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HON. THOMAS G. MURPHY, *Minister*

R. A. GIBSON, *Assistant Deputy Minister*

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BY

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January, February, March, 1934

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, containing items 1-2000 and beginning with the issue for the first quarter of 1929, closes with the issue for the last quarter of 1933 and Volume XII begins with this, the issue for the first quarter of 1934. Preceding the bibliography of Vol 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 history of the development of the *Bibliography of Seismology* is given in detail in an article entitled, "An Engineer's Library of Seismology" (*Bul. S.S.A.*, Vol. 21, No. 1, 51-52, 1931). The present editor is responsible for the entire compilation, old series 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 field which is ever widening. Publications of interest to seismologists, when reported to the Director of the Dominion Observatory, Ottawa, 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 to anyone interested, on application to the Director, Dominion Observatory. The use of the form reduces the work of a collaborator to a minimum and insures the complete listing of the publication details.

Beginning with the present issue names of publication media will be abbreviated. A list of typical abbreviations follows:

ABRIDGED LIST OF ABBREVIATIONS

- | | |
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| Académie des Sciences de l'Union des Républiques Soviétiques Socialistes; Leningrad
..... Acad. Sc. URSS. | Annals of the Smithsonian Institution; Washington... Ann. Smith. Inst. |
| American Geophysical Union; Washington... A.G.U. | Annotated Bibliography of Economic Geology; Washington... Ann. Bib. Econ. Geol. |
| American Institute of Mining and Metallurgical Engineers, Technical Publication; New York
..... A.I.M.M.E., Tech. Pub. | Annual Report of the Smithsonian Institution; Washington... Ann. Rep. Smith. Inst. |
| American Journal of Science; New Haven
..... Amer. J. Sc. | Asociación Española para el Progreso de las Ciencias; Madrid... Assoc. Esp. Prog. Cien. |
| Annalen der Physik; Leipzig... Ann. Phys. | Associated Factory Mutual Fire Insurance Companies; Boston... A.F.M.F.I.C. |
| Annalen der Schweizerischen Meteorologischen Zentralanstalt; Zürich... Ann. Schweiz. Met. Zent. | Astronomische Nachrichten; Hamburg... Ast. Nach. |
| Annales de l'Institut de Physique du Globe de l'Université de Paris et du Bureau Central de Magnétisme Terrestre; Paris... Ann. Inst. Phys. Gl., Univ. Paris | Beiträge zur Angewandten Geophysik; Leipzig
..... Bei. Angew. Geoph. |
| Annals of the Association of American Geographers... Ann. Ass. Amer. Geog. | Beiträge zur Physikalischen Erforschung der Erdrinde; Berlin... Bei. Phys. Erfor. Erdrinde |
| Annals of the Crimean Scientific Research Institute; Simpheropol... Ann. Crimean Sc. Res. Inst. | Bergens Museums Årbok, Naturvidenskapelig rekke... Bergens Mus. Årbok, Natur. |
| | Bericht der Erdbebenwarte des Geophysikalischen Instituts der Universität Leipzig; Leipzig... Ber. Erd. Geoph. Inst., Univ. Leipzig |

ABRIDGED LIST OF ABBREVIATIONS—*Continued*

- Berichte der Mathematisch-physikalischen Klasse der Sächsischen Akademie der Wissenschaften zu Leipzig; Leipzig. Ber. M-p. Kl. Säch. Akad. Wiss. Leipzig
- Boletín del Servicio Sismológico de la Universidad de Chile; Santiago. Bol. Sis. Univ. Chile
- Bollettino del Comitato Nazionale Italiano per la Geodesia e la Geofisica; Rome. Bol. Com. Nas. Ital. Geod. Geof.
- Bollettino della Società Sismologica Italiana; Rome. Bol. Soc. Sis. Ital.
- British Association for the Advancement of Science. Brit. Ass.
- Bulletin de la Société des Naturalistes de Moscou; Moscow. Bul. Soc. Nat. Moscou
- Bulletin de la Société Neuchateloise des Sciences Naturelles; Neuchatel. Bul. Soc. Neuch. Sc. Nat.
- Bulletin of Saint Louis University; Saint Louis. Bul. Saint Louis Univ.
- Bulletin of the American Association of Jesuit Scientists, Eastern Section; Baltimore. Bul. Amer. Ass. Jesuit Sc., E.S.
- Bulletin of the American Association of Petroleum Geologists; Tulsa. Bul. Amer. Ass. Pet. Geol.
- Bulletin of the Earthquake Research Institute, Tokyo Imperial University; Tokyo. Bul. Eq. Res. Inst.
- Bulletin of the Geological and Prospecting Service of the USSR.; Moscow-Leningrad. Bul. Geol. Pros. Ser. USSR.
- Bulletin of the Geological Society of America; Washington. Bul. Geol. Soc. Amer.
- Bulletin of the Imperial Earthquake Investigation Committee; Tokyo. Bul. Imp. Eq. Inves. Com.
- Bulletin of the Seismological Society of America; Stanford. Bul. S.S.A.
- Bureau of Standards, Journal of Research; Washington. Bur. Stand. Jour. Res.
- Bureau of Standards Miscellaneous Publications; Washington. Bur. Stand. Misc. Pub.
- Canadian Mining and Metallurgy Bulletin; Montreal. Can. Min. Metal. Bul.
- Carnegie Institution of Washington, Year Book; Washington. Car. Inst. Wash., Year Book
- Comité National du Royaume des Serbes, Croates, et Slovènes (Union Géodésique et Géophysique Internationale), Section de Sismologie; Belgrade. Com. Nat. R. Serbes, Croates, et Slovènes, U.G.G.I., Sec. Séis.
- Comptes Rendus, Comité National Français de Géodésie et Géophysique; Paris. C.R. Com. Nat. Fran. Géod. Géoph.
- Comptes Rendus des Congrès de l'Association Française pour l'Avancement des Sciences. C.R. Cong. Ass. Fran. Adv. Sc.
- Comptes Rendus du Congrès des Sociétés Savantes. C.R. Cong. Soc. Sav.
- Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences; Paris. C.R.
- Contributions from the Department of Geology and Mineralogy, University of Manitoba; Winnipeg. Cont. Dept. Geol. Min., Univ. Man.
- Deutsche Rundschau; Berlin. Deut. Rund.
- Dirección General del Instituto Geográfico, Cadas-tral y de Estadística; Madrid. Dir. Gen. Inst. Geog. Cad. Estad.
- Dominion Observatory (New Zealand) Bulletins; Wellington. Dom. Obs. (N.Z.) Bul.
- Earthquake Notes, Publication of the Eastern Section of the Seismological Society of America; Washington. Eq. Notes
- Eastern Section of the Seismological Society of America; Washington. E.S., S.S.A.
- Economic Geology; Tulsa. Econ. Geol.
- Engineering and Mining Journal; New York. Eng. Min. Jour.
- Engineering News-Record; New York. Eng. N.-R.
- English Mechanics; London. Eng. Mech.
- Feinmechanik und Präzision. Feinmech.
- Geofysiske Publikasjoner, utgitt av det Norske Videnskaps-Akademi i Oslo; Oslo. Geof. Pub. Akad. Oslo
- (The) Geographical Journal; London. Geog. Jour.
- (The) Geological Magazine; London. Geol. Mag.
- Geographical Review; New York. Geog. Rev.
- Geologische Rundschau; Berlin. Geol. Rund.
- Geologisches Zentralblatt; Berlin. Geol. Zent.
- Geophysical Abstracts, United States Bureau of Mines; Washington. Geoph. Abs.
- Geophysical Laboratory, Saint Louis University; Saint Louis. Geoph. Lab., Saint Louis Univ.
- Geophysical Magazine, Central Meteorological Observatory; Tokyo. Geoph. Mag.
- Geophysical News and Review of Geophysical Literature, Colorado School of Mines Publication; Golden. Geoph. News and Rev. Geoph. Lit.
- Gerlands Beiträge zur Geophysik; Leipzig. Ger. Bei.
- Gerlands Beiträge zur Geophysik, Ergänzungshefte für Angewandte Geophysik; Leipzig. Ger. Bei., Ergänz.
- Handelingen van het negende Nederlandsch Natuur- en Geneeskundig Congres. Hand. Neder. Nat.-Genee. Cong.
- Information Bulletin, Académie des Sciences, URSS; Leningrad. Inf. Bul., Acad. Sc. URSS.
- Instituto Geológico de Mexico; Mexico. Inst. Geol. Mexico
- International Seismological Summary; Oxford. Int. Seis. Sum.
- International Union of Geodesy and Geophysics. I.U.G.G.
- Jaarboek van het Mijnewezen in Nederlandsch Oost-Indië; Batavia. Jaar. Mij. O-Ind.
- Jaarverslag van het Geologisch Bureau voor het Nederlandsche Mijngedied; Heerlen. Jaar. Geol. Bur. Neder. Mij.
- Jahrbuch der Preussischen Geologischen Landesanstalt; Berlin. Jahr. Preus. Geol. Land.
- Jahresbericht der Physikalischen Vereins zu Frankfurt am Main; Frankfurt a.M. Jahr. Phys. Ver., Frankfurt a.M.

