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Bibliography of Seismology

January, February, March, 1939

With this issue a new volume of the PUBLICATIONS OF THE DOMINION OBSERVATORY is assigned to the *Bibliography of Seismology*. Volume X of the PUBLICATIONS contains items 1-2000; it began with the first quarter of 1929, and closed with the last quarter of 1933. Volume XII of the PUBLICATIONS contains items 2001-4259, and brings the series to the end of 1938.

Preceding the bibliography of Volume X, an earlier series, compiled under the auspices of the Eastern Section of the Seismological Society of America and covering a total of 1,200 items for the period 1926 to 1928, was published in the *Bulletin of the Seismological Society of America* (Vol. 17, Nos. 3 and 4, 1927; Vol. 18, Nos. 1, 2, 3, and 4, 1928; Vol. 19, No. 4, 1929; Stanford, Cal.). The present editor is responsible for the entire compilation, old and new.

The editor has been fortunate in having the continued and able assistance of collaborators in practically all the countries of the world in which seismological work is undertaken. Without such collaboration it would not be possible to cover, even approximately, the ever widening field. Publications of interest to seismologists, when reported to the Dominion Observatory by their authors or by collaborators, are listed at once in the current manuscript of the *Bibliography*. The manuscript for any issue is closed about the mid-date of the period nominally covered by that issue.

It is hoped that the list of those regularly collaborating in this work may continue to grow. To this end, convenient report forms have been prepared, a supply of which will be sent on application to anyone interested. The use of the form reduces the work of a collaborator to a minimum and insures the complete listing of the publication details.

4260. ADAMS, John Q., "Alnico—Its Properties and Possibilities, Field of Usefulness, Physical Characteristics, Magnetic Characteristics, Hysteresis Loops, Comparison of Permanent Magnetic Materials, Applications," *General Electric Review*, Vol. 41, No. 12, 518-522, 10 fig., bib., Schenectady, Dec., 1938.

4261. AGAMENNONE, G.,

- (1) "Studio macrosismico del terremoto Calabro-Siculo del 13 Aprile 1938," *Bollettino della Società Sismologica Italiana*, Vol. 36, Nos. 3-4, 83-98, 1 fig., bib., Rome, 1938.
- (2) "Lo stato del cielo e i terremoti," *Ibid.*, 110-115, bib. G.A.

4262. ALFANI, G., "Strani fenomeni nel cielo e terremoti," *L'Avvenire d'Italia*, May 22, 1938.

A review in Italian, by Agamennone, appears on p. 119 of *Bollettino della Società Sismologica Italiana*, Vol. 36, Nos. 3-4, Rome, 1938.

4263. ANDREOTTI, G.,

- (1) "L'osservatorio geodinamico della R. Università di Padova," *Atti del Reale Istituto Veneto di Scienze, Lettere ed Arti*, Anno accademico 1937-38, Tomo 97, Part 2 (Science), 737-744, 4 fig., Venice, 1938.
- (2) "Sismicità di Fonzaso," *Memorie della R. Accademia di Scienze, Lettere ed Arti in Padova*, Anno 1937-38, Vol. 54, 5-11, 1 fig., 1938.
- (3) "Sismicità del Friuli," *Atti del XII Congresso Geografico Italiano*, 7 pp., Udine, 1938. G.A.

4264. ANGENSEISTER, G., "Beziehung zwischen Meereshöhe und Schwere in gestörten Gebieten" *Zeitschrift für Geophysik*, Jahr. 14, Heft 5-6, 219-230, 10 fig., bib., Braunschweig, 1938. G.I.G.
4265. ASCARI, M., BACCINO, L., and SANGUINETTI, G., "Le spiagge della Riviera Ligure," *Ricerche sulle variazioni delle Spiagge Italiana*, Vol. 1, 1937.
A review in Italian, by Agamennone, appears on p. 21 of *Bollettino della Società Sismologica Italiana*, Vol. 36, Nos. 1-2, Rome, 1938.
4266. AYVAZOGLU, W., "Geophysical Abstracts 91; October-December, 1937," *U.S. Department of the Interior, Geological Survey Bulletins*, No. 895-D, 137-204, Washington, 1938.
- BACCINO, L., SANGUINETTI, G., and ASCARI, M., "Le spiagge della Riviera Ligure." See No. 4265 of this list.
- BANCROFT, Dennison, and BIRCH, Francis, "The Elasticity of Certain Rocks and Massive Minerals." See No. 4273 of this list.
4267. BARSCH, O., "Der Aufbau der geophysikalischen Reichsaufnahme," *Oel und Kohle*, Vol. 13, No. 25, 641-644, Berlin, 1937.
A brief review by W. Ayvazoglou appears on p. 169 of *Geophysical Abstracts 91*, reported as No. 4266 of this list.
4268. BARTELS, J., "Bericht über die dreizehnte Tagung der Deutschen Geophysikalischen Gesellschaft vom 20. bis 22. Oktober in Jena," *Zeitschrift für Geophysik*, Bd. 14, Heft 7-8, 275-285, Braunschweig, 1938.
4269. BARTON, Donald C., "The State of Geologic Research in the Oil Industry," *Bulletin of the American Association of Petroleum Geologists*, Vol. 21, No. 5, 665-674, Tulsa, 1937.
A review by W. Ayvazoglou appears on p. 169 of *Geophysical Abstracts 91*, reported as No. 4266 of this list.
4270. BEANFIELD, E. McC., Discussion of paper by L. H. Nishkian, "Why a Constant Seismic Factor for Building?" presented before a meeting of the Seismological Society of America, April 2, 1938. See *Southwest Builder and Contractor*, Oct. 7, 1938.
E. McC. B.
4271. BERLAGE, H. P., Jr., "Aardbevingen in den Oest-Indischen Archipel waargenomen gedurende het jaar 1936, verzameld en bewerkt door het Koninklijk Magnetisch en Meteorologisch Observatorium te Batavia-Centrum," *Natuurkundig Tijdschrift voor Nederlandsch-Indië*, Vol. 98, No. 3, 142-170, Weltevreden, 1938.
- BERNAL, J. D., "Crystallographic Relations of Seismology." See No. 4277 of this list.
4272. BERNARD, Pierre, "Le cycle solaire dans l'agitation microséismique," *Comptes Rendus*, T. 206, No. 21, 1585-1587, Paris, 1938.
- BIRCH, Francis, "Variation of Seismic Velocities within a Simplified Earth Model" (abstract). See No. 4300 of this list.
4273. BIRCH, Francis, and BANCROFT, Dennison, "The Elasticity of Certain Rocks and Massive Minerals," *American Journal of Science*, Vol. 237, No. 1, 2-6, 1 tab., bib., New Haven, Jan., 1939.

