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11581. ACHESON, C. H. The correction of seismic time maps for lateral variation in velocity beneath the low velocity layer: *Geophysics*, v. 24, no. 4, 706-724, Menasha, Oct., 1959. An abstract appears in *Geophysics*, v. 23, no. 5, p. 1058, Menasha, Dec., 1958.
11582. AGUILAR, G., and GUZMAN, G. Operational problems of seismological crews in Mexico: (abstr. only), *Geophysics*, v. 23, no. 5, p. 1057, Menasha, Dec., 1958
11583. AHMAD, M., and THIRLAWAY, H. I. S. The application of integrated geophysical surveys for estimating ground water resources in the mountain valleys of West Pakistan: *Pakistan J. Sci.*, v. 10, no. 5, 211-226, Lahore, 1958. GEOPHYS. ABSTR.
11584. AHRENS, L. H., PRESS, F., RANKAMA, K., and RUNCORN, S. K. *Editors, Physics and Chemistry of the Earth*, v. 3, 464., Pergamon Press, London and New York, 1959.
11585. AKI, K. Correlational study of earthquake waves: (abstr. only), *Geol. Soc. Am. Bull.* v. 70, no. 12, pt. 2, p. 1707, Washington, Dec., 1959.
- AKI, K., PRESS, F., and HEALY, J. H. Model seismology studies of surface waves. See no. 11786 of this list.
11586. AKI, K., and TSUJIIURA, M. Correlational study of near earthquake waves. *Earthquake Res. Inst. Bull.*, v. 37, pt. 2, 207-232, Tokyo, June, 1959.
11587. ALDRICH, L. T., BASS, M. N., TUVE, M. A., and WETHERILL, G. W. The earth's crust—seismic studies: *Carnegie Inst. Year Book* 58, 234-236, Washington, 1959.
- ALGER, R. P., DOH, C. A., and TIXIER, M. P. Sonic logging. See no. 12183 of this list. GEOPHYS. ABSTR.
- ALEKSEEV, A. S., and BABICH, V. M. A ray method of computing wave front intensities. See no. 11603 of this list.
11588. ALLEN, C. R., ST. AMAND, P., and RICHTER, C. F. Geologic structure and seismicity in southern California and adjacent areas: (abstr. only), *Geol. Soc. Am. Bull.*, v. 69, no. 12, pt. 2, p. 1672, New York, Dec., 1958.
11589. ALTERMAN, Z., JAROSCH, H., and PEKERIS, C. L. Oscillations of the earth: *Roy. Soc. Lond. Proc. ser. A*, (Math. and Phys. Sci.), v. 252, no. 1268, 80-95, London, 1959. BULL. SIGNAL.
11590. AMBRASEYS, N. N. A note on the response of an elastic overburden of varying rigidity to an arbitrary ground motion: *Seismol. Soc. Am. Bull.*, v. 49, no. 3, 211-220, Berkeley, July, 1959.
11591. ANDERS, E., and LIMBER, D. N. Origin of the Worzel deep-sea ash: *Nature*, v. 184, no. 4679, 44-45, London, July 4, 1959.
11592. ANDRES, J. Geological and geophysical investigations in the Saar-Nahe trough: (in German), *Erdöl und Kohle*, v. 11, no. 7, 441-450, Berlin, 1958. GEOPHYS. ABSTR.
11593. ANDRES, J., and SCHAD, A. Seismische Kartierung von Bruchzonen im mittleren und nördlichen Teil des Oberrheintalgraben und deren Bedeutung für die Olansammlung: *Erdöl und Kohle*, v. 12, no. 5, 323-334, Berlin, 1959. GEOPHYS. ABSTR.
11594. ANDREWS, A. B. Frequency dependence of seismic wave attenuation: (abstr. only), *Geophysics*, v. 23, no. 5, p. 1075, Menasha, Dec., 1958.
- ANDREWS, A. B., HUBER, R. E., and HOWELL, B. F., JR.: Photomechanical method of frequency analysis of seismic pulses. See no. 11814 of this list.
11595. ANGINO, E. E. The operations of a seismic field party: *Compass*, v. 35, no. 2, 92-97, Lincoln, 1958. GEOPHYS. ABSTR.
11596. ANNALS OF THE INTERNATIONAL GEOPHYSICAL YEAR. This compendium of IGY data is published by Pergamon Press, London, New York, and Paris. The following volumes appeared in 1959:—
- | | | |
|-----------|-----------|---|
| Vol. I | Part I | The first international polar year |
| | Part II | The second international polar year |
| | Part III | The inception and development of the International Geophysical Year. |
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| | Part III | The third meeting of the CSAGI |
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| Vol. VII | Part I | IGY Instruction Manual—World days and communications. |
| | Part II | IGY Instruction Manual—CSAGI guide to IGY world data centres. |
| | Part III | IGY Instruction Manual—Arctic communications. |
| Vol. VIII | | Geographical distribution of the International Geophysical Year Stations. |
| Vol. IX | | The membership and programs of the IGY participating committees. |
11597. ANSTEY, N. A. Why all this interest in the shape of the pulse? *Geophys. Prospecting*, v. 6, no. 4, 394-403, The Hague, Dec., 1958.
- This paper was part of a symposium on changes of shape of seismic pulses, held by the European Association of Exploration Geophysicists at The Hague, May 28-30, 1958. A discussion of the symposium is given in *Geophys. Prospecting*, v. 6, no. 4, 456-463, and in v. 7, no. 1, 1-17, 1959. An abstract appears in *Geophys. Prospecting*, v. 6, no. 3, page 298, The Hague, Sept., 1958.
11598. ANSTEY, N. A. A note on the seismic pulse recorded from a mine explosion: *Geophys. Prospecting*, v. 6, no. 4, 433-437, The Hague, Dec., 1958.
- This paper was part of a symposium on changes of shape of seismic pulses, held by the European Association of Exploration Geophysicists at the Hague, May 28-30, 1958. A discussion of the symposium is given in *Geophys. Prospecting*, v. 6, no. 4, 456-463,

- and in v. 7, no. 1, 1-17, 1959. An abstract appears in *Geophys. Prospecting*, v. 6, no. 3, 298-299, The Hague, Sept., 1958.
- AOKI, H., and IIDA, K. Phases in the preliminary tremors of seismograms and crustal structure in Nagoya district. See no. 11820 of this list.
- AOKI, H., and IIDA, K. Propagation of spherical plastic waves and of the boundary between elastic and plastic regions. See no. 11821 of this list.
11599. ARKHANGEL'SKAYA, V. M. Some results of surface wave studies from experimental data: (abstr. only), *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 12 1527-1528, Moscow, Dec., 1958. Translated by I. A. Mamantov in the English edition, p. 893, *Am. Geophys. Union*, Washington, Jan., 1960.
11600. ASANO, S. On the accuracy of hypocentre determination III: (in Japanese with summary in English), *Earthquake Res. Inst. Bull.*, v. 37, pt. 2, 337-345, Tokyo, June, 1959.
11601. ASANO, S., DEN, N., MIKUMO, T., SHIMA, E., and USAMI, T. On the travel-times of S-waves, derived from the explosion seismic observations: *Earthquake Res. Inst. Bull.*, v. 37, pt. 2, 37 pt. 2, 279-306, Tokyo, June, 1959.
- ASANO, S., MATUZAWA, T., and MATUMOTO, T. On the crustal structure derived from observations of the second Hokoda explosion. See no. 11947 of this list.
- ATCHISON, T. C., DUVAL, W. I., and FOGELSON, D. Propagation of peak strain and strain energy from explosion-generated strain pulses in rock. See no. 11733 of this list.
11602. ATLASOV, I. P., and SOKOLOV, V. N. Main features of the tectonic development of the central Soviet Arctic: (abstr. only), *Can. Oil and Gas Ind.* v. 12, no. 12, p. 50, Gardenvale, Dec., 1959.
11603. BABICH, V. M., and ALEKSEEV, A. S. A ray method of computing wave front intensities: *Akad. Nauk SSSR Izv.* ser. Geofiz., no. 1, 17-31, Moscow, Jan., 1958. Translated by M. E. Burgunker in the English edition, 9-15, *Am. Geophys. Union*, Washington.
11604. BACKUS, M. M. Elimination of water reverberations through modern data processing techniques: (abstr. only), *Geophysics*, v. 23, no. 5, p. 1073, Menasha, Dec., 1958.
11605. BACKUS, M. M. Water reverberations—their nature and elimination: *Geophysics*, v. 24, no. 2, 233-261, Menasha, Apr., 1959. A correction by F. Kalisvaart and A. J. Seriff appears in *Geophysics*, v. 26, no. 2, p. 242, Menasha, Apr. 1961.
- BALAKINA, L. M., and VVEDENSKAYA, A. V. On some peculiarities of the displacement fields of the longitudinal and transverse waves propagating in the earth's mantle. See no. 12215 of this list.
- BALASHOV, D. B., STAKOVSKAYA, Z. I., and VOLAROVICH, M. P. An investigation of elastic properties of rocks at high pressures. See no. 12208 of this list.
11606. BALAVADZE, B. K., and TVALTVADZE, G. K. The structure of the earth's crust in Georgia according to geophysical data: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 9, 1075-1084, Moscow, Sept., 1958. Translated by I. A. Mamantov in the English edition, 623-628, *Am. Geophys. Union*, Washington, Nov., 1959.
11607. BALLAKH, I. YA, and MIRCHINK, M. F. On the possibility of application of seismic surveying for direct prospecting for deposits of oil and gas; (in Russian), *Akad. Nauk SSSR Dokl.*, v. 126, no. 6, 1239-1241, Moscow, 1959.
11608. BARANOV, V. I., and SERDYUKOVA, A. S. Radiogenic heat: *Priroda*, no. 3, 29-34, Moscow, 1959. GEOPHYS. ABSTR.
- BASCOM, W., and LILL, G. A bore-hole to the earth's mantle; AMSOC'S Mohole. See no. 11915 of this list.
11609. BASS, B. L., and LUKERT, L. H. Geophysical history of the Fall Creek pool, Sumner County, Kansas: 321-333 in Hambleton, W. W., *Editor*, Symposium on Geophysics in Kansas (reported as no. 11780 of this list), *State Geol. Surv. Kansas*, Bull. 137, Lawrence, July, 1959.
- BASS, M. N., TUVE, M. A., WETHERILL, G. W., and ALDRICH, L. T. The earth's crust—seismic studies. See no. 11587 of this list.
11610. BATES, D. R. The Planet Earth, viii + 312, *Pergamon Press*, London, 1957. A review appears in *Sci. Progress*, no. 183, v. 46, 534, London, July, 1958.
11611. BÄTH, M. Ultra-long-period motions from the Alaska earthquake of July 10, 1958: *Geofis. Pura e Appl.*, v. 41, 91-100, Milan, Sept.-Dec., 1958.
11612. BÄTH, M. Development of instrumental seismology in Sweden in 1949-1958: *Geofis. Pura e Appl.*, v. 43, 108-130, Milan, May-Aug., 1959.
11613. BÄTH, M. Seismic surface-wave dispersion: a worldwide survey: *Geofis. Pura e Appl.*, v. 43, 131-147, Milan, May-Aug, 1959.
11614. BÄTH, M. Seismicity of the European area, a progress report: *IUGG Chronicle*, no. 22, 220-221, Paris, July, 1959.
11615. BÄTH, M. The seismograph station in Gothenburg: *Astron. Notes, Univ. Gothenburg*, Sweden, no. 2, 3-8, 1959.
11616. BÄTH, M. Seismologiska arbeten under geofysiska året: *Tek. Tidskr.*, Norrköping, Aug. 28, 1959.
11617. BAULE, H. Seismische Arbeiten der westfälischen Berggewerkschaftskasse Bochum: (abstr. only), *Geophys. Prospecting*, v. 7, no. 3, p. 369, The Hague, Sept., 1959.
11618. BECKMAN, W. C., ROBERTS, A. C., and LUSKIN, B. Sub-bottom depth recorder: *Geophysics*, v. 24, 4, 749-760, Menasha, Oct., 1959. An abstract appears in *Geophysics*, v. 23, no. 5, p. 1065, Menasha, Dec., 1958.
11619. BEEBE, B. W. A case history of the Koelsch southeast pool, Stafford county, Kansas, a study in microseismics: 249-274 in Hambleton, W. W., *Editor*, Symposium on Geophysics in Kansas (reported as no. 11780 of this list), *State Geol. Surv. Kansas*, Bull. 137, Lawrence, July, 1959.
11620. BENIOFF, H. Effect of unequal fling of two surfaces of a fault: (abstr. only), *Geol. Soc. Am. Bull.*, v. 69, no. 12, pt. 2, p. 1673, New York, Dec., 1958.
11621. BENIOFF, H. Strain seismograph recorders for long-period waves: (abstr. only), *Geol. Soc. Am. Bull.*, v. 69, no. 12, pt. 2, p. 1674, New York, Dec., 1958.
11622. BENIOFF, H. Circum-Pacific tectonics: 395-402 in Hodgson, J. H., *Editor*, The Mechanics of Faulting, with Special Reference to the Fault-plane Work. (See no. 11800 of this list), *Dom. Obs. Pub.*, v. 20, no. 2, Ottawa, 1959.
11623. BENIOFF, H. Suggestions for standards of noise, amplitude and spectrum: appx. 12 to the report of the panel on seismic improvement (reported as no. 11635 of this list), 137-138, Washington, July, 1959.
11624. BENIOFF, H. Improved seismographs: appx. 13 to the report of the panel on seismic improvement (reported as no. 11635 of this list), 139-144, Washington, July, 1959.