ABRIDGED LIST OF ABBREVIATIONS—*Continued*

- Jahresbericht des Schweizerischen Erdbebendienstes; Zürich.Jahr. Schweiz. Erd.
- Japanese Journal of Astronomy and Geophysics; Tokyo.Jap. Jour. Ast. Geoph.
- Japanese Journal of Geology and Geography; Tokyo.Jap. Jour. Geol. Geog.
- Journal de Physique et le Radium; Paris.Jour. Phys. Rad.
- Journal of Applied Physics.Jour. App. Phys.
- Journal of Geology; Chicago.Jour. Geol.
- Journal of Geophysics and Meteorology; Leningrad.Jour. Geoph. Met.
- Journal of Scientific Instruments; London.J.S.I.
- Journal of the British Astronomical Association; London.Jour. Brit. Ast. Ass.
- Journal of the Faculty of Science, Tokyo Imperial University; Tokyo.Jour. Fac. Sc., Tokyo Imp. Univ.
- Journal of the Franklin Institute; Philadelphia.Jour. Frank. Inst.
- Journal of the Institute of Electrical Engineers; London.Jour. Inst. Elec. Eng.
- Journal of the Institution of Petroleum Technologists; London.Jour. Inst. Pet. Tech.
- Journal of the Royal Astronomical Society of Canada; Toronto.J.R.A.S.C.
- Journal of the Washington Academy of Science; Washington.Jour. Wash. Acad. Sc.
- Koninklijke Akademie van Wetenschappen te Amsterdam; Amsterdam.K. Akad. Weten. Amsterdam
- Koninklijk Magnetisch en Meteorologisch Observatorium te Batavia; Batavia.K. Mag. Met. Obs. Batavia
- Koninklijk Nederlandsch Meteorologisch Instituut, Publications; De Bilt.K. Neder. Met. Inst. Pub.
- Lehigh University Publications, Institute of Research Circular; Bethlehem, Pa.Lehigh Univ. Pub., Inst. Res. Cir.
- Manila Central Observatory, Seismological Bulletin; Manila.Manila Cent. Obs. Seis. Bul.
- Matériaux pour l'Étude des Calamités; Geneva.Mat. E. Cal.
- Memoirs of the College of Science and Engineering, Kyoto Imperial University; Kyoto.Mem. Col. Sc. Eng., Kyoto Imp. Univ.
- Memoirs of the Imperial Marine Observatory; Kobe.Mem. Imp. Mar. Obs.
- Memorias de la Real Sociedad Española de Historia Natural; Madrid.Mem. R. Soc. Esp. Hist. Nat.
- Memorie del Reale Ufficio Centrale di Meteorologia e Geofisica; Rome.Mem. R. Uff. Cent. Met. Geof.
- Meteorolog-geophysikalische Abteilung des Württembergischen Statistischen Landesamts; Stuttgart.M-g. Ab. Württ. Stat. Land.
- Mines Magazine, Colorado School of Mines; Golden.Mines Mag.
- Mitteilungen aus dem Laboratorium für Technische Physik, der Technischen Hochschule, München; München.Mitt. Lab. Tech. Physik., München
- Mitteilungen der Geophysikalischen Warte Gr. Raum der Albertus-Universität, Königsberg i. Pr.; Königsberg.Mitt. Geoph. Warte Gr. Raum, Univ. Königsberg
- Monthly Notices of the Royal Astronomical Society, Geophysical Supplement; London.M. N., Geoph. Sup.
- Nachrichten der Gesellschaft der Wissenschaften zu Göttingen, Mathematisch-physikalische Klasse; Göttingen.Nach. Ges. Wiss. Gött., M-p. Kl.
- National Research Council (United States); Washington.N.R.C. (U.S.)
- Natuurkundige Voordrachten gehouden in de Maatschappij Diligentia; The Hague.Natuur. Voor. Maat. Dil.
- Natuurkundig Tijdschrift voor Nederlandsch-Indië; Weltevreden (Isle of Java).Natuur. Tijd.
- New Zealand Journal of Science and Technology; Wellington.N.Z. J. Sc. Tech.
- New Zealand National Review.N.Z. Nat. Rev.
- (The) New Zealand Official Year Book; Wellington.N.Z. Year Book
- Notes de Séismologie, Observatoire de Zi-Ka-Wei.Notes Séis., Zi-Ka-Wei
- Observatorio Astronómico de la Universidad Nacional de La Plata; Contribuciones Geofísicas; La Plata.Obs. Ast. Univ. Nac. La Plata, Cont. Geof.
- Pan-American Geologist; Des Moines.Pan-Amer. Geol.
- Papers from the Geophysical Laboratory, Carnegie Institution of Washington; Washington.Papers Geoph. Lab., Car. Inst. Wash.
- Petermanns Mitteilungen; Gotha.Peter. Mitt.
- (The) Petroleum Times; London.Pet. Times
- (The London, Edinburgh and Dublin) Philosophical Magazine and Journal of Science; London.Phil. Mag.
- Philosophical Transactions of the Royal Society of London; London.Phil. Trans. R. Soc.
- Physical Review; New York.Phys. Rev.
- Physikalische Berichte; Braunschweig.Phys. Ber.
- Physikalische Zeitschrift; Leipzig.Phys. Zeit.
- Pontificia Accademia delle Scienze Nuovi Lincei; Rome.Pont. Accad. Sc. Lincei
- Proceedings of the American Society of Civil Engineers; New York.Proc. Amer. Soc. C.E.
- Proceedings of the London Mathematical Society; London.Proc. London Math. Soc.
- Proceedings of the National Academy of Sciences; Washington.Proc. Nat. Acad. Sc.
- Proceedings of the Pan Pacific Science Congress;Proc. Pan Pac. Sc. Cong.
- Proceedings of the Physical Society; London.Proc. Phys. Soc.
- Proceedings of the Physico-Mathematical Society of Japan; Tokyo.Proc. P-M. Soc. Jap.

ABRIDGED LIST OF ABBREVIATIONS—*Continued*

- Proceedings of the Royal Society; London... .. Proc. R.S.
 Proceedings of the Section of Seismology of the International Union of Geodesy and Geophysics... .. Proc. Sec. Seis., I.U.G.G.
 Publications de l'Institut Séismologique, Académie des Sciences de l'Union des Républiques Soviétiques Socialistes; Leningrad... .. Pub. Inst. Séis., Acad. Sc. URSS.
 Publication Series of the Department of Geophysics of the Colorado School of Mines; Golden... .. Pub. Col. Sch. Mines
 Publications of the Dominion Observatory; Ottawa... .. Pub. Dom. Obs.
 Pubblicazione dell'Osservatorio di Pompei; Pompei... .. Pub. Oss. Pompei
 Quarterly Journal of the Royal Meteorological Society; London... .. Quar. J. R. Met. Soc.
 Quarterly of the Colorado School of Mines; Golden... .. Quar. Col. Sch. Mines
 Records of the Geological Survey of India... .. Rec. Geol. Sur. India
 Relazione alla Società Geografica Italiana; Rome... .. Rel. Soc. Geog. Ital.
 Rendiconti della Reale Accademia Nazionale dei Lincei, Classe di Scienze fisiche, matematiche e naturali; Rome... .. Rend. R. Accad. Naz. Lincei, Cl. Sc.
 Report of the Committee on Seismology, British Association for the Advancement of Science... .. Rep. Com. Seis., Brit. Ass.
 Review of Scientific Instruments; Lancaster... .. R.S.I.
 Revista de la Real Academia de Ciencias Exactas, Físicas y Naturales de Madrid; Madrid... .. Rev. R. Acad. Cien. Madrid
 (La) Ricerca Scientifica, nel Bollettino di Geodesia e Geofisica; Rome... .. Ric. Sc., Bol. Geod. Geof.
 Royal Society of Edinburgh; Edinburgh... .. R. Soc. Edin.
 Sächsischen Akademie der Wissenschaften zu Leipzig, Mathematisch-physikalische Klasse; Leipzig... .. Säch. Akad. Wiss. Leipzig, M-p. Kl.
 Schriften der Physikalisch-ökonomischen Gesellschaft zu Königsberg i. Pr.; Königsberg... .. Sch. Phys.-ökon. Ges. Königsberg
 Science Abstracts, Section A, Physics; London... .. Sc. Abst. A.
 Science News-Letter; Washington... .. Sc. N.-L.
 Science Reports, Tohoku Imperial University; Sendai... .. Sc. Rep., Tohoku Imp. Univ.
 Science Service; Washington... .. Sc. Ser.
 Seismische Berichte der Württembergischen Erdbenenwarten; Stuttgart... .. Seis. Ber. Württ. Erd.
 Seismische Berichte des Taunus-Observatoriums; Frankfurt a.M... .. Seis. Ber. Taunus
 Seismische Untersuchungen des Geophysikalischen Instituts in Göttingen; Braunschweig... .. Seis. Unter. Geoph. Inst. Gött.
 Seismological Society of America... .. S.S.A.
 Senckenbergische Naturforschende Gesellschaft; Frankfurt a.M... .. Sencken. Natur. Ges.
 Sitzungsberichte der Naturforscher-Gesellschaft; Dorpat... .. Sitz. Natur. Ges.
 Société Française de Physique, Section de Strasbourg; Strasbourg... .. Soc. Fran. Phys. Sec. Strasbourg
 Sveriges Geologiska Undersökning, Årsbok; Stockholm... .. Sver. Geol. Under, Årsbok
 Technological Reports, Tohoku University; Sendai... .. Tech. Rep., Tohoku Univ.
 (The) Technology Review; Cambridge, Mass... .. Tech. Rev.
 Terrestrial Magnetism and Atmospheric Electricity; Baltimore... .. Ter. Mag. At. Elec.
 Tijdschrift van het Koninklijk Nederlandsch Aardrijkskundig Genootschap; Leiden... .. Tijd. K. Neder. Aard. Genoot.
 Tijdschrift voor het Onderwijs in de Aardrijkskunde; Amsterdam... .. Tijd. Onder. Aard.
 Transactions of the American Geophysical Union, Annual Meeting; Washington... .. Trans. A.G.U., Ann. Mtg.
 Transactions of the American Institute of Mining and Metallurgical Engineers; New York... .. Trans. Amer. Inst. Min. Met. Eng.
 Transactions of the Royal Society of Canada; Ottawa... .. Trans. R.S.C.
 Transactions of the United Geological and Prospecting Service of the USSR; Leningrad... .. Trans. Geol. Pros. Ser. USSR.
 Tycos: Publication of the Taylor Instrument Company; Rochester... .. Tycos
 Union Géodésique et Géophysique Internationale... .. U.G.G.I.
 United States Bureau of Mines; Washington... .. U.S. Bur. Mines
 United States Coast and Geodetic Survey; Washington... .. U.S.C.G.S.
 United States Department of Commerce; Washington... .. U.S. Dept. Com.
 United States Patent Office; Washington... .. U.S. Pat. Off.
 University of California, Publications in Geography; Berkeley... .. Univ. Cal. Pub. Geog.
 University of Texas, Contributions to Geology; Austin... .. Univ. Texas, Cont. Geol.
 Verhandelingen Tweede Nederlandsch-Indisch Natuurwetenschappelijk Congres... .. Verhand. Tweede Neder. Natuur. Cong.
 Verhandelingen van den Koninklijke Akademie van Wetenschappen; Amsterdam... .. Verhand. K. Akad. Weten.
 Verhandlungen der Deutschen Physikalischen Gesellschaft; Braunschweig... .. Verhand. Deut. Phys. Ges.
 Verhandlungen des Naturwissenschaften Vereins zu Hamburg; Hamburg... .. Verhand. Natur. Ver. Hamburg
 Veröffentlichungen der Reichsanstalt für Erdbenenforschung in Jena; Leipzig... .. Veröff. Jena
 Veröffentlichungen des Preussischen Geodatischen Instituts; Potsdam... .. Veröff. Pr. Geod. Inst.

