

DEPARTMENT OF THE INTERIOR  
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BY

ERNEST A. HODGSON

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# Bibliography of Seismology

April, May, June, 1934

— ADLER, Joseph L. and ROSAIRE, E. E., "Applications and Limitations of Dip Shooting." See No. 2218 of this list.

2131. AGAMENNONE, G., "Gli strumenti sismici e il suono delle campane," *Bol. Soc. Sis. Ital.*, Vol. 31, No. 3-4, 80-95, bib., Rome, 1933. G.A.

2132. AGAMENNONE, G., ALESSANDRI, C., and PROVIERO, A., "Rassegna sismologica," *Bol. Soc. Sis. Ital.*, Vol. 31, No. 3-4, 101-116, Rome, 1933.

This annotated seismological bibliography begins in this issue of the *Bollettino*. It is to be continued.

A number of items reported in this issue of the *Bibliography of Seismology* and credited to G. A. were obtained from the above bibliography which was made available through the kindness of Prof. Agamennone.

— ALESSANDRI, C., PROVIERO, A., and AGAMENNONE, G., "Rassegna sismologica." See No. 2132 of this list.

— ALLEN, Maxwell W., "Destructive and Near-destructive Earthquakes in California and Western Nevada, 1769-1933." See No. 2172 of this list.

2133. AMBRONN, Richard, "Apparatus for the Measurement of Technical Vibrations and Seismographs on the Piezo-electrical Principle." Advertising Circular issued from Göttingen, 1933, 4 pp., 5 fig.

This circular is most satisfactory in that it gives a really good description of the apparatus and lists various combinations of equipment giving the prices of the individual items and those for the combinations. If the claims of the manufacturer are valid the equipment described would be most convenient to handle in field operation. The cost of the most sensitive instruments for six seismographs simultaneously recording on the same drum, including packing, totals RM 13700. These give a magnification up to about three or four millions at 100 cycles. The circular gives a bibliography indicating reports of investigations made by the help of this apparatus.

2134. AMBROSE, J. W., "A Discussion of the Movement of Fault Blocks," *Amer. J. Sc.*, No. 156, Vol. 26, 552-563, New Haven, Dec., 1933.

2135. ATHANASAKI, J., "Quand la terre tremble en Grèce," *Bul. Ligue des Sociétés de la Croix-Rouge*, 431-433, Dec., 1932.

A review, signed R. M., appears on page 268 of *Mat. E. Cal.*, No. 30-31, Geneva, 1933.

2136. BANERJI, S. K. and MANOHAR, M. D., "On the Artificial Vibrations of Ground," *Indian Jour. Phys.*, Vol. 8, No. 2, 95-121, Calcutta, 1933.

- BENJAMIN, H. L. and ROBINSON, I. R., "Effects of Earthquakes on Electrical Supply Systems." See No. 2214 of this list.
2137. BERLAGE, H. P., Jr., "Über die Hörbarkeit der Knalle einer semi-vulkanischen Dampfexplosion auf Sumatra," *Ger. Bei.*, Bd. 40, Heft 4, 369-370, 1 map, Leipzig, 1934.
2138. BOBILLIER, C., "La sismicidad de Chile durante el año de 1931 y resumen historico de los principales maremotos acaecidos en Chile," *Bol. Sis. Univ. Chile*, No. 23, 41 pp., 2 fig., Santiago, 1933. G.A.
2139. BODLE, Ralph R. *et al.*, "Earthquake Notes," *Pub. E. S., S. S. A.*, Vol. 5, No. 4, 8 pp., Washington, Mar., 1934.
- The announcement is made that the Annual Meeting of the Eastern Section, S. S. A., will be held in New York, April 30 and May 1, 1934, at Fordham University. In addition to other brief items of interest this issue contains the following short papers: "The Seismograph Station at Montezuma, Chile," by C. P. Butler, "The Utah Earthquake, March 12, 1934," "Indian Earthquake, January 15, 1934," "Annual Exhibit of the Carnegie Institution of Washington," "Study of Seismograph Characteristics," "New Vibration Recording Instrument Successful," "Earthquake Insurance in New Zealand," "Earthquake Insurance in the United States."
2140. BOIS, Ch., "Recherches sur les séismographes destinés à l'inscription de la composante verticale du mouvement du sol," *U.G.G.I., Sec. Séis., Sér. A, Trav. scien.*, Fasc. 8, 5-120, 45 fig., bib., Strasbourg, 1933.
- This very complete and valuable paper deals with many phases of the subject, some of which may be indicated as follows:
- (1) History.
  - (2) Recent researches: optical instruments, mechanically recording instruments.
  - (3) Methods of obtaining the optimum period.
  - (4) Methods of obtaining temperature compensation.
  - (5) Summary.
  - (6) Bibliography.
2141. BOIS, Ch., "Sur les phases des séismes très éloignés (10000 km. et au dela)," *U. G. G. I., Sec. Séis. Sér. A, Trav. scien.*, Fasc. 8, 121-149, 1 fig., 5 tab., Strasbourg, 1933.
2142. BOIS, Ch., "Chronique Sismologique," *Mat. E. Cal.*, No. 30-31, 251-257, Geneva, 1933.
- BORN, W. T., HARDING, R. L., and WEATHERBY, B. B., "Granite and Limestone Velocity Determinations in Arbuckle Mountains, Oklahoma." See No. 2239 of this list.
2143. BOWIE, William, "A Comparison of Isostasy in India and in the United States and Southern Canada," *Ger. Bei.*, Bd. 41, Heft 2, 250-259, 2 fig., bib., Leipzig, 1934.
2144. BRADFORD, Donald C. and WATERS, Aaron C., "The Tolt River Earthquake and its Bearing on the Structure of the Cascade Range," *Bul. S. S. A.*, Vol. 24, No. 1, 51-62, 1 map, Stanford, Jan., 1934. D.C.B.
2145. BRAHTZ, J. H. A., "Photoelastic Apparatus at the California Institute of Technology," *R.S.I.*, Vol. 5, No. 2, 80-83, 4 fig., Lancaster, Feb., 1934.



2146. BULLEN, K. E., "The Constants of Seismological Observatories," *Brit. Ass., Gray-Milne Trust*, 14 pp., Newport, 1933. K.E.B.

The author presents a list of about 400 stations with the latitude and longitude of each and the constants  $a$ ,  $b$ , and  $c$  used in computing epicentral distances by Turner's method. These have been very carefully checked and should prove a decided step toward the final elimination of errors in the published lists of the geographical co-ordinates. There are still some discrepancies between this list and that by Gutenberg and Richter (see No. 2043 of these lists), which are being investigated by the latter authors preparatory to issuing a supplementary report. To any investigator who has had experience in making use of published geographical co-ordinates this work will be much appreciated. Every list previous to these latest investigations, which the reviewer has had occasion to use, has been found to contain an error or errors, the use of which would lead to incorrect values of the epicentral distance and make a corresponding misplacement of the plotted point on the time-distance graph. E.A.H.

- BUTLER, C. P., "The Seismograph Station at Montezuma, Chile." See No. 2139 of this list.
- BYERLY, PERRY, "Destructive and Near-destructive Earthquakes in California and Western Nevada, 1769-1933." See No. 2172 of this list.
- CALLAGHAN, Eugene and GIANELLA, Vincent P., "The Earthquake of December 20, 1932, at Cedar Mountain, Nevada, and its Bearing on the Genesis of Basin Range Structure." See No. 2165 of this list.

2147. CALOI, Pietro, "Due tipi d'onde caratteristici tra le fasi  $S$  ed  $L$  di un telesisma: le onde  $SL$  ed  $SM$ ," *Ric. Sc. Bol. Geod. Geof.*, Anno 5, Vol. 1, No. 2, 5 pp., 2 pl., Rome, 1934. P.C.

2148. CARLETON, R. B., "Suitability of Materials for Photoelastic Investigations," *R.S.I.*, Vol. 5, No. 1, 30-32, 7 fig., 1 tab., Lancaster, Jan., 1934.

The author's abstract reads: "Glass, celluloid, cellulose acetate, hard and soft rubber and seven synthetic resins have been tested to determine their suitability for photoelastic investigations. The stress-strain relations, photoelastic coefficients and annealing temperatures have been measured. It is concluded that the synthetic resins Phenolite, Bakelite and L'Orca are among the most satisfactory materials for photoelastic purposes."

2149. CRESKOFF, Jacob J., "Dynamics of Earthquake Resistant Structures," McGraw-Hill Book Co., 127 pp., illus. Price \$2.50. New York, 1934. R.R.B.+McG-H.

The table of contents, as given by the publishers, is as follows:

- (1) Earthquake History of the United States.
- (2) Seismography.
- (3) Seismic Motion of a Particle.
- (4) Dynamics of Earthquake Motion.
- (5) Deflections of Beams in Moment and Shear.
- (6) Free Transverse Vibrations of a Slender Beam.
- (7) Forced Transverse Vibrations of a Slender Beam.
- (8) Distribution of Seismic Shear and Moment.
- (9) Application to Buildings.
- (10) Aseismic Design of a Tall Building.
- (11) Aseismic Design of a Short Building.

2150. DAVIS, Watson, "Optical Problems Involved in a Comprehensive System of Bibliography," *J. Op. Soc. Amer.*, Vol. 24, No. 2, p. 58, New York, Feb., 1934.

The abstract only of a paper proposing a complete bibliographical service covering "all scientific published material, past, present, and future." The paper deals particularly with the optical problems involved in the working out of the scheme proposed.

2151. DAVISON, Charles, "The Japanese Seismic Sea-waves of March 3, 1933," *Nature*, No. 3350, Vol. 133, 72-73, 1 map, London, Jan. 13, 1934.

2152. DAVISON, Charles, "The Earthquake-series of Itô (Japan)," *Geog. Jour.*, Vol. 83, No. 3, 228-231, 2 fig., bib., London, Mar., 1934.

2153. DAY, Arthur L. *et al.*, "Seismology: Report of the Advisory Committee," *Car. Inst. Wash., Year Book*, No. 32 (1932-1933), 362-372, Washington, 1934.

The report is divided into subsections under the following headings: Geodetic Work in Regions of Seismic Activity; Earthquake Studies of the Seismological Laboratories; Instrumental Equipment; Studies in Comparative Seismology.

2154. DERJAGIN, B., "Absorption of Seismic and Acoustic Waves and its Dependence on Frequency" (in Russian), *Jour. Geoph.*, Vol. 2, No. 3-4, 337-341, Moscow, 1933.

A review by W. Ayvazoglou appears as No. 1730, page 1012, of *Geoph. Abs.* See No. 2191 of this list. The above is the second paper by the same author on this subject. For reference to the earlier paper see No. 1812 of these lists. F.W.L.

2155. DESCOTES, M., S.J., "Courbes isodiastématiques: nouvelle méthode pour les calculer," *U.G.G.I., Sec. Séis., Sér. A, Trav. scien.*, Fasc. 9, 98-114, 1 fig., 2 pl., bib., Strasbourg, 1933.

The author presents a short method of computing the data for constructing an azimuth-distance chart. These charts are most useful in seismological investigations where effects of azimuth are to be checked roughly but frequently; and they are useful also in approximate location work. Prof. Rothé appends a short bibliography quoting papers by G. Grablowitz, E. Tams, C. Zeissig, A. Sieberg, Rudolph and Szirtes. These are given in this list as cross references under the respective names.

Such charts have been published for various other places as well. They will be found in the publications listed in this Bibliography as Nos. 1054 (L. D. Leet, *re Ottawa*), 1317 (S. Gold, *re Ottawa*), and 2025 (C. G. Dahm, *re Hawke Bay, New Zealand*). In the case of the paper by Gold, some interesting mathematical aspects of the direct method of computing such a chart are presented.

Mention may also here be made of the fact that the late Prof. Woodworth of Harvard had an azimuth-distance chart constructed on Mercator Projection maps for each of the then-existing seismograph stations of the world. By means of facsimile world maps, drawn on transparent paper, he was able to use the charts for the location of epicentres. One transparent map was used for each earthquake. Laid over the charts, one at a time, the azimuth distance lines for the particular earthquake and station were traced on the transparent map. The intersections permitted an approximation to the position of the epicentre. E.A.H.

2156. DÖRR, Josef Norbert, "Über drei Kleinbeben in Österreich in Jahre 1932," *Anzeiger, Akad. Wiss. Wien, M-n. Kl.*, Jahr. 70, 121-122, 2 pl., Wien, 1933.

The paper deals with the following earthquakes:

21 Oct., 1932 (Salzburg, Leoganger Steinberg).

15 Nov., 1932 (Steiermark, oberes Murtal).

23-24 Dec., 1932 (Niederösterreich, nordwestliches Waldviertel). R.Z.

2157. EARTHQUAKE RESEARCH INSTITUTE, TOKYO IMPERIAL UNIVERSITY, "Seismometrical Reports." (i) 1924-1930, 66 pp., Tokyo, 1934. (ii) 1933, Part 3, July 1-Sept. 30, 1933, 15-21, 6 pl., Tokyo, 1934.

2158. ENDRÖS, A., "Beobachtungen über die Dämpfung der Seiches in Seen," *Ger. Bei.*, Bd. 41, Heft 2, 130-148, Leipzig, 1934.

2159. ENGINEERING NEWS-RECORD, "Earthquake in Japan Affects Tide Gage in Golden Gate at San Francisco," *Eng. N.-R.*, Vol. 112, No. 5, p. 146, New York, Feb. 1, 1934.

2160. ENGINEERING NEWS-RECORD, "Mulholland Dam above Los Angeles, Reinforced," *Eng. N.-R.*, Vol. 112, No. 10, 335, 1 illus., New York, Mar. 8, 1934.

A brief note and half-tone describing the back-fill protection being given the Mulholland Dam to make it earthquake resistant.

2161. EVANS, L. T. and ROSSEN, M., "Earthquake Damage to Masonry Structures, and Their Repair," *Amer. Concrete Inst. Jour.*, Vol. 5, No. 2, 129-136, Nov.-Dec., 1933. R.R.M.

2162. FUJIWHARA, S., TSUJIMURA, T., and KUSAMITSU, S., "On the Earth-vortex, Echelon Faults, and Allied Phenomena," *Ger. Bei., Supbd. II*, 303-360, 50 fig., bib., Leipzig, 1933.

2163. GASSMANN, F., "Zur Auswertung der Diagramme von Seismographen und Erschütterungsmessern," *Verhand. Schweiz. Natur. Ges.*, 114 Jahresversammlung vom 1. bis 3. Sept., 1933, 342-344, Aarau, Switz., 1933. R.Z.

2164. GERECKE, Fr. and RAMSPECK, A., "Boden- und Gebäudeschwingungen in Rastatt nach dem Erdbeben vom 8. Februar 1933," *Zeit. Geoph.*, Jahr. 9, Heft 6-8, 342-350, 6 fig., Braunschweig, 1933.

The above publication is No. 10 of the series: *Seismische Untersuchungen des Geophysikalischen Instituts in Göttingen*.

2165. GIANELLA, Vincent P. and CALLAGHAN, Eugene, "The Earthquake of December 20, 1932, at Cedar Mountain, Nevada, and its Bearing on the Genesis of Basin Range Structure," *Jour. Geol.*, Vol. 42, No. 1, 1-22, 10 fig., bib., Chicago, Jan.-Feb., 1934.

- GRABLOWITZ, G., "Weltkarte der Entfernungen und der Azimute für Hamburg," Sonderdruck aus der Monatsschrift "Die Erdbebenwarte," Jahrgang VI, 1906-1907. Carte au 1/140,000,000. E.R.

See No. 2155 of this list.



2166. GRACY, J., "La reconstruction de Tokio et Yokohama après le tremblement de terre de 1923," *Musée Social*, 269-288, Paris, 1930. G.A.

Compare No. 1459 of these lists.

2167. GREEN, N. B. and HORNER, A. C., "Earthquake Resistance of Timber Floors," *Eng. N.-R.*, Vol. 112, No. 5, 142-145, 4 fig., 1 tab., New York, Feb. 1, 1934.

2168. GUTENBERG, Beno, "Das 'Seismological Laboratory' in Pasadena," *Ger. Bei., Supbd. II*, 213-237, 12 fig., bib., Leipzig, 1933.

2169. GUTENBERG, Beno, "The Propagation of the Longitudinal Waves Produced by the Long Beach Earthquake," *Ger. Bei.*, Bd. 41, Heft 1, 114-120, 3 fig., 4 tab., bib., Leipzig, 1934. R.R.B.

2170. GUTENBERG, Beno and RICHTER, C. F., "On *P'P'* and Related Waves," *Ger. Bei.*, Bd. 41, Heft 2, 149-159, 5 fig., bib., Leipzig, 1934.

2171. GUTENBERG, Beno and RICHTER, C. F., "Contribution to the Study of Deep-focus Earthquakes," *Ger. Bei.*, Bd. 41, Heft 2, 160-169, Leipzig, 1934.

The authors introduce the paper by the following: "In the following pages are presented certain rapid and convenient methods for interpreting the records of deep-focus earthquakes. These methods are in regular use at Pasadena, and furnish the basis for the discussion of new phases in the preceding paper. The procedure is by no means in a final state; it is offered here in justification of the preceding results and as a contribution to the rapidly developing theory of these interesting shocks." (By *preceding results* the authors indicate those given in the paper reported next above as No. 2170 of this list.)

- HARDING, R. L., WEATHERBY, B. B., and BORN, W. T., "Granite and Limestone Velocity Determinations in Arbuckle Mountains, Oklahoma." See No. 2239 of this list.

2172. HECK, N. H., *et al.*, "Destructive and Near-destructive Earthquakes in California and Western Nevada, 1769-1933." Mimeographed publication of the U.S. Coast and Geodetic Survey, Washington, 1933. This list, 21 pages of closely typed material, was prepared by the Coast and Geodetic Survey officials with the assistance of Messrs. H. O. Wood, Maxwell W. Allen, Perry Byerly, and S. D. Townley. N.H.H.

2173. HECK, N. H., "Vibration Meter for Earthquake Studies of Buildings," *Eng. N.-R.*, Vol. 110, No. 10, 315, 1 fig., New York, Mar. 8, 1934.

2174. HÉE, Mme. A., "La fréquence des tremblements de terre en Algérie (1925-1932)," *U. G. G. I., Sec. Séis., Sér. B, Monog.*, Fasc. 5, 59-108, 6 fig., num. tab., Strasbourg, 1933.

A previous paper on the same subject, covering the years 1911-1924, appeared in Fasc. 2 of this same series.

2175. HÉE, Mme. A., "Étude des battements électriques: application à la séismologie et à l'étude des constantes diélectriques," *U.G.G.I., Sec. Séis., Sér. A, Trav. scien.*, Fasc. 9, 3-97, 44 fig., num. tab., bib., Strasbourg, 1933.

2176. HILLER, W., "Der Herd des Rastatter Bebens am 8. Februar 1933," *Ger. Bei.*, Bd. 41, Heft 2, 170-180, 3 fig., 2 tab., bib., Leipzig, 1934. W.H.

The macroseismic and microseismic evidence together serve as the basis for the determination of the position of this epicentre and for the deduction that it is in the form of a "focus-line" from ten to fifteen kilometers in length. The depth of focus is found to be about 30 kilometers. The first motion registrations are found to be dependent on the azimuth from the epicentre and indicate that the dislocation at the focus was a shear.

2177. HODGSON, Ernest A., "Surface-reflected Waves of Shallow-focus Earthquakes," *Bul. S.S.A.*, Vol. 24, No. 1, 33-46, 7 fig., 2 tab., bib., Stanford, Jan., 1934.

2178. HODGSON, Ernest A., "Making the World Safe by Seismology," *J.R.A.S.C.*, No. 231, Vol. 28, No. 2, 49-57, Toronto, Feb., 1934.

Reporting an address given before the Montreal Amateur Athletic Association, on Thursday, Jan. 11, 1934.

- HORNER, A. C. and GREEN, N. B., "Earthquake Resistance of Timber Floors." See No. 2167 of this list.

2179. HOSKINS, Leander M. and JACOBSEN, Lydik S., "Water Pressure in a Tank Caused by a Simulated Earthquake," *Bul. S.S.A.*, Vol. 24, No. 1, 1-32, 10 fig., Stanford, Jan., 1934.

2180. HUNTER, J. de Graaff, "The Indian Earthquake (1934) Area," *Nature*, No. 3355, Vol. 133, 236-237, London, Feb. 17, 1934.

The note is accompanied by a sketch map on which is marked the position of the epicentre. This is placed, approximately, at 27° N., 86° E. The source of the information fixing this position is not given. The relationship of this epicentre to the distribution of gravity is discussed and indicated by underload contours on the map.

A note regarding the above discussion appears in *Science*, No. 2043, Vol. 79, p. 6 (Supp.), with the title: "Earth Level and the Indian Earthquake."

2181. IMAMURA, Akitune, "Past Tunamis of the Sanriku Coast," *Jap. Jour. Ast. Geoph.*, Vol. 11, No. 2, 79-93, 12 fig., 2 tab., Tokyo, 1934. A.I.

2182. ISHIMOTO, Mishio and KIMURA, Motoharu, "Construction d'un appareil analyseur en fréquence et son application aux inscriptions sismographiques," *Bul. Eq. Res. Inst.*, Vol. 12, Part 1, 20-23, 20 fig., Tokyo, Mar., 1934.

2183. ITOO, Tokunosuke, "Note on the Tilting of a Rigid Pillar Caused by an Earthquake," *Proc. P-M. Soc. Jap.*, Vol. 15, No. 6, 246-247, Tokyo, 1933.

2184. ITOO, Tokunosuke, "Sur les séismes des grands fonds au Japon," *Jap. Jour. Ast. Geoph.*, Vol. 11, No. 2, 71-78, 3 fig., bib., Tokyo, 1934.

- JACOBSEN, Lydik S. and HOSKINS, Leander M., "Water Pressure in a Tank Caused by a Simulated Earthquake." See No. 2179 of this list.

- KIMURA, Motoharu and ISHIMOTO, Mishio, "Construction d'un appareil analyseur en fréquence et son application aux inscriptions sismographiques." See No. 2182 of this list.

2185. KIROFF, K. T., "Les calamités géophysiques en Bulgarie, 1928-29. Les tremblements de terre catastrophiques des 14 et 18 avril, 1928, en Bulgarie méridionale," *Mat. E. Cal.*, No. 26, p. 106, Coimbra, 1931. G.A.

See also No. 1346 of these lists.

2186. KLEINSCHMIDT, E., "Erwiderung auf den Aufsatz von R. Tomaschek und W. Schaffernicht: Die Flut der festen Erde," *Zeit. Geoph.*, Jahr 9, Heft 6-8, 308-309, Braunschweig, 1933.

The above criticism is directed against the paper reported as No. 1987 of these lists. It is replied to by Tomaschek and Schaffernicht on page 309 of the same journal under the heading "Bemerkung hierzu."

2187. KRUMBACH, G.,

- (1) "Seismische Registrierungen in Jena; 1. Januar bis 31. Dezember 1931," *Veröff., Jena*, Heft 18, 24 pp., Jena, 1932.
- (2) "Die Ausbreitung von Erdbebenwellen in grossen Herdentfernungen bei dem Südseebeben vom 26. Juni 1924." *Ibid.*, Heft 16a, 68 pp., 16 fig., bib., Jena, 1934.
- (3) "Die instrumentellen Aufzeichnungen des Erdbeben vom 26. Juni 1924," *Ibid.*, Heft 16b, 9 pp., 24 pl., Jena, 1934.
- (4) "Seismische Registrierungen in Jena; 1. Januar bis 31. Dezember 1932," *Ibid.*, Heft 20, 20 pp., Jena, 1933.
- (5) "Seismische Registrierungen in Jena; 1. Januar bis 31. Dezember 1933," *Ibid.*, Heft 22, 24 pp., Jena, 1934. A.S.

— KUSAMITSU, S., FUJIWHARA, S., and TSUJIMURA, T., "On the Earth-vortex, etc." See No. 2162 of this list.

2188. LACOSTE, J., "Tremblements de terre Mexicains: tremblement de terre du 14 janvier 1931," *U.G.G.I., Sec. Séis., Sér. B, Monog.*, Fasc. 5, 3-58, num. tab., bib., Strasbourg, 1933.

2189. LAGALLY, M., "Mechanik und Thermodynamik des stationären Gletschers," *Ger. Bei., Supbd. II, Ergebnisse der Kosmischen Physik*, 1-94, bib., Leipzig, 1933.

Section III of this paper deals with the subject "Das Eis als elastischer und plastischer Körper," and subsection 13 with "Seismische Tiefenmessung."

2190. LAGRANGE, E., "Sur l'histoire du pendule horizontal en Italie," *Ciel et Terre*, T. 30, Séance du 6 mars, 1932, Brussels. G.A.

2191. LEE, Frederick W., "Geophysical Abstracts," No. 57, 1006-1059, Jan.; No. 58, 1060-1080, Feb.; No. 59, 1081-1104, Mar.; Washington, 1934. F.W.L.

2192. LEET, L. Don, "New Recording Vault of the Harvard Seismograph," *Bul. S.S.A.*, Vol 24, No. 1, 47-50, 2 fig., Stanford, Jan., 1934. L.D.L.

2193. LEWIS, R. G., "Subsidence in the European Area," *Geol. Mag.*, No. 836, Vol. 71, 76-85, 1 fig., bib., London, Feb., 1934.

2194. LEYPOLDT, Harry, "Earth-movements in California Determined from Apparent Variation in Tidal Datum Planes," *Bul. S.S.A.*, Vol. 24, No. 1, 63-68, 3 fig., Stanford, Jan., 1934.

2195. LYSE, Inge, "Current Work at Lehigh University," *Eng. N.-R.*, Vol. 112, No. 7, 225-226, 3 illus., New York, Feb. 15, 1934.

Included in this short note is a description of the photo-elastic apparatus designed to test the distortion of steel frames.

2196. MACELWANE, James B., S.J., "Studies of Earthquake Action Promise Better Structures," *Eng. N.-R.*, Vol. 111, No. 26, p. 779, New York, Dec. 28, 1933.

See also editorial comment in same issue, p. 792.

2197. MACMILLAN, H. G., "Note on the Long Beach Earthquake and Plants," *The Plant Disease Reporter, Plant Disease Survey, Division of Mycology and Disease Survey*, Vol. 18, No. 2, 16-18, Washington, Mar. 15, 1934. H.T.G.

The author quotes a statement by Tschudi, a traveller in Peru (J. J. Tschudi, *Travels in Peru*, New York, 1847) to the effect that in Peru earthquakes often resulted in converting luxuriant lands to barren wastes. He discusses this matter and presents the fact for what it may be worth that the Long Beach earthquake produced no appreciable visible effect on growing crops, either at the time of the quake or later.

— MANOHAR, M. D., and BANERJI, S. K., "On the Artificial Vibrations of the Ground." See No. 2136 of this list.

2198. MATUZAWA, Takeo, "Comparison of Movement of Water in a V-shaped Bay with that in a U-shaped Bay," *Jap. Jour. Ast. Geoph.*, Vol. 11, No. 2, 67-70, 3 fig., Tokyo, 1934.

2199. MEINESZ, F. A. Vening, "Ergebnisse der Schwerkraftbeobachtungen auf dem Meere in den Jahren 1923-1932," *Ger. Bei., Supbd. II*, 153-212, 7 fig., 4 pl., bib., Leipzig, 1933.

2200. MEISSER, O., "Angewandte Geophysik," *Mitt. Reichsan. Erd. Jena*, Heft 5, being pp. 1108-1121 of the *Handwörterbuch der Naturwissenschaften* published by Gustav Fischer, Jena. A.S.

See also No. 2226 of this list.

2201. MIHAILOVIĆ, Jélénko,

(1) "La région séismique de Timok," *Ann. Géol. Péninsule Balkanique*, T. 11, Fasc. 2, 268-281, 1 pl., Beograd, 1933.

(2) "La séismicité de la Thrace, de la mer de Marmara et de l'Asie Mineure," *Pub. Inst. Séis. Univ. Beograd*, 77 pp., 80 fig., 1 pl., bib., Beograd, 1933. (Fasc. 2, Sér. B, Monog. et Trav. scien., Comité National du Royaume Yougoslavie, U.G.G.I.)

(3) "La séismicité de la Bulgarie du Sud," *Ibid.*, 42 pp., 47 fig., 11 pl., bib., Beograd, 1933. (*Ibid.*, Fasc. 3.) J.M.



2202. MINES MAGAZINE, "Geophysical Prospecting in Japan," *Mines Mag.*, Vol. 24, No. 3, p. 7, Golden, Mar., 1934.

A short note, signed M. W. B., concerning the activities of Prof. Yoshizo Fujita, professor of mining engineering at Kyoto Imperial University, describes him as an "outstanding leader in the development of geophysical work in his country".

2203. MIYABE, Naomi, "Provisional Result of the Recent Revision of Precise Levelling in Tokyo," *Proc. Imp. Acad.*, Vol. 9, No. 10, 588-591, Tokyo, Dec., 1933.

2204. MONDELLO, Ugo, "Ricerche sulla sismicità brasiliana," *Bol. Soc. Sis. Ital.*, Vol. 31, No. 3-4, 61-79, 3 fig., Rome, 1933. G.A.

This is the second part of the paper on this subject by the above author. The first part was reported as No. 1962 of these lists.

2205. MONONOBE, Nagaho, "Ultimate Strength of Building Structures against Earthquakes," *Bul. Eq. Res. Inst.*, Vol. 12, Part 1, 35-43, 8 fig., Tokyo, Mar., 1934.

2206. NAGAOKA, Hantaro and SHIRAI, Toshiaki, "Continental Margins as Slip Lines: Formation of Japanese Arcs and Deep Seated Earthquakes," *Proc. Imp. Acad.*, Vol. 9, No. 10, 584-587, 1 map, Tokyo, Dec., 1933.

The above is a second communication by these authors on the same subject. The first paper was reported as No. 2087 of these lists.

2207. NATURE. The following short notes of interest to seismologists have appeared recently in *Nature* (London):

- (1) "Sensitiveness of Fish to Earthquakes," No. 3343, Vol. 132, p. 817, Nov. 25, 1933.
- (2) "Earthquake Insurance (in New Zealand)," No. 3349, Vol. 133, p. 22, Jan. 6, 1934.
- (3) "India Earthquake of January 15th," No. 3351, Vol. 133, p. 94, Jan. 20, 1934.
- (4) "Long Beach Earthquake of March 10, 1933," *Ibid.*, p. 108. R.R.B.

2208. NAVARRO NEUMANN, M. Ma. S., S.J., "La station sismologique de la Compagnie de Jésus à Cartuja (Espagne)," *Revue des questions scientifiques*, Sept. 20, 1932.

A review, signed R.M., appears on pp. 262-263 of *Mat. E. Cal.*, No. 30-31, Geneva, 1933.

2209. NEUMANN, Frank, "United States Earthquakes, 1932," *U.S.C.G.S. Pub.*, No. 563, p. 21, Washington, 1934. F.N.

2210. NÖLKE, Friedrich, "Der Ursprung des Mondes," *Ger. Bei.*, Bd. 41, Heft 1, 86-91, Leipzig, 1934.

The author's English abstract reads: "Recently the widespread hypothesis that the moon had separated from the earth and left behind the basin of the Pacific as a scar, has been very much shaken by a strong objection of Mr. Jeffreys, and as other objections could be made, this theory cannot be maintained. Nevertheless the

birthplace of the moon is to be searched for in the neighbourhood of the earth, since the moon enlarges its orbit by tidal friction. Jeffreys' hypothesis of the moon being captured by the earth as well as that of Laplace of its being thrown off at the boundary of the atmosphere above the equator are not admissible. But the moon may have taken rise in the interior of the primary atmosphere out of condensable gases describing free circular orbits in a defined equatorial ring-district."

2211. OXFORD UNIVERSITY, "Heavy Motor Traffic in High Street," *University College Oxford Record*, pp. 3-5, 2 pl., 1932-1933.

A graph of traffic vibrations is shown as recorded by a seismograph in University College, Oxford. A record of a North sea earthquake on June 7, 1931, by a seismograph in Oxford University Observatory, compared with the traffic record, showed that the disturbance of the former was trifling as compared with the daily and nightly vibrations of commercial traffic in Oxford. E.M.K.

2212. OXFORD UNIVERSITY, "International Seismological Summary, Oct., Nov., Dec., 1929," pp. 421-518, Oxford, 1933.

— PROVIERO, A., AGAMENNONE, G., and ALESSANDRI, C., "Rassegna sismologica." See No. 2132 of this list.

— RAMSPECK, A. and GERECKE, Fr., "Boden- und Gebäudeschwingungen in Rastatt nach dem Erdbeben vom 8. Februar 1933." See No. 2164 of this list.

2213. REICH, H., "Bemerkungen zur angewandten Seismik," *Zeit. Geoph.*, Jahr 9, Heft 6-8, 350-353, 1 fig., Braunschweig, 1933.

The above paper is in the nature of a critical discussion of a paper by O. v. Schmidt (reported as No. 1092 of these lists) entitled: "Angewandte Seismik." A reply to the above paper is made by von Schmidt (*Ibid.*, pp. 354-355), under the title: "Zu vorstehender Arbeit von H. Reich, 'Bemerkungen zur angewandten Seismik'".

— RICHTER, C. F. and GUTENBERG, Beno, "On  $P'P'$  and Related Waves." See No. 2170 of this list.

— RICHTER, C. F. and GUTENBERG, Beno, "Contribution to the Study of Deep-focus Earthquakes." See No. 2171 of this list.

2214. ROBINSON, I. R. and BENJAMIN, H. L., "Effects of Earthquakes on Electrical Supply Systems." Paper read at the Annual Meeting of the New Zealand Society of Civil Engineers, 1933. Proceedings published by Ferguson and Osborne, Wellington, N.Z., 1933.

The paper deals with the effects on electrical equipment of the Hawke Bay earthquake of 1931, Feb. 3, and suggests a number of precautions desirable to ensure continuity of electrical services in the event of another similar disaster. The most novel among these suggestions would appear to be the idea of providing a floating powerhouse which could be moved to any large port as required. L.B.

2215. RODÉS, Luis, S. J., "The Influence of the Moon on the Frequency of Earthquakes," *Ger Bei.*, Bd. 41, Heft 2, 209-211, 4 fig., Leipzig, 1934.

2216. ROHLEDER, Herbert P. T., "Beiträge zur Kenntnis der Erdbebenkunde und seismischakustischen Phänomene Nord-Rhodesiens," *Zeit. Geoph.*, Jahr 9, Heft 6-8, 325-332, 2 fig., Braunschweig, 1933.

A publication appearing in 1927 and reported as No. 568 of the earlier series of this *Bibliography* published in the *Bul. S.S.A.*, dealt also with the elusive phenomenon of seismic sounds or "brontides," as noted in north Ireland. As remarked in that earlier reference, it is interesting in this connection to read pp. 62-65 of Davison's "Manual of Seismology" (*Bib. Seis. Old Ser. No. 218*).

2217. ROMAN, Irwin, "Analysis of Seismic Profiles," *A.I.M.M.E.*, Contrib. 64, 35 pp., New York, Nov., 1933.

The author's abstract is quoted on pp. 1013-1014 as item 1733 of *Geoph. Abs.* See No. 2191 of this list. It may be quoted, in part, as follows: "In this paper some general formulas for seismic prospecting have been developed and applied in the cases of horizontal layering, including rectangular intrusions, such as salt domes. The results may be extended to other structures, such as faults and tilted layers. The primary problem has been that of a prism of salt embedded in the lowest layer of a group of homogeneous horizontal beds. While the principal attempt has been to make the analysis of the various possible cases a few general conclusions may be drawn."

F.W.L.

2218. ROSAIRE, E. E. and ADLER, Joseph L., "Applications and Limitations of Dip Shooting," *Bul. Amer. Ass. Pet. Geol.*, Vol. 18, No. 1, 119-132, 5 fig., Tulsa, Jan., 1934.

— ROSSEN, M. and EVANS, L. T., "Earthquake Damage to Masonry Structures, and Their Repair." See No. 2161 of this list.

2219. ROWLAND, J. P., S.J., "The Wensleydale Earthquake of 1933, January 14," *Rep. Brit. Ass., Leicester Mtg.*, 1933, p. 461. E.T.

— RUDOLPH, E. and SZIRTES, S., "Erdkarte in mittabstandstreuer Azimutalprojektion," berechnet und entworfen von Prof. Dr. Emil Rudolph und Dr. Sigmund Szirtes, Maassstab: 1/38,000,000. Justus Perthes, Gotha, 1914. The map in this case is centred at Strasbourg. E.R.

See No. 2155 of this list.

2220. SCHAZMANN, P., "Le tremblement de terre de Cos (23 avril 1933)," *Mat. E. Cal.*, No. 30-31, 244-246, Geneva, 1933.

This is abridged from a report in the *Journal de Genève* of April 30, 1933.

2221. SCHMIDT-ZITTEL, H., "Vorläufige Mitteilungen über das Rastatter Erdbeben vom 8. Februar 1933," *Badische Geologische Abhandlungen*, Vol. 5, No. 2, 140-158, Karlsruhe, Feb., 1934.

The epicentre is found to lie close to Rastatt and the intensity on the Mercalli-Cancani-Sieberg scale is 7.5. W.H.

2222. SCHWINNER, Robert, "Mikroseimische Bodenunruhe und Gebirgsbau im westlichen Europa," *Zeit. Geoph.*, Jahr. 9, Heft 6-8, 332-335, 3 maps, Braunschweig, 1933.

2223. SCIENCE NEWS-LETTER. Short notes of interest to seismologists have appeared in recent issues of *Science News-Letter*, Vol. 25, as follows:

- (1) "Earthquake Problems Automatically Solved," No. 671, 102-103, 1 illus., Feb. 17, 1934, describing a stress recorder developed at the Mass. Inst. Tech. by A. C. Ruge. See also *Science*, No. 2046, Vol. 79, p. 9 (Supp.), New York, Mar. 16, 1934.
- (2) "Earthquake Centered under Northeastern China Sea," No. 672, p. 120, Feb. 24, 1934, indicating the epicentre of the earthquake of Feb. 13, 1934.
- (3) "Quake Shakes Sea Bottom among Japanese Islands," No. 673, p. 136, Mar. 3, 1934, indicating the epicentre of the earthquake of Feb. 24, 1934.
- (4) "Observing Ground Tilt May Aid Earthquake Prediction," No. 674, p. 150, Mar. 10, 1934, reporting an address by Capt. N. H. Heck before the Brooklyn Academy of Arts and Sciences.
- (5) "Earthquakes Shake San Salvador and Utah," No. 675, p. 169, Mar. 17, 1934, indicating the epicentres of the earthquakes of Mar. 7, and Mar. 12, 1934, respectively.
- (6) "Brine Fountains Spout after Utah Earthquake," No. 676, p. 184, Mar. 24, 1934, describing phenomena observed during the earthquake of Mar. 12, 1934.
- (7) "Desert Earthquake Opens Deep Crack in Ground," No. 677, p. 207, Mar. 31, 1934; and also cover illustration. Both refer to the earthquake of Mar. 12, 1934, in Utah.
- (8) "World-shaking Earthquake near Solomon Islands," No. 678, p. 212, Apr. 7, 1934.
- (9) "Engineers Test Structures Without Destroying Them," *Ibid.*, p. 220.

2224. SEVERIT, I. W., "Die Anthropogeographische Bedeutung der Erdbeben," *Mat. E. Cal.*, No. 30-31, 100-218, 1 map, num. tab., bib., Geneva, 1933.

The article, in German, is given on pages 101-206; page 100 being devoted to a table of contents and pages 207-218 to an extended *résumé* in French.

— SHIRAI, Toshiaki and NAGAOKA, Hantaro, "Continental Margins as Slip Lines: Formation of Japanese Arcs and Deep Seated Earthquakes." See No. 2206 of this list.

2225. SIEBERG, A., "Warum Erdbebenforschung in Deutschland?" *Mitt. Reichsan. Erd. Jena*, Heft 3, 11 pp., 1 map, Jena, 1933. A.S.

2226. SIEBERG, A., "Erdbeben," *Mitt. Reichsan. Erd. Jena*, Heft 4, being pp. 730-756 of the *Handwörterbuch der Naturwissenschaften*, published by Gustav Fischer, Jena, 1934. A.S.

The above publication, a chapter of the *Handwörterbuch*, contains 33 illustrations. For other contributions by the same author to the same book, see No. 1873 of these lists.

The publications of the *Reichsanstalt für Erdbebenforschung in Jena* are in two series: *Mitteilungen* and *Veröffentlichungen*. On the cover of the above issue of the former series is given a list of Hefte 1-15 of the latter. Hefte 16 and 16a are reported as Nos. 2187 (2) and 2187 (3) of this list. Heft 17 was reported as No. 1259 of these lists and Heft 19 as No. 1623. Hefte 18, 20, 21, and 22 are reported in this issue as Nos. 2187 (1), 2187 (4), 2227, and 2187 (5), respectively. Heft 22 is the latest to appear in this series.

Of the *Mitteilungen*, Heft 2 was reported as No. 81 of the earlier series of bibliographical items published in the *Bul. S.S.A.* Hefte 3, 4, and 5 are reported in



this issue as Nos. 2225, 2226, and 2200, respectively. At the moment the data for Heft 1 are lacking. This summary note will be supplemented later when further information has been obtained. E.A.H.

2227. SIEBERG, A., "Tätigkeitsbericht der Reichsanstalt für Erdbebenforschung für die Zeit vom 1. April 1932 bis zum 31. März 1933," *Veröff. Reichsan. Erd. Jena*, Heft 21, 16 pp., Leipzig, 1933. A.S.

— SIEBERG, A., "Morphologisch-seismische Weltkarte entworfen und gezeichnet von A. Sieberg." Beilage zu: Sieberg, "Der Erdball" (For Strasbourg). E.R.

See No. 2155 of this list.

2228. SPEIGHT, R., "The Arthur's Pass Earthquake of 9th March, 1925," *N.Z. J. Sc. Tech.*, Vol. 15, No. 3, 173-182, Wellington, 1933.

The paper is technical and deals with the geological aspects of the above earthquake. L.B.

2229. SUZUKI, Takeo,

(1) "A Study on the Initial Motion of Earthquakes," *Bul. Eq. Res. Inst.*, Vol. 12, Part 1, 15-18, 9 fig., Tokyo, Mar., 1934.

(2) "Report of the Strong Noto Earthquake of Sept. 21, 1933," *Ibid.*, 44-51, 14 fig.

The former of the above papers is in English with a short *résumé* in Japanese; the latter is in Japanese with a short *résumé* in English.

2230. TAMS, E., "Einige Korrelationen zwischen seismischer Bodenunruhe in Hamburg und der Brandung in West- und Nordeuropa, II," *Zeit. Geoph.*, Jahr. 9, Heft 6-8, 295-300, Braunschweig, 1933. E. TAMS

The initial paper was reported as No. 1880 of these lists. The following is an English translation of the author's German abstract: "A linear single correlation gives the correlation factor between the daily data of the microseisms in Hamburg and those of the surf on the Norwegian coast, for the period Jan. 20 to Feb. 10, 1932, as 0.88, if the direction of the wind be taken into consideration. The re-calculation on the basis of a linear four-fold correlation shows that the effect of the surf is less for the nearer-lying points on the Norwegian coast than for those more distant. Even from the correlations of single observations, for the times approximately 7 h. and 18 h., G.M.T., about 70 per cent of the mean square variability of the microseisms may be shown to be linearly dependent on the surf conditions."

— TAMS, E., "Weltkarte, Linien gleicher Entfernungen und Azimute für Hamburg," *Die seismischen Registrierungen in Hamburg vom 1. Januar 1910 bis zum 31. Dezember 1911*, Hamburg, 1912.

Cette carte est en projection de Mercator, au 1/80,000,000: Tams en a également tracé une pour les faibles distances dans le système de projection de Lambert, dit "projections azimutales à aires conservées". Uebersichtskarte von Europa, Linien gleicher Entfernungen und Azimute für Hamburg, mit Benutzung einer Karte von Europa in Lamberts flächentreuer Azimutalprojektion (Maassstab: 1/15,000,000)  
 . . . entworfen von Dr. E. Tams. E.R.

See No. 2155 of this list.

2231. TAYAMA, Risaburo, "Surface and Subsurface Deformation of Ground in Sendai and Its Vicinity," *Bul. Eq. Res. Inst.*, Vol. 12, Part 1, 77-95, 16 fig., Tokyo, Mar., 1934.

The paper is in Japanese with a long *résumé* in English by H. Yabe.

2232. TILLOTSON, E., "High Focus Earthquakes in the International Seismological Summary," *Rep. Brit. Ass. Leicester Mtg.*, 1933, p. 460. E.T.

2233. TIMOSHENKO, S., "Structural Analysis by Elastic Theory," McGraw-Hill Book Co., (an Engineering Societies' Monograph), 416 pp. Price \$5. New York, 1934.

A short review appears on page 419 of the *Eng. N.-R.*, Vol. 112, No. 13, New York, Mar. 29, 1934.

- TOWNLEY, S. D., "Destructive and Near-destructive Earthquakes in California and Western Nevada, 1769-1933." See No. 2172 of this list.

- TSUJIMURA, T., KUSAMITSU, S., and FUJIWHARA, S., "On the Earth-vortex, etc." See No. 2162 of this list.

2234. ULLER, Karl, "Die Entwicklung des Wellen-Begriffes, VII," *Ger. Bei.*, Bd. 41, Heft 2, 225-249, bib., Leipzig, 1934.

Nos. 2, 3, 4, 5, and 6 of this series were reported respectively as Nos. 591, 678, 989, 1094, and 1192 of these lists. No. 1 of the series was published in *Ger. Bei.*, Bd. 18, 398-414, Leipzig, 1927.

2235. VAN DIJK, G.,

- (1) "Seismische Registrierungen in De Bilt," *Pub. K. Neder. Met. Inst.*, No. 108, 52 pp., De Bilt, 1933.

The publication is No. 19 of the series and covers the year 1931. G.v.D.

- (2) "Seismische Registreringen te Heerlen, 1 Mai 1932—30 April 1933," *Jaar. Geol. Bur. Heerlen, 1932*, 16-19, 1 pl., Heerlen, 1933. G.v.D.

- VON SCHMIDT, O., "Zu vorstehender Arbeit von H. Reich, 'Bemerkungen zur angewandte Seismik.'" See No. 2213 of this list.

2236. WAILES, C. D., Jr., "Reconstruction in Long Beach Following the Earthquake," *Eng. N.-R.*, Vol. 112, No. 8, 263-267, 6 fig., New York, Feb. 22, 1934.

2237. WANNER, E., "Jahresbericht 1932 des Schweizerischen Erdbebendienstes," *Ann. Schweiz. Met. Zent.*, Jahr. 69, 23 pp., 1 pl., Zürich, 1933.

The table of contents is as follows:

1. Allgemeines und statistische Bemerkungen.
2. Tabellarische Zusammenstellung der in der Schweiz im Jahre 1932 verspürten und an den Erdbebenwarten Zürich, Chur, und Neuchâtel registrierten Erdbeben.
3. Erdbebenkatalog der Schweiz für die Jahre 1855-1879.
4. Schütterkarte der Schweiz.

2238. WANNER, E., "Die Lage der zerstörenden Alpinen Erdbebenherde," *Verhand. Schweiz. Natur. Ges.*, 114 Jahresversammlung vom 1. bis 3. Sept., 1933, 346-347, Aarau, Switzerland, 1933.

See also No. 1994 of these lists.

R.Z.

- WATERS, Aaron C. and BRADFORD, Donald C., "The Tolt River Earthquake and its Bearing on the Structure of the Cascade Range." See No. 2144 of this list.
2239. WEATHERBY, B. B., "Symposium on Geophysics—Foreword," *Bul. Amer. Ass. Pet. Geol.*, Vol. 18, No. 1, 1-2, Tulsa, Jan., 1934.
- The author states that, "At the present time there are more than fifty reflection seismograph parties operating throughout the United States. The vast majority of this work lies in Oklahoma and Texas."
2240. WEATHERBY, B. B., BORN, W. T., and HARDING, R. L., "Granite and Limestone Velocity Determinations in Arbuckle Mountains, Oklahoma," *Bul. Amer. Ass. Pet. Geol.*, Vol. 18, No. 1, 106-118, 5 fig., Tulsa, Jan., 1934.
2241. WEAVER, Paul, "Relations of Geophysics to Geology," *Bul. Amer. Ass. Pet. Geol.*, Vol. 18, No. 1, 3-12, Tulsa, Jan., 1934.
- WOOD, H. O., "Destructive and Near-destructive Earthquakes in California and Western Nevada, 1769-1933." See No. 2172 of this list.
2242. WROCKLAGE, H. G., "Installation of McComb-Romberg Tilt-compensation Horizontal-component Seismometers at the International Latitude Observatory, Ukiah, California," *Bul. S.S.A.*, Vol. 24, No. 1, 69-71, Stanford, Jan., 1934.
- YABE, H., "Surface and Subsurface Deformation of Ground in Sendai and Its Vicinity." See No. 2230 of this list.
2243. ZANON, P.F.S., "Il reparto sismico dell'Osservatorio Geofisico del Seminario Patriarcale di Venezia, ed il suo microsismografo Vicentini," Libreria Emiliana Editrice, 18 pp., 7 illus., Venice, 1933.
- ZEISSIG, C., "Koordinaten-Tafeln für die seismische Station Darmstadt-Jugenheim, nebst Karte. Notizblatt des Vereins für Erdkunde. Darmstadt, 1909; et du même auteur: "Zwei graphische Methoden der Herdbestimmung von Erdbeben," *Ger. Bei.*, Bd. 11, 1911, p. 520, Leipzig, 1911. E.R.
- See No. 2155 of this list.
2244. ZERVOS, Skévos, "L'arc sismique du Dodécanèse," *Mat. E. Cal.*, No. 30-31, 247-250, Geneva, 1933.
- This is abridged from a report in the *Journal de Genève*, June-July, 1933.

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