11625. BENIOFF, H. Fused-quartz extensometer for secular, tidal, and seismic strains: *Geol. Soc. Am. Bull.*, v. 70, no. 8, 1019-1032, New York, Aug., 1959.
11626. BENIOFF, H. Passive networks for seismographs: (abstr. only), *Geol. Soc. Am. Bull.*, v. 70, no. 12, pt. 2, p. 1708, Washington, Dec., 1959.
11627. BENIOFF, H., HARRISON, J. C., LACOSTE, L., MUNK, W. H., and SLICHTER, L. B. Searching for the earth's free oscillations: *J. Geophys. Res.*, v. 64, no. 9, 1334-1337, Washington, September, 1959. An abstract appears in *J. Geophys. Res.*, v. 64, no. 8, p. 1094, Washington, Aug., 1959.
11628. BENTLEY, C. R., and OSTENSO, N. A. Seismic methods and preliminary results, Marie Byrd Land, Antarctica: (abstr. only), *J. Geophys. Res.*, v. 64, no. 8, p. 1094, Washington, Aug., 1959.
11629. BERCKHEMER, H. Bericht über laufende Arbeiten zur Seismographen Eichung: (abstr. with discussions by Stein, Strobach, Förtsch, and Gassman, and replies by H. Berckhemer.) *IUGG Chronicle*, no. 22, 221-222, Paris, July, 1959.
11630. BERCKHEMER, H. Einfluss der Herdausdehnung auf das seismische Wellenspektrum: (an abstr. with discussions by Jung, Jobert, Ingram, Keylis-Borok, Strobach and Baule, and replies by H. Berckhemer), *IUGG Chronicle*, no. 22, 229-230, Paris, July, 1959.
11631. BERG, E. Tectonique et sismicité du Western Rift valley: *Folia Sci. Africae Centralis*, v. 1, 9-12, Bukavu, Mar. 31, 1959.
11632. BERG, J. W., JR., and COOK, K. L. Ground-motion measurements near quarry blasts at Promontory Point, Utah: *Seismol. Soc. Am. Bull.*, v. 49, no. 4, 391-397, Berkeley, Oct., 1959.
11633. BERG, J. W., JR., COOK, K. L., and NARANS, H. D., JR. Seismic studies of crustal structure in the eastern Basin and Range province: (abstr. only), *Geol. Soc. Am. Bull.*, v. 70, no. 12, pt. 2, p. 1709, Washington, Dec., 1959.
11634. BERG, J. W., JR., and RESLER, R. C. Investigation of local earthquakes February 13, 1958, near Wallsburg, Utah: *Utah Acad. Sci. Arts and Letters Proc.*, v. 35, 113-117, Logan, 1958. GEOPHYS. ABSTR.
11635. BERKNER, L. V., et al. The need for fundamental research in seismology: report of the panel on seismic improvement to the Department of State, Washington, D. C., 214 p., Washington, July, 1959.
11636. BERKNER, L. V. Government sponsorship of scientific research: *Science*, v. 129, no. 3352, 817-821, Washington, Mar., 1959.
11637. BERNARD, P. Sur un cas de propagation de la houle à très grande distance: *Acad. Sci. Paris, Comptes Rendus*, v. 248, 2370-2372, Paris, Apr., 1959.
11638. BERZON, I. S. Experimental data on converted refracted PSP waves: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 6, 689-712, Moscow, June, 1958. Translated by I. A. Mamantov in the English edition, 397-406, *Am. Geophys. Union*, Washington, Oct. 1959.
11639. BERZON, I. S. Experimental investigation of dynamic parameters of seismic waves in real media: *Studia Geophys. et Geod.*, v. 3, no. 3, 232-241, Prague, 1959.
11640. BIRKENHAUER, H. F., S. J. Report on Antarctica: *Earthquake Notes*, v. 30, no. 1, 10-11, Washington, Mar., 1959.
11641. BIRKENHAUER, H. F., S. J. and STUDER, M., O. P. Correlation between displacement and acceleration from quarry blasting: *Earthquake Notes*, v. 30, no. 3, 35-36, Washington, Sept., 1959.
11642. BLAIK, M., NORTHROP, J., and CLAY, C. S. Some seismic profiles onshore and offshore Long Island, New York: *J. Geophys. Res.*, v. 64, no. 2, 231-239, Washington, Feb., 1959. An abstract appears in *Am. Geophys. Union Trans.*, v. 39, no. 3, p. 507, Washington, June, 1958.
11643. BLAKE, F. G. A magnetic tape recording of the underground A-bomb explosion, 'Rainier': (abstr. only), *Geophysics*, v. 23, no. 5, p. 1063, Menasha, Dec., 1958. An abstract also appears in *Geol. Soc. Am. Bull.*, v. 69, no. 12, pt. 2, p. 1674, New York, Dec., 1958.
- BLIZARD, R. B., and KOKESH, F. P. Geometrical factors in sonic logging. See no. 11885 of this list.
11644. BLUM, P.-A., JOBERT, G., and JOBERT, N. Premiers résultats obtenus à l'aide d'inclinomètres: *Acad. Sci. Paris Comptes Rendus*, v. 248, 1551-1554, Paris, Mar., 1959.
11645. BLUME, J. A. Structural dynamics in earthquake-resistant design: *Proc. Am. Soc. Civ. Engrs.*, J. Struct. Div., v. 85, no. 1, pt. I, 127-129, New York, 1959. BULL. SIGNAL.
11646. BLUME, J. A. Structural dynamics in earthquake-resistant design: *Proc. Am. Soc. Civ. Engrs.*, J. Struct. Div., v. 85, no. 3, pt. I, 159-165, New York, 1959. BULL. SIGNAL.
11647. BLUNDUN, G. J. The Mississippian in the Alberta plains and the reflection seismograph: *Geophysics*, v. 24, no. 3, 426-442, Menasha, July, 1959. Also appears in *Oilweek*, v. 10, no. 34, 25-32, Calgary, 1959. An abstract appears in *Geophysics*, v. 23, no. 5, p. 1056, Menasha, Dec., 1958.
- BOGDANOFF, J. L., MOH, Z., and GOLDBERG, J. E. Forced vibration and natural frequencies of tall building frames. See no. 11761 of this list.
11648. BOLETIN DE INFORMACIONES CIENTIFICAS NACIONALES v. 10, no. 87, of this Journal, published by la Casca de la Cultura Ecuatoriana, Quito, contains a number of testimonials in memory of the Rev. Alberto D. Semanate, O. P., deceased June 27, 1958.
11649. BOLT, B. A. Travel times of PKP up to 145°: *Geophys. J.* v. 2, no. 3, 190-198, London, Sept., 1959.
11650. BORTFELD, R., and HURTGEN, H. Über die Identifizierung und Darstellung von reflektierten Refraktionen: (abstr. only), *Geophys. Prospecting*, v. 7, no. 3, p. 372, The Hague, Sept., 1959.
11651. BOUKSA, J. L'Institut Géophysique de l'Académie Tchecoslovaque des Sciences dans son nouveau site: *Studia Geophys. et Geod.* v. 3, no. 1, 99-100, Prague, 1959.
- BRANDT, S. B., TABULEVICH, V. N., and STRUK, YE. V. Automatic receiving of time signals by seismic station 'Makhachkala'. See no. 12156 of this list.
11652. BRAZEE, R. J., and CLOUD, W. K., Editors. United States Earthquakes, 1957: USCGS, 60 cents, 108 p. U.S. Government Printing Office, Washington, D. C., 1959.
11653. BRECK, H. R. Continuous velocity logging method: 3-4 in Oklahoma Geophysical Society, Symposium on Continuous Velocity Logging, (reported as no. 11989 of this list), *Shale Shaker*, v. 9, no. 9, Oklahoma City, 1959. GEOPHYS. ABSTR.
11654. BREWER, J. E. Geophysical problems on Pratt anticline, Pratt County, Kansas: 275-280 in Hambleton, W. W., Editor, Symposium on Geophysics in Kansas (reported as no. 11780 of this list), *State Geol. Surv. Kansas, Bull.* 137, Lawrence, July, 1959.

11655. BREWER, R. R., JR. A geophysical case history of the Lindsborg pool, McPherson County, Kansas: 287-295 in Hambleton, W. W., *Editor*, Symposium on Geophysics in Kansas (reported as no. 11780 of this list), *State Geol. Surv. Kansas*, Bull. 137, Lawrence, July, 1959.
- BROCKIE, D. C., HAMBLETON, W. W., and LYDEN, J. P. Geophysical investigations in the Tri-State zinc and lead mining district. See no. 11781 of this list.
11656. BRODE, H. L. Blast wave from a spherical charge: *The Physics of Fluids*, v. 2, no. 2, 217-229, New York, Mar.-Apr. 1959.
11657. BRODING, R. A. Possible causes of velocity mis-ties: 12-13 in Oklahoma Geophysical Society, Symposium on Continuous Velocity Logging, (reported as no. 11989 of this list), *Shale Shaker*, v. 9, no. 9, Oklahoma City, 1959. GEPHYS. ABSTR.
11658. BRONSON, W. The Earth Shook, the Sky Burned: (a record of the earthquake and fire at San Francisco, April 19, 1906), 192p., *Doubleday and Co. Inc.*, Garden City, 1959. The book gives a description of San Francisco as it was immediately before the earthquake, describes the earthquake and its effects in San Francisco and neighbouring towns, traces the course of the fire in detail, and describes the re-building of the city. It is illustrated with more than 400 photographs. many not previously published. A review appears in *The New Yorker Magazine*, Oct. 21, 1959.
11659. BROOKS, J. E., S.J. A study in seismicity and structural geology: *Bull. Geophys., Collège Jean-de-Brébeuf*, no. 6, 11-59, Montreal, Oct., 1959.
- BROOKS, L., WALLACE, C. H., and CARE, J. L. Geophysical case history of the Engel pool. See no. 11673 of this list.
11660. BROWN, H., and JOHNSON, G. W. Non-military uses of nuclear explosions: *Univ. California, Radiation Lab., Livermore Site*. Publ. UCRL 5026 of the U.S. Atomic Energy Commission, Washington, June, 1958.
- BRUCE, C. R., and WHITE, J. E. A technique for resolving over-lapping refraction arrivals. See no. 12224 of this list.
11661. BRUNE, J. N., NAFE, J. E., and OLIVER, J. E. A simplified method for the analysis and synthesis of dispersed wavetrains: (abstr. only), *J. Geophys. Res.*, v. 64, no. 8, p. 1096, Washington, Aug. 1959.
11662. BRUNE, J. N., and OLIVER, J. The seismic noise of the earth's surface: *Seismol. Soc. Am. Bull.*, v. 49, no. 4, 349-353, Berkeley, Oct. 1959. An abstract appears in *Earthquake Notes*, v. 30, no. 2, p. 16, Washington, June, 1959.
11663. BUKHNIKASHVILI, A. V. The twenty-fifth anniversary of The Geophysical Institute of Georgian S.S.R. Academy of Sciences: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 10, 1153-1161, Moscow, Oct., 1958. Translated by George Pietuchow in the English edition, 669-672, *Am. Geophys. Union*, Washington, Dec. 1959.
11664. BULLEN, K. E. Geophysics in Russia and China: *Australian J. Sci.*, v. 21, no. 7, 205-207, Sydney, 1959. GEPHYS. ABSTR.
11665. BUNCE, E. T., PHINNEY, R. A., and POOLEY, R. N. Seismic refraction observations in Buzzards Bay, Massachusetts: (abstr. only), *J. Geophys. Res.*, v. 64, no. 8, p. 1096, Washington, Aug., 1959.
- BUNCE, E. T., WYRICK, R. F., DIETZ, F. T., and HERSEY, J. B. Geophysical investigation of the continental margin between Cape Henry, Virginia, and Jacksonville, Florida. See no. 11791 of this list.
- BUROVA, A. V., and OGURTSOV, K. I. Intensities of longitudinal and transverse waves propagating at the boundary of a half-space. See no. 11987 of this list.
- BUSH, V. R., ZACHER, E. G., and STEINBRUGGE, K. V. San Francisco earthquake of March 22, 1957: engineering observations. See no. 12139 of this list.
11666. BUTOVSKAYA, E. M. Surface waves during local earthquakes: (abstr. only), *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 12, p. 1529, Moscow, Dec., 1958. Translated by I. A. Mamantov in the English edition, p. 894, *Am. Geophys. Union*, Washington, Jan., 1960.
11667. BYERLY, P., and STAUDER, W., S. J. Motion at the source of an earthquake: 255-261 in Hodgson, J. H., *Editor*, The Mechanics of Faulting, with Special Reference to the Fault-plane Work. (See no. 11800 of this list.) *Dom. Obs. Pub.*, v. 20, no. 2, Ottawa, 1959.
11668. CANADIAN OIL AND GAS INDUSTRIES v. 11, no. 2, p. 55 of this journal, published in Gardenville, Quebec, carries a report of a talk by P.L. Willmore to the Canadian Society of Exploration Geophysicists, under the title: "Preliminary Seismic Results—Ripple Rock."
11669. CARDER, D. S. Seismology in Australia and around the world. Part I *Earthquake Notes*, v. 29, no. 4, 41-44, Washington, Dec., 1958; Part II v. 30, no. 1, 5-9, Washington, Mar., 1959.
11670. CARDER, D. S. Eruption of March 5-6, 1958, of Manam volcano off the north coast of New Guinea: (abstr. only), *Geol. Soc. Am. Bull.*, v. 70, no. 12, pt. 2, 1711-1712, Washington, Dec., 1959.
11671. CARDER, D. S. Seismic-wave travel times from nuclear explosions—Part II: (abstr. only), *Geol. Soc. Am. Bull.*, v. 70, no. 12, pt. 2, p. 1712, Washington, Dec., 1959.
11672. CARDER, D. S., and CLOUD, W. K. Surface motion from large underground explosions: *J. Geophys. Res.*, v. 64, no. 10, 1471-1487, Washington, Oct., 1959.
11673. CARE, J. L., BROOKS, L., and WALLACE, C. H. Geophysical case history of the Engel pool: 281-286 in Hambleton, W. W., *Editor*, Symposium on Geophysics in Kansas (reported as no. 11780 of this list), *State Geol. Surv. Kansas*, Bull. 137, Lawrence, July, 1959.
11674. ČERVENÝ, V. On the reflection of spherical waves at a plane interface with refractive index near to one, I: *Studia Geophys. et Geod.*, v. 3, no. 2, 116-134, Prague, 1959.
11675. CHEREAU, J. Y., and LEDOUX, Y. Aspects théoriques et pratiques de la détermination des vitesses d'intervalle en sismique réflexion: *Geophys. Prospecting*, v. 7, no. 1, 24-37, The Hague, Mar., 1959.
- CHRISTIE, J. M., and MCINTYRE, D. B. The kinematic of faulting from seismic data. See no. 11949 of this list.
- CLAY, C. S., BLAIK, M., and NORTHROP, J. Some seismic profiles onshore and offshore Long Island, New York. See no. 11642 of this list.
- CLEVEN, M., and JORDAN, J. N. Physiographic changes associated with the southeastern Alaska earthquakes. See no. 11843 of this list.
11676. CLOSS, H. Über Erfahrungen mit Sprengungen zur Untersuchung der höheren Teile der Erdkruste in Deutschland: *Annali Geofis.*, v. 12, no. 3, 257-271, Rome, July-Sept., 1959.
- CLOUD, W. K., and BRAZEE, R. J. *Editors*, United States Earthquakes, 1957. See no. 11652 of this list.
- CLOUD, W. K., and CARDER, D. S. Surface motion from large underground explosions. See no. 11672 of this list.