- BOIS, Ch., "Agitation microsismique à Strasbourg." "Tremblements de terre en Afrique du Nord—Tunisie," and "Macroséismes signalés." See No. 4350 of this list.
4274. BOWEN, Norman L.,
 (1) "Lavias of the African Rift Valleys and Their Tectonic Setting," *American Journal of Science*, Fifth Series, Vol. 35A, 19-33, 3 tab., bib., New Haven, 1938.
 The above issue of the *Journal* is dedicated to Dr. A. L. Day by the authors of the various papers printed therein. It is listed among the *Publications of the Carnegie Institution of Washington* as Publication No. 1000.
 (2) "Geology and Chemistry," *Science*, No. 2303, Vol. 89, 135-139, New York, Feb. 17, 1939.
4275. BOWIE, William, "The Shape and Size of the Earth," *Scientific Monthly*, Vol. 47, No. 6, 506-510, New York, Dec., 1938.
- BOWIE, William, "Report of the Chairman of the Planning and Project Committee of the American Geophysical Union, April 29, 1938." See pp. 575-577 of the *Transactions of the American Geophysical Union*, reported as No. 4296 of this list.
4276. BRIDGMAN, P. W., "The High Pressure Behaviour of Miscellaneous Minerals," *American Journal of Science*, Vol. 237, No. 1, 7-18, 2 fig., 4 tab., bib., New Haven, Jan., 1939.
4277. BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. The following abstracts of papers presented before the British Association at Cambridge, 1938, appear in the *Pan-American Geologist*, Vol. 70, No. 5, Des Moines, Dec., 1938.
 (1) JONES, Owen T., "Introduction to Symposium on Seismology," 370-371.
 (2) PHILLIPS, D. W., "Imperfections of Elasticity in Rocks," 371-372.
 (3) GASKELL, T. F., "Seismic Exploration of Eastern England," p. 372.
 (4) JEFFREYS, Harold, "Deep Foci and After-shocks," 372-373.
 (5) BERNAL, J. D., "Crystallographic Relations of Seismology," p. 373.
4278. BRYAN, W. H., "The Establishment of a Seismological Station in Brisbane, Queensland," *Proceedings of the Royal Society of Queensland*, Vol. 49, Nos. 9-10, 104-105, bib., Brisbane, June, 1938.
 The above is also issued as a separate: *University of Queensland Papers, Department of Geology*, New Series, Vol. 1, Nos. 5-6, 1938.
4279. BRYAN, W. H., and WHITEHOUSE, F. W., "The Gayndah Earthquake of 1935," *Proceedings of the Royal Society of Queensland*, Vol. 49, Nos. 9-10, 106-119, 2 fig., 1 tab., Brisbane, June, 1938.
 The above also appears as a separate: *University of Queensland Papers, Department of Geology*, New Series, Vol. 1, Nos. 5-6, 1938.
4280. BUBNOFF, S. v., "Structure of the Earth," *Naturwissenschaften*, Bd. 26, 490-493, Berlin, July 29, 1938.
4281. BULLARD, E. C., and GASKELL, T. F., "Seismic Methods in Submarine Geology," *Nature*, No. 3603, Vol. 142, 916-917, London, Nov. 19, 1938.
4282. BULLEN, K. E., "The Wairoa Earthquake of 1932, September 15," *Dominion Observatory, Wellington, N.Z., Bulletins*, No. 136. Published as a reprint from the *New Zealand Journal of Science and Technology*, Vol. 20, No. 1, 31B-43B, Wellington, 1938.

K.E.B. + E.T.

- BURKHOLDER, J. L., "Construction Program and Management." See No. 4292 of this list.
- BYERLY, Perry, and WILSON, James T., "Microseisms Recorded at Berkeley." See pp. 107-109 (2 fig., bib.) of the *Transactions of the American Geophysical Union*, reported as No. 4296 of this list.
4283. CAIRNS, W. D., "Seismology from a Mathematical View-Point," *Science*, No. 2302, Vol. 89, 113-118, bib., New York, Feb. 10, 1939. W.D.C.
4284. CALOI, P., "Sullo spessore dello strato delle onde Pg nell'Europa Centrale," *Bollettino della Società Sismologica Italiana*, Vol. 36, Nos. 3-4, 75-82, 2 fig., bib., Rome, 1938.
For a review in Italian, by Agamennone, see *Ibid.*, p. 120.
An article by the same author and with the same title appears in *La Ricerca Scientifica*, Anno 9, Vol. 1, Nos. 7-8, 334-338, Rome, April, 1938. P.C.
4285. CARDER, Dean S., "Vibrations in Concrete Water Tanks," *Engineering News-Record*, 767-768, 2 fig., bib., New York, Dec. 15, 1938.
4286. CHAMBERLIN, Rollin T., A review of "The West Nelson Earthquakes of 1929," by J. Henderson (reported as No. 4066 of these lists), *Journal of Geology*, Vol. 47, No. 1, 107-109, Chicago, Jan.-Feb., 1939.
- CHIA, L. H., "Summary of Noticeable Earthquakes as Registered at Chiufeng." See No. 4321 of this list.
4287. DALY, R. A., "Architecture of the Earth." D. Appleton—Century Company, 200 pp., 152 illus. Price \$3.00. New York, 1938.
A review by A. P. Wendler appears on pp. 76-77 of *Geophysics*, Vol. 4, No. 1, Houston, Jan., 1939.
- DALY, R. A., "The Roots of Volcanoes." See pp. 35-39 (1 fig., bib.) of the *Transactions of the American Geophysical Union*, reported as No. 4296 of this list.
- DEBRACH, J., "Tremblements de terre en Afrique du Nord—Maroc." See No. 4350 of this list.
4288. DEJUHASZ, Kalman J., "Graphical Analysis of Surges in Mechanical Springs," *Journal, Franklin Institute*, Vol. 226, No. 5, 631-644, 5 fig., bib., Philadelphia, Nov., 1938.
The concluding section of the article of which the first section was reported as No. 4155 of these lists.
4289. DE MIRANDA, R., "A influencia des fenomenos sismicos no espirito poetico portugues," *A Terra*, 31-33, Coimbra, Nov., 1937.
A review in Italian, by Agamennone, appears on p. 28 of the *Bollettino della Società Sismologica Italiana*, Vol. 36, Nos. 1-2, Rome, 1938.
4290. DIX, C. H., "Interpretation of Well-Shot Data," *Geophysics*, Vol. 4, No. 1, 24-32, 4 fig., bib., Houston, Jan., 1939.
- DUDLEY, Oscar E., "System of Geological Explorations" (Patent). See No. 4342 of this list.

- DUNBAR, C. P., and GABRIEL, V. G., "Miscellaneous Geophysical Methods Used in Prospecting for Oil." See No. 4299 of this list.
- EICKELBERG, E. W., "Progress Report in Seismology for the United States Coast and Geodetic Survey and Cooperating Stations." See pp. 130-132 of the *Transactions of the American Geophysical Union*, reported as No. 4296 of this list.
4291. ENCYCLOPAEDIA BRITANNICA. The Encyclopaedia Britannica Book of the Year 1938, published in London (90 Dean Street, Soho Square, London W. 1), contains the following items of interest to seismologists:
- (1) "Bihar Earthquake," p. 100.
 - (2) "Quetta Earthquake," p. 87.
 - (3) "Seismology," p. 573.
4292. ENGINEERING NEWS-RECORD. The issue of the above periodical for Nov. 24, 1938 (Vol. 121, No. 21) is devoted to a series of papers describing the construction of the Colorado River Aqueduct. This "construction supreme" was completed in a section of the United States subject to earthquakes. One of the longest tunnels crosses the San Jacinto fault. The eight papers are of outstanding interest throughout, but those which deal with the seismological problem as a factor may be listed as follows:
- (1) HINDS, Julian, "Major Problems of Aqueduct Location," 646-651, 4 fig.
 - (2) GUMENSKY, D. B., "Governing Factors in Aqueduct Design," 653-658, 6 fig.
 - (3) BURKHOLDER, J. L., "Construction Program and Management," 659-667, 6 fig.
 - (4) LEADBETTER, B. C., "Driving an Extremely Difficult Tunnel," 669-673, 3 fig.
4293. ENGINEERING NEWS-RECORD.
- (1) "Design for Broadcasting," *Engineering News-Record*, Vol. 122, No. 1, 12-15, 6 illus., New York, Jan. 5, 1939.
Describes the construction of a broadcasting station at Hollywood, designed to resist earthquake stresses.
 - (2) "Volcanoes Erupt after Chile Quake," *Ibid.*, No. 6, p. 5, 5 illus., Feb. 9, 1939.
 - (3) "Earthquake Bracing for a Tall Building," *Ibid.*, No. 7, 215-217, 3 fig., Feb. 16, 1939.
See also the editorial in the same issue, p. 205, with the title "Earthquake Knowledge".
4294. EWING, Maurice, WOOLLARD, George P., and VINE, A. C., "Geophysical Investigations in the Emerged and Submerged Atlantic Coastal Plain: Part III, Barnegat Bay, New Jersey, Section," *Bulletin of the Geological Society of America*, Vol. 50, No. 2, 257-296, 16 fig., bib., New York, Feb. 1, 1939. M.E.
An abstract of this paper appeared in the same publication, Vol. 49, No. 12, Part 2, Dec. 1, 1938. See No. 4300 of this list.
The above paper is listed as one of the *Lehigh University Publications* (Vol. 13, No. 3, March, 1939), being Circular No. 148, Studies in Science and Technology No. 124.
- EWING, Maurice, "Topography of the Buried Land Surface of the Former Continent of Appalachia: from Seismic Evidence" (abstract). See No. 4300 of this list.