ABRIDGED LIST OF ABBREVIATIONS—*Concluded*

Vierteljahrsschrift der Naturforschenden Gesellschaft in Zürich; Zürich.	Zeitschrift für den Physikalischen und Chemischen Unterricht; Berlin.
. Viertel. Natur. Ges. Zürich Zeit. Phys. Chem. Unter.
(The) Volcano Letter; Honolulu.	Zeitschrift für Geophysik; Braunschweig.
. Vol. Let. Zeit. Geoph.
Vulkanologische en Seismologische Mededeelingen van den Dienst van den Mijnbouw in Nederlandsch-Indië; Weltevreden (Isle of Java)	Zeitschrift für Instrumentenkunde; Berlin.
. Vul. Seis. Med. Neder-Ind. Zeit. Inst.
Zeitschrift der Deutschen Geologischen Gesellschaft; Berlin.	Zeitschrift für Praktische Geologie; Halle.
. Zeit. Deut. Geol. Ges. Zeit. Prak. Geol.
Zeitschrift für Angewandte Mathematik und Mechanik; Berlin.	Zeitschrift für Technische Physik; Leipzig.
. Zeit. Angew. Math. Mech. Zeit. Tech. Phys.
	Zeitschrift für Vulkanologie; Berlin.
 Zeit. Vulkan.

2001. ACKERL, F., "Die Ergebnisse der Entwicklung des Schwerkraftfeldes der Erde nach Kugelfunktionen bis zur 16. Ordnung," *Zeit. Geoph.*, Jahr, 9, 263-275, 3 tables, Braunschweig, 1933.

2002. ADAMS, C. E., "Report of the Dominion Astronomer and Seismologist for the year ended 31st December, 1930," and a report of similar nature for the year ended 31st December, 1931. These are extracts of, respectively, 7 and 8 pages from the corresponding annual reports of the Department of Scientific and Industrial Research, New Zealand. Both were distributed in 1933. Information of considerable interest and value with regard to seismic conditions in New Zealand is included in each.

2003. ADAMS, C. E. *et al.*,

(1) "Seismology in New Zealand," *Dom. Obs. (N.Z.) Bul.*, No. 84, 8 pp., 1 map, Wellington, 1933. Issued with the collaboration of Dr. J. Henderson of the Geological Survey. (Extract from *N.Z. Year Book 1933*.)

(2) "Seismology in New Zealand," *Ibid.*, No. 90, 4 pp., Wellington, 1933. (Extract from *N.Z. Year Book 1934*.)

(3) "Seismological Report of the Hawke's Bay Earthquake of 3rd February, 1931," *Ibid.*, No. 85, 16 pp., 7 fig., Wellington, 1933. (With the collaboration of M. A. F. Barnett and R. C. Hayes.)

2004. AGAMENNONE, G., "Elenco dei soci e costituzione del Direttore Provvisorio della Società Sismologica Italiana," *Bol. Soc. Sis. Ital.*, Vol. 31, Fasc. 1-2, 12 pp. in reprint, Rome, 1933. G.A.

2005. AMBRONN, Richard, "A new Shock Measurer for Seismic Acceleration Curves," *Pet. Times*, No. 758, Vol. 30, 132, London, 1933.

The abstract only is given in the above publication. It reads as follows: "It is first shown why seismographs, which record the acceleration of the ground, are particularly suited to prospecting work. Instruments which utilize the piezo-electric properties of certain crystals prove specially useful for exactly recording the acceleration curves, on account of the suppression of the natural vibrations and damping arrangements. Several types of a seismograph constructed on this principle are described and explained by illustration." F.W.L.

— ANDERSON, J. A., "Principle of the Seismograph." Chapter 15, pp. 137-153 of the *Bulletin on Seismology* issued by the National Research Council, U.S.A., and reported as No. 2076 of this list.

2006. ANDRÉE, K., "Die Geophysikalische Warte der Albertus-Universität, ihre Aufgaben and ihre bisherigen Arbeiten," *Ostdeutschen Naturwart*, Bd. 4, Heft 5, 6 pp. in reprint, Liegnitz, Sept., 1933.
2007. ANGENHEISTER, G., "Seismische Methoden zur Erforschung des Aufbaues der Grossformen der Erde," *Jahr. Phys. Ver., Frankfurt a.M. (1932-1933)*, 30-33, Frankfurt a.M., 1933. R.Z.
2008. ARAKAWA, H., "Generalized Green's Law on Wave Motion in a Canal of Variable Section," *Geoph. Mag.*, Vol. 7, No. 3-4, 319-325, 7 fig., Tokyo, Nov., 1933.
2009. ASSOCIATED FACTORY MUTUAL FIRE INSURANCE COMPANIES, "Construction." Booklet of 53 pages, 35 figures, dealing with building construction to resist fire and also (pp. 49-53) wind and earthquakes. Price 20 cents. May be obtained through the Arkwright Office, Factory Mutual Insurance, 185 Franklin St., Boston, Mass., U.S.A. C.G.R.
- BARNETT, M. A. F., "Seismological Report of the Hawke's Bay Earthquake of 3rd February, 1931." See No. 2003 (3) of this list.
2010. BASCHIN Otto, "Bekämpfung von Erdbeben: Lehren einer grossen Natur-Katastrophe," *Deut. Rund.*, Bd. 60, 47-51, Berlin, Oct., 1933. H.T.G.
The article is a general discussion of the nature and effects of earthquakes, their causes and their habit of recurrence. The illustrations are mostly taken in the case of earthquakes in Japan though there is some reference to earthquake epicentres in California.
2011. BASTINGS, L., "Some Seismological Aspects of the Buller Earthquake, 1929, June 16-17," *N.Z.J. Sc. Tech.*, Vol. 15, No. 2, 128 *et seq.*, Wellington, Sept., 1933.
Records from stations in the nearer hemisphere indicate that the earthquake had a triple focus, with shocks in dynamical connection. The energy of the third and main disturbance is estimated at about 10^{24} ergs. Travel times for *P* and *S* agree reasonably well with Jeffrey's recent tables, but are distinctly longer in the neighbourhood of 20° .
A paper by the same author and with the same title appears as *Bulletin No. 86* of the publications of the Dominion Observatory, Wellington, New Zealand. The paper appears as a separate of 15 pp., 3 fig., 3 tables. The place and date of publication are, respectively, Wellington, 1933. L.B.
2012. BEARDSLEY, R., "Le tremblement de terre de California du 10 mars 1933," *Astronomie*, T. 47, No. 10, 474, Paris, Oct., 1933.
An account by a resident of Los Angeles who experienced the earthquake. Three photographs of damaged structures. J.C.
2013. BEBB, A. H., "On the Suppression of Harmonics of the Einthoven String Galvanometer," *J. S. I.*, Vol. 10, No. 11, 362-364, 4 fig., London, Nov., 1933.
2014. BENNDORF, Hans, "Über die Art der Fortpflanzung der Erdbebenwellen im Erdinnern," *Mitt. Erd.-Komm. K. Akad. Wiss. Wien*, N. F., No. 29, Wien, 1905 and No. 30, Wien, 1906.