11677. COLLINS, F. Plane compressional Voigt waves: (abstr. only), *Geophysics*, v. 24, no. 5, p. 1140, Menasha, Dec., 1959.
11678. COMITÉ DEL AÑO GEOFÍSICO INTERNACIONAL DEL ECUADOR. Breve historia de les principales terremotos en la República del Ecuador 1534-1958: *Publ. Observatorio Astronómico de Quito*, 37 p., Quito, 1959.
- COOK, K. L., and BERG, J. W., JR. Ground-motion measurements near quarry blasts at Promontory Point, Utah. See no. 11632 of this list.
- COOK, K. L., NARANS, H. D., JR., and BERG, J. W., JR. Seismic studies of crustal structure in the eastern Basin and Range province. See no. 11633 of this list.
11679. CRARY, A. P. Seismic methods and preliminary results, Ross ice shelf and Victoria land plateau: (abstr. only), *J. Geophys. Res.*, v. 64, no. 8, p. 1099, Washington, Aug., 1959.
11680. CRARY, A. P. Antarctica: *Am. Geophys. Union Trans.*, v. 40, no. 4, 331-339, Washington, Dec., 1959.
11681. CRENN, Y., and METZGER, J. Quelques observations d'ondes de Rayleigh de séismes Atlantiques enregistrés à la bordure du continent Africain: *Annales Geophys.*, v. 15, no. 4, 555-560, Paris, Oct.-Dec., 1959.
11682. CROOME, A. Geophysics and space research: A series of reviews, occasionally carrying articles of interest to seismologists, appears each month in *Discovery*, v. 20, London, 1959.
11683. CSOMOR, D. and KISS, Z. The seismicity of Hungary: *Geofiz. Közlem.*, v. 7, no. 3-4, 169-180, Budapest, 1958.
11684. CSOMOR, D., and KISS, Z. Die Seismizität von Ungarn: *Studia Geophys. et Geod.* v. 3, no. 1, 33-42, Prague, 1959.
- CUMMINGS, L. C., JR., and TULLOS, F. N. An analog seismic correlator. See no. 12193 of this list.
11685. DA COSTA, J. A. Water-level fluctuations caused by Montana earthquake: *Am. Geophys. Union Trans.*, v. 40, no. 4, p. 346, Washington, Dec., 1959.
11686. DAS, S. C. On the general plane problem of plasticity and its geophysical significance: *Can. J. Phys.* v. 37, no. 1, 63-74, Ottawa, Jan., 1959, also *Dom. Obs., Contr.*, v. 3, no. 21, 3-14, Ottawa, 1959.
11687. DAS GUPTA, S. C. On Coda waves of earthquakes: *Geofis. Pura e Appl.* v. 43, 45-74, Milan, May-Aug., 1959.
11688. DAS GUPTA, S. C. On the generation of microseisms due to disturbances in deep sea correlating observations at different stations: *Gerlands Beitr. Geophys.* v. 68, no. 4, 204-223, Leipzig, 1959.
11689. DAVYDOVA, N. I. The dependence of the dynamic characteristics of longitudinal head waves relating to thin layers on the velocity differentiation of the media: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 10, 1181-1191, Moscow, Oct. 1958. Translated by D. Fry and K. Syers in the English edition, 684-688, *Am. Geophys. Union*, Washington, Dec., 1959.
11690. DE BREMAECKER, J. Cl. Electronic transducer and tiltmeter: (abstr. only), *J. Geophys. Res.*, v. 64, no. 8, p. 1099, Washington, Aug., 1959.
11691. DE BREMAECKER, J. Cl. Seismicity of the West African Rift valley: *J. Geophys. Res.*, v. 64, no. 11, 1961-1966, Washington, Nov., 1959. An abstract appears in *J. Geophys. Res.*, v. 64, no. 8, p. 1099, Washington, Aug., 1959.
- DEN, N., MIKUMO, T., SHIMA, E., USAMI, T., and ASANO, S. On the travel-times of S-waves, derived from the explosion seismic observations. See no. 11601 of this list.
11692. DE NOYER, J. Determination of the energy in body and surface waves (Part II): *Seismol. Soc. Am. Bull.*, v. 49, no. 1, 1-10, Berkeley, Jan., 1959. An abstract appears in *Geol. Soc. Am. Bull.*, v. 69, no. 12, pt. 2, p. 1681, New York, Dec., 1958.
11693. DE NOYER, J. Crustal structure of the North Pacific from Love-wave dispersion: *Seismol. Soc. Am. Bull.*, v. 49, no. 4, 331-336, Oct., 1959. An abstract appears in *Geol. Soc. Am. Bull.*, v. 70, no. 12, pt. 2, 1714-1715, Washington, Dec., 1959.
11694. DE PANFILIS, M. Attività sismica in Italia dal 1953 al 1957: (with abstr. in English), *Annali Geofis.*, v. 12, no. 1, 21-148, Rome, Jan.-Mar., 1959.
11695. DE PANFILIS, M. L'attività sismica en Italie de 1951 à 1957: (abstr. only), *IUGG Chronicle*, no. 22, p. 219, Paris, July, 1959.
11696. DESBRANDES, R., REVERDY, X., and LAGARDE, A. Contribution à l'étude de la vitesse des ondes sismiques: *Inst. Français Pétrole Rev.*, v. 14, no. 4-5, 535-548, Paris 1959. GEOPHYS. ABSTR.
- DEWART, G., and PRESS, F. Extent of the Antarctic continent. See no. 12030 of this list.
- DIETZ, F. T., HERSEY, J. B., BUNCE, E. T., and WYRICK, R. F. Geophysical investigation of the continental margin between Cape Henry, Virginia, and Jacksonville, Florida. See no. 11791 of this list.
11697. DI FILIPPO, D., and MARCELLI, L. La magnitudo unificata per i terremoti a profondità normale, e la magnitudo dei terremoti profondi per la stazione sismica di Roma: *Bureau Central Séismologique International*, (UGGI), *Trav. Sci.*, ser. A, v. 20, 17-29, Strasbourg, 1959.
11698. DIX, C. H. Mechanisms of faulting: 267-270 in Hodgson, J. H., *Editor*, The Mechanics of Faulting, with Special Reference to the Fault-plane Work. (See no. 11800 of this list). *Dom. Obs. Pub.*, v. 20, no. 2, Ottawa, 1959.
11699. DIX, C. H. The reflected seismic pulse: (abstr. only), *J. Geophys. Res.*, v. 64, no. 8, p. 1100, Washington, Aug., 1959.
11700. DOBRIN, M. B. Seismic prospecting: *Can. Oil and Gas Ind.* v. 12, no. 1, 52-54, Gardenvale, 1959. GEOPHYS. ABSTR.
- DOH, C. A., TIXIER, M. P., and ALGER, R. P. Sonic logging. See no. 12183 of this list. GEOPHYS. ABSTR.
- DOLBILKINA, N. A., and MONAKHOV, F. I. The structure of microseisms. See no. 11966 of this list.
11701. DORMAN, J. Numerical solutions for Love wave dispersion on a half-space with double surface layer: *Geophysics*, v. 24, no. 1, 12-29, Menasha, Feb., 1959.
11702. DORMAN, J. Theory and computation of properties of surface waves on layered media: (abstr. only), *J. Geophys. Res.*, v. 64, no. 8, p. 1101, Washington, Aug., 1959.
- DORMAN, J., EWING, M., and OLIVER, J. Surface-wave dispersion for oceanic paths. See no. 11995 of this list.
- DORMAN, J., OLIVER, J. and KOVACH, R. An experimental and theoretical study of Rayleigh wave phase velocities. See no. 11997 of this list.
- DORMAN, J., SUTTON, G. H. and OLIVER, J. The second shear mode of continental Rayleigh waves. See no. 11996 of this list.
11703. DOYLE, H. A., EVERINGHAM, I. B., and HOGAN, T. K. Seismic recordings of large explosions in south-eastern Australia: *Australian J. Phys.* v. 12 no. 3, 222-230, Melbourne, Sept., 1959.

11704. DRAKE, C. L., EWING, M., and SUTTON, G. H. Continental margins and geosynclines: The east coast of North America north of Cape Hatteras: in *Physics and Chemistry of the Earth*, v. 3, 110-198, Pergamon Press, London and New York, 1959.
11705. DRAKE, C. L., GAIBAR-PUERTAS, C., NAFE, J. E., and LANGSETH, M. Estudios de prospección sísmica por refracción en el golfo de Cádiz: *Rev. Geofis.* v. 18, no. 70, 143-162, Madrid, Apr.-June, 1959.
11706. DROSTE, S., GIBOWICZ, S., and HORDEJUK, J. Analysis of the first movements of the seismic waves recorded on seismograms: (in Russian with extensive summary in English), *Acta Geophys. Polonica*, v. 7, no. 2, 136-164, Warsaw, 1959.
11707. DROSTE, S., and TEISSEYRE, R. The mechanism of earthquakes according to dislocation theory: *Sci. Repts. Tôhoku Univ.*, ser. 5, Geophys., v. 11, no. 1, 55-71, Sendai, Sept., 1959.
11708. DUKE, C. M. Bibliography of effects of soil conditions on earthquake damage: iii + 47p. *Earthquake Eng. Res. Inst.*, San Francisco, 1958. A review appears in *Seismol. Soc. Am. Bull.*, v. 49, no. 2, page 209, Berkeley, 1959.
11709. DUKE, C. M. Effect of ground on destructiveness of large earthquakes: *Proc. Am. Soc. Civ. Engrs.*, J. Struct. Div., v. 85, no. 1, pt. 1, 77-83, New York, 1959.
- BULL. SIGNAL.
11710. DUKE, C. M., and LEEDS, D. J. Soil conditions and damage in the Mexico earthquake of July 28, 1957: *Seismol. Soc. Am. Bull.*, v. 49, no. 2, 179-191, Berkeley, April, 1959. An abstract appears in *Geol. Soc. Am. Bull.*, v. 69, no. 12, pt. 2, p. 1682, New York, Dec., 1958.
11711. DUKE, C. M., and LEEDS, D. J. Effects of earthquakes on tunnels: presented at the Rand Second Protective Construction Symposium, and published in mimeograph form by The Rand Corporations, Santa Monica, California, July, 1959.
11712. DUNOYER DE SEGONZAC, Ph., and LAHERRERE, J. Application of the continuous velocity log to anisotropy measurements in northern Sahara; results and consequences: *Geophys. Prospecting*, v. 7, no. 2, 202-217, The Hague, June, 1959.
11713. DUSHANE, G. Unidentified seismic events: *Science*, v. 129, no. 3344, p. 241, Washington, Jan., 30, 1959.
- DUVALL, W. I., FOGELSON, D. and ATCHISON, T. C. Propagation of peak strain and strain energy from explosion-generated strain pulses in rock. See no. 11733 of this list.
11714. DUWALO, G., and JACOBS, J. A. Effects of a liquid core on the propagation of seismic waves: *Can. J. Phys.*, v. 37, no. 2, 109-128, Ottawa, 1959. GEOPHYS. ABSTR.
11715. EATON, J. P. A portable water-tube tiltmeter: *Seismol. Soc. Am. Bull.*, v. 49, no. 4, 301-316, Berkeley, Oct., 1959.
11716. EATON, J. P., and TAKASAKI, K. J. Seismological interpretation of earthquake-induced water-level fluctuations in wells: *Seismol. Soc. Am. Bull.*, v. 49, no. 3, 227-245, Berkeley, July, 1959.
- EATON, J. P., WENTWORTH, C. K., and FRASER, G. D. The tsunami of March 9, 1957, on the island of Hawaii. See no. 11734 of this list.
11717. ELLIOTT, S. E. Computation techniques and problems in the synthesis of seismograms: (abstr.) only, *Geophysics*, v. 24, no. 5, 1133-1134, Menasha, Dec., 1959.
11718. EPINAT'EVA, A. M. The present state of the correlation method of refractive waves: (in Chinese with Russian summary), *Acta Geophys. Sinica*, v. 8, no. 1, 55-59, Peking, Aug., 1959.
11719. EPINAT'EVA, A. M., and KOSMINSKAYA, I. P. Seismic exploration in China: (in Chinese with Russian summary), *Acta Geophys. Sinica*, v. 8, no. 1, 60-70, Peking, Aug., 1959.
- ERICSON, D. B., EWING, M., and HEEZEN, B. C. Significance of the Worzel deep sea ash. See no. 11727 of this list.
11720. ESPINOSA, A. F. Observation of the effect of regional structures on the propagation of surface waves at small epicentral distances: (abstr. only), *Earthquake Notes*, v. 30, no. 2, p. 16, Washington, June, 1959.
11721. ESPINOSA, A. F. Simplified expressions for the period equation of Love waves in a double and triple surface layer: *Earthquake Notes*, v. 30, no. 2, p. 18, Washington, June, 1959.
11722. EVANS, J. F. Seismic model experiments with shear waves: *Geophysics*, v. 24, no. 1, 40-48, Menasha, Feb., 1959. An abstract appears in *Geophysics*, v. 23, no. 5, p. 1075, Menasha, Dec., 1958.
- EVERINGHAM, I. B., HOGAN, T. K., and DOYLE, H. A. Seismic recordings of large explosions in southeastern Australia. See no. 11703 of this list.
11723. EVISON, F. F., INGHAM, C. E., and ORR, R. H. Thickness of the earth's crust in Antarctica: *Nature*, v. 183, no. 4657, 306-308, London, Jan. 31, 1959.
11724. EWING, J. I. Crustal structure in the Caribbean from seismic measurements: (abstr. only), *Geo. Soc. Am. Bull.*, v. 70, no. 12, pt. 2, p. 1719, Washington, Dec., 1959.
- EWING, J. I., HENNIION, J. F., HARKRIDER, D. G., MILLER, D. E., and OFFICER, C. B. Geophysical investigations in the eastern Caribbean: Summary of 1955 and 1956 cruises. See no. 11986 of this list.
11725. EWING, J., and EWING, M. Seismic-refraction measurements in the Atlantic Ocean basins, in the Mediterranean Sea, on the mid-Atlantic ridge, and in the Norwegian Sea: *Geol. Soc. Am. Bull.*, v. 70, no. 3, 291-317, New York, March, 1959.
11726. EWING, M. The Scotia sea floor: (abstr. only), *J. Geophys. Res.*, v. 64, no. 8, p. 1101, Washington, Aug. 1959.
- EWING, M., and EWING, J. Seismic-refraction measurements in the Atlantic Ocean basin, in the Mediterranean Sea, on the mid-Atlantic ridge, and in the Norwegian Sea. See no. 11725 of this list.
- EWING, M., and HEEZEN, B. C. Extension of the mid-oceanic ridge through the Arctic basin. See no. 11789 of this list.
11727. EWING, M., HEEZEN, B. C., and ERICSON, D. B. Significance of the Worzel deep sea ash: *U.S. National Acad. Sci. Proc.*, v. 45, no. 3, 355-361, Washington, Mar., 1959.
- EWING, M., LANDISMAN, M., and SATÔ, Y. Surface wave dispersion in elastic media having gradients in their physical properties. See no. 11902 of this list.
- EWING, M., LANDISMAN, M., and SATÔ, Y. The distortion of pulse-like earthquake signals by seismographs. See no. 11901 of this list.
11728. EWING, M., MUELLER, S., LANDISMAN, M., and SATÔ, Y. Transient analysis of earthquake and explosion arrivals: *Geof. Pura e Appl.*, v. 44, 83-118, Milan, Sept.-Dec., 1959. An abstract appears in *Earthquake Notes*, v. 29, no. 2, p. 15, Washington, June, 1959.
- EWING, M., OLIVER, J., and DORMAN, J. Surface-wave dispersion for oceanic paths. See no. 11995 of this list.
11729. EWING, M., and PRESS, F. Determination of crustal structure from phase velocity of Rayleigh waves. Part III. The United States: *Geol. Soc. Am. Bull.*, v. 70, no. 3, 229-244, New York, March, 1959.