- EWING, Maurice, JOHNSON, Meredith, and WOOLLARD, George P., "Geophysical Investigations of the Geologic Structure of the Coastal Plain." See pp. 98-107 (4 fig., 1 tab., bib.) of the *Transactions of the American Geophysical Union*, reported as No. 4296 of this list.

- EWING, Maurice, and PENTZ, H. H., "A Proposed Investigation of Vening Meinesz Anomalies." See pp. 90-91 (bib.) of the *Transactions of the American Geophysical Union*, reported as No. 4296 of this list.

- EWING, Maurice, and VINE, A. C., "Deep Sea Measurements Without Wires or Cables." See pp. 248-251 (3 fig.) of the *Transactions of the American Geophysical Union*, reported as No. 4296 of this list.

4295. FENNER, Clarence N., "The Phenomenon of Falling Mountain," *American Journal of Science*, Fifth Series, Vol. 35A, 35-48, 5 fig., 2 tab., bib., New Haven, 1938.

The above issue of the *Journal* is dedicated to Dr. A. L. Day by the authors of the various papers printed therein. It is listed among the *Publications of the Carnegie Institution of Washington* as Publication No. 1000.

- FIELD, R. M., *et al.*, "Report of Special Committee on Geophysical and Geological Study of Oceanic Basins." See pp. 571-574 of the *Transactions of the American Geophysical Union*, reported as No. 4296 of this list.

4296. FLEMING, John A., *et al.*, "Transactions of the American Geophysical Union," 585 pp., Washington, 1938.

The following meetings are here reported: Washington, April 27-30, 1938; Spokane, Wash., Dec. 28-29, 1937; Denver, June 21, 1937. The pagination above given refers only to Part I, dealing with papers presented before the various sections of the Union at the meetings listed.

Abstracts or short papers of interest to seismologists are listed in this *Bibliography* under the names of the following authors: Daly; Hellweg; Ewing and Pentz; Woollard, Ewing and Johnson; Byerly and Wilson; Thoenen and Windes; Westland; Lynch, Wm. A., and Lynch, J.; Gutenberg, B.; Landsberg and Neuberger; Jaggar; Macelwane and Ramirez; Macelwane and Sprengnether; Heinrich; Eickelberg; Brunner; Ewing and Vine; Field, *et al.*; Bowie.

- FLEMING, J. A., MEYERHOFF, H. A., and STETSON, H. T., "Geophysics as Applied to Continental Structure." See No. 4331 of this list.

4297. FÖRTSCH, O., "Das Verhalten noch freistehender Brückenpfeiler bei Schwingungen und deren Abhängigkeit vom Untergrund," *Zeitschrift für Geophysik*, Jahr. 14, Heft 5-6, 173-195, 6 fig., 4 tab., bib., Braunschweig, 1938. G.I.G.

The above is No. 33 of the series: "*Seismische Untersuchungen des Geophysikalischen Instituts in Göttingen*."

4298. FRIEDLANDER, I., "Sui bradisismi dell'Isola d'Ischia e sulla 'Grotta del Mago'," *Bollettino della Reale Società Geografica Italiana*, Ser. 7a, Vol. 3, 44-54, Genoa, 1938.

A review in Italian, by Agamennone, appears on p. 29 of the *Bollettino della Società Sismologica Italiana*, Vol. 36, Nos. 1-2, Rome, 1938.

4299. GABRIEL, V. G., and DUNBAR, C. P., "Miscellaneous Geophysical Methods Used in Prospecting for Oil," *Louisiana Conservation Review*, Vol. 6, No. 1, 2-4, New Orleans, Jan., 1937.

A brief review by D. W. appears on pp. 463-464 of *Mines Magazine*, Vol. 28, No. 10, Golden, Oct., 1938.

- GAMBURTSEV, G. A., "Seismic Method of Prospecting by Means of Reflected Waves" (Patent). See No. 4342 of this list.

- GASKELL, T. F., "Seismic Exploration of Eastern England." See No. 4277 of this list.

- GASKELL, T. F., and BULLARD, E. C., "Seismic Methods in Submarine Geology." See No. 4281 of this list.

- GÉNAUX, L., "Agitation microséismique au Parc Saint-Maur." See No. 4350 of this list.

4300. GEOLOGICAL SOCIETY OF AMERICA, "Abstracts of Papers to be Offered at the Fifty-first Annual Meeting, December 28-30, 1938," *Bulletin of the Geological Society of America*, Vol. 49, No. 12, Part 2, New York, Dec. 1, 1938.

The following authors have contributed abstracts which are of special interest to seismologists. The titles will be found in each case under the listing of the name of the author in this issue of the *Bibliography*, namely: Ewing, Woollard and Vine; Griggs; Lawson; Shepard; Birch; Heck; Hubbert; Linehan; Lynch, Wm.; Lynch, J.; McMurray; Slichter; Kelly; Lundberg; Ewing; Longwell; Stetson.

4301. GREEN, C. H., "Velocity Determinations by Means of Reflection Profiles," *Geophysics*, Vol. 3, No. 4, 295-305, 8 fig., Houston, Oct., 1938.

4302. GREENWALD, H. P., "Ground Movement in Mines," *Journal of Applied Physics*, Vol. 9, 567-572, Sept., 1938.

The author's abstract is quoted on pp. 932-933 of *Science Abstracts*, Section A., No. 490, Vol. 41, London, Oct. 25, 1938.

- GRIGGS, David, "Convection Currents and Mountain Building" (abstract). See No. 4300 of this list.

- GUMENSKY, D. B., "Governing Factors in Aqueduct Design." See No. 4292 of this list.

- GUTENBERG, B., "The Velocity of Sound Waves from Gun Fire in Southern California." See p. 156 (2 fig.) of the *Transactions of the American Geophysical Union*, reported as No. 4296 of this list.

4303. HAGIWARA, Takahiro, and OMOTE, Syun'itiro, "Comparative Observations of the Acceleration of Earthquake Motions in the Compound of the Tokyo Imperial University, Part I," *Bulletin, Earthquake Research Institute*, Vol. 16, Part 3, 632-637, 15 fig., 2 tab., bib., Tokyo, Sept., 1938.

The paper is in Japanese with an abstract in English.

- HASSELMANN, Karl F., "Geophysical Measurement-making Apparatus" (Patent). See No. 4342 of this list.