The first communication occupies 24 pages in the reprint, having 3 figures and numerous tables. The second communication occupies 42 pages in the reprint, having 9 figures and 5 tables. The above is the classic contribution of Benndorf to the problem of the propagation of earthquake waves in the earth.

2015. BERGER, R. and JUNG, K., "Seismometrische Beobachtungen in Potsdam in der Zeit vom 1. Januar 1929 bis 31. Dezember 1932," *Veröff. Pr. Geod. Inst.*, 1-61, Potsdam, 1933.
2016. BILLINGS, Marland, "Thrusting Younger Rocks over Older," *Amer. J. Sc.*, Fifth Ser., No. 146, Vol. 35, 140-165, 13 fig., bib., New Haven, 1933.
2017. BODLE, Ralph R. *et al.*, "Earthquake Notes." Pub. E. S., S. S. A., Vol. 5, No. 3, 8 pp., Washington, Dec., 1933.

The issue contains many items of interest to seismologists and two short papers by James B. Macelwane, S.J., entitled: "The Lisbon Meeting," and "Grover, Missouri, Earthquake of November 16, 1933."

The publication is edited by Ralph R. Bodle U.S. Coast and Geodetic Survey, Washington, D.C., U.S.A. Items of interest to members of the Eastern Section should be forwarded to him at that address for publication in *Earthquake Notes*.

2018. BOWIE, William, "Geodetic Operations in the United States, 1930-1932," U.S. Dept. Com., C.G.S., Spec. Pub. No. 178, 25 pp., 3 fig., Washington, 1933.

The above constitutes the report of the Coast and Geodetic Survey to the International Association of Geodesy of the International Union of Geodesy and Geophysics, International Council of Scientific Unions. On page 9 is given a short report on the special geodetic work in California, carried out for the purpose of affording quantitative measures of earthquake and slow creep displacements.

- BRAZIER, C. E. and MAURAIN, Ch., "Sur le tremblement de terre du 3 octobre 1933." See No. 2079 of this list.

2019. BULLEN, K. E., "On the Errors in Calculations of Epicentral Distances in Earthquakes," *M.N., Geoph. Sup.*, Vol. 3, No. 5, 190-201, London, Jan., 1934.

- BULLEN, K. E. and JEFFREYS, Harold, "Final Tables." See No. 2061 of this list.

- BYERLY, P. The *Bulletin on Seismology*, issued recently by the National Research Council, U.S.A., and reported as No. 2076 of this list, contains the following chapters by Dr. Byerly:

- Chap. 16. "Analysis of Seismograms of Near Earthquakes," pp. 154-170.
- Chap. 17. "Records of Earthquakes at Intermediate and Great Distances," pp. 171-188.
- Chap. 18. "Time-Distance Curves," pp. 189-197.
- Chap. 19. "Reduction of Trace Amplitudes," pp. 198-205.
- Chap. 20. "Seismic Geography," pp. 206-215.

2020. CAPPA, F. X., "A Laboratory on Wheels," *Mines Mag.*, Vol. 22, No. 9, p. 24, Golden, Sept. 24, 1932.

A short article showing two pictures of a Colorado School of Mines seismic reflection equipment and relating the history of its development by members of the geophysics department.

2021. COLEMAN, A. P., "Ice Ages and the Drift of Continents," *J. Geol.*, Vol. 41, No. 4, 409-417, Chicago, May-June, 1933.

The author's abstract reads: "The theory of the 'drift of continents' proposed by the late Dr. Wegener was supposed to account readily for the Pleistocene and the Permo-Carboniferous ice ages, and this was considered one of the most important proofs of its validity. In the following paper it is shown that his theory fails completely in this respect, and it is considered that the fixity of the continents is the more reasonable supposition."

2022. CONRAD, V., "Die zeitliche Folge von Beben mit tiefem Herd," *Ger. Bei.*, Bd. 40, Heft 2-3, 113-133, 3 fig., 10 tables, Leipzig, 1933.

The author found no correlation between moon influences and the time of occurrence of deep-focus earthquakes. There is some indication of a yearly cycle calculated on the basis of monthly frequencies, and other periods of less than a year which promise to be established on the basis of a study of a larger amount of statistical material. The author believes that such a study will establish the rotation of the pole as one of the causes of both deep and shallow focus earthquakes.

2023. CONROY, Charles C., "Earthquake Weather," *Typos*, Vol. 23, No. 3-4, 106-108, Rochester, 1933.

2024. CRITIKOS, M. N., "Sur le séismicité de Macédoine," *Ger. Bei.*, Bd. 40, Heft 4, 371-379, 3 maps, Leipzig, 1933.

2025. DAHM, Cornelius G., "Epicenter of the Hawke Bay (New Zealand) Earthquake and Travel-times of Condensational Waves," *Bul. S.S.A.*, Vol. 23, No. 4, 139-157, 10 fig., 6 tables, bib., Stanford, Oct., 1933. C.G.D.

2026. DAVIS, W. M., "The Long Beach Earthquake," *Geog. Rev.*, Vol. 24, No. 1, 1-11, 6 illus., New York, Jan., 1934. R.R.B.

The paper deals with the subject under the following headings: Geological Relations; Report of the Committee on Earthquake Protection; Damage to Property; Earthquake-Resistant Construction; Report of the National Board of Fire Underwriters; Effects on the Tourist Industry.

2027. DAVISON, Charles, "Scales of Seismic Intensity: Supplementary Paper," *Bul. S.S.A.*, Vol. 23, No. 4, 158-166, Stanford, Oct., 1933.

The earlier paper appeared in the same publication (Vol. 11, 95-129, 1921). The combined papers constitute a most complete treatment of the subject.

2028. DELURY, J. S., "The Strength of the Earth," *J. Geol.*, Vol. 41, No. 7, 748-756, 2 fig., Chicago, Oct.-Nov., 1933.

The author's abstract reads: "A consideration of sources of local heat in crust and subcrust and a recognition of the significance of horizontal variations in geothermal gradients, and consequent irregularities of shallow geoisotherms, together lead directly to the interpretations that the levels of magma formation are relatively shallow, and that in the levels of smoothly concentric geoisotherms (beneath the influence of shallow sources of heat), temperatures are so low that other factors decree a strength too great to permit a continuous zone of weakness for isostatic adjustment. The conception of the asthenosphere is criticized on other grounds and a mechanism is provided for disturbing, as well as for correcting, the isostatic balance." J.S.DeL.

2029. EARTHQUAKE RESEARCH INSTITUTE, "Seismometrical Report, Part I, 1933, January 1-March 31," *Eq. Res. Inst.*, 7 pp., 7 pl., Tokyo, 1933.

The report deals first with "Sensible Earthquakes in Tokyo" for the period under discussion. It then discusses "The Earthquake and the Seismic Sea-wave (Tsunami) of Northeast Japan, March 3, 1933." Each of these sections is illustrated by a map in addition to the plates mentioned above.

2030. EISENHOUR, B. E. and TYZZER, F. G., "Elastic Properties of Various Materials and Their Effect on the Transmission of Vibrations," *J. Frank. Inst.*, Vol. 214, No. 6, 691-707, Philadelphia, 1932. W.W.D.
2031. ENGINEERING NEWS-RECORD, "A Word of Caution," *Eng. N.-R.*, Vol. 112, No. 3, p. 92, New York, Jan. 18, 1934. R.R.B.
2032. FRAZER, Calvin, "What is a Tidal Wave?" *Tycos*, Vol. 23, Nos. 3-4, 91-92, 8 illus., Rochester, July-Oct., 1933.
2033. FRYKELL, Fritiof, "Earthquake Shocks in Jackson Hole, Wyoming," *Bul. S.S.A.*, Vol. 23, No. 4, 167-168, Stanford, Oct., 1933.
2034. FUJIWHARA, S., "On Spiral Cracks of Fuzi (Fuji) Volcano," *Geoph. Mag.*, Vol. 7, No. 2, 207-224, 6 fig., Tokyo, 1933. S.F.
2035. FUKUTOMI, Takaharu, "Some Statistical Problems Concerning Initial Earthquake Motion. (The First Report)," *Bul. Eq. Res. Inst.*, Vol. 11, Part 3, 510-529, 9 fig., 3 tables, Tokyo, Sept., 1933.
2036. GALES, B. G., "A New Harmonic Analyser," *J. S. I.*, Vol. 9, No. 12, 380-386, London, 1932. W.W.D.
2037. GAUDEY, R. F., "Treatment of Water Supply after Long Beach Earthquake," *Eng. N.-R.*, Vol. 111, No. 17, 502-503, New York, Oct. 26, 1933.
2038. GILLIGAN, Albert, "A Contribution to the Geological History of the North Atlantic Region," *Ann. Rep. Smith. Inst.*, 1932, Pub. No. 3185, 207-222, bib., Washington, 1933.
2039. GOLDSTONE, F., "Mapping of Geological Structure by the Reflection of Elastic Waves," *Pet. Times*, No. 756, Vol. 30, p. 30, London, 1933.

The following abstract by Ayvazoglou is given in *Geoph. Abs.* No. 55, 962-963 (see No. 2071 of this list): "According to the abstract of Goldstone's paper given in this number of *The Petroleum Times*, the author describes the utilization of the reflected elastic waves in structure mapping. The usual field procedure is discussed and examples of typical seismograms permitting mapping by correlation are reproduced. The results of such a survey in Oklahoma are given. Examples of typical seismograms from which interpretation must be derived by the dip method are reproduced and the graphical method of obtaining the reflecting plane is explained. The conclusion is drawn that many structural problems confronting the petroleum geologist can be solved by the two methods of reflection shooting outlined in the article." F.W.L.

2040. GROUBÉ, W., "Les tremblements de terre au Maroc en juillet et août 1933," *L'Astronomie*, Vol. 47, No. 10, 480, Paris, Oct., 1933.

A summary description of two earthquakes.

J.C.

2041. GUTENBERG, B., "Über Erdbeben mit Herdtiefen von mehreren hundert Kilometern," *Geol. Rund.*, Bd. 24, Heft 3-4, 229-239, 5 fig., bib., Berlin, 1933.

2042. GUTENBERG, B., "Erde," *Handwörterbuch der Naturwissenschaften, Zweite Auflage*, Gustav Fischer, 762-774, 10 fig., Jena, 1933.

This publication is appearing in sections (Lieferungen und Bände). There will be about 95 Lieferungen, each of about 128 pages. Each will cost RM6. A total of 10 Bände is planned. The publishers have ready for distribution a folder giving full details of the work.

The section reported above as the work of Dr. Gutenberg deals with the following subject matter: The structure of the earth; Density and mass of the earth; Pressure in the interior; Gravity, etc.; Rigidity in the earth's interior; Compressibility in the earth's interior; Internal friction in the earth's interior; Viscosity in the deep interior; Temperature; Earth forces; Movements of parts of the earth body.

2043. GUTHENBERG, B. and RICHTER, C. F., "Advantages of Using Geocentric Latitude in Calculating Distances," *Ger. Bei.*, Bd. 40, Heft 4, 380-389, 1 fig., 3 tables, Leipzig, 1933.

2044. HAMMILL, Harold B., "Earthquake Design for an Eight-story Apartment House," *Eng. N.-R.*, Vol. 111, No. 20, 590-592, 3 fig., New York, Nov. 16, 1933.

The article describes a building constructed in San Francisco. The extra cost for steel to provide for earthquake hazard was \$2,840. This is only 1.9 per cent of the cost of the building. The total annual saving in insurance costs is estimated at \$1,046. When all comparative figures are considered a saving of 2.1 per cent is shown, the computation being on the basis of interest at 6 per cent.

2045. HARRIS, Sidon, "A Semi-graphical Method of Determining Depths of Multi-layer, Dipping Strata from Seismic Time-Travel Curves," *Amer. J. Sc.*, Fifth Ser., No. 157, Vol. 27, 13-23, 4 fig., New Haven, Jan., 1934.

— HAYES, R. C., "Seismological Report of the Hawke's Bay Earthquake of 3rd February, 1931." See No. 2003 (3) of this list.

2046. HECK, N. H. *et al.*,

(1) "Notes on the Interpretation of Strong Motion Seismograph Records," *Mim. Pub.*, U. S. C. G. S., 4 pp., 4 diag., Washington, Aug., 1933.

(2) "Analyses of Strong Motion Seismograph Records Obtained at the Time of the Nevada Earthquake of June 25, 1933," *Ibid.*, 8 pp., 2 pl., Washington, 1933.

2047. HEILAND, C. A.,

(1) "Demonstrating Geophysical Science to the Public," *Min. Met.*, No. 323, Vol. 14, 455-458, 3 fig., New York, Nov., 1933. C.A.H.

(2) "Elements of Geophysical Prospecting as Demonstrated at A Century of Progress, Chicago, 1933, in the Geophysics Section of the American Petroleum Industries Exhibit," *Quar. Col. Sc. Mines*, Vol. 28, No. 4, 1-52, 20 fig., Golden, Oct., 1933. C.A.H.

(3) "The Story of Oil at A Century of Progress," *Amer. Pet. Inst.*, Booklet of 32 pages, profusely illustrated, for distribution at A Century of Progress Exposition, Chicago, 1933.

The three publications are grouped because they each describe the exhibits related to geophysical prospecting and the oil industry. The last is not a publication by Dr. Heiland though he contributed largely to the displays there described. The companies and individuals responsible for the exhibit as a whole are named in the booklet. The two publications first named, and especially the second, are rather complete and detailed accounts of the subject, prepared for the instruction of the general public.

— HENDERSON, J., "Seismology in New Zealand." See No. 2003 (1) of this list.

2048. HIGUCHI, Seiichi, "Two-dimensional Elastic Waves Due to Double Source," *Tech. Rep., Tohoku Univ.*, Vol. 10, No. 4, 1-11, Sendai, 1932.

On page 427 of *Sc. Abst. A.*, Vol. 36, No. 425, London, May, 1933, is given a short abstract of the above paper. W.W.D.

2049. HODGSON, Ernest A., "The Saint Lawrence Earthquake, February 28, 1925," *Bul. S.S.A.*, Vol. 15, No. 2, 84-105, 16 fig., Stanford, June, 1925.

2050. HONDA, H., "Notes on the Propagation of Elastic Waves Generated from a Cylindrical Origin," *Geoph. Mag.*, Vol. 7, No. 3-4, 249-256, Tokyo, Nov., 1933.

2051. HONDA, H., "Notes on the Mechanism of Deep Earthquakes," *Geoph. Mag.*, Vol. 7, No. 3-4, 257-267, 9 fig., Tokyo, Nov., 1933.

2052. HONDA, H., SAGISAKA, K., and TAMURA, M., "Long Period Horizontal Seismograph," *Geoph. Mag.*, Vol. 7, No. 3-4, 245-247, Tokyo, Nov., 1933.

Four illustrations indicate the construction of this instrument, which can be operated at a period as great as 55 sec., and show records obtained with it.

2053. IMAMURA, Akitune, "On Chronic Movements of the North-west Osaka Block," *Proc. Imp. Acad.*, Vol. 9, No. 8, 378-381, 3 fig., Tokyo, Oct., 1933.

2054. IMAMURA, Akitune and KAWASE, Ziro, "The Sanriku Tsunami of 1933," *Jap. J.A.G.*, Vol. 11, No. 1, 17-35, num. fig., 3 tables, Tokyo, 1933.

2055. IMBO, Giuseppe, "Dati sismici relativi alla fase esplosiva dello Stromboli del Settembre 1930," *Bul. Vol.*, Vol. 5, Nos. 15-18, 239 *et seq.*, Naples, 1933.

The author reproduces a seismogram and readings for three shocks associated with explosions of Stromboli, with deduced phase velocity. The issues of the periodical, though published in 1933, are for the fifth publication year, 1928.

In the same issues, under the title, "Notices de phénomènes géodynamiques communiquées au Bureau Central International de Volcanologie," are given the reports from various sea captains of twenty-three seaquakes noted during the years 1927-31.

L.B.

— INABA, Yoshi and INOUE, Win, "On Barometric Gradients at Times of Earthquakes in Japan (2nd paper)." See No. 2057 of this list.

2056. INOUE, Win, "Earth-tilts Observed at Mt. Tukuba, Japan," *Bul. Eq. Res. Inst.*, Vol. 11, Part 4, 693-703, 8 fig., 7 tables, Tokyo, Dec., 1933.

2057. INOUE, Win and INABA, Yoshi, "On Barometric Gradients at Times of Earthquakes in Japan (2nd paper)," *Bul. Eq. Res. Inst.*, Vol. 11, Part 4, 704-713, 16 fig., Tokyo, Dec., 1933.

2058. ISHIMOTO, Mishio, "Preliminary Notes on the Tunami of March 2, 1933 (G.M.T.) and an Outline of the Investigations now being made concerning it at the Earthquake Research Institute," *Jap. J.A.G.*, Vol. 11, No. 1, 1-9, 2 maps, Tokyo, 1933.
2059. ISHIMOTO, Mishio, "Construction d'un sismographe accélérométrique pour la composante verticale," *Bul. Eq. Res. Inst.*, Vol. 11, Part 4, 717-723, 5 fig., Tokyo, Dec., 1933.
- ISIKAWA, T. and WADATI, K., "On Deep-focus Earthquakes in the Northern Part of the Japan Sea." See No. 2124 of this list.
2060. JEFFREYS, Harold, "Upward Curvature in Seismic Time-curves," *M.N., Geoph. Sup.*, Vol. 3, No. 5, 201-202, London, Jan., 1934.
2061. JEFFREYS, Harold and BULLEN, K. E., "Final Tables." Mimeographed issue of 4 pages, giving tables for various phases at intervals of whole degrees in epicentral distance. Cambridge, Dec., 1933.
2062. JONES, H. Spencer, "The International Union for Geodesy and Geophysics," *Observatory*, No. 714, Vol. 56, 521-523, London, Nov., 1933.
The article is a brief account of the Lisbon meeting of the Union. The next meeting is to be held in Edinburgh in 1936.
2063. JONES, J. H., "A Seismic Method of Mapping Anticlinal Structures," *Pet. Times*, No. 758, Vol. 30, London, 1933.
The above reference indicates only the abstract of the paper. This is quoted at length on page 963 of *Geoph. Abs.*, No. 55. See No. 2071 of this list. F.W.L.
- JUNG, K. and BERGER, R., "Seismometrische Beobachtungen in Potsdam in der Zeit vom 1. Januar 1929 bis 31. Dezember 1932." See No. 2015 of this list.
- KANAI, Kiyoshi and NISHIMURA, Genrokuro, "On the Effects of Discontinuity Surfaces upon the Propagation of Elastic Waves (II)." See No. 2093 of this list.
- KANAI, Kiyoshi, NISHIMURA, Genrokuro, and TAKAYAMA, Takeo, "On Stresses in the Interior and in the Vicinity of a Horizontal Cylindrical Inclusion of Circular Section in a Gravitating Semi-infinite Elastic Solid (II)." See No. 2094 of this list.
- KANBARA, K., MINAKAMI, T., and MATUZAWA, T., "Horizontal Movement of Water in the Tunami of March 3, 1933." See No. 2078 of this list.
- KAWASE, Ziro and IMAMURA, Akitune, "The Sanriku Tunami of 1933." See No. 2054 of this list.
2064. KAWASUMI, Hiroshi, "Study on the Propagation of Seismic Waves. (The second paper). Amplitude of Seismic Waves with the Structure of the Earth's Crust and Mechanisms of their Origin," *Bul. Eq. Res. Inst.*, Vol. 11, Part 3, 403-453, 10 fig. 11 tables, Tokyo, Sept., 1933.
2065. KNOPF, Adolph, "The Age of the Earth and the Age of the Ocean," *Ann. Rep. Smith Inst.*, 1932, Pub. No. 3185, 193-206, bib., Washington, 1933.
2066. KOENIGSBERGER, J., "Aufsuchung von Wasser mit geophysikalischen Methoden," *Bei. Angew. Geoph.*, Bd. 5, Heft 4, 463-525, 22 fig., Leipzig, 1933.
The article has been reprinted in book form by the same publishers (Akademische Verlagsgesellschaft m.b.H., Leipzig). It is priced at RM 3.80.

2067. KRAHMANN, R., "Geophysical Investigations in Southern Africa," *Bei. Angew. Geoph.*, Bd. 4, Heft 1, 88-116, num. tab., bib., maps, Leipzig, 1933.

— LACOSTE, J., "Étude comparative du mouvement microséismique, etc." See No. 2104 of this list.

2068. LANDSBERG, H., "Über Zusammenhänge von Tiefherdbeben mit anderen geophysikalischen Erscheinungen," *Ger. Bei.*, Bd. 40, Heft 2-3, 238-243, 3 fig., bib., Leipzig, 1933.

The author's English summary reads: "The deep-focus earthquakes show an annual variation of frequency with maxima at the equinoxes and minima at the solstices. Though some parallelism with terrestrial magnetic disturbances is given, no real connection between the two phenomena can be supposed. For the earthquakes it is shown that poleshift as a consequence of air mass transports might be the cause. The magnetic disturbances are due to the influence of the high layers of the atmosphere, which are influenced in their turn by the great changes of general circulation at the equinoxes." H.L.

2069. LANDSBERG, H., "Über tektonische und magmatische Erdbeben," *Naturwissenschaften*, Bd. 21, Heft 51, 894-896, 2 fig., 1 table, bib., Berlin, 1933. H.L.

2070. LARMOR, Joseph, "The Tidal Strain on the Earth," *Nature*, No. 3330, Vol. 132, 313, London, Aug. 26, 1933.

2071. LEE, Frederick W., "Geophysical Abstracts," No. 54, 925-949, Oct.; No. 55, 950-977, Nov.; No. 56, 978-1005, Dec.; Washington, 1933. F.W.L.

2072. LEET, L. Don, "Velocity of Elastic Waves in Granite and Norite," *Physics*, Vol. 4, No. 10, 375-385, 6 fig., 3 tables, New York, Oct., 1933.

A significant paragraph terminates the paper in which the author writes: "The new facts are serving rather to complicate than to clarify the situation at present. The ambiguity of current lithological interpretations of velocities and seismically effective elastic constants is looming larger at every turn. It cannot be said that a longitudinal wave speed of 5.5 km/sec. is unique for granite, or even necessarily suggestive of granite. There is as yet no seismological justification for the identification of any 'layer' of the earth's crust as either sedimentary or granitic."

2073. LEWIS, R. G., "A Search for the Mechanism of Earth Movements," *Geol. Mag.*, No. 833, Vol. 70, No. 11, 499-521, 14 fig., 2 tables, London, Nov., 1933.

2074. LÜNKENHEIMER, Federico, "La erupción del volcán chileno Quizapú," *Bol. Soc. Sis. Ital.*, Vol. 30, Fasc. 5, 155-168, Rome, 1932. F.L.

2075. LUPP, Paul, "Über die Laufzeiten gewisser P-Einsätze nach herdnahen Aufzeichnungen in Gr. Raum und die mögliche Deutung von Einsätzen durch örtliche Untergrundverhältnisse," *Mitt. Geoph. Warte Gr. Raum., Univ. Königsberg*, No. 18, 21 pp. in reprint, 6 illus., bib., Gr. Raum, 1933.

2076. MACELWANE, James B., S.J. *et al.*, "Physics of the Earth—VI: Seismology," *N.R.C. (U.S.) Bul.* No. 90, 223 pp., 28 fig. Price \$2.00 (paper); \$2.50 (cloth). Washington, Dec., 1933.

The publication is the work of the Subsidiary Committee on Seismology, of the Committee on Physics of the Earth. The various chapters are written by Macelwane, Wood, Reid, Anderson, and Byerly. The titles of the chapters by each of these authors will be found indexed as cross references in this issue of the *Bibliography*. The lists of publications at the end of each chapter in the *Bulletin* have been carefully prepared and should be found very useful.

2077. MACELWANE, James B., S.J., "Report of the Jesuit Seismological Association," Mim. pub., 9 pp., issued by Cent. Stn. (Saint Louis Univ.) Saint Louis, 1933. J.B.M.

— MACELWANE, James B., S.J. The *Bulletin on Seismology*, issued recently by the National Research Council, U.S.A., and reported as No. 2076 of this list, contains the following chapters by Dr. Macelwane:

- Chap. 1. "Definitions and Classification of Earthquakes," pp. 1-3.
- Chap. 2. "Tectonic Earthquakes," pp. 4-8.
- Chap. 4. "Plutonic Earthquakes," pp. 32-36.
- Chap. 5. "Impact or Rock Fall Earthquakes," pp. 37-40.
- Chap. 11. "Earthquake Body Waves," pp. 106-115.
- Chap. 12. "Reflection and Refraction of Earthquake Waves," pp. 116-120.
- Chap. 13. "Earthquake Surface Waves," pp. 121-129.
- Chap. 14. "Paths and Velocities of Earthquake Waves in the Interior of the Earth," pp. 130-136.

— MACELWANE, James B., S.J.,

- (1) "The Lisbon Meeting." A report of the recent congress of the International Geodetic and Geophysical Union.
- (2) "Grover, Missouri, Earthquake of November 16, 1933."

These papers appear in *Earthquake Notes*, which is reported in item No. 2017 of this list.

— MASUDA, K. and WADATI, K., "On the Travel Time of Earthquakes (Part V)." See No. 2125 of this list.

2078. MATUZAWA, T., KANBARA, K., and MINAKAMI, T., "Horizontal Movement of Water in the Tunami of March 3, 1933," *Jap. J.A.G.*, Vol. 11, No. 1, 11-16, 5 fig., Tokyo, 1933.

2079. MAURAIN, Ch. and BRAZIER, C. E., "Sur le tremblement de terre du 3 octobre 1933," *C.B.*, T. 197, No. 15, 721-722, Paris, Oct., 1933.

The note deals with an earthquake which was felt in Paris.

J.C.

2080. MCCOLLUM, Burton, "Seismic Method of Profiling Geologic Formations," U.S. Patent No. 1,923,107, issued Aug. 22, 1933.

The invention relates to a seismic method of profiling the boundary surfaces of subterranean geologic formations. The method consists in producing a seismic wave in the earth's substance, detecting the arrival of the wave at a point in the earth's substance, producing a seismic wave above said point, and detecting the arrival of the second-mentioned wave at two spaced points adjacent to the first-mentioned point. Claims allowed—8.

The above report has been copied from *Geoph. Abs.*, No. 55, p. 974. See No. 2071 of this list.

F.W.L.

2081. MERCIER, André, "Contribution à la théorie des dérives continentales," *Pub. Obs. Genève*, Sér. A, Fasc. 23-24 (Fasc. 11-12 du Vol. 3), 471-508, 9 fig., ext. bib., Geneva, 1933.

2082. MILLIKAN, Robert A. *et al.*, "Earthquake Hazard and Earthquake Protection," Rep. Joint Com. Eq. Protection, 1-13, Los Angeles, June 6, 1933.

The above-mentioned committee has prepared a most comprehensive and well-balanced report on the Long Beach earthquake. Following a lengthy introduction the report is divided into sections as follows:

Geological and Seismological Considerations: Fault Structure, Prehistoric Earthquakes, Historical Earthquakes, Future Earthquakes, Variations in Risk, Protection Required, Summary.

Effect of Long Beach Earthquake: Areas Affected, Damage to Structures, Damage to Schools, Loss of Life, Necessary Conclusions.

Standards of Design of Structures: Acceleration of Earthquakes, Allowable Stresses and Load Reductions, Distribution of Forces, Complexity of Design, Recommended Standards (Horizontal Forces, Live Loads, Combined Stresses).

Strengthening of Existing Buildings: Basis of Original Designs, Analysis of Present Condition, Plans for Strengthening, Personnel, Costs, Methods of Financing.

Prevention of Conflagrations: Building Construction, Water Supply and Other Utilities, Fire Fighting Equipment, Disaster Plan, Summary.

General Conclusions and Recommendations.

R.R.M.

— MINAKAMI, T., MATUZAWA, T., and KANBARA, K., "Horizontal Movement of Water in the Tsunami of March 3, 1933." See No. 2078 of this list.

2083. MITCHELL, A. S., "Seismic Damage and Its Mitigations," *Proc. Victorian Inst. Eng.*, Mtg. of June 7, 1933, 20-41, Melbourne, 1933. A.S.M.

2084. MIYABE, Naomi, "Block Movements of the Earth's Crust in the Kwanto District (The Crustal-Blocks and Their Movements—Part III)," *Bul. Eq. Res. Inst.*, Vol. 11, Part 4, 639-691, 30 diag., Tokyo, Dec., 1933.

2085. MORALES y PEDROSO, Luis,

"El terremoto de Santiago de Cuba de 3 de Febrero de 1932," *Rev. Soc. Cubana Ing.*, Vol. 25, No. 2, 123-166, Havana, Mar.-Apr., 1933.

The views of the author regarding the geologic structure of the Sierra Maestra and of the origin of the earthquake are given. S.T.

2086. NAGAOKA, Hantaro and SHIRAI, Toshiaki,

(1) "Lines of Fissure through Central Japan and Sea of Japan Physically Considered," *Proc. Imp. Acad.*, Vol. 9, No. 8, 382-385, 1 fig., Tokyo, Oct., 1933.

(2) "Formation of Fossa Magna and Japanese Alps on the Fissure Line of Central Japan," *Ibid.*, 386-389, 1 fig., Tokyo, Oct., 1933.

2087. NAGAOKA, Hantaro and SHIRAI, Toshiaki, "Continental Margins as Slip Lines of Earth's Crust," *Proc. Imp. Acad.*, Vol. 9, No. 9, 490-493, 2 fig., Tokyo, Nov., 1933.

2088. NATURE, "The Baffin Bay Earthquake," *Nature*, No. 3344, Vol. 132, 845, London, Dec. 2, 1933.

The note intimates that the Baffin Bay earthquake may have been due to the fall of a meteor. Considering the magnitude of the tremors recorded at distant seismograph stations, this would, in the opinion of the reviewer, be quite out of the question. The note discusses the distribution of epicentres by latitude zones. This is not a very useful analysis as the epicentres are concentrated in limited sections of such zones. No. 1326 of these lists reports an analysis for Arctic epicentres on the basis of data available up to the year 1928. This shows that epicentres within the Arctic circle were confined to the vicinity of Iceland and Nova Zembla, except for three north of the mouth of the Lena river, Siberia, and one near Banks island, approximately north of the Mackenzie River delta, Canada. E.A.H.

2089. NAVARRO NEUMANN, M. Ma. S., S.J., "Les microséismes à Granada," *Atti Pont. Accad. Sc. Lincei*, Vol. 86, Session V, Apr. 23, 1933, 225-235, 3 fig., Rome, 1933. N.N.

2090. NAVARRO NEUMANN, M. Ma. S., S.J., "Notas sismológicas y volcanológicas," *Ibérica*, 8 pp. in reprint, Barcelona, 1933.

The above notes deal with the second semester of 1932. In Nos. 970 and 971 of the same publication (Apr. 1 and 8, 1933), the same author deals with the subject, "Ciclones y otros fenómenos meteorológicos más importantes del año 1932," the article appearing in a reprint of seven pages. N.N.

2091. NEVILLE, E. H., "Communication Regarding the Application of the Mintrop Seismic Method to Coal Measures and Mineral Deposits," *Cong. Int. M.M.G.*, VI Session, Liège, 1930, Sec. Geol., 309-311, 1931.

A short abstract by C. A. Heiland appears as No. 1181, p. 401, of the *Ann. Bib. Econ. Geol.*, Vol., 5, No. 2, Washington, July, 1933. See No. 1755 of these lists.

2092. NIKIFOROV, P., "Bericht über die I. international Tagung des wissenschaftlichen Beirats des Seismologischen Instituts der Akademie der Wissenschaften der USSR.," *Acad. Sc. URSS.*, No. 32, 1-178, Leningrad, 1933.

A lengthy abstract by Ayvazoglou, listing the authors and titles of twelve papers presented at the meeting, is given in *Geoph. Abs.*, No. 55, 964-965. See No. 2071 of this list. F.W.L.

2093. NISHIMURA, Genrokuro and KANAI, Kiyoshi, "On the Effects of Discontinuity Surfaces upon the Propagation of Elastic Waves (II)," *Bul. Eq. Res. Inst.*, Vol. 11, Part 4, 595-631, num. diag., Tokyo, Dec., 1933.

2094. NISHIMURA, Genrokuro, TAKAYAMA, Takeo, and KANAI, Kiyoshi, "On Stresses in the Interior and in the Vicinity of a Horizontal Cylindrical Inclusion of Circular Section in a Gravitating Semi-infinite Elastic Solid (II)," *Bul. Eq. Res. Inst.*, Vol. 11, Part 3, 454-487, num. fig., num. tab., Tokyo, Sept., 1933.

2095. NJEGOVAN, V., "Stjepan Mohorovičić," *Archiv za Hemiju i Farmaciju*, Vol. 7, No. 5, 129-142, Zagreb, Sept., 1933.

The above paper is a testimonial to the work of S. Mohorovičić, with comments from many investigators in Europe and America. It includes a likeness of Dr. Mohorovičić and a bibliography of seventy-two publications from his pen.

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2097. OTUKA, Yanosuke, "Contraction of the Japanese Islands since the Middle Neogene (advance paper)," *Bul. Eq. Res. Inst.*, Vol. 11, Part 4, 724-731, 3 fig., Tokyo, Dec., 1933.

2098. PROVIERO, Antonio, "La sospensione 'Zöllner' nel sismografo 'Galitzin,'" *Atti Pont. Accad. Sc. Lincei*, Vol. 86, Fasc. sup., 8 pp., Rome, 1933.

2099. RASTALL, R. H., "Igneous Rocks and the Depths of the Earth—R. A. Daly," A Review; *Geol. Mag.*, No. 833, Vol. 70, No. 11, 522-524, London, Nov., 1933.

The above review by the editor of the *Geological Magazine* deals with the book to which reference was made in No. 1808 of these lists.

In the same issue of the magazine the editor presents (pp. 481-488) a useful article entitled: "On the Preparation of Geological Manuscripts."

— REID, H. F., *The Bulletin on Seismology*, issued recently by the National Research Council, U.S.A., and reported as No. 2076 of this list, contains the following chapters by Dr. Reid:

Chap. 8. "Magnetic Effects Attributed to Earthquakes," pp. 83-86.

Chap. 9. "Mechanics of Earthquakes, Rebound Theory, Regional Strain," pp. 87-103.

Chap. 10. "The Conception of the Focus," pp. 104-105.

2100. REPETTI, W. C., S.J., "The Benguet Earthquake of August 24th, 1932," *Manila Cent. Obs., Seis. Bul. July-Dec., 1932*, 51-54, Manila, 1933.

2101. REPETTI, W. C., S.J., "Preliminary Investigation of Microseisms in Manila," *Ger. Bei.*, Bd. 40, Heft 2-3, 268-271, Leipzig, 1933.

The author concludes that, "The work done so far appears to indicate the lines along which further research should be made. This future research must elucidate the relations between barometric pressure at the centre of the typhoon, the area affected by the pumping effect, the path of the typhoon, microseismic amplitude and duration. Any definite results which may be obtained will be of special value in Manila where every means must be taken advantage of for the prediction of typhoon paths."

— RICHTER, C. F. and GUTENBERG, Beno, "Advantages of Using Geocentric Latitude in Calculating Distances." See No. 2043 of this list.

2102. ROTHÉ, E.,

(1) "Sur le publication d'une histoire des tremblements de terre en France; et la collaboration des sociétés savantes," *C.R. Soc. Sav.*, 1927, 3 pp. in reprint.

(2) "Les télégrammes séismologiques," *Ibid.*, 1929, 7 pp. in reprint.

(3) "Les tremblements de terre en France de 1920 à 1929," *Ibid.*, 1931, 282-291.

(4) "Les tremblements de terre dans les régions polaires; la migration des épïcêtres; méthode d'étude," *Ibid.*, 1932, 533-543.

2103. ROTHÉ, E., "Les progrès dans la séismologie théorique et appliquée." A reprint of 8 pp. from *A Terra*, No. 4, Coimbra, 1932. N.H.H.+ E.R.

2104. ROTHÉ, E. *et al.*, "Annuaire de l'Institut de Physique du Globe, 1931," *Univ. Stras., Fac. Sc.*, Deuxième Partie, Séismologie, i-vii + 90 pp., 1933.

The introduction lists the data regarding the various seismological stations of France which are associated with the University of Strasbourg. It then lists first the instrumental and then the felt data regarding earthquakes of the year 1931. On pages 87-90 appears an article by J. Lacoste on the microseisms observed during the year concerned.

2105. ROUX, E., "Die Entwicklung der Gerate für die seismische Lagerstättenforschung," *Cong. Int. M.M.G.*, VI Session, Liège, 1930, Sec. Geol., 323-335, 1931.

— SAGISAKA, K., TAMURA, M., and HONDA, H., "Long Period Horizontal Seismograph." See No. 2052 of this list.

2106. SCHWINNER, Robert, "Das Transversalbeben vom 14. Mai 1930 und der Tiefbau der Hohen Tauern," *Verhand. Geol. Bundesanstalt*, No. 8, 191-194, Wien, Aug., 1930.

R.Z.

2107. SCIENCE, "Award of the Comstock Prize of the National Academy of Sciences to Professor Bridgman," *Science*, No. 2031, Vol. 78, 503-504, New York, Dec. 1, 1933.

In *Sc. N.-L.* (No. 660, Vol. 24, Dec. 2, 1933) comment is made on the above award, an excellent picture of Prof. Bridgman being included. A new book by Bridgman, outlining his methods in high-pressure experimentation and his results to date, was reported as No. 1712 of these lists.

2108. SCIENCE NEWS-LETTER,

(1) "Earth Shakes Severely in Region Usually Quiet," *Sc. N.-L.*, No. 660, Vol. 24, 359, Dec. 2, 1933.

Reports that the earthquake of Nov. 20, 1933, was centred in Baffin Bay.

W.W.D.

(2) "Radio Timing Aids Earthquake Study," *Ibid.*, No. 662, Vol. 24, 389, Dec. 17, 1933.

(3) "Deep-seated Earthquake Located in Siberia," *Ibid.*, No. 662, Vol. 24, 393, Dec. 17, 1933.

(4) "Himalaya 'Growing Pains' Blamed for India Quake," *Ibid.*, No. 668, Vol. 25, 60, Washington, Jan. 27, 1934.

2109. SHEPARD, Francis P., "Geological Misconceptions Concerning the Oceans," *Science*, No. 2027, Vol. 78, 406-408, New York, Nov. 3, 1933.

2110. SHEPARD, Francis P., "Canyons off the New England Coast," *Amer. J. Sc.*, Fifth Ser., No. 157, Vol. 27, 24-36, 6 fig., New Haven, Jan., 1934.

— SHIRAI, Toshiaki and NAGAOKA, Hantaro, "Lines of Fissure through Central Japan and Sea of Japan Physically Considered" and "Formation of Fossa Magna and Japanese Alps on the Fissure Line of Central Japan." See No. 2086 of this list.

— SHIRAI, Toshiaki and NAGAOKA, Hantaro, "Continental Margins as Slip Lines of Earth's Crust." See No. 2087 of this list.

2111. SIEGENTHALER, Jakob, "Bodentemperaturen in Abhängigkeit von äusseren meteorologischen Factoren," *Ger. Bei.*, Bd. 40, Heft 2-3, 305-332, 3 fig., bib., Leipzig, 1933.

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This paper is listed because of the parallelism between the problem here discussed and that of the interpretation, under the ray concept, of travel-time curves due to a seismic pulse.

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A short review by W. Ayvazoglou appears on page 862 of *Geoph. Abs.*, No. 51. See No. 2071 of this list. F.W.L.

2114. SOMVILLE, O., "Ondes longues dans la première phase des séismogrammes," *Ger. Bei.*, Bd. 40, Heft 2-3, 333-338, 6 fig., bib., Leipzig, 1933.

2115. SPITALEER, R., "Zum Erdbeben in Baden am 8. Februar 1933," *Ger. Bei.*, Bd. 40, Heft 2-3, 339-341, 1 table, Leipzig, 1933.

— TAKAYAMA, Takeo, KANAI, Kiyoshi, and NISHIMURA, Genrokuro "On Stresses in the Interior and in the Vicinity of a Horizontal Cylindrical Inclusion of Circular Section in a Gravitating Semi-infinite Elastic Solid (II)." See No. 2094 of this list.

— TAMURA, M., HONDA, H., and SAGISAKA, K., "Long Period Horizontal Seismograph." See No. 2052 of this list.

2116. TERADA, Torahiko, "Luminous Phenomena Accompanying Destructive Sea-waves (Tunami)," *Proc. Imp. Acad.*, Vol. 9, No. 8, 367-369, Tokyo, Oct., 1933.

2117. TERADA, Torahiko, "Earthquake and Fisheries (II)," *Bul. Eq. Res. Inst.*, Vol. 11, Part 4, 714-716, Tokyo, Dec., 1933.

2118. THOM, W. T., Jr., "Unknown Interior of Earth Invites Future Explorers," *Sc. N.-L.*, Vol. 24, No. 655, p. 285, Washington, Oct. 28, 1933. W.W.D.

2119. TRUSCOTT, S. J., "Problems of Mining at Great Depths," *Nature*, No. 3328, Vol. 132, 229-231, London, Aug. 12, 1933.

2120. TSUBOI, Chûji, "Vertical Crustal Displacement in the Seismic Region of Itô, on the East Coast of the Idu Peninsula," *Bul. Eq. Res. Inst.*, Vol. 11, Part 3, 488-499, 7 fig., 5 tables, Tokyo, Sept., 1933.

— TYZZER, F. G. and EISENHOUR, B. E., "Elastic Properties of Various Materials and Their Effect on the Transmission of Vibrations." See No. 2030 of this list.

2121. ULANOFF, A. S., "Materials on Seismology of the Far East," *Rec. Far East Geoph. Inst.*, No. II (IX), 147-164, 2 tables, 1 map, Vladivostok, 1932.

The paper is in Russian with a one-page summary in English. He states that, "The list of earthquakes in the Russian Far East now presented in this paper is the continuation of the already started publication of the 'Materials on Seismology of the Far East'. All the earthquakes that occurred up to 1930 are quoted here. The scheme of the composition remains the same as in the previous issue (*Ibid.*, No. 1 (VIII), 1931)."

2122. VERCELLI, F., "I tremiti della terra," *Scientia*, No. 246-10, Vol. 52, 193-202, Bologna, Oct., 1933.

A translation into French, bearing the title, "L'agitation du sol," and prepared by H. Buriot-Darsiles, appears on pages 97-106 of the supplement section of the same issue of the periodical.

2123. WADATI, Kiyoo, "Some Problems on the Propagation of Earthquake Waves," *Proc. Imp. Acad.*, Vol. 9, No. 9, 494-497, 4 fig., Tokyo, Nov., 1933. K.W.

2124. WADATI, Kiyoo and ISIKAWA, T., "On Deep-focus Earthquakes in the Northern Part of the Japan Sea," *Geoph. Mag.*, Vol. 7, No. 3-4, 291-305, 6 fig., 6 tables, Tokyo, Nov., 1933.

2125. WADATI, Kiyoo and MASUDA, K., "On the Travel Time of Earthquakes (Part V)," *Geoph. Mag.*, Vol. 7, No. 3-4, 269-290, 3 fig., 11 tables, Tokyo, Nov., 1933. K.W.

2126. WARNE, William E., "Earthquake Waves," *Bul. S.S.A.*, Vol. 23, No. 4, 169-171, Stanford, Oct., 1933.

The paper deals with the subject of visible surface waves near the epicentre. A note by Harry O. Wood is appended to the paper.

2127. WEBER, Siegfried, "Untersuchungen über die kurzperiodische Bodenunruhe kurzer Periode (2-4 sec.) in Gr. Raum," *Mitt. Geoph. Warte Gr. Raum, Univ. Königsberg*, No. 17, 3 pp. in reprint, Gr. Raum, 1933.

2128. WESTERGAARD, H. M., "Earthquake-shock Transmission in Tall Buildings," *Eng. N.-R.*, Vol. 111, No. 22, 654-656, 3 fig., New York, Nov. 30, 1933.

2129. WHIPPLE, F. J. W., *et al.*, "Seismological Investigations," *Thirty-eighth Ann. Rep. Com. Seis., Brit. Ass. Rep. of Leicester Mtg. 1933*, 5 pp. in reprint, London, 1933.

The report expresses the regret felt by the members of the committee at the death of Dr. J. E. Crombie and briefly outlines the support given by him to seismological investigations.

It then deals, successively, with the topics: Finance, Seismographs, British Earthquakes, The Revision of Seismological Tables, High-focus Earthquakes, Microseisms, and Periodicity of Earthquakes.

— WOOD, Harry O., *The Bulletin on Seismology*, issued recently by the National Research Council, U.S.A., and reported as No. 2076 of this list, contains the following chapters by Dr. Wood:

Chap. 3. "Volcanic Earthquakes," pp. 9-31.

Chap. 6. "Earthquake Investigations in the Field," pp. 41-66.

Chap. 7. "'Apparent' Intensity and Surface Geology," pp. 67-82.

— WOOD, Harry O., "Earthquake Waves." See No. 2126 of this list.

2130. YAMAGUTI, S., "Distribution of Earthquakes in Japan," *Bul. Eq. Res. Inst.*, Vol. 11, Part 3, 500-509, 7 fig., Tokyo, Sept., 1933.

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