- EWING, M., SUTTON, G. H., and DRAKE, C. L. Continental margins and geosynclines: The east coast of North America north of Cape Hatteras. See no. 11704 of this list.
- EWING, M., SUTTON, G. H., and MAJOR, M. Oceanic Rayleigh-wave dispersion in the period range 15–140 seconds: the group-velocity maximum and associated Airy phase. See no. 12148 of this list.
- EWING, M., TALWANI, M., and WORZEL, J. L. Gravity anomalies and crustal section across the Tonga trench. See no. 12168 of this list.
11730. FIGUEROA ABARCA, J. Actividades sismológicas durante el AGI: *Inst. Geofis. Univ. Nac. Auton. Mexico*, Tacubaya, Jan. 1959.
11731. FIGUEROA ABARCA, J. Macrosismo del 24 de Mayo de 1959: *Inst. Geofis. Univ. Auton. Mexico*, Tacubaya, July, 1959.
11732. FLITMAN, L. M. A boundary problem for an elastic half space: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 1, 105–106, Moscow, Jan. 1958. Translated by K. Syers in the English edition, 59–60, *Am. Geophys. Union*, Washington.
11733. FOGELSON, D., ATCHISON, T. C., and DUVAL, W. I. Propagation of peak strain and strain energy from explosion-generated strain pulses in rock: (abstr. only), *Earthquake Notes*, v. 30, no. 3, Washington, Sept., 1959.
11734. FRASER, G. D., EATON, J. P., and WENTWORTH, C. K. The tsunami of March 9, 1957, on the island of Hawaii: *Seismol. Soc. Am. Bull.*, v. 49, no. 1, 79–90, Berkeley, Jan., 1959.
11735. FREESTON, W. D., and SUPPIGER, E. W. A note on Mohr's stress circles: *J. Franklin Inst.*, v. 268, no. 2, 106–110, Lancaster, Aug., 1959.
- FRISCHKNECHT, F. C., WAHL, R. R., PLOUFF, D., and KELLER, G. V. Geophysical studies on I.G.Y. drifting station Bravo (T3), 1958 to 1959. See no. 12016 of this list.
11736. FURUTA, M. A summarised report on the development of seismological observation net and seismographs in the present use in USSR (2): (in Japanese), *Quart. J. Seismol.*, v. 23, no. 4, 177–182, Tokyo, Mar., 1959.
11737. FURUTA, M. A summarised report on the development of seismological observation net and seismographs in the present use in USSR (3): (in Japanese), *Quart. J. Seismol.*, v. 24, no. 2, 57–63, Tokyo, Sept., 1959.
- GAIBAR-PUERTAS, C., NAFE, J. E., LANGSETH, M., and DRAKE, C. L. Estudios de prospección sísmica por refracción en el golfo de Cádiz. See no. 11705 of this list.
11738. GAITHER, V. U. Index of wells shot for velocity, eighth supplement: *Geophysics*, v. 24, no. 5, 944–955, Menasha, Dec., 1959.
11739. GALANOPOULOS, A. G. Macroseismic evidence for the fault plane: *Annali Geofis.* v. 12, no. 2, 189–196, Rome, Apr.–May, 1959. An abstract, with discussions by Peterschmitt, R. Stoneley, and J. M. Van Gils appears in *IUGG Chronicle*, no. 22, p. 230, Paris, July, 1959.
11740. GAL'PERIN, Ye. I. Grouping of the first kind and a method for obtaining multi-component azimuthal seismograms: *Akad. Nauk. SSSR Izv.*, ser. Geofiz., no. 9, 1081–1098, Moscow, Sept., 1957. Translated by A. K. Henn in the English edition, 1–23, *Pergamon Press*, New York.
11741. GAL'PERIN Ye. I., and KOSMINSKAYA, I. P. Characteristics of the method of deep seismic sounding on the sea: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 7, 833–847, Moscow, July, 1958. Translated by A. S. Ryall in the English edition, 475–483, *Am. Geophys. Union*, Washington, Nov., 1959.
11742. GAL'PERIN, Ye. I., and KOSMINSKAYA, I. P. On seismic investigations of the deep crustal structure according to the International Geophysical Year plan: *Annali Geofis.* v. 12, no. 3, 283–295, Rome July–Sept., 1959. An abstract appears in *IUGG Chronicle*, no. 22, p. 214 Paris, July, 1959.
11743. GAMBURTSEV, G. A. The principles of seismic exploration: *Gostoptekhizdat*, 277 p., Moscow, 1959. GEOPHYS. ABSTR.
11744. GANE, P. G. Seismic work on crustal structure in South Africa: *Bureau Central Séismologique International (UGGI)*, Trav. Sci. ser., A, 20, 151–152, Strasbourg, 1959.
- GANGI, A. F., and KNOPOFF, L. Seismic reciprocity. See no. 11872 of this list.
11745. GARLAND, G. D. Current research in geophysics in Canada: *Geophys. J.*, v. 2, no. 1, 45–50, London, Mar., 1959.
11746. GASSMANN, F. Elastische Multipolwellen in einem Medium, das aus Homogenen, Isotropen, Planparallelen Schichten Besteht: *Geofis. Pura e Appl.*, v. 43, 83–107, Milan, May–Aug., 1959. Also appears in *Mitteil. Inst. Geophys.*, no. 36, Zurich, Aug., 1959.
11747. GEOPHYSICAL JOURNAL. The following articles of interest to seismologists appeared in v. 1, of this journal, London, 1958:—
Symposium on fault-plane conditions: no. 1, 106–109.
Resolutions on deep drilling: no. 1, p. 111.
11748. GEOPHYSICAL JOURNAL. The following items of interest to seismologists appeared in v. 2 of this periodical:—
The characteristics of the Antarctic ice sheet: (R.A.S. discussion of 1959, February 27), no. 2, 164–168, June, 1959.
The geological and geophysical results of the cruises of R.R.S. Discovery II, 1958, May–July: (Cambridge discussion of 1959 March 4), no. 2, 168–170, June, 1959.
Turbidity currents; high-speed underwater flow of sediment suspensions: no. 3, 248–250, Sept., 1959.
The automatic reduction of geophysical data: no. 3, 250–255, Sept., 1959.
11749. GERRARD, J. Unattended auxiliary seismic stations, Appx. 3 to the report of the panel on seismic improvement: (reported as no. 11635 of this list), 22–41 Washington, July, 1959.
11750. GERRARD, J. 'Throw-away' or portable seismic probes for operation on land, Appx. 14 to the report of the panel on seismic improvement: (reported as no. 11635 of this list), 145–151, Washington, July, 1959.
11751. GERRARD, J. Use of multiple arrays in seismic detection, Appx. 15 to the report of the panel on seismic improvement: (reported as no. 11635 of this list), 152–163, Washington, July, 1959.
11752. GERRARD, J. Data processing requirements, Appx. 16 to the report of the panel on seismic improvement: reported as no. 11635 of this list), 164–183, Washington, July, 1959.
11753. GERRARD, J. Program to establish a complete experimental seismic station for the evaluation of network instruments and methods, Appx. 17 to the report of the panel on seismic improvement: (reported as no. 11635 of this list), 184–185, Washington, July, 1959.
11754. GERRARD, J. Research computing facilities and a digital library of seismograms, Appx. 19 to the report of the panel on seismic improvement: (reported as no. 11635 of this list), 193–194, Washington, July, 1959.

11755. GERRARD, J. Considerations on the standardization of seismometers to be used in the Geneva network, Appx. 20 to the report of the panel on seismic improvement: (reported as no. 11635 of this list), 195-214, Washington, July, 1959.
- GIANELLA, V. P., SLEMMONS, D. B., STEINBRUGGE, K. V., TOCHER, D., and OAKESHOTT, G. B. Wonder, Nevada, earthquake of 1903. See no. 12125 of this list.
- GIBOWICZ, S., HORDEJUK, J., and DROSTE, S. Analysis of the first movements of the seismic waves recorded on seismograms. See no. 11706 of this list.
11756. GIBSON, A. S. Efficiency of seismic operations in Western Canada: (abstr. only), *Geophysics*, v. 24, no. 5, 1128-1129, Menasha, Dec., 1959.
- GILBERT, F., and KNOPOFF, L. Radiation from a strike-slip fault. See no. 11873 of this list.
- GILBERT, F., and KNOPOFF, L. First motions from seismic sources. See no. 11874 of this list.
11757. GILBERT, F., and KNOPOFF, L. Scattering of P waves by the core of the earth: (abstr. only), *J. Geophys. Res.*, v. 64, no. 8, p. 1103, Washington, Aug., 1959.
11758. GILIC, A. The geographical location of a distant earthquake: *Seismol. Soc. Am. Bull.*, v. 49, no. 3, 221-226, Berkeley, July, 1959.
11759. GLOVER, R. H. Techniques used in interpreting seismic data in Kansas: 225-240 in Hambleton, W. W., *Editor*, Symposium on Geophysics in Kansas (reported as no. 11780 of this list), *State Geol. Surv. Kansas*, Bull. 137, Lawrence, July, 1959.
11760. GODFREY, L. M., Jr. Seismometer harmonic distortion: (abstr. only), *Geophysics*, v. 24, no. 5, p. 1141, Menasha, Dec., 1959.
11761. GOLDBERG, J. E., BOGDANOFF, J. L., and MOH, Z. L. Forced vibration and natural frequencies of tall building frames: *Seismol. Soc. Am. Bull.*, v. 49, no. 1, 33-48, Berkeley, Jan., 1959.
- GOODSPEED, M. J., and MATHER, K. B. Australian Antarctic ice thickness measurements and sastrugi observations, Mac-Robertson Land, 1957-58. See no. 11935 of this list. GEOPHYS. ABSTR.
11762. GORSHKOV, G. P. On seismic regioning of Asian countries: *Bureau Central Seismologique International*, (UGGI), *Trav. Sci.*, ser. A, v. 20, 407-411, Strasbourg, 1959.
11763. GRANNEMANN, W. W. Field testing seismic instruments: *Geophysics*, v. 24, no. 4, 817-822, Menasha, Oct., 1959.
- GRIGGS, D., and PRESS, F. Improved equipment for existing seismic stations. See no. 12031 of this list.
- GRIGGS, D., and PRESS, F. Geophysical investigation of continental crustal structure. See no. 12032 of this list.
11764. GRINDA, L. Influence de la profondeur de l'explosif sur l'amplitude des ondes séismiques engendrées par une explosion sous-marine: *Geofis. Teorica Appl. Boll.* v. 1, no. 2, 161-174, Trieste, 1959.
11765. GRINE, D. R. Finite amplitude stress waves in rocks: *Poulter Lab. Tech. Rept. 012-59*, Stanford Res. Inst., Menlo Park, Oct. 1, 1959.
11766. GROSSLING, B. F. Seismic waves from the underground atomic explosion in Nevada: *Seismol. Soc. Am. Bull.*, v. 49, no. 1, 11-32, Berkeley, Jan., 1959.
11767. GROSSLING, B. F. An amplitude's ratio method: (abstr. only), *Geophysics*, v. 24, no. 5, p. 1123, Menasha, Dec., 1959.
11768. GRYC, G. Progress report—a study of tectonics of Alaska: (abstr. only), *Can. Oil and Gas Ind.*, v. 12, no. 12, p. 54, Gardenvale, Dec., 1959.
11769. GURVICH, I. I. Conditions for seismic search for oil in the territory of the Chinese People's Republic: (in Chinese), *Acta Geophys. Sinica*, v. 8, no. 1, 48-54, Peking, Aug., 1959.
11770. GUTENBERG, B. Earthquake waves reflected at the inside of the core boundary: *J. Geophys. Res.*, v. 64, no. 10, 1503-1508, Washington, Oct., 1959.
11771. GUTENBERG, B., *Editor* Physics of the Earth's Interior: *Academic Press*, 240 p., New York, 1959.
11772. GUTENBERG, B. Wave velocities below the Mohorovičić discontinuity: *Geophys. J.*, v. 2, no. 4, 348-352, London, Dec., 1959.
- GUZMAN, G., and AGUILAR, G. Operational problems of seismological crews in Mexico. See no. 11582 of this list.
- GVOZDEV, A. A., and SKURIDIN, G. A. Boundary conditions for jumps in solutions of dynamic equations of the theory of elasticity with discontinuities. See no. 12124 of this list.
11773. GZOVSKY, M. V. The modeling method in tectonophysics: *Sovet. Geol.* no. 4, 53-72, Moscow, 1958. Translated by E. R. Hope, Translation T311R, *Defence Res. Bd.*, Ottawa, Mar., 1959.
11774. GZOVSKY, M. V., KRESTNIKOV, V. N., NERSESOV, I. L., and REISNER, G. I. A comparison of tectonics and seismicity in the Garm region, Tadzhik SSR. I: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 8, 959-976, Moscow, Aug., 1958. Translated by I. A. Mamantov in the English edition, 550-559, *Am. Geophys. Union*, Washington, Nov., 1959.
11775. HADLEY, J. B. The Madison Canyon landslide: *GeoTimes*, v. 4, no. 3, 14-17, Washington, Oct., 1959.
11776. HAGEDOORN, J. G. The plus-minus method of interpreting seismic refraction sections: *Geophys. Prospecting*, v. 7, no. 2, 158-182, The Hague, June, 1959. Also appears in *Geol. Mijn.*, v. 20, no. 11, 406-417, The Hague, 1958.
11777. HALES, A. L., and SACKS, I. S. Evidence for an intermediate layer from crustal structure studies in the Eastern Transvaal: *Geophys. J.*, v. 2, no. 1, 15-33, London, March, 1959.
11778. HALL, T. O. Use of portable playback system effects a saving: *Geophysics*, v. 24, no. 4, 824-827, Menasha, Oct., 1959.
11779. HALL, T. O., and MARTIN, J. Ammonium nitrate: economy blasting agent for oil exploration: *Geophys. Prospecting*, v. 7, no. 1, 18-23, The Hague, Mar., 1959. Also appears in *Geophysics*, v. 24, no. 1, 155-163, Menasha, Feb., 1959.
11780. HAMBLETON, W. W. *Editor*, Symposium on Geophysics in Kansas: *State Geol. Surv. Kansas*, Bull. 137, 375 p. Lawrence, July, 1959. A review appears in *Geophysics*, v. 25, no. 1, 340-341, Menasha, Feb., 1960.
11781. HAMBLETON, W. W., LYDEN, J. P., and BROCKIE, D. C. Geophysical investigations in the Tri-State zinc and lead mining district; 357-375 in Hambleton, W. W., *Editor*, Symposium on Geophysics in Kansas (reported as no. 11780 of this list), *State Geol. Surv. Kansas*, Bull. 137, Lawrence, July, 1959.
- HAMBLETON, W. W., and MERRIAM, D. F. Exploration geophysics in Kansas. See no. 11957 of this list.
11782. HAMEISTER, E. Ein Diagramm zur Bestimmung der Tiefe beim 2-Schichten-Problem in der Refraktionsseismik: *Gerlands Beitr. Geophys.* v. 67, no. 2, 158-161, Leipzig, 1958.

- HARKRIDER, D. G., MILLER, D. E., OFFICER, C. B., EWING, J. I., and HENNION, J. F. Geophysical investigations in the Eastern Caribbean: summary of 1955 and 1956 cruises. See no. 11986 of this list.
11783. HARRIS, H. I. Deep seismic results mean new exploration in Israel: *World Oil*, v. 148, no. 2, p. 106, 109-110, Houston, 1959. GEOPHYS. ABSTR.
- HARRISON, J. C., LACOSTE, L., MUNK, W. H., SLICHTER, L. B., and BENIOFF, H. Searching for the earth's free oscillations. See no. 11627 of this list.
11784. HATHERTON, T., and ORR, B. H. Microseisms at Scott Base: *Nature*, v. 183, no. 4677, 1760-1761, London, June 20, 1959.
11785. HAYES, R. C. Earthquakes in New Zealand during the year 1954: *N. Z. Dept. Sci. Ind. Res.*, Geophys. Div. Seismol. Bull. S-106, 5 p., Wellington, 1959.
11786. HEALY, J. H., AKI, K., and PRESS, F. Model seismology studies of surface waves: (abstr. only), *Geophysics*, v. 24, no. 5, p. 1141, Menasha, Dec., 1959.
11787. HEALY, J. H., and PRESS, F. Further model study of the radiation of elastic waves from a dipole source: *Seismol. Soc. Am. Bull.*, v. 49, no. 2, 193-198, Berkeley, April, 1959. An abstract appears in *Geol. Soc. Am. Bull.*, v. 69, no. 12, pt. 2, p. 1687, New York, Dec., 1958.
11788. HEEZEN, B. C. Dynamic processes of abyssal sedimentation: erosion, transportation, and redeposition on the deep-sea floor: *Geophys. J.*, v. 2, no. 2, 142-163, London, June, 1959.
- HEEZEN, B. C., ERICSON, D. B., and EWING, M. Significance of the Wozzel deep sea ash. See no. 11727 of this list.
11789. HEEZEN, B. C. and EWING, M. Extension of the mid-oceanic ridge through the Arctic basin: (abstr. only), *Can. Oil and Gas Ind.*, v. 12, no. 12, p. 55, Gardenvale, Dec. 1959.
- HENNION, J. F., HARKRIDER, D. G., MILLER, D. E., OFFICER, C. B., and EWING, J. I. Geophysical investigations in the Eastern Caribbean: summary of 1955 and 1956 cruises. See no. 11986 of this list.
11790. HERRINCH, P. Séismicité du Congo belge: *Acad. Roy. Sci. Coloniales*, new ser., v. 9, no. 5, 55 p., Brussels, 1959.
11791. HERSEY, J. B., BUNCE, E. T., WYRICK, R. F., and DIETZ, F. T. Geophysical investigation of the continental margin between Cape Henry, Virginia, and Jacksonville, Florida: *Geol. Soc. Am. Bull.*, v. 70, no. 4, 437-465, New York, Apr., 1959.
11792. HESS, H. H. The AMSOC hole to the earth's mantle: *Am. Geophys. Union Trans.*, v. 40, no. 4, 340-345, Washington, Dec., 1959. An abstract appears in *J. Geophys. Res.* v. 64, no. 8, p. 1106, Washington, Aug., 1959.
11793. HICKS, W. G. Adjustment of velocity logs to tie geophone surveys: 17-20 in Oklahoma Geophysical Society Symposium or Continuous Velocity Logging, (reported as no. 11989 of this list), *Shale Shaker*, v. 9, no. 9, Oklahoma City, 1959. GEOPHYS. ABSTR.
11794. HICKS, W. G. Lateral velocity variations near boreholes: *Geophysics*, v. 24, no. 3, 451-461, Menasha, July, 1959. An abstract appears in *Geophysics*, v. 23, no. 5, p. 1061, Menasha, Dec., 1958. Discussions by J. A. Brooks, and E. Kaarsberg, and replies by W. G. Hicks, appear in *Geophysics*, v. 24, no. 3, 461-464, Menasha, July, 1959.
11795. HIEBLT, J., and ROCARD, Y. Contribution à la théorie des microséismes: *Annales Géophys.* v. 15, no. 4, 539-546, Paris, Oct.-Déc., 1959.
11796. HIGGINS, G. E. Seismic velocity data from Trinidad, B.W.I., and comparison with the Caribbean area: *Geophysics*, v. 24, no. 3, 580-597, Menasha, July, 1959.
- HIGGINS, G. H., VIOLET, C. E., and JOHNSON, G. W. Underground nuclear detonations. See no. 11842 of this list.
11797. HILLER, W. Projet d'installation d'un réseau de sismographes à grande période homogène dans les 3 composantes: (abstr. with discussions by F. Gassman, I. Lehmann, E. F. Savarensky, G. Grenet, J. M. Van Gils, H. Jensen, and replies by W. Hiller), *IUGG Chronicle*, no. 22, 222-223, Paris, July, 1959.
11798. HIRAMATSU, Y., and OKA, Y. The fracture of rock around underground openings; *Kyōto Univ. Fac. Eng. Mem.*, v. 21, pt. 2, 128-153, Kyōto, 1959. GEOPHYS. ABSTR.
- HIRONO, T., and WADATI, K. Abnormal distribution of seismic intensity observed in Japan. See no. 12216 of this list.
11799. HISAMOTO, S. On the shallow earthquakes in western Japan: (in Japanese with summary and captions in English), *Quart. J. Seismol.* v. 23, no. 4, 149-154, Tokyo, Mar., 1959.
11800. HODGSON, J. H., *Editor*, The Mechanics of Faulting, with Special Reference to the Fault-plane Work; (A symposium of the International Union of Geodesy and Geophysics, Association of Seismology and Physics of the Earth's Interior, Eleventh General Assembly, Toronto, Canada), *Dom. Obs. Pub.*, v. 20, no. 2, 251-418, Ottawa, 1959. Reviews appear in *Rev. Geofis.* v. 18, no. 69, p. 102, Madrid, Jan.-Mar., 1959, *Geophysics*, v. 25, no. 1, p. 339, Menasha, Feb., 1960, and a review by W. F. Brace, *Am. Geophys. Union Trans.*, v. 42, no. 1, 39-40, Washington, Mar., 1961.
11801. HODGSON, J. H. The null vector as a guide to regional tectonic patterns: 369-384 in Hodgson, J. H., *Editor* The Mechanics of Faulting, with Special Reference to the Fault-plane Work. See no. 11800 of this list. *Dom. Obs. Pub.*, v. 20, no. 2, Ottawa, 1959.
11802. HODGSON, J. H. Current status of fault-plane studies—A summing up: 413-418 in Hodgson, J. H., *Editor*, The Mechanics of Faulting, with Special Reference to the Fault-plane Work. (See no. 11800 of this list). *Dom. Obs. Pub.*, v. 20, no. 2, Ottawa, 1959.
- HOGAN, T. K., DOYLE, H. A., and EVERINGHAM, I. B. Seismic recordings of large explosions in southeastern Australia. See no. 11703 of this list.
11803. HOLLIS, E. P. Bibliography of Engineering Seismology: Second ed., xi+144 pages. *Earthquake Eng. Res. Inst.*, San Francisco, 1958. A review appears in *Seismol. Soc. Am. Bull.*, v. 49, no. 1, p. 119, Berkeley, 1959.
- HOLLY, L. M., and PICKHARDT, H. E. Sonic log proves valuable porosity tool. See no. 12014 of this list. GEOPHYS. ABSTR.
11804. HOLSTE, W. Problems and results with refraction seismics in boreholes: *Geophys. Prospecting*, v. 7, no. 2, 231-244, The Hague, June, 1959.
11805. HONDA, H. The mechanism of the earthquakes: 295-340 in Hodgson, J. H., *Editor*, The Mechanics of Faulting, with Special Reference to the Fault-plan Work. (See no. 11800 of this list). *Dom. Obs. Pub.*, v. 20, no. 2, Ottawa, 1959. This is a reprint of the paper listed as no. 10156 of this list.
11806. HOOK, J. F. Propagation of seismic waves in inhomogeneous isotropic media: (abstr. only), *Geophysics*, v. 24, no. 5, 1139-1140, Menasha, Dec., 1959.
11807. HOPE, E. R. Geotectonics of the Arctic Ocean and the great Arctic magnetic anomaly: *J. Geophys. Res.*, v. 64, no. 4, 407-427, Washington, Apr., 1959.

11808. HOPE, E. R. List of translations from Russian, Yugoslav, Ukrainian, Polish, Japanese and Chinese, Defence Research Board, Ottawa, June, 1959. The translations here listed are not for sale. However, they are regularly deposited in a number of libraries, in particular the following, from where photo-copies or microfilm copies may be obtained:

Canada:	The Library, National Research Council, Sussex Street, Ottawa, Ontario.
United States:	Special Libraries Assoc., Translations Pool, c/o John Crerar Library, 86 E Randolph Street, Chicago 1, Illinois.
United Kingdom:	Science Museum Library, South Kensington, London, England.

The list contains the following translations, all by E. R. Hope, of interest to seismologists:—

T. 127R. Study of the "head wave" developed at the interface between two elastic fluids: *Akad. Nauk SSSR Izv. ser. Geofiz.*, v. 15 no. 1, 20–39, (1951), by L. P. Zaicev and M. V. Zvolinski.

T. 164R. Diffraction of sound waves on an uneven surface: *Akad. Nauk. SSSR Dokl.* v. 79, no. 4, 585–588 (1951), by L. M. Brekhovskikh.

T.200R. Existence of a deep-lying surface of seismic foci on the edge of the Pacific Ocean: *Akad. Nauk SSSR Dokl.* v. 101 no. 1, 63–64. (1955), by S. D. Kogan.

T. 201R. The question of research on the mechanism of deep earthquakes: *Akad. Nauk. SSSR Dokl.* v. 99 no. 3, 385–388, 1954, by S. D. Kogan.

T. 204R. Neotectonic movements in the Arctic region: *Akad. Nauk SSSR Dokl.* v. 104 no. 3, 462–465, 1955, by D. G. Panov.

T. 207R. Tectonics of the Central Arctic: *Akad. Nauk. SSSR Dokl.* v. 105, no. 2, 339–342, 1955, by D. G. Panov.

T. 211R. Geomagnetism and seismic phenomena *Akad. Nauk SSSR Izv.*, ser. Geophys., v. 5, 393–404, 1953, by M. I. Lapina.

T. 217R. Three papers:—(i) New data on the geological structure of the Soviet far eastern seas: *Akad. Nauk SSSR Dokl.* v. 91 no. 2, 359–362, 1953, by P. L. Bezrukov, and G. M. Udincev. (ii) New data on topography of the Kurile-Kamchatha trough: *Akad. Nauk. SSSR Dokl.* v. 94, no. 2, 315–318, 1954, by G. B. Udincev. (iii) Geological structure of the Kurile-Kamchatka trough: *Priroda*, v. 12, 79–82, 1955, by G. B. Udincev.

T. 226R. Research on seismicity of inaccessible regions: *Akad. Nauk SSSR Vestnik*, v. 6, 78–81, 1956, by Ye. F. Savarensky.

T. 242R. The seismicity of the Arctic: *Akad. Nauk SSSR Dokl.* v. 106, no. 5, 904–906, 1956, by V. A. Tokarev. T.275R. Regions of distension in the earth's mantle. *Akad. Nauk SSSR Dokl.* v.116 no. 6, 949–951, 1957, by N. Ye. Mart' yanov.

T. 284R. The geological structure and evolution of the oceanic depressions. *Akad. Nauk SSSR Izv.*, ser. Geol. v. 3, 3–18, 1955, by V. V. Belousov.

T. 310R. Tectonophysics: A promising new orientation in geology. *Akad. Nauk SSSR Vestnik* v. 28 no. 9, 3–10, 1958, by V. V. Belousov.

- HORDEJUK, J., DROSTE, S., and GIBOWICZ, S. Analysis of the first movements of the seismic waves recorded on seismograms. See no. 11706 of this list.

11809. HORDEJUK, J., UCHMAN, J., and WOJTCZAK, B. A new type short-period seismograph SK-58: *Acta Geophys. Polonica*, v. 7, no. 2, 165–175, Warsaw, 1959.

11810. HORTON, C. W. A loss mechanism for the Pierre shale: *Geophysics*, v. 24, no. 4, 667–680, Menasha, Oct., 1959.

11811. HOUTZ, R. E. Submarine canyons near Suva as possible fault lineations: *Geol. Surv. Dept., Suva, Fiji, Rep.* no., 51, Suva, Mar., 1959.

11812. HOWELL, B. F. Jr. Introduction to Geophysics, xi + 399 p. *McGraw-Hill Book Company*, New York, 1959. Reviews appear in: *Seismol. Soc. Am. Bull.* v. 49, no. 3, p. 288, Berkeley, 1959. *Econ. Geol.* v. 54, no. 3, p. 520, Lancaster, May 1959. *Geophysics* v. 25, no. 1, p. 338, Menasha, Feb. 1960 and a review by L. H. Adams, *Am. Geophys. Union Trans.*, v. 42, no. 1, 43–44, Washington, Mar. 1961.

11813. HOWELL, B. F., Jr. Energy represented by seismic waves from small explosions: *Bureau Central Séismologique International, (UGGI)*, Trav. Ser., ser. A., v. 20, 55–66, Strasbourg, 1959.

11814. HOWELL, B. F., JR., ANDREWS, A. B., and HUBER, R. E. Photomechanical method of frequency analysis of seismic pulses: *Geophysics*, v. 24, no. 4, 692–705, Menasha, Oct., 1959. An abstract appears in *Geophysics*, v. 23, no. 5, p. 1076, Menasha, Dec., 1958. A discussion by R. L. Sengbush and a reply by B. F. Howell, Jr., appear in *Geophysics*, v. 25, no. 1, 322–324, Menasha, Feb., 1960.

11815. HSU, J. A. Theory for the origin of geosynclines: (abstr. only), *J. Geophys. Res.*, v. 64, no. 8, p. 1108, Washington, Aug., 1959.

11816. HUAN-YUAN, W. The new Chinese seismic scale: (Chinese with Russian summary), *Acta Geophys. Sinica*, v. 8, no. 1, 7–14, Peking, Aug., 1959.

- HUBER, R. E., HOWELL, B. F., JR., and ANDREWS, A. B. Photomechanical method of frequency analysis of seismic pulses. See no. 11814 of this list.

11817. HUNKINS, K. Seismic studies of the Arctic ocean floor: (abstr. only), *Can. Oil and Gas Ind.*, v. 12, no. 12, 55–56, Gardenvale, Dec., 1959.

- HURGTEN, H., and BORTFELD, R. Über die Identifizierung und Darstellung von reflektierten Refraktionen. See no. 11650 of this list.

11818. ICHIKAWA, M. A study of occurrence mechanism of an earthquake on Oct. 26, 1956, using P and S waves: (in Japanese with summary and captions in English), *Quart. J. Seismol.*, v. 23, no. 4, 136–148, Tokyo, Mar., 1959.

11819. I.G.Y. BULLETIN. The following articles of interest to seismologists have appeared in the IGY. Bulletin, U.S. National Academy Sciences, Washington, 1959:— Trans-Antarctic trough: no. 19, 8–10, January.

Seismic studies in the western Caribbean: no. 21, 1–3, March.

Expedition to 'Pole of Inaccessibility': no. 21, 8, March.

Antarctic traverse reports, no. 25, 9–14, July.

Antarctic notes—continental structure: no. 26, 12, August.

Oversnow traverses from IGY Little America Station: no. 27, 11–15, September.

International Geophysical Cooperation—1959: Seismology: no. 28, 6, October.

Ice thickness and bottom topography of the Felchner ice shelf and along the Ellsworth-Byrd traverse route: no. 30, 13–16, December.

11820. IIDA, K., and AOKI, H. Phases in the preliminary tremors of seismograms and crustal structure in Nagoya district: (in Japanese with English abstr.), *Zisin, J. Seismol. Soc. Japan*, ser. 2, v. 12, no. 2, 75-81, Tokyo, July, 1959.
11821. IIDA, K., and AOKI, H. Propagation of spherical plastic waves and of the boundary between elastic and plastic regions: (in Japanese with English abstr.), *Zisin, J. Seismol. Soc. Japan*, ser. 2, v. 12, no. 2, 82-83, Tokyo, July, 1959.
11822. IIDA, K., and KUMAZAWA, M. Measurements of elastic wave velocities in rocks at high temperatures. I: (in Japanese with English abstr.), *Zisin, J. Seismol. Soc. Japan*, ser. 2, v. 12, no. 1, 11-18, Tokyo, Mar., 1959.
11823. IIDA, K., and KUMAZAWA, M. Measurements of elastic wave velocities in volcanic rocks at high temperatures by means of ultrasonic impulse transmission. Part I: *J. Earth Sci., Nagoya Univ.*, v. 7, no. 1, 49-64, Nagoya, Mar., 1959.
- INGHAM, C. E., ORR, R. H., and EVISON, F. F. Thickness of the earth's crust in Antarctica. See no. 11723 of this list.
11824. INGRAM, R. E., S. J. Statistics and the fault plane, a conjecture: 263-265 in Hodgson, J. H., Editor, *The Mechanics of Faulting*, with Special Reference to the Fault-plane Work. (See no. 11800 of this list). *Dom. Obs. Pub.*, v. 20, no. 2, Ottawa, 1959.
11825. INOUE, W. Magnitude of deep-focus earthquakes in and near Japan: *Papers in Met. and Geophys.*, v. 9, nos. 3, 4, 177-192, Tokyo, Jan., 1959.
- ISHIDA, H., and SUZUKI, Z. A simple method to determine the damping constant of a seismograph from the record of its free oscillation when the damping is nearly critical. (Appx.). See no. 12153 of this list.
- ISHIGAKI, A., and SUZUKI, Z. On converted waves by a narrow canal on the surface of a semi-infinite elastic medium. See no. 12151 of this list.
- ISHIGAKI, A., and SUZUKI, Z. On the shielding effect of various types of canals. See no. 12152 of this list.
11826. ISSAYEV, V. S. Contribution to a theory of the directional effect of groups of seismographs in a case of pulse vibrations. I: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 6, 770-782, Moscow, June, 1958. Translated by K. Syers in the English edition, 437-443, *Am. Geophys. Union*, Washington, Oct., 1959.
11827. ISSAYEV, V. S. On the theory of the directional effect of a group of seismometers in case of pulse oscillations. II: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 10, 1234-1244, Moscow, Oct., 1958. Translated by I. A. Mamanov in the English edition, 710-717, *Am. Geophys. Union*, Washington, Dec. 1959.
11828. IUGG CHRONICLE. The following items of interest to seismologists have appeared in this periodical (Paris, 1959):
 Liste des Communications Scientifiques présentées à la XI Assemblée Générale de l'Association Internationale de Séismologie et de Physique de l'Intérieur de la Terre: no. 19, 69-75, Mar. 1959.
 Expériences Séismique dans les Alpes: no. 20, 101-102, April, 1959.
 Activité du Bureau Séismologique International pendant l'A.G.I.: no. 20, p. 102, April 1959.
 Announcement of the Alicante meeting, 5-10, October, 1959, of the European Seismological Commission: no. 20, p. 102, April, 1959.
 Comptes Rendus of the Utrecht meeting of the European Seismological Commission: no. 22, 209-232, July, 1959.
- Proposed agenda for the XII General Assembly, International Association of Seismology and Physics of the Earth's Interior, Helsinki, July 25-Aug. 6, 1960: no. 23, 244-246, Sept., 1959.
- Programme provisoire de la Réunion d'Alicante de la Commission Séismologique Européenne: no. 23, p. 247, Sept., 1959.
- Preliminary programme for the XII General Assembly, International Association of Seismology and Physics of the Earth's Interior, Helsinki, July 25-Aug. 6, 1960: no. 24, 265-268, Nov., 1959.
- Meeting of the European Seismological Commission, held at Gif, April 1-3, 1959, to study the results of the Alpine explosions from 1956-1958: no. 24, 268-269, Nov., 1959.
- Scientific papers presented at the 5th General Assembly, European Seismological Commission (C.S.E.) held at Alicante, Oct. 26-31, 1959: no. 24, 269-270, Nov., 1959.
- Publication dates of the International Seismological Summary, 1951 (April, May, June), 1959 (248 p.) for the International Association of Seismology and Physics of the Earth's Interior: no. 24, p. 310, Nov., 1959.
- Meeting of the Bureau of the Executive Committee and of the Finance Committee, I.U.G.G., Paris, Sept. 21-26, 1959: no. 25, 313-360, Nov., 1959.
11829. IVAKIN, B. N. On modeling of absorption of seismic waves: *Akad. Nauk SSSR Izv.* ser. Geofiz., no. 7, 818-832, Moscow, July, 1958. Translated by G. Pietuchow in the English edition, 468-474, *Am. Geophys. Union*, Washington, Nov. 1959.
11830. IVAKIN, B. N. The calculation and modeling of the absorption of seismic waves: *Akad. Nauk SSSR Izv.* ser. Geofiz., no. 11, 1288-1309, Moscow, Nov., 1958. Translated by P. W. Pomeroy in the English edition, 743-754, *Am. Geophys. Union*, Washington, Dec. 1959.
11831. IVANOV, A. G. Electronic searching in the Chinese People's Republic: (in Chinese), *Acta Geophys. Sinica*, v. 8, no. 1, 71-83, Peking, Aug., 1959.
- JACOBS, J. A., and DUWALO, G. Effects of a liquid core on the propagation of seismic waves. See no. 11714 of this list.
11832. JAEGER, J. C. The frictional properties of joints in rock: *Geofis. Pura e Appl.*, v. 43, 148-158, Milan, May-Aug., 1959.
11833. JAMES, L. B., and WOODS, H. D. Engineering geology in the California Department of Water Resources: (abstr. only), *Geol. Soc. Am. Bull.*, v. 70, no. 12, pt. 2, p. 1726, Washington, Dec., 1959.
11834. JANCZEWSKI, E. W. Sur les secousses locales en Haute Silésie: (abstr. with discussions by J. P. Rothé, V. Karnik, Y. V. Riznichenko, and replies by Mme Bobr), *IUGG Chronicle*, no. 22, 217-218, Paris, July, 1959.
11835. JAPANESE NATIONAL COMMITTEE FOR THE INTERNATIONAL GEOPHYSICAL YEAR. Report of microseismic and sea wave observations in Japan during the International Geophysical Year, 1957/8: v. 1, July, 1957-July, 1958, *Sci. Council Japan*, 1-115, Tokyo, Mar., 1959.
11836. JARDETZKY, W. S. Velocity of propagation of a disturbance in a heterogeneous medium: (abstr. only), *J. Geophys. Res.*, v. 64, no. 8, p. 1110, Washington, Aug., 1959.
- JAROSCH, H., PEKERIS, C. L., and ALTERMAN, Z. Oscillations of the earth. See no. 11589 of this list.

11837. JEFFREYS, H. The Earth: Its Origin, History and Physical Constitution: Fourth Ed., xvi + 420 p., Cambridge University Press, Cambridge, 1959. A review by B. Gutenberg appears in *Nature*, v. 184, no. 4692, 1007-1008, London, Oct., 3, 1959, and in *Rev. Geofis.* v. 18, no. 70, p. 217, Madrid, Apr.-June 1959.
11838. JENSEN, H. Daily determinations of the microseismic direction in København during the IGY 1958: *Geod. Inst. Meddelelse*, no. 38, 23 p., Copenhagen, 1959.
11839. JENSEN, K. D. Zur Spur-für Spur-Korrektur in der Seismik: *Geofis. Pura e Appl.*, v. 44, 74-82, Milan, Sept.-Dec., 1959.
11840. JOBERT, G. Étude du mouvement du sol au voisinage d'une faille: *Geofis. Pura e Appl.*, v. 43, 75-82, Milan, May-Aug., 1959.
- JOBERT, G., JOBERT, N., and BLUM, P.-A. Premiers résultats obtenus à l'aide d'inclinomètres. See no. 11644 of this list.
11841. JOBERT, N. Période propre des oscillations de la terre: (abstr. only), *IUGG Chronicle*, no. 22, p. 231, Paris, July, 1959.
- JOBERT, N., BLUM, P.-A., and JOBERT, G. Premiers résultats obtenus à l'aide d'inclinomètres. See no. 11644 of this list.
- JOHNSON, G. W. and BROWN, H. Non-military uses of nuclear explosions. See no. 11660 of this list.
11842. JOHNSON, G. W., HIGGINS, G. H., and VIOLET, C. E. Underground nuclear detonations: *J. Geophys. Res.*, v. 64, no. 10, 1457-1470, Washington, Oct., 1959.
- JOHNSON, J. C. and Willis D. E. Some seismic results using magnetic tape recording. See no. 12227 of this list.
11843. JORDON, J. N., and CLEVEN, M. Physiographic changes associated with the southeastern Alaska earthquakes: (abstr. only), *Geol. Soc. Am. Bull.* v. 70, no. 12, pt. 2, 1795-1796, Washington, Dec., 1959.
11844. KAGOSHIMA LOCAL METEOROLOGICAL OBSERVATORY. Velocities of propagation of earth tremors and seismic waves near volcano Sakurajima: (in Japanese with summary and captions in English), *Quart. J. Seismol.*, v. 24, no. 1, 11-18, Tokyo, June, 1959.
- KALININ, V. A., and MAGNITSKY, V. A. Properties of the earth's mantle and the physical nature of the transition layer (layer C). See no. 11927 of this list.
11845. KALININA, P. V. Some experimental data on the effect of moisture on the velocity of propagation of ultrasonic waves in rock specimens: (in Russian) *Razved. Promyslov. Geofiz.*, no. 27, 18-29, Moscow, 1959.
- GEOPHYS. ABSTR.
11846. KANAI, K., TANAKA, T., and YOSHIZAWA, S. Comparative studies of earthquake motions on the ground and underground: (multiple reflection problem), *Earthquake Res. Inst. Bull.*, v. 37, pt. 1, 53-87, Tokyo, March, 1959.
11847. KARAPETYAN, N. K. The dynamic parameters of some seismic foci in the Caucasus: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 2, 260-268, Moscow, Feb., 1958. Translated by I. A. Mamantov in the English edition, 142-146, *Am. Geophys. Union*. Washington, June, 1959.
11848. KARNIK, V. Neue seismische Karten der Tschechoslowakei: *Geofys. Sbornik*, Paper no. 88, 233-252, Prague, 1958. An abstract, with discussions by Y. V. Riznichenko, F. Gassman and reply by V. Karnik, appear in *IUGG Chronicle*, no. 22, p. 218, Paris, July, 1959.
11849. KARNIK, V., VANĚK, J. and ZÁTOPEK, A. Contribution au problème des magnitudes unifiées: *Bureau Central Séismologique International*, (UGGI), Trav. Sci., ser. A, 67-80, Strasbourg, 1959.
11850. KARUS, E. V. The absorption of elastic vibrations in rocks during stationary excitation: *Akad. Nauk SSSR Izv. ser. Geofiz.*, no. 4, 438-448, Moscow, Apr., 1958. Translated by I. A. Mamantov in the English edition, 249-254, *Am. Geophys. Union*, Washington, Aug. 1959.
11851. KARUS, E. V., and ZUCKERNIK, V. B. An ultrasonic apparatus for studying the physical and mechanical properties of rocks intersected by a drill-hole: *Akad. Nauk SSSR Izv. ser. Geofiz.*, no. 11, 1310-1322, Moscow, Nov., 1958. Translated by R. B. Mudge in the English edition, 755-761, *Am. Geophys. Union*, Washington Dec. 1959.
11852. KASAHARA, K. Physical conditions of earthquake faults II: (A model of strike-slip faults with various dip angles), *Earthquake Res. Inst. Bull.*, v. 37, pt. 1, 39-51, Tokyo, March, 1959.
11853. KATAOKA, A., and OGURI, M. Effects of humidity and temperature on dynamic properties of rocks: (in Japanese), *Zisin, J. Seismol. Soc. Japan*, ser. 2, v. 12, no. 2, 83-85, Tokyo, July, 1959.
11854. KATAOKA, A., and OGURI, M. Some dynamic properties of rocks at room temperatures: (in Japanese with English summary), *Zisin, J. Seismol. Soc. Japan*, v. 12, no. 3, ser. 2, 91-100, Tokyo, Sept., 1959.
- KELLER, G. V., FRISCHKNECHT, F. C., WAHL, R. R., and PLOUFF, D. Geophysical studies on IGY, drifting station Bravo (T3), 1958 to 1959. See no. 12016 of this list.
11855. KEYLIS-BOROK, V. I. The study of earthquake mechanism: 279-294 in Hodgson, J. H., Editor, *The Mechanics of Faulting*, with Special Reference to the Fault-plane Work. (See no. 11800 of this list). *Dom. Obs. Pub.*, v. 20, 2, Ottawa, 1959.
11856. KEYLIS-BOROK, V. I. On estimation of the displacement in an earthquake source and of source dimensions: *Annali Geofis.* v. 12, no. 2, 205-214, Rome, Apr.-May, 1959. An abstract appears in *IUGG Chronicle*, no. 22, p. 227, Paris, July, 1959.
11857. KHALEVIN, N. I. On the impulse-interval acoustical logging: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 3, 379-386, Moscow, Mar., 1958. Translated by G. Pietuchov in the English edition, 211-215, *Am. Geophys. Union*. Washington, July 1959.
11858. KHOROSHEVA, V. V. Effect of the atmospheric pressure on the tilting of the earth's surface: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 1, 131-135, Moscow, Jan., 1958. Translated by W. S. Jardetzky in the English edition, 77-79, *Am. Geophys. Union*, Washington.
11859. KIRBY, C. Exact true dip for a single constant-velocity reflector, *Geophysics*, v. 24, no. 3, 598-603, Menasha, July, 1959.
- KISHIMOTO, Y., TANAKA, Y., and NISHIMURA, E. Observed secular secular tilting motion of the ground which preceded the occurrence of several destructive earthquakes. See no. 11981 of this list.
11860. KISHINOUE, F. and KOTAKA, M. Microseisms and typhoons: *Earthquake Res. Inst. Bull.*, v. 37, pt. 1, 171-176, Tokyo, March, 1959.
11861. KISHINOUE, F., and SHIDA, I. Tripartite observations of microseisms in Yamagata City: *Earthquake Res. Inst. Bull.*, v. 37, pt. 1, 177-181, Tokyo, March, 1959.

11862. KISHINOUE, F. and SHIDA, I. Tripartite observations of microseisms at Sakata (Second Paper): *Earthquake Res. Inst. Bull.*, v. 37, pt. 1, 183-188, Tokyo, March, 1959.
11863. KISHINOUE, F., and SHIDA, I. Tripartite observations of microseisms in Shonai plain, Yamagata prefecture: *Earthquake Res. Inst. Bull.*, v. 37, pt. 1, 189-192, Tokyo, March, 1959.
11864. KISHINOUE, F., and WATANABE, Y. An electromagnetic horizontal seismograph for recording microseisms: *Earthquake Res. Inst. Bull.*, v. 37, pt. 2, 327-335, Tokyo, June, 1959.
- KISS, Z., and CSOMOR, D. The seismicity of Hungary. See no. 11683 of this list.
- KISS, Z., and CSOMOR, D. Die seismizität von ungar. See no. 11684 of this list.
11865. KISSLINGER, C. Observations of the development of Rayleigh-type waves in the vicinity of small explosions: *J. Geophys. Res.*, v. 64, no. 4, 429-436, Washington, Apr., 1959. An abstract appeared in *Am. Geophys. Union Trans.* v. 39, no. 3, p. 521, Washington, June, 1958.
11866. KISSLINGER, C. A note on Benndorf's formula for the dynamic magnification of a mechanical seismograph: *Seismol. Soc. Am. Bull.*, v. 49, no. 3, 267-271, Berkeley, July, 1959.
11867. KNOPOFF, L. Scattering of compression waves by spherical obstacles: *Geophysics*, v. 24, no. 1, 30-39, Menasha, Feb., 1959.
11868. KNOPOFF, L. Velocity of sound in two-component systems: *J. Geophys. Res.*, v. 64, no. 3, 359-361, Washington, Mar., 1959.
11869. KNOPOFF, L. Scattering of shear waves by spherical obstacles: *Geophysics*, v. 24, no. 2, 209-219, Menasha, Apr., 1959.
11870. KNOPOFF, L. Deductive seismology: Appx. 6 to the report of the panel on seismic improvement (reported as no. 11635 of this list), 46-51, Washington, July, 1959.
11871. KNOPOFF, L. The seismic pulse in materials possessing solid friction, II: Lamb's problem: *Seismol. Soc. Am. Bull.*, v. 49, no. 4, 403-413, Berkeley, Oct., 1959.
11872. KNOPOFF, L., and GANGI, A. F. Seismic reciprocity: *Geophysics*, v. 24, no. 4, 681-691, Menasha, Oct., 1959.
11873. KNOPOFF, L., and GILBERT, F. Radiation from a strike-slip fault: *Seismol. Soc. Am. Bull.*, v. 49, no. 2, 163-178, Berkeley, April, 1959. An abstract appears in *Geol. Soc. Am. Bull.*, v. 69, no. 12, pt. 2, p. 1692, New York, Dec., 1958.
11874. KNOPOFF, L., and GILBERT, F. First motions from seismic sources: (abstr. only), *Geol. Soc. Am. Bull.*, v. 70, no. 12, pt. 2, p. 1728, Washington, Dec., 1959.
- KNOPOFF, L., and GILBERT, F. Scattering of P waves by the core of the earth. See no. 11757 of this list.
11875. KNOPOFF, L., and MACDONALD, G. J. F. An equation of state for the earth's core: (abstr. only), *J. Geophys. Res.*, v. 64, no. 8, p. 1112, Washington, Aug., 1959.
11876. KOBAYASHI, N. A method of determining of the underground structure by means of SH waves: (in Japanese with English abstr.), *Zisin, J. Seismol. Soc. Japan*, ser. 2, v. 12, no. 1, 19-24, Tokyo, Mar., 1959.
11877. KOBAYASHI, N. Wave generation from a line source within the ground: (in Japanese with English abstr.), *Zisin, J. Seismol. Soc. Japan*, ser. 2, v. 12, no. 2, 49-60, Tokyo, July, 1959.
11878. KOBAYASHI, N. Vertical distribution of amplitudes of the Rayleigh type dispersive waves: (in Japanese with English summary), *Zisin, J. Seismol. Soc. Japan*, ser. 2, v. 12, no. 3, 101-114, Tokyo, Sept., 1959.
- KOBAYASHI, N., and TAKEUCHI, H. Surface waves propagating along a free surface of a semi-infinite elastic medium of variable density and elasticity. (Part 1). See no. 12163 of this list.
- KOBAYASHI, N., TAKEUCHI, H., and PRESS, F. Rayleigh-wave evidence for the low-velocity zone in the mantle. See no. 12164 of this list.
- KOBAYASHI, N., TAKEUCHI, H., and PRESS, F. Mantle Rayleigh waves and mantle structure. See no. 12165 of this list.
11879. KODAMA, R. Distribution of earthquake foci in and near Kinki and Chūbu districts: (Japanese with English summary), *Quart. J. Seismol.*, v. 24, no. 2, 41-43, Tokyo, Sept., 1959.
11880. KOEFOED, O. An analysis of amplitudes of reflected seismic waves: (abstr. only), *Geophys. Prospecting*, v. 7, no. 3, p. 370, The Hague, Sept., 1959.
- KOEFOED, O., KUIPER, J., and VAN RYEN, W. M. L. Laboratory determinations of elastic properties of some limestones. See no. 11894 of this list.
11881. KOESTER, E. A. A successful seismic program on the central Kansas uplift: 351-355 in Hambleton, W. W., Editor, Symposium on Geophysics in Kansas (reported as no. 11780 of this list), *State Geol. Surv. Kansas, Bull.* 137, Lawrence, July, 1959.
11882. KOGAN, S. YA. Determination of the energy of 3-dimensional seismic waves, (in Chinese and Russian), *Acta Geophys. Sinica*, v. 8, no. 1, 31-47, Peking, Aug., 1959.
11883. KOIKE, R. Microbarometric observations of the off-Etorofu Island earthquake on 7 Nov., 1958 and of the large explosion at Mt. Asama on 10 Nov., 1958: (in Japanese), *Quart. J. Seismol.*, v. 24, no. 2, 45-46, Tokyo, Sept., 1959.
11884. KOKESH, F. P. Limits of accuracy of present sonic logging equipment: 15-16 in Oklahoma Geophysical Society, Symposium on Continuous Velocity Logging, (reported as no. 11989 of this list), *Shale Shaker*, v. 9, no. 9, Oklahoma City, 1959. GEOPHYS. ABSTR.
11885. KOKESH, F. P., and BLIZARD, R. B. Geometrical factors in sonic logging: *Geophysics*, v. 24, no. 1, 64-76, Menasha, Feb., 1959.
11886. KOLOSENKO, M. N. Accounting for the ellipticity of the earth while determining the epicentral distances: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 1, 116-120, Moscow, Jan., 1958. Translated by V. Poppe in the English edition, 67-70, *Am. Geophys. Union*, Washington.
- KOMPANETS, M. V., SAVARENSKY, E. F., and LYSENKO, L. N. Microseisms in Lake Issyk-kul' as observed by the seismic station at Rybach'e. See no. 12095 of this list.
11887. KONDORSKAYA, N. V. Some results of investigation of earthquakes from Kurile-Kamchatka zone: *Studia Geophys. et Geod.*, v. 3, no. 4, 360-368, Prague, 1959.
11888. KONDORSKAYA, N. V. Travel times and some dynamic characteristics of seismic waves: *Bureau Central Séismologique International, (UGGI)*, Trav. Sci., ser. A, 113-121, Strasbourg, 1959.
11889. KONING, L. P. G. A simple graph for the determination of the approximate values of epicentral distances: *Geol. Mijn.* v. 21, no. 2, 46-48, The Hague, 1959. GEOPHYS. ABSTR.
- KOSMINSKAYA, I. P., and EPINAT'EVA, A. M. Seismic exploration in China. See no. 11719 of this list.

- KOSMINSKAYA, I. P., and GAL'PERIN, Ye. I. Characteristics of the method of deep seismic sounding on the sea. See no. 11741 of this list.
- KOSMINSKAYA, I. P., and GAL'PERIN, Ye. I. On seismic investigations of the deep crustal structure according to the International Geophysical Year plan. See no. 11742 of this list.
11890. KOSMINSKAYA, I. P., MIKHOTA, G. G., and TULINA, YU. V. Crustal structure of the Pamir-Alai zone from seismic depth-sounding data: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 10, 1162–1180, Moscow, Oct., 1958. Translated by Kenneth Syers in the English edition, 673–683, *Am. Geophys. Union*, Washington, Dec., 1959. A reprinting of this article in German will be found in *Veröffentlichung Nr. 71 des Instituts für Angewandte Geophysik an der Bergakademie Freiberg*, 669–672, Freiberg, 1959.
- KOSMINSKAYA, I. P., RIZNICHENKO, YU. V., and VEYTSMAN, P. S. New deep seismic sounding data on the structure of the earth's crust and on mountain roots. See no. 12221 of this list.
11891. KOSTINA, A. F. The relationship of microseismic oscillations, observed in the Crimea, to the meteorological conditions on the Black Sea: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 8, 1029–1032, Moscow, Aug., 1958. Translated by I. A. Mamantov in the English edition, 592–594, *Am. Geophys. Union*, Washington, Nov. 1959.
- KOTAKA, M., and KISHINOUE, F. Microseisms and typhoons. See no. 11860 of this list.
11892. KOVACH, R. L. Surface wave dispersion for an Afro-African and a Eurasian path: *J. Geophys. Res.*, v. 64, no. 7, 805–813, Washington, July, 1959.
- KOVACH, R. L., DORMAN, J., and OLIVER, J. An experimental and theoretical study of Rayleigh-wave phase velocities. See no. 11997 of this list.
11893. KOVALEV, O. I. Low frequency receiver for seismic prospecting: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 7, 913–916, Moscow July, 1958. Translated by A. S. Ryall in the English edition, 519–522, *Am. Geophys. Union*, Washington, Nov. 1959.
- KOVALEV, O. I., PARKHOMENKO, I. S., and VASSIL'EV, YU. I. Study of the crystalline basement by the refracted wave method under conditions of partial masking. I. See no. 12201 of this list.
- KOVALEV, O. I., PARKHOMENKO, I. S., and VASSIL'EV, YU. I. Investigation of the incompletely masked crystalline basement by the refracted wave method II. See no. 12202 of this list.
- KRESTNIKOV, V. N., NERSESOV, I. L., REISNER, G. I., and GZOVSKY, M. V. A comparison of tectonics and seismicity in the Garm region, Tadzhik SSR. I. See No. 11774 of this list.
11894. KUIPER, J., VAN RYEN, W. M. L., and KOEFOED, O. Laboratory determinations of elastic properties of some limestones: *Geophys. Prospecting*, v. 7, no. 1, 38–44, The Hague, Mar., 1959.
- KUMAZAWA, M., and IIDA, K. Measurements of elastic wave velocities in rocks at high temperatures. I. See no. 11822 of this list.
- KUMAZAWA, M., and IIDA, K. Measurements of elastic wave velocities in volcanic rocks at high temperatures by means of ultrasonic impulse transmission. Part I. See no. 11823 of this list.
11895. KUO, J. T. Rayleigh-wave velocities in a visco-elastic solid: (abstr. only), *Geol. Soc. Am. Bull.*, v. 70, no. 12, pt. 2, p. 1729, Washington, Dec., 1959.
11896. KURIMOTO, H. A statistical study of some aftershock problems: (in Japanese with English summary) *Zisin, J. Seismol. Soc. Japan*, ser. 2., v. 12, no. 1, 1–10, Tokyo, Mar., 1959. Also appears in *Geophysical Notes*, v. 12, no. 2, Tokyo, 1959.
11897. KUSHIRO LOCAL METEOROLOGICAL OBSERVATORY Reports on the Teshikaga earthquake of Jan. 31, 1959: (in Japanese), *Quart. J. Seismol.* v. 24, no. 2, 47–56, Tokyo, Sept., 1959.
11898. KVALE, A. Jordskjelv i Norge 1948–52: (in Norwegian with English summary) *Univ. Bergen. Arbok. Naturv. Rekke*, 1959, no. 6, 24 p., Bergen, Jan., 1959.
- LACOSTE, L., MUNK, W. H., SLICHTER, L. B., BENIOFF, H., and HARRISON, J. C. Searching for the earth's free oscillations. See no. 11627 of this list.
- LAGARDE, A., DESBRANDES, R., and REVERDY, X. Contribution à l'étude de la vitesse des ondes sismiques. See no. 11696 of this list. GEOPHYS. ABSTR.
- LAHERRERE, J., and DUNOYER DE SEGONZAC, Ph. Application of the continuous velocity log to anisotropy measurements in northern Sahara; results and consequences. See no. 11712 of this list.
11899. LAKTIONOV, A. F. Bottom topography of the Greenland sea in the region of Nansen's sill: *Priroda*, no. 10, 95–97, Moscow, 1959. A translation into English by E. R. Hope appears as publication T333R of the Directorate Sci. Inf. Serv., DRB Canada, Nov., 1959.
11900. LANDER, J. F. Seismicity of Antarctica and Guam: *Earthquake Notes*, v. 30, no. 2, 16–17, Washington, June, 1959.
11901. LANDISMAN, M., SATÔ, Y., and EWING, M. The distortion of pulse-like earthquake signals by seismographs: *Geophys. J.*, v. 2, no. 2, 101–115, London, June, 1959.
11902. LANDISMAN, M., SATÔ, Y., and EWING, M. Surface wave dispersion in elastic media having gradients in their physical properties: (abstr. only), *J. Geophys. Res.*, v. 64, no. 8, page 1113, Washington, Aug., 1959.
- LANDISMAN, M., SATÔ, Y., EWING, M., and MUELLER, S. Transient analysis of earthquake and explosion arrivals. See no. 11728 of this list.
- LANGSETH, M., DRAKE, C. L., GAIBAR-PUERTAS, C., and NAFE, J. E. Estudios de prospección sísmica por refracción en el golfo de Cádiz. See no. 11705 of this list.
11903. LATTER, A. L., LELEVIER, R. E., MARTINELLI, E. A., and McMILLAN, W. G. A method of concealing underground nuclear explosions: *The Rand Corp. R-348*, vii + 13 p., Santa Monica, Mar. 30, 1959.
11904. LATTER, A. L., MARTINELLI, E. A., and TELLER, E. Seismic scaling law for underground explosions: *Phys. Fluids*, v. 2, no. 2, 280–282, New York, May–June, 1959.
11905. LATYNINA, L. A. On the existence of convection currents in the mantle of the earth: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 3, 391–397, Moscow, Mar., 1958. Translated by A. E. Scheidegger in the English edition, 219–223, *Am. Geophys. Union*, Washington, July, 1959.
11906. LATYNINA, L. A. Thermal convection in the mantle of the earth: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 9, 1085–1098, Moscow, Sept. 1958. Translated by A. E. Scheidegger in the English edition, 629–635, *Am. Geophys. Union*, Washington, Nov. 1959.
11907. LAUGHTON, A. S. The sea floor: *Sci. Progress*, v. 47, no. 186, 230–249, London, Apr., 1959.
11908. LAUGHTON, A. S. Photography of the ocean floor: *Endeavour*, v. 18, no. 72, 178–185, London, Oct., 1959.

- LAWRENCE, P. L., McDONAL, F. J., and SENGBUSH, R. L. Interpretation of synthetic seismograms. See no. 12112 of this list.
- LEDOUX, Y., and CHEREAU, J. Y. Aspects théoriques et pratiques de la détermination des vitesses d'intervalle en sismique réflexion. See no. 11675 of this list.
11909. LEDOUX, Y., and RICHARD, H. Sismique réflexion en tectonique calme: compositions, correlations etc.: (abstr. only), *Geophys. Prospecting*, v. 7, no. 3, 372-373, The Hague, Sept., 1959.
- LEEDS, D. J., and DUKE, C. M. Soil conditions and earthquake damage in the Mexico earthquake of July 28, 1957. See no. 11710 of this list.
- LEEDS, D. J., and DUKE, C. M. Effects of earthquakes on tunnels. See no. 11711 of this list.
11910. LEHMANN, I. The interior of the earth as revealed by earthquakes: *Endeavour*, v. 18, no. 70, 99-105, London, Apr., 1959.
11911. LEHMANN, I. Velocities of longitudinal waves in the upper part of the earth's mantle: *Annales Géophys.*, v. 15, no. 1, 93-118, Paris, Jan.-Mar., 1959. Also appears in *Dom. Obs. Pub.*, v. 19, 10, 381-406, Ottawa 1959. An abstract appears in *IUGG Chronicle*, no. 22, 225-226, Paris, July, 1959.
11912. LEHMANN, I. On short-period surface waves recorded at Copenhagen: (abstr. with discussion by H. Jeffreys), *IUGG Chronicle*, no. 22, p. 224, Paris, July, 1959.
11913. LEHNER, F. E. An ultra-long-period seismograph galvanometer: *Seismol. Soc. Am. Bull.*, v. 49, no. 4, 399-401, Berkeley, Oct., 1959.
- LELEVIER, R. E., MARTINELLI, E. A., McMILLAN, W. G., and LATTE, A. L. A method of concealing underground nuclear explosions. See no. 11903 of this list.
- LEVIN, B. J., and SCHMIDT, O. J. Origin and composition of the earth. See no. 12105 of this list.
- LIFSON, H., PEKERIS, C. L. and, LONGMAN, I. M. Application of ray theory to the problem of long-range propagation of explosive sound in a layered liquid. See no. 12007 of this list.
11914. LIGHTHILL, M. J. Shock waves: *Manchester Lit. Phil. Soc. Mem. and Proc.*, v. 101, 7-22, Manchester, 1959.
11915. LILL, G., and BASCOM, W. A. bore-hole to the earth's mantle: AMSOC'S Mohole: *Nature*, v. 184, no. 4681, 140-144, London 18, 1959.
11916. LILL, G. G., and MAXWELL, A. E. The earth's mantle: *Science*, v. 129, no. 3360, 1407-1410, Washington, May, 22, 1959.
- LIMBER, D. N., and ANDERS, E. Origin of the Worzel deep-sea ash. See no. 11591 of this list.
11917. LIU, D. T. Wave propagation in a liquid layer: *Geophysics*, v. 24, no. 4, 658-666, Menasha, Oct., 1959.
- LIU, D. T., TROREY, A. W., and WERTH, G. C. Offshore singing-field experiments and theoretical interpretation. See no. 12222 of this list.
11918. LODE, W., and ÜBERSCHAR, H. J. Reflexionsseismische Überschüssung von Geländehindernissen am Beispiel einer Rheinüberschüssung: (abstr. only), *Geophys. Prospecting*, v. 7, no. 3, 370-371, The Hague, Sept., 1959.
- LONGMAN, I. M., LIFSON, H., and PEKERIS, C. L. Application of ray theory to the problem of long-range propagation of explosive sound in a layered liquid. See no. 12007 of this list.
- LOPER, G. B., McCLURE, C. D., SIMPSON, E. B., and McDONAL, F. J. A new marine seismic system. See no. 11948 of this list.
11919. LOVE, J. D. Postglacial movement along normal faults in and adjacent to Yellowstone National Park, Wyoming: (abstr. only), *Geol. Soc. Am. Bull.*, v. 70, no. 12, pt. 2, p. 1782, Washington, Dec., 1959.
11920. LOVERING, J. F. The nature of the Mohorovičić discontinuity: *Am. Geophys. Union. Trans.*, v. 39, no. 5, 947-955, Washington, Oct., 1958. A discussion by H. Kuno appears in *J. Geophys. Res.*, v. 64, no. 8, 1071-1072, Washington, Aug., 1959. A reply by J. F. Lovering appears in *J. Geophys. Res.*, v. 64, no. 8, p. 1073, Washington, Aug., 1959.
11921. LUBIMOVA, H. A. Thermal history of the earth and the thermal conductivity of its mantle: *Bureau Central Séismologique International, (UGGI)*, Trav. Sci. ser. A, 345-368, Strasbourg, 1959.
- LUKERT, L. H., and BASS, B. L. Geophysical history of the Fall Creek pool, Sumner County, Kansas. See no. 11609 of this list.
- LUSKIN, B., BECKMANN, W. C., and ROBERTS, A. C. Sub-bottom depth recorder. See no. 11618 of this list.
- LYDEN, L. P., BROCKIE, D. C., and HAMBLETON, W. W. Geophysical investigations in the Tri-State zinc and lead mining district. See no. 11781 of this list.
- LYSENKO, L. N., KOMPANETS, M. V., and SAVERENSKY, E. F. Microseisms in Lake Issyk-kul' as observed by the seismic station at Rybach'e. See no. 12095 of this list.
11922. MACCARTHY, G. R. Some first motions as recorded at Chapel Hill, N.C.: *Earthquake Notes*, v. 30, no. 1, 1-4, Washington, Mar., 1959. An abstract appears in *J. Geophys. Res.*, v. 64, no. 8, p. 1114, Washington, Aug. 1959.
11923. MACDONALD, G. J. F. Calculations on the thermal history of the earth: *J. Geophys. Res.*, v. 64, no. 11, 1967-2000, Washington, Nov., 1959.
- MACDONALD, G. J. F., and KNOPOFF, L. An equation of state for the Earth's core. See no. 11875 of this list.
11924. MACDONALD, J. R. Rayleigh-wave dissipation functions in low-loss media: *Geophys. J.*, v. 2, no. 2, 132-135, London, June, 1959.
11925. MACDOWALL, J. A note on the relation between wind velocity and the amplitude of microseisms on the coast of Antarctica: *Geophys. J.*, v. 2, no. 4, 364-368, London, Dec., 1959.
11926. MACMURROUGH, M. C. Marine seismic operations, Cook Inlet, Alaska: (abstr. only), *Geophysics*, v. 24, no. 5, 1134-1135, Menasha, Dec., 1959.
11927. MAGNITSKY, V. A., and KALININ, V. A. Properties of the earth's mantle and the physical nature of the transition layer (layer C): *Bureau Central Séismologique International, (UGGI)*, Trav. Sci., ser. A, 129-144, Strasbourg, 1959.
- MAJOR, M., EWING, M., and SUTTON, G. H. Oceanic Rayleigh-wave dispersion in the period range 15-140 seconds: the group-velocity maximum and associated Airy phase. See no. 12148 of this list.
- MAJOR, M., and OLIVER, J. Leaking modes and the PL phase. See no. 11998 of this list.
11928. MALINOVSKAYA, L. N. The dynamic features of totally reflected transverse waves: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 2, 184-195, Moscow, Feb., 1958. Translated by Mrs. L. Rutgers in the English edition, 106-110, *Am. Geophys. Union*, Washington, June 1959.
11929. MALINOVSKAYA, L. M. Methods used in the analysis of dynamic properties of certain types of seismic waves: (abstr. only), *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 4, 566-567, Moscow, Apr. 1958. Translated by V. A. Salkind in the English edition, 320-321, *Am. Geophys. Union*, Washington, Aug. 1959.

11930. MANCHEE, E. B. Direct integration of continuous velocity logs: *Geophysics*, v. 24, no. 2, 335-343, Menasha, Apr., 1959.
11931. MANN, V. I. Notes on the southeastern Alaska earthquake of July 1958: (abstr. only), *Geol. Soc. Am. Bull.*, v. 70, no. 12, pt. 2, p. 1766, Washington, Dec., 1959.
- MARCELLI, L., and DiFILIPPO, D. La magnitudo unificata per i terremoti a profondita normale, e la magnitudo dei terremoti profondi per la stazione sismica di Roma. See no. 11697 of this list.
- MARION, W. C., TOCHER, D., STEINBRUGGE, K. V., and ZACHER, E. G. Creep on the San Andreas fault. See no. 12185 of this list.
11932. MARK, J. C. The detection of nuclear explosions: *Nucleonics*, no. 8, 64-73, New York, 1959.
- GEOPHYS. ABSTR.
- MARTIN, J., and HALL, T. O. Ammonium nitrate: economy blasting agent for oil exploration. See no. 11779 of this list.
11933. MARTIN, L. J. Tectonic framework of Northern Canada: (abstr. only), *Can. Oil and Gas Ind.*, v. 12, no. 12, p. 58, Gardenvale, Dec., 1959.
- MARTINELLI, E. A., McMILLAN, W. G., LATTER, A. L., and LeLEVIER, R. E. A method of concealing underground nuclear explosions. See no. 11903 of this list.
- MARTINELLI, E. A., TELLER, E., and LATTER, A. L. Seismic scaling law for underground explosions. See no. 11904 of this list.
11934. MARTNER, S. T., and SPARKS, N. R. The electroseismic effect: *Geophysics*, v. 24, no. 2, 297-308, Menasha, Apr., 1959. An abstract appears in *Geophysics*, v. 23, no. 5, p. 1065, Menasha, Dec., 1958. A discussion by E. Kindij appears in *Geophysics*, v. 25, no. 1, p. 325, Menasha, Feb., 1960.
11935. MATHER, K. B., and GOODSPEED, M. J. Australian Antarctic ice thickness measurements and sastrugi observations, Mac-Robertson Land, 1957-58: *Polar Rec.*, v. 9, no. 62, 436-445, Cambridge, 1959.
11936. MATHEY, R., and ROCARD, Y. Performances de certains séismographes à courte période: *Acad. Sci. Paris Comptes Rendus*, v. 248, no. 24, 3462-3464, Paris, 1959.
- GEOPHYS. ABSTR.
11937. MATSUSHIMA, S. On deformation and fracture of granite, Part III: (in Japanese with English abstr.), *Zisin. J. Seismol. Soc. Japan*, ser. 2, v. 12, no. 2, 45-48, Tokyo, July, 1959.
11938. MATSUSHIMA, S. On deformation and fracture of rock, Part IV, deformation and fracture of granite under high confining pressure up to 2,000 kg/cm²: (in Japanese with English abstr.), *Zisin. J. Seismol. Soc. Japan*, ser. 2, v. 12, no. 2, 68-74, Tokyo, July, 1959.
11939. MATUMOTO, H. Simple electronic seismographs supplied only with commercial A. C. source: (in Japanese with English summary), *Earthquake Res. Inst. Bull.* v. 37, pt. 2, 375-380, Tokyo, June, 1959.
11940. MATUMOTO, H. Logarithmic wide-amplitude range electronic seismograph: (in Japanese with English summary), *Earthquake Res. Inst. Bull.*, v. 37, pt. 2, 381-388, Tokyo, June, 1959.
11941. MATUMOTO, H. Transistor pre-amplifier for a seismograph: (in Japanese with English summary), *Earthquake Res. Inst. Bull.*, v. 37, pt. 3, 525-530, Tokyo, Sept., 1959.
11942. MATUMOTO, T. On the spectral structure of earthquake waves. Its influence on magnitude scale: *Earthquake Res. Inst. Bull.*, v. 37, pt. 2, 265-277, Tokyo, June, 1959.
11943. MATUMOTO, T. Tesikaga earthquake of Jan. 31, 1959: (in Japanese with English summary), *Earthquake Res. Inst. Bull.*, v. 37, pt. 3, 531-544, Tokyo, Sