presented and the manner in which this method may be utilized to aid in the correlation of records is indicated. The major areas of California offering possibilities for reflection work are classified according to their general groups, and typical reflection records secured in an area of each group are reproduced and discussed. (Author's abstract.) F.W.L.

1870. Science News Letter, "Prediction of Tidal Wave Forestalls Harbour Damage," *Science News Letter*, No. 633, **23**, 335, Washington, May 27, 1933.

An account of the precautions taken at Hawaii after reports had been received of a severe earthquake in Japan. Seismologists A. E. Jones at the Kilauea Observatory and R. V. Woods at Kona issued warnings predicting the time of arrival of the tidal waves at the various harbours to within six minutes. At Kona the maximum wave was about seventeen feet. The note concludes with the remark: "Had it not been for the scientific research investigations carried on by the Hawaiian Volcano Research Association with the co-operation of the United States Geological Survey, serious damage might have occurred."

1871. Seidlitz, W. von, "Der Bau der Erde und die Bewegungen ihrer Oberfläche." Julius Springer, 152 pages. RM 4.80. Berlin, 1933. F.W.L.

1872. Selga, Miguel, S.J., "The Deeps of the Philippines," *Publications of the Manila Observatory*, **3**, No. 8, 189-195, with chart, Manila, 1931.

This is one of a series of papers published by the Manila Observatory as a contribution to the work of the Standing Committee on Oceanography of the Fifth Pacific Science Congress made by the Subcommittee on Physical and Chemical Oceanography of the Philippine Islands. Other papers by the same author of some interest in the field of seismology are: "Historical Notes on the Oceanography of the Philippines," *Ibid.*, No. 1, 7-33; and "Variation of the Temperature of the Sea with Depth in the Philippines," *Ibid.*, No. 4, 143-153. See also No. 1865 of this list.

—— Shinohara, S. and Kunitomi, S. I., "The Diurnal Variation of Seismic Frequency in the Kwanto District." See No. 1836 of this list.

1873. Sieberg, A., "Erdbebenforschung und ihre Verwertung für Technik, Bergbau und Geologie." Gustav Fischer, 144 pages, 52 figures, bibliography. Price (card cover) RM 3.2. Jena, 1933.

This publication is a separate printing from the *Handwörterbuch der Naturwissenschaften* issued by the same publishers. It is in convenient pocket size (5″ x 7″), printed on good paper and well illustrated. The text is divided into three main sections: "Geologie und Physik der Erdbeben"; "Erdbebeninstrumente und ihre Verwendung"; and "Geographie der Erdbeben".

—— SNUYF, S., "De meest geteisterde plaateen in verband met de terreinformatie" (The Most Devastated Places in Connection with the Character of the Soil). See No. 1863 of this list.

1874. SOKOLOV, P. T.,

(1) "On the Deduction of the Equation of a Horizontal Seismograph" (in Russian), *Transactions of the United Geological and Prospecting Service of U.S.S.R.*, No. 213, 1-8, Leningrad, 1932.

(2) "Contribution to the Problem of Interpretation of the Results of Seismic Surveying for the Case of One Contact" (in Russian), *Ibid.*, No. 213, 20-26, Leningrad, 1932.

(3) "Experimental Application of Artificially Generated Elastic Waves to Problems of Geological Prospecting" (in Russian), *Ibid.*, No. 214, 1-30, Leningrad, 1932.

Abstracts of these papers appear on pages 809-811 of *Geophysical Abstracts*, No. 49. See No. 1838 of this list. F.W.L.

1875. SPACEK, Josef, "Les tremblements de terre dans la région frontière Silésie-Moravie," *Union Géodésique et Géophysique Internationale, Section de Séismologie*, Series B, Monographies, Fascicule No. 4, 74-90, 7 illustrations, Strasbourg, 1933.

—— STANDARD OIL DEVELOPMENT CO., "Geophysical Exploration Method." Patent. See No. 1819 of this list.

1876. STEHN, Ch., "De aardbeving van Maos op 15 Mei 1923" (The Earthquake of Maos on May 15, 1923), *Vulkanologische en Seismologische Mededeelingen van den Dienst van den Mijnbouw in Nederlandsch-Indië*, No. 8, 22-28, Weltevreden, Isle of Java, 1925.

J.F.S.

1877. SVERDRUP, H. U., "Vereinfachtes verfahren zur Berechnung der Druck– und Massenverteilung im Meere," *Geofysiske Publikasjoner, utgitt av det Norske Videnskaps-Akademi i Oslo*, **10**, No. 1, 3-9, Oslo, 1933.

1878. TAKAHASI, Ryutaro, "Tilt of the Earth's Crust Observed at the Asama Volcano," *Bulletin of the Earthquake Research Institute*, **11**, Part 1, 25-37, 2 figures, Tokyo, March, 1933.

1879. TAMS, E., "Grundzüge der physikalischen Verhältnisse der festen Erde; Erster Teil." Gebrüder Borntraeger, 184 pages, illustrations. Price RM 14. Berlin, 1933.

This volume is one of the series on the geology of the earth being prepared under the editorship of Prof. E. Krenkel of Leipzig. It discusses

(1) the size and shape of the earth and the horizontal and vertical distribution of its surface features;

(2) the constitution of the earth as a whole;

(3) the constitution of the outer portion of the earth;

(4) thermal relations of the earth and its age;

(5) gravity distribution upon the earth and the mass arrangement of its outer part.

F.W.L.

1880. TAMS, E., "Einige Korrelationen zwischen seismischer Bodenunruhe in Hamburg und der Brandung in West-und Nordeuropa," *Zeitschrift für Geophysik*, **9**, Heft 1-2, 23-31, 2 figures, Braunschweig, 1933. E.T.

The correlations made were for the microseisms in Hamburg and the surf on the Scottish-Irish coast, the Norwegian coast, the coast of Jutland, and the German-Baltic sea coast, the period being for the 22 days of strong microseisms (January-February, 1932.) The author finds that the correlation is established for the microseisms at Hamburg and the surf on the coast of Norway.

1881. (1) TAVERNE, N. J. M., "De waarde van tromometerwaarnemingen" (The Value of Tromometer Observations), *De Mijningenieur*, **5**, No. 11, 187-190, Weltevreden (Isle of Java), November, 1924.

The Omori tromometer, which since February, 1924, had been placed on the Merapi, Java, registered at first exclusively tectonic earthquakes. But, in September, 1924, a typical volcanic disturbance was recorded, an exception formally announced by the above publication. J.F.S.

1881. (2) TAVERNE, N. J. M., "De aardbevingen van Wonosobo op 12 Nov. en 2 Dec. 1924" (The Earthquake of Wonosobo, Isle of Java, on November 12 and December 2, 1924), *Vulkanologische en Seismologische Mededeelingen van den Dienst van den Mijnbouw in Nederlandsch-Indië*, No. 8, 1-21, Weltevreden, 1925. J.F.S.

1882. TERADA, Torahiko, "Result of the Precise Levelling along the Pacific Coast from Koti to Kagosima, 1932," *Proceedings of the Imperial Academy*, **9**, No. 4, 159-162, 4 figures, Tokyo, April, 1933. W.W.D.

1883. TIMOSHENKO, S., "Vibration Problems in Engineering." State Scientific and Technical Office, 344 pages, 168 figures. Price 3.70 roubles. Moscow-Leningrad, 1931.

The above is a translation into Russian of the book published in English to which reference was made in No. 892 of these lists. N.V.R.

1884. TROMP, S. W., "Het mechanisme en de oorzaken der gebergtevorming" (The Mechanics and the Conditions of the Origin of Mountains—Mountain-building). Martinus Nijhoff, 137 pages. Price Fl. 5. Gravenhage (The Hague), 1933.

Chapter III deals with: "Bijdrage voor de verklaring van het probleem der orogenese" (Contribution to the Explanation of the Problem of Mountain-building), pages 92-124.

It discusses first: "De oorzaken van gebergtevorming en die van haar nevenverschijnselen" (The Conditions of the Origin of Mountains and Those of Annexed Phenomena), pages 92-117.

Then follows: "De aardbevingswetten" (The Seismological Laws), pages 107-109. This presents an outline of the various forces causing earthquakes. J.F.S.

1885. VAN DIJK, G., "Seismische Registreeringen te Heerlen: 1 Mei 1931–30 April 1932; en 20-28 November 1932," *Jaarverslag van het Geologisch Bureau te Heerlen over 1931 (1932)*, 47-50, 1933. G.v.D.

1886. VAN ORSTRAND, C. E., "Some Comments on the Measurement and Interpretation of Deep Earth Temperatures," *Gerlands Beiträge zur Geophysik, Ergänzungshefte für angewandte Geophysik*, **3**, Heft 3, 261-281, 14 figures, Leipzig, 1933.

The author's abstract reads, "A brief description is given of the apparatus used by the U.S. Geological Survey and the American Petroleum Institute in conducting recent geothermal surveys. As a result of tests in 700 wells located chiefly in producing oil fields, instances have been found in which the isothermal surfaces rise in passing over salt domes, faults, sand lenses, and structures of large and small closure. In central Oklahoma, there is, in addition to the local variations, a regional variation that seems to be determined largely by the depth to the granite."

1887. VAN WATERSCHOOT VAN DER GRACHT, W. A. J. M.,

(1) "Waar komen de aardbevingen vandaan" (The Origin of Earthquakes), *Nieuwe Rotterdamsche Courant*, December 3, 1932.

(2) "De aardbevingen in ons land" (The Earthquakes in the Netherlands), *Algemeen Handelsblad*, Amsterdam, December 2, 1932.

(3) "Aardbeving in Nederland" (An Earthquake in the Netherlands), *Tijdschrift voor het Onderwijs in de Aardrijkskunde*, **10**, No. 11-12, 254-256, Haarlem, December, 1932.

These articles contain some general remarks as to the deeper geology of the Netherlands and present communications on the earthquake of November 20, 1932 (epicentre northeast of the province of North-Brabant). J.F.S.

1888. VASILIEV, M. V., "New Method of Seismic Interpretation" (in Russian), *Transactions of the United Geological and Prospecting Service of U.S.S.R.*, No. 213, 14-19, Leningrad, 1932. F.W.L.

1889. VERBEEK, R. D. M., "Kort verslag over de aardan zeebeving op Ceram den 30sten September 1899" (A Concise Report on the Earthquake and Seaquake on the island of Ceram, September 30, 1899), *Natuurkundig Tijdschrift voor Nederlandsch-Indië*, **60**, 219-228, Weltvreden, Isle of Java, and Amsterdam, 1901. J.F.S.

1890. WADATI, K., SAGISAKA, K., and MASUDA, K., "On the Travel Time of Earthquake Waves: Part I," *Geophysical Magazine*, **7**, No. 1, 87-99, Tokyo, April, 1933.

Part II of the same paper, written by K. Wadati alone, appears on pages 101-111 of the same issue of the magazine. W.W.D.

1891. WAILES, C. D., Jr. and HORNER, A. C., "Earthquake Damage Analyzed by Long Beach Officials," *Engineering News-Record*, **110**, No. 21, 684-686, New York, May 25, 1933.

Damage is classified into five groups, separating old structures from those erected under the 1930 code. Basic code changes suggested for security are offered together with those desirable for future building. A short editorial on the above article entitled: "Design Integrity," appears on page 694 of the same issue. W.W.D.

1892. WHIPPLE, F. J. W. *et al.*, "Seismological Investigations," *Thirty-seventh Report of the Committee on Seismology, British Association for the Advancement of Science, Report of York Meeting (1932)*, 257-262, London, 1933.

The report deals with general conditions with regard to the Committee and then with the following specific subjects: "The International Seismological Summary and the Revised Seismological Tables," "Seismographs," "British Earthquakes," "Deep Focus Earthquakes," "High Focus Earthquakes," "The Surface Layers," "Microseisms," "Membership and Accounts."

1893. (1) WICHMANN, E. C. A., "De statistiek der aardbevingen in den N. I. Archipel" (The Statistics of the Earthquakes in the Dutch East Indian Archipelago), *Handelingen Nederlandsch Natuur- en Geneeskundig Congres*, **5**, 493-498, Haarlem, 1895.

The above deals with two questions, viz., which statistical, seismological investigations have been made in the Dutch East Indian Archipelago and what results may nowadays be deduced from these statistical data.

1893. (2) WICHMANN, E. C. A., "Die Erdbeben des Indischen Archipels bis zum Jahre 1857," *Verhandelingen van den Koninklijke Akademie van Wetenschappen*, 2de Sectie, **20**, No. 4, 1-193, Amsterdam, 1918.

The above is in the nature of a chronological review.

1893. (3) WICHMANN, E. C. A., "Die Erdbeben des Indischen Archipels von 1858 bis 1877," *Ibid.*, **22**, No. 5, 1-209, Amsterdam, 1922.

A chronological review. J.F.S.

1894. WOOD, Harry O., "Preliminary Report on the Long Beach Earthquake of March 10, 1933," *Bulletin of the Seismological Society of America*, **23**, No. 2, 43-56, 23 illustrations, Stanford, April, 1933.

1895. YAMAGUTI, Seiti, "On Time and Space Distribution of Earthquakes," *Bulletin of the Earthquake Research Institute*, **11**, Part 1, 46-68, 14 figures, Tokyo, March, 1933.

1896. YOSIYAMA, Ryoti, "Elastic Waves from a Point in an Isotropic Heterogeneous Sphere, Part 1," *Bulletin of the Earthquake Research Institute*, **11**, Part 1, 1-13, 4 figures, Tokyo, March, 1933.

—— ZELLER, W. and KOCH, H. W., "Die Genauigkeit von seismographischen Messungen nichtstationärer Vorgänge." See No. 1834 of this list.

1897. ZISMAN, W. A., "The Elastic Constants of Rocks and Their Relation to Seismic Wave Speeds," *Physical Review*, **43**, No. 6, 501-502, New York, March 15, 1933.

The above is an abstract only of a paper presented at the Cambridge Meeting (February 4, 1933), of the New England Section of the American Physical Society. It reports investigations of the discrepancies found between the elastic constants of rocks determined statically and those found by applying the theory of elastic waves to the seismically observed speeds of propagation.

1898. ZISMAN, W. A., "An Improved Apparatus for the Measurement of Poisson's Ratio," *The Review of Scientific Instruments*, **4**, No. 6, 342-344, 4 figures, Lancaster, Pa., June, 1933.

In concluding the article the author states that, "This instrument was designed in order to carry out a part of an extensive program of geophysical research sponsored by the Committee on Geophysics of Harvard University."

1899. ZUNTURIDI, J. G., "On the Problem of Secular Movements of the Earth Crust in Transcaucasia" (in Russian with a summary in German), *Transcaucasian Regional Magazine*, Series A, Natural History, **1**, 203-211, Tiflis, 1930.

The author describes two cases of secular earth crust movements: positive (sinking) in the district of Poti and negative (upheaval) in that of Tiflis. In the former case the values of sinking for 25 years (1904-1929) in two cases proved to be 27.7 cm. and 10.7 cm. N.V.R.

1900. ZWART, W., "Aardschuivingen naar aanleiding van de aardbeving bij Wonosobo" (Earth Movements in Consequence of the Earthquake near Wonosobo, Java), *Tectona*, **18**, 413-421, Buitenzorg (Isle of Java), 1925. J.F.S.

LIST OF COLLABORATORS

The initials appended to various items throughout the *Bibliography* indicate, in each case, the contributions by the respective collaborator.

Agamennone, G., Real Osservatorio Geofisico, Rocca di Papa, Rome, Italy.	G.A.
Doxsee, W. W., Dominion Observatory, Ottawa, Canada.	W.W.D.
Hiller, W. H., Württembergisches Statistisches Landesamt, Stuttgart, Germany.	W.H.H.
Imamura, Akitune, Tokyo Imperial University, Tokyo, Japan.	A.I.
Lee, Frederick W., Editor *"Geophysical Abstracts,"* United States Bureau of Mines, Washington, D.C., U.S.A.	F.W.L.
McGraw-Hill Book Company, New York City, N.Y., U.S.A.	McG-H.
Okada, T., Director, Central Meteorological Observatory, Tokyo, Japan.	T.O.
Raïko, N. V., Pioneerskaia Ulitza 8/A, Appt. 9, Leningrad 3, U.S.S.R.	N.V.R.
Steenhuis, J. F., Kleverparkstraat 16, Haarlem, Holland.	J.F.S.
Taber, Stephen, Department of Geology, University of South Carolina, Columbia, S.C., U.S.A.	S.T.
Tams, E., Hauptstation für Erdbebenforschung, Hamburg 36, Germany.	E.T.
van Dijk, G., Koninklijk Nederlandsch Meteorologische Instituut, De Bilt, Holland.	G. v. D.
Zaunick, Rudolph, Editor, *"Mitteilungen zur Geschichte der Medizin der Naturwissenschaften und der Technik,"* Dresden A-16, Germany.	R.Z.

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