- HAWLEY, Paul F., and SPARKS, Neil R., "Maximum Electromagnetic Damping of a Reluctance Seismometer." See No. 4360 of this list.
4304. HAYES, R. C., "Report of the Activities of the Dominion Observatory During the Year Ended 31st December, 1937," *Dominion Observatory (N.Z.) Bulletins*, No. 135, 6 pp., 1 map, 3 tab., bib., Wellington, 1938. R.C.H.
4305. HECK, N. H., "Earthquake History of the United States; Part I—Continental United States (Exclusive of California and Western Nevada) and Alaska," *U.S. Coast and Geodetic Survey Publications*, No. 609, 83 pp., 1 map, bib., Washington, 1938. N.H.H.
The above may be obtained from the Superintendent of Documents, Washington, D.C., at the nominal price of 20 cents.
- HECK, N. H., "Recent Advances in Seismology," and "Earthquake Problems of the Coastal Plain" (abstracts). See No. 4300 of this list.
- HÉE, Mme. A., "Tremblements de terre en Afrique du Nord—Algérie." See No. 4350 of this list.
- HEINRICH, ROSS R., "A Contribution to the Study of the Seismicity of Missouri." See pp. 129-130 of the *Transactions of the American Geophysical Union*, reported as No. 4296 of this list.
- HELLWEG, J. F., "The Improvement in Time Service and Broadcasting." See pp. 48-51 of the *Transactions of the American Geophysical Union*, reported as No. 4296 of this list.
4306. HESS, Harry Hammond, "Gravity Anomalies and Island Arc Structure with Particular Reference to the West Indies," *Proceedings of the American Philosophical Society*, Vol. 79, No. 1, 71-96, Philadelphia, 1938.
- HINDS, Julian, "Major Problems of Aqueduct Location." See No. 4292 of this list.
- HUBBERT, M. King, "Design Elements of a Self-integrating Strong Motion Accelerometer" (abstract). See No. 4300 of this list.
- HUKUNAGA, Mituo, SATO, Mitunosuke, and MIYABE, Naomi, "Crustal Deformations in Central Taiwan, Part 2." See No. 4333 of this list.
4307. INOUE, Win, "Notes on the Origin of Earthquakes, Sixth Paper," *Bulletin, Earthquake Research Institute*, Vol. 16, Part 3, 597-631, 30 fig., 2 tab., bib., Tokyo, Sept., 1938.
- JAGGAR, T. A., "A Simple Seismoscope." See p. 125 (1 fig.) of the *Transactions of the American Geophysical Union*, reported as No. 4296 of this list.
- JEFFREYS, Harold, "Deep Foci and After-shocks." See No. 4277 of this list.
4308. JENKINS, Olaf P., "Geologic Map of California," Scale 1:500,000; Size 6½ ft. x 7½ ft. Price \$4, from Walter W. Bradley, State Mineralogist, Ferry Building, San Francisco, Cal.
For further details see p. 516, *Mines Magazine*, Vol. 28, No. 11, Golden, Nov., 1938.

4309. JOHNSON, C. H., "Steady State Polar Sensitivity Curves," *Geophysics*, Vol. 4, No. 1, 33-52, 13 fig., bib., Houston, Jan., 1939.

————— JOHNSON, Meredith, WOOLLARD, George P., and EWING, Maurice, "Geophysical Investigations of the Geologic Structure of the Coastal Plain." See pp. 98-107 (4 fig., 1 tab., bib.) of the *Transactions of the American Geophysical Union*, reported as No. 4296 of this list.

4310. JOHNSTON, W. A., "Recent Changes of Level of the Land Relative to Sea Level," *American Journal of Science*, Vol. 227, No. 2, 94-98, bib., New Haven, Feb., 1939.

4311. JONES, Austin E., "The Amateur's Seismograph: Instructions for building and operating in the owner's cellar an instrument which will record quakes from the most distant parts of the earth," *Scientific American*, Vol. 160, No. 2, 83-85, 10 fig., New York, Feb., 1939. R.R.B.

In the same issue of the *Scientific American*, p. 97, appears a brief note entitled: "Ten Tires Float Oil Explorers." This note describes the field equipment for transporting seismic prospecting materials over swamp lands. It is illustrated with one figure.

————— JONES, Owen T., "Introduction to Symposium on Seismology." See No. 4277 of this list.

4312. KANAI, Kiyoshi, "Three-dimensional Vibrations of a Framed Structure, I," *Bulletin, Earthquake Research Institute*, Vol. 16, Part 3, 538-549, 6 fig., Tokyo, Sept., 1938.

————— KANAI, Kiyoshi, and SEZAWA, Katsutada,
(1) "Damping of Periodic Visco-elastic Waves with Increase in Focal Distance."
(2) "The Formation of Boundary Waves at the Surface of a Discontinuity within the Earth's Crust, I."
(3) "The Effect of Cooling on a Plastic Earth under Gravitational Forces, II."
See No. 4357 of this list.

4313. KATO, Y., "Changes in Earth's Magnetic Field Accompanying Earthquakes or Volcanic Eruptions," *Tohoku University Science Reports*, No. 27, 1-90, Sendai, July, 1938.

4314. KELLY, Dunford, "A Reaction-type Shaking Table," *Geophysics*, Vol. 4, No. 1, 69-75, 4 fig., Houston, Jan., 1939. R.R.B.

4315. KELLY, Sherwin F., "Geophysical Prospecting," *Mining and Metallurgy*, Vol. 18, No. 361, 26-27, New York, Jan., 1937.

A brief review by D. W. appears on p. 463 of *Mines Magazine*, Vol. 28, No. 10, Golden, Oct., 1938.

————— KELLY, Sherwin F., "Geophysics: A New Factor in World Mineral Economics" (abstract). See No. 4300 of this list.

————— KELLY, S. F., and STIPE, C. G., "Geophysical Methods Aid Construction Work." See No. 4361 of this list.

4316. KIRSCH, Gerhard, "Geomechanik Entwurf zu einer Physik der Erdgeschichte," J. A. Barth, Pub., 151 pp., 43 fig. Price: unbound 14.80 RM., bound 16. RM. Leipzig, 1938.
4317. KOHLSCHÜTTER, E., "Nachruf auf Oskar Hecker," *Zeitschrift für Geophysik*, Jahr. 14, Heft 7-8, 235-240, portrait, list of publications, Braunschweig, 1938.
An obituary of Dr. Hecker, who died in Munich on Sept. 19, 1938.
4318. KOSYGIN, A. I., "Geophysical Work in Western Turkmenistan from 1930 to 1936" (in Russian), *Neftianoe Khoziaistvo*, Vol. 18, No. 6, 71-74, Moscow, 1937.
A review by W. Ayvazoglou appears on pp. 170-171 of *Geophysical Abstracts* 91, reported as No. 4266 of this list.
- KREIS, A., "Der neue Vertikalseismograph der schweizerischen Erdbebenwarte in Zürich." See No. 4372 (1) of this list.
- LACOSTE, J., "Note sur l'agitation microséismique à Strasbourg en 1935." See No. 4350 of this list.
- LANDSBERG, H., and NEUBERGER, H., "Relations of Travel Time Curves to the Seismic Wave Velocities in the Continental and Suboceanic Lithosphere." See pp. 121-124 (1 fig., 5 tab.) of the *Transactions of the American Geophysical Union*, reported as No. 4296 of this list.
4319. LAWLOR, Reed, "Nomogram for Dip Computations," *Geophysics*, Vol. 3, No. 4, 349-357, 5 fig., Houston, Oct., 1938.
4320. LAWSON, Andrew C., "The Flotation of Mountains," *Scientific Monthly*, Vol. 47, No. 5, 429-438, New York, Nov., 1938.
- LAWSON, Andrew C., "Subsidence by Thrusting" (abstract). See No. 4300 of this list.
- LEADBETTER, B. C., "Driving an Extremely Difficult Tunnel." See No. 4292 of this list.
4321. LEE, S. P.,
(1) "Some Deep Focus Earthquakes Recently Occurred in Central Asia," *Seismological Bulletin of the Chiufeng Seismic Station*, Vol. 3, Nos. 2-3, 107-118, 2 fig., 5 tab., bib., Changsha, 1938.
(2) "Notes on Galitzin Seismometer," *Ibid.*, 119-125, 7 fig.
"The Summary of Noticeable Earthquakes, as Registered at Chiufeng" occupies the first 106 pages of the above mentioned bulletin. The summary was prepared by S. P. Lee, C. L. Pan, and L. H. Chia.
4322. LEET, L. Don, "Practical Seismology and Seismic Prospecting," D. Appleton-Century Co., 430 pp., 185 fig. Price \$6.00. New York, 1938.
A review by M. M. Slotnick appears on page 358 of *Geophysics*, Vol. 3, No. 4, Houston, Oct., 1938.
- LINEHAN, Daniel, S.J., "Recent Earthquakes in New England" (abstract). See No. 4300 of this list.

- LONGWELL, Chester R., "Relative Roles of Geology and Geophysics in Determining Crustal Structure" (abstract). See No. 4300 of this list.
- LUNDBERG, Hans, "Geophysics Applied to Geology" (abstract). See No. 4300 of this list.
4323. LYNCH, Joseph, S.J., "The Earth's Pulse," *Scientific American*, Vol. 159, No. 6, 290-292, 10 fig., New York, Dec., 1938.
- LYNCH, Joseph, S.J., "Attempt to Harmonize the Seismological and Geological Data of Deep Focus Earthquakes" (abstract). See No. 4300 of this list.
- LYNCH, Joseph, S.J., and LYNCH, William A., "Body Waves of Long Path in the Banda Sea Earthquake of February 1, 1938." See pp. 119-121 (1 fig., bib.) of the *Transactions of the American Geophysical Union*, reported as No. 4296 of this list.
- LYNCH, William A., "New York and New Jersey Quakes of the Northeastern Network" (abstract). See No. 4300 of this list.
- LYNCH, William A., and LYNCH, Joseph, S.J., "Body Waves of Long Path in the Banda Sea Earthquake of February 1, 1938." See pp. 119-121 (1 fig., bib.) of the *Transactions of the American Geophysical Union*, reported as No. 4296 of this list.
- MACELWANE, J. B., S.J., and RAMIREZ, J. E., S.J., "The Electromagnetic Microbarograph and Its Performance." See pp. 125-128 (3 fig.) of the *Transactions of the American Geophysical Union*, reported as No. 4296 of this list.
- MACELWANE, J. B., S.J., and SPRENGNETHER, W. F., "A Seismograph for Microseisms." See pp. 128-129 (1 fig.) of the *Transactions of the American Geophysical Union*, reported as No. 4296 of this list.
4324. MAILLES, Charles, "Hypothèses concernant l'écorce terrestre et les causes de ses déformations," *Bulletin Géodésique*, No. 57, 72-75, Jan.-Feb.-March, 1938.
4325. MAINKA, Karl, "Ergebnisse der geophysikalischen Gebirgsschlagforschung," *Forschungen und Fortschritte*, Jahr. 14, No. 28, 3 pp., 1 fig., 3 tab., bib., Berlin, Oct., 1938. K.M.
4326. MARMER, H. A., "Application of Geophysics to the Geological Study of the Ocean Bottom," *Geographical Review*, Vol. 29, No. 1, 152-153, New York, Jan., 1939.
The above is a brief but comprehensive review of the work recently done along the Atlantic coast by Prof. R. M. Field and his associates.
4327. MATHER, Kirtley F., "Earth Structure and Earth Origin," *Science*, No. 2300, Vol. 89, 65-70, bib., New York, Jan. 27, 1939.
- McMURRAY, Howard V., "Periodicity Phenomena in Deep Focus Earthquakes" (abstract). See No. 4300 of this list.
4328. MEISSER, O., "Oscar Hecker," *Gerlands Beiträge zur Geophysik*, Bd. 54, Heft 1, I-II, Leipzig, 1938.
An obituary of Professor Hecker, who died in Munich September 19, 1938.

- MENGEL, O., "Aperçu sur la séismotectonique de Tricastin (Drôme)." See No. 4350 of this list.
4329. MERCANTON, P. L., "Kreis-Wanner Seismograph," *Comptes Rendus*, T. 207, 374-375, Paris, Aug. 8, 1938.
The vertical-component instrument described has a stationary mass of 1100 kg., an amplification of 150, and a period of 10 sec. An electrical device is employed to correct for temperature.
4330. MEYERHOFF, H. A., "Report of Section E (A.A.A.S.) for the Richmond Meeting," *Science*, No. 2301, Vol. 89, 98-99, New York, Feb. 3, 1939.
4331. MEYERHOFF, H. A., STETSON, H. T., and FLEMING, J. A., "Geophysics as Applied to Continental Structure," *Science*, No. 2294, Vol. 88, p. 564, New York, Dec. 16, 1938.
4332. MITERA, Z.,
 (1) "Problems of Application of Seismic Reflection Methods in the Polish Eastern Carpathian Mountains in the Light of Present Investigations" (in Polish), *Polskiego Towarzystwa Geologicznego Rocznik*, Vol. 12, 1-21, Krakow, 1936.
 (2) "Studies on Seismic Methods of Prospecting and Their Application in Exploration for Oil in Poland" (abstract of paper presented at 2nd Petroleum Congress, Paris, June 14-19, 1937), *Petroleum World*, Vol. 34, No. 442, p. 165, Los Angeles, 1937.
 Abstracts of the above papers, by W. Ayvazoglou, appear as Nos. 4013 and 4014 respectively, p. 157 of *Geophysical Abstracts 91*, reported as No. 4266 of this list.
4333. MIYABE, NAOMI, HUKUNAGA, Mituo, and SATO, Mitunosuke, "Crustal Deformations in Central Taiwan, Part 2," *Bulletin, Earthquake Research Institute*, Vol. 16, Part 3, 578-596, 15 fig., bib., Tokyo, Sept., 1938.
4334. MOTT-SMITH, M., "On Seismic Paths and Velocity-time Relations," *Geophysics*, Vol. 4, No. 1, 8-23, 10 fig., Houston, Jan., 1939. R.R.B.
4335. NATURE. The following brief notes of interest to seismologists have appeared in recent issues of Vol. 142 of the above periodical (London, 1938):
 (1) "Periodicity of Earthquakes," No. 3598, p. 689, Oct. 15. A review of the book by Charles Davison reported as No. 4047 of these lists.
 (2) "Vibration in Engineering," *Ibid.*, 705-707.
 (3) "Recent Research in Seismology," *Ibid.*, 710-711. A report of a symposium on seismology held at Cambridge by Section A of the British Association.
 (4) "Earthquake of October 19," No. 3600, p. 790, Oct. 29.
 (5) "Travel-times of the Seismic Waves *P* and *S*," *Ibid.*, 801-802.
 (6) "Geocentric Distances in Seismology," *Ibid.*, p. 802.
 (7) "Geophysical Research at Johannesburg," No. 3601, p. 824, Nov. 5.
 (8) "Seismological Work at Stuttgart," *Ibid.*, p. 826.
 (9) "The Earth's Crust," *Ibid.*, p. 840.
 (10) "Gulf Coast Oil Fields," No. 3602, p. 854, Nov. 12. A review of the book reported as No. 4025 of these lists.
 (11) "Earthquake in Bulgaria on November 6," *Ibid.*, p. 869.
 (12) "Japanese Earthquake of November 5," *Ibid.*
 (13) "Past Seismic Activity in Japan," *Ibid.*, p. 881.

- (14) "Violent Earthquake of November 10," No. 3603, p. 909, Nov. 19.
 - (15) "Earthquake near Vienna," *Ibid.*
 - (16) "Earthquakes in the Neighbourhood of Lake Michigan," *Ibid.*, p. 922.
 - (17) "Earthquake Sounds," *Ibid.*
 - (18) "Earthquake in the East Indies," No. 3604, p. 949, Nov. 26.
 - (19) "Boundary Waves at a Surface of Discontinuity," *Ibid.*, p. 962.
 - (20) "The Violent Earthquake of November 10," No. 3605, p. 1003, Dec. 3.
 - (21) "Epicentres of Recent Earthquakes," No. 3606, p. 1042, Dec. 10.
 - (22) "Seismological Data and Volcanicity," *Ibid.*, p. 1043.
 - (23) "Principal Earthquakes during 1937," No. 3607, p. 1072, Dec. 17.
 - (24) "Recent Earthquakes Recorded at Hamburg," *Ibid.*, p. 1084.
 - (25) "Earthquake in Spain," No. 3608, p. 1112, Dec. 24.
 - (26) "Bibliography of Seismology," *Ibid.*, p. 1115.
 - (27) "Recent Large Earthquakes Recorded at Stuttgart," *Ibid.*, p. 1125.
 - (28) "Earthquake in the East Indies," No. 3609, p. 1165, Dec. 31.
4336. NATURE. The following brief notes of interest to seismologists have appeared in recent issues of Vol. 143 of the above periodical (London, 1939):
- (1) "Earthquake near Japan," No. 3610, p. 21, Jan. 7.
 - (2) "Earthquake in Belgium," *Ibid.*
 - (3) "Earth Tremor at Quetta," No. 3611, p. 71, Jan. 14.
 - (4) "Outer Regions of the Earth's Core," No. 3612, p. 124, Jan. 21.
 - (5) "Rate of Faulting near an Earthquake Epicentre," *Ibid.*
 - (6) "The Earth's Crust near New Zealand," No. 3613, p. 168, Jan. 28.
 - (7) "Earth Tremor in the Lipari Islands," No. 3614, p. 197, Feb. 4.
 - (8) "The Chilean Earthquake," *Ibid.*
 - (9) "Northern Californian Earthquakes during 1937," *Ibid.*, p. 209.
 - (10) "The Earthquake in Chile," No. 3615, 230-231, 1 fig., Feb. 11.
 - (11) "The International Seismological Summary," *Ibid.*, p. 237.
 - (12) "Earthquake in Ecuador," *Ibid.*, p. 238.
 - (13) "Clover Creek Earthquake of July 15, 1938," *Ibid.*, p. 250.
4337. NAVARRO NEUMANN, E. M. S., S.J., "Sur le tremblement de terre du Dogger Bank (7-VI-1931)," *Bollettino della Società Sismologica Italiana*, Vol. 36, Nos. 1-2, 14-17, bib., Rome, 1938.
4338. NEGROPONTE, Miltiade, "La Croix-Rouge Hellénique et le séisme d'Oropos," *Revue pour l'Étude des Calamités*, T. 1, No. 3, 207-208, Geneva, Sept.-Dec., 1938.
- NEUBERGER, H., and LANDSBERG, H., "Relations of Travel Time Curves to the Seismic Wave Velocities in the Continental and Suboceanic Lithosphere." See pp. 121-124 (1 fig., 5 tab.) of the *Transactions of the American Geophysical Union*, reported as No. 4296 of this list.
4339. NEUMANN, Frank, "United States Earthquakes, 1936," *U.S. Department of Commerce, Coast and Geodetic Survey Bulletins*, No. 610, 44 pp., 10 fig., 5 tab., Washington, 1938. F.N.
- OMOTE, Syun'itiro, and HAGIWARA, Takahiro, "Comparative Observations of the Acceleration of Earthquake Motions in the Compound of the Tokyo Imperial University, Part I." See No. 4303 of this list.

4340. OSBORN, W. G., "Geophysical Complex of Iowa is Problem for Geophysicists," *Oil and Gas Journal*, Vol. 35, No. 52, 51-53, Tulsa, May 13, 1937.

A brief review by D. W. appears on p. 463 of *Mines Magazine*, Vol. 28, No. 10, Golden, Oct., 1938.

- PAN, C. L., "Summary of Noticeable Earthquakes as Registered at Chiufeng." See No. 4321 of this list.

4341. PARASCANDOLA, A., "Il periodo sismico 1927-36 nell'isola d'Ischia," *Bollettino della Società dei Naturalisti in Napoli*, Vol. 49, 147-159, Naples, 1937.

A review in Italian, by Agamennone, appears on pp. 126-127 of *Bollettino della Società Sismologica Italiana*, Vol. 36, Nos. 3-4, Rome, 1938.

4342. PATENTS. On pp. 179-184 of *Geophysical Abstracts 91*, reported as No. 4266 of this list, are given the details of a series of recent patents. Those of particular interest to seismologists are as follows:

- (1) SALVATORI, Henri, and WALLING, Dean, "Method of Making Weathering Corrections in Seismic Surveying," U.S. Patent 2,087,120, July 13, 1937.
- (2) PETERS, Leo J., "Method and Means for Recording Terrestrial Waves," U.S. Patent 2,087,702, July 20, 1937.
- (3) DUDLEY, Oscar E., "System of Geological Explorations," U.S. Patent 2,088,588, Aug. 3, 1937.
- (4) RICKER, Norman H., "Method and Means of Geophysical Prospecting," U.S. Patent 2,089,983, Aug. 17, 1937.
- (5) HASSELMANN, Karl F., "Geophysical Measurement-making Apparatus," Canadian Patent 364,924, March 23, 1937.
- (6) GAMBURTSEY, G. A., "Seismic Method of Prospecting by Means of Reflected Waves," Russian Patent 50,338, Aug. 31, 1936.

- PENTZ, H. H., and EWING, Maurice, "A Proposed Investigation of Vening-Meinesz Anomalies." See pp. 90-91 (bib.) of the *Transactions of the American Geophysical Union*, reported as No. 4296 of this list.

4343. PERRI, Emilio,

- (1) "Una formula per la determinazione del periodo libero di vibrazione trasversale degli edifici," *L'Ingegnere*, 317-324, Rome, July, 1937.

A review in Italian, by Agamennone, appears on p. 47 of the *Bollettino della Società Sismologica Italiana*, Vol. 36, Nos. 1-2, Rome, 1938.

- (2) "Nuovo metodo di calcolo per le profondità ipocentrali," *Bollettino della Società Sismologica Italiana*, Vol. 36, Nos. 1-2, 3-13, 2 fig., bib., Rome, 1938.

4344. PERRINE, C. D., "Cause of Earthquake Ruptures," *Nature*, No. 3602, Vol. 142, 876-877, London, Nov. 12, 1938.

- PETERS, Leo J., "Method and Means for Recording Terrestrial Waves" (Patent). See No. 4342 of this list.

- PHILLIPS, D. W., "Imperfections of Elasticity in Rocks." See No. 4277 of this list.

4345. PRIVITERA, M., "Il nuovo Osservatorio Meteoro-Sismico di Mineo," *Bollettino della Società Sismologica Italiana*, Vol. 36, Nos. 1-2, 18-19, bib., Rome, 1938.

4346. PROVIERO, A., "L'Osservatorio sismico di Trenta (Cosenza)," *Bollettino della Società Sismologica Italiana*, Vol. 36, Nos. 3-4, 104-109, bib., Rome, 1938.

— RAMIREZ, J. E., S.J., and MACELWANE, J. B., S.J., "The Electromagnetic Microbarograph and Its Performance." See pp. 125-128 (3 fig.) of the *Transactions of the American Geophysical Union*, reported as No. 4296 of this list.

4347. REPETTI, William C., S.J., "The Alabat Earthquake of August 20th, 1937: The Epicentre, Time, and Depth of Focus," *Seismological Bulletin for 1937, July-December*, Weather Bureau, Manila Central Observatory, 49-53, Manila, 1938.

— RICKER, Norman H., "Method and Means of Geophysical Prospecting" (Patent). See No. 4342 of this list.

4348. ROCK, S. M., "Three Dimensional Reflection Control," *Geophysics*, Vol. 3, No. 4, 340-348, 8 fig., Houston, Oct., 1938.

4349. ROTHÉ, E., "Rapport de la Section de Séismologie," *Compte Rendu 1933-1934-1935-1936, du Comité National Français et Comité National Marocain de Géodésie et Géophysique*, 111-141, Paris, 1938.

The reports of the Secretary of the Section of Seismology were presented at meetings held on the following dates: Feb. 22, 1933; June 6, 1934; July 10, 1935; and April 20, 1936.

4350. ROTHÉ, E., *et al.*, "Annuaire de l'Institut de Physique du Globe, 1935," deuxième partie, Séismologie, 152 pp., Strasbourg, 1938.

The report presents the seismological records of the stations in France and her dependencies. There is a discussion of microseisms by J. Lacoste. Professor Lacoste died on November 19, 1937. An obituary, by professor E. Rothé, appears in the above publication together with a portrait of Professor Lacoste.

The sub-sections of the report are prepared by J. P. Rothé, P. Stahl, Mme. A. Hée, Ch. Bois, J. Debrach, Ch. Poisson, J. Lacoste, L. Génaux, and O. Mengel. For the titles of the section prepared by each, see cross references under the author names in this issue.

— ROTHÉ, J. P., "Tremblements de terre en France (1935)." See No. 4350 of this list.

— SALVATORI, Henri, and WALLING, Dean, "Method of Making Weathering Corrections in Seismic Surveying" (Patent). See No. 4342 of this list.

— SANGUINETTI, G., ASCARI, M., and BACCINO, L., "Le spiagge della Riviera Ligure." See No. 4265 of this list.

— SATO, Mitunosuke, MIYABE, Naomi, and HUKUNAGA, Mituo, "Crustal Deformations in Central Taiwan, Part 2." See No. 4333 of this list.

4351. SCHMERWITZ, Gerhard,

(1) "Zur Dämpfungskopplung," *Annalen der Physik*, Folge 5, Bd. 33, Heft 2, 107-108, Leipzig, Sept., 1938.

(2) "Ausgleichung der besten Stationsbeobachtungen mitteleuropäischer Erdbeben," *Zeitschrift für Geophysik*, Bd. 14, Heft 7-8, 351-390, 6 fig., 3 tab., bib., Braunschweig, 1938.

4352. SCHUMANN, T. E. W., "A General Graduation Formula for the Smoothing of Time Series," *Philosophical Magazine*, No. 179, Vol. 26, 970-983, 2 fig., 2 tab., bib., London, Dec., 1938.
4353. SCIENCE. The following brief reports of interest to seismologists have appeared in recent issues of Vol. 88 of the above periodical (New York, 1938):
- (1) "The Mathematical Association of America," No. 2290, 469-470, Nov. 18.
An announcement of the twenty-third annual meeting to be held at Richmond and Williamsburg, Virginia, Dec. 27-31, 1938. Professor W. D. Cairns of Oberlin College will deliver an address on "Seismology from a Mathematical Viewpoint".
 - (2) "Award of the Penrose Medal to Professor Lawson," *Ibid.*, p. 470.
 - (3) "Seismological Observatory at Mineral, Cal.," No. 2293, p. 8 (Supp.), Dec. 6.
 - (4) "The Action of Rocks under Pressure," No. 2294, p. 8 (Supp.), Dec. 16.
 - (5) "The Washington Meeting of the International Union of Geodesy and Geophysics," No. 2295, p. 589, Dec. 23.
4354. SCIENCE. The following brief reports of interest to seismologists have appeared in recent issues of Vol. 89 of the above periodical (New York, 1939):
- (1) "Drill Samples of Ocean Floor," No. 2301, p. 48 (Supp.), Feb. 3.
 - (2) "The Sixth Pacific Science Congress," No. 2303, 146-147, Feb. 17.
4355. SCIENCE NEWS-LETTER. The following brief notes of interest to seismologists have appeared in recent issues of Vol. 34 of the above periodical (Washington, 1938):
- (1) "Earth Trembles" (Nov. 5), No. 20, p. 318, Nov. 12.
 - (2) "Earth Trembles" (Nov. 16), No. 22, p. 340, Nov. 26.
 - (3) "Pull of Sun and Moon Seen as Trigger for Quakes," No. 23, p. 361, Dec. 3.
 - (4) "Earthquake Observatory Established in California," No. 24, p. 375, Dec. 10.
 - (5) "Rocks Flow, then Break, Harvard Studies Show," No. 25, p. 388, Dec. 17.
4356. SCIENCE NEWS-LETTER. The following brief notes of interest to seismologists have appeared in recent issues of Vol. 35 of the above periodical (Washington, 1939):
- (1) "Changes in Gravity may Warn of Earthquake," No. 2, p. 22, Jan. 14.
 - (2) "Moon may Start Earthquakes by 'Triggering' Stresses," No. 4, p. 57, Jan. 28.
 - (3) "Earth Trembles," No. 6, p. 90, Feb. 11.
4357. SEZAWA, Katsutada, and KANAI, Kiyoshi,
- (1) "Damping of Periodic Visco-elastic Waves with Increase in Focal Distance," *Bulletin, Earthquake Research Institute*, Vol. 16, Part 3, 491-503, 1 fig., 2 tab., bib., Tokyo, Sept., 1938.
 - (2) "The Formation of Boundary Waves at the Surface of a Discontinuity within the Earth's Crust, I," *Ibid.*, 504-526, 3 fig., 2 tab., bib.
 - (3) "The Effect of Cooling on a Plastic Earth under Gravitational Forces, II," *Ibid.*, 527-537, 5 fig., bib.
- SHEPARD, Francis P., "California Submarine Canyons" (abstract). See No. 4300 of this list.
4358. SILVERMAN, Daniel, "The Frequency Response of Electro-magnetically Damped, Dynamic, and Reluctance-type Seismometers," *Geophysics*, Vol. 4, No. 1, 53-68, 10 fig., bib., Houston, Jan., 1939. R.R.B.
- SLICHTER, L. B., "Seismological Investigations of the Earth's Crust, using Quarry Blasts" (abstract). See No. 4300 of this list.

4359. SMITH, Lynn Davis, "Boring through a Rainstorm. San Jacinto Tunnel, Part of Colorado River Aqueduct System, Presented Engineering Difficulties, Rock and Water, Pioneer Tunnels Driven Ahead," *Scientific American*, Vol. 160, No. 3, 140-141, 4 illus., New York, March, 1939.
4360. SPARKS, Neil R., and HAWLEY, Paul F., "Maximum Electromagnetic Damping of a Reluctance Seismometer," *Geophysics*, Vol. 4, No. 1, 1-7, 1 fig., bib., Houston, Jan., 1939. R.R.B.
- SPRENGNETH, W. F., and MACELWANE, J. B., S.J., "A Seismograph for Microseisms." See pp. 128-129 (1 fig.) of the *Transactions of the American Geophysical Union*, reported as No. 4296 of this list.
- STAHL, P., "Les séismes des Charentes," and "Tremblements de terre en Indochine." See No. 4350 of this list.
- STETSON, H. T., "Time Problem in Connection with Geophysical Study of Crustal Structure" (abstract). See No. 4300 of this list.
- STETSON, H. T., FLEMING, J. A., and MYERHOFF, H. A., "Geophysics as Applied to Continental Structure." See No. 4331 of this list.
4361. STIPE, C. G., and KELLY, S. F., "Geophysical Methods Aid Construction Work," *Civil Engineering*, Vol. 7, No. 4, 264-268, Easton, Pa., 1937.
A quotation of the authors' abstract is given on p. 171 of *Geophysical Abstracts 91*, reported as No. 4266 of this list.
4362. TAKABEYA, F., "Model Experiments on the Minimization of Structural Vibrations Caused by Seismic Disturbances," *Nature*, No. 3583, Vol. 142, 38-39, London, 1938.
4363. TAKAHASI, K., "On the Effect of the Block Structure of the Earth's Crust on the Propagation of Seismic Waves," *Journal of the Meteorological Society of Japan*, Vol. 15, 118-133, Tokyo, 1937.
A review by Y. Kodaira is quoted on pp. 161-162 of *Geophysical Abstracts 91*, reported as No. 4266 of this list. The paper by Takahasi is in Japanese.
4364. TAMS, E., "Fortschritte in der Physik der Erde als Ganzes und der Erdrinde," *Geologische Jahresberichte*, Bd. 1, 23 pp. in reprint, bib., 1938. E. Tams.
4365. TAMS, E., "Zur Frage der regionalen Verkoppelung von Erdbeben," *Zeitschrift für Geophysik*, Jahr. 14, Heft 7-8, 241-259, 7 fig., bib., Braunschweig, 1938. E. Tams.
The author's abstract is in German. Translated it reads: "On the basis of a closer study of suitable data in Iceland, Austria and the Philippines, it is established that, in seismotectonic regions known to be essentially related, even earthquakes which, considered alone, seem to be independent, being widely separated in space and time, may very well be interconnected causally with others through a widespread and deep-seated condition. This relationship, not apparent perhaps in the data of isolated cases, becomes evident through a statistical-probability treatment. In Norway, no such interrelationship has been established. However, there has been a noticeable diminution in seismic activity within the past twenty-five years, so that earth deformation must also be diminishing as time goes on."

- THOENEN, J. R., and WINDES, S. L., "Seismic Phenomena as Revealed by Quarry Blasting." See pp. 109-115 (14 fig., bib.) of the *Transactions of the American Geophysical Union*, reported as No. 4296 of this list.
4366. TRAPPE, Fr., "Beiträge zur Anwendung der Reflexionsmethode in Deutschland," *Oel und Kohle*, Vol. 13, No. 30, 757-758, Berlin, 1937.
A brief review by W. Ayvazoglou appears on p. 162 of *Geophysical Abstracts 91*, reported as No. 4266 of this list.
4367. TRAXLER, R. N., "Everything Flows: Industry is finding many practical applications of Science's studies of the flow phenomena of apparently solid matter as well as of the liquids," *Scientific American*, Vol. 160, No. 1, 16-18, 3 fig., New York, Jan., 1939.
4368. U.S. COAST AND GEODETIC SURVEY, "Preliminary Report of the New Jersey Earthquakes of August 22, 23, and 27, 1938" (mimeographed), 3 pp., 1 map., Washington, 1938.
4369. VACQUIER, Victor, "Ultimate Precision of Barometric Surveying," *Bulletin of the American Association of Petroleum Geologists*, Vol. 21, No. 9, 1168-1181, Tulsa, 1937.
A review by W. Ayvazoglou appears on p. 171 of *Geophysical Abstracts 91*, reported as No. 4266 of this list.
4370. VANNUCCI, P. Onorio, "Il nuovo sismografo per la componente verticale dell'Osservatorio sismologico di S. Domenico in Prato," *Bollettino della Società Sismologica Italiana* Vol. 36, Nos. 3-4, 99-103, 3 fig., Rome, 1938.
- VINE, A. C., and EWING, Maurice, "Deep Sea Measurements Without Wires or Cables." See pp. 248-251 (3 fig.) of the *Transactions of the American Geophysical Union*, reported as No. 4296 of this list.
- VINE, A. C., EWING, Maurice, and WOOLLARD, George P., "Geophysical Investigations in the Emerged and Submerged Atlantic Coastal Plain, III." See No. 4294 of this list.
4371. WAESCHE, Hugh H., "An Equatorial Cruise," *Volcano Letter*, No. 461, 1-5, 5 illus., Hawaii, July, 1938.
An account of a cruise in mid-Pacific for the purpose of establishing Jaggar shock recorders on Enderbury and Conton islands.
- WALLING, Dean, and SALVATORI, Henri, "Method of Making Weathering Corrections in Seismic Surveying" (Patent). See No. 4342 of this list.
4372. WANNER, E.,
(1) "Jahresbericht 1937 des Erdbebendienstes der Schweizerischen Meteorologischen Zentralanstalt," Separatabdruck, *Annalen der Schweizerischen Meteorologischen Zentralanstalt*, 1937, 18 pp., Zürich, 1938.
Contains also a four-page article by the same author, in collaboration with A. Kreis, with the title: "Der neue Vertikalseismograph der schweizerischen Erdbebenwarte in Zürich," 5 illus., bib.
(2) "Über die Definition der Seismizität einer Gegend," *Helvetica Physica Acta*, Vol. 11, 1 pg., bib., Basel, 1938. E.W.
4373. WEGENER, Kurt, "Die Erhaltung der Gebirge," *Zeitschrift für Geophysik*, Jahr. 14, Heft 7-8, 270-271, Braunschweig, 1938.

4374. WENNER, Frank, "Time Measurements," *Journal, Washington Academy of Sciences*, Vol. 28, No. 12, 505-525, 10 fig., portrait, Menasha, Wis., Dec. 15, 1938.
- WESTLAND, A. J., S.J., "The Epicenter and P-Curve of the April 16, 1937, Fiji Island Earthquake." See pp. 115-119 (1 fig., bib.) of the *Transactions of the American Geophysical Union*, reported as No. 4296 of this list.
- WHITEHOUSE, F. W., and BRYAN, W. H., "The Gayndah Earthquake of 1935." See No. 4279 of this list.
4375. WILLIAMS, N., "Present Rate of Gulf Coast Exploration May Find all Reserves in Two Years," *Oil and Gas Journal*, Vol. 34, No. 21, 11-12, Tulsa, Oct. 10, 1935.
A brief review by D. W. appears on p. 463 of *Mines Magazine*, Vol. 28, No. 10, Golden, Oct., 1938.
4376. WILLIS, Bailey, "San Andreas Rift in Southwestern California," *Journal of Geology*, Vol. 46, No. 8, 1017-1057, 3 fig., bib., Chicago, Nov.-Dec., 1938.
- WILSON, James T., and BYERLY, Perry, "Microseisms Recorded at Berkeley." See pp. 107-109 (2 fig., bib.) of the *Transactions of the American Geophysical Union*, reported as No. 4296 of this list.
- WINDES, S. L., and THOENEN, J. R., "Seismic Phenomena as Revealed by Quarry Blasting." See pp. 109-115 (14 fig., bib.) of the *Transactions of the American Geophysical Union*, reported as No. 4296 of this list.
- WOOLLARD, George P., EWING, Maurice, and JOHNSON, Meredith, "Geophysical Investigations of the Geologic Structure of the Coastal Plain." See pp. 98-107 (4 fig., 1 tab., bib.) of the *Transactions of the American Geophysical Union*, reported as No. 4296 of this list.
- WOOLLARD, George P., VINE, A. C., and EWING, Maurice, "Geophysical Investigations in the Emerged and Submerged Atlantic Coastal Plain, III." See No. 4294 of this list.
4377. ZONDERVAN, H., "Wat weten wij van het binnenste der aarde?" *Tijdschrift van het Onderwijs in de Aardrijkskunde*, Vol. 15, 5-18, Amsterdam, Jan., 1937.
A review in Italian, by Agamennone, appears on p. 133 of *Bollettino della Società Sismologica Italiana*, Vol. 36, Nos. 3-4, Rome, 1938.
4378. ZUR MÜHLEN, W. VON, "Über einige Probleme der angewandten Seismik," *Oel und Kohle*, Vol. 13, No. 33, 819-821, Berlin, 1937.
An abstract by W. Ayvazoglou appears on p. 158 of *Geophysical Abstracts 91*, reported as No. 4266 of this list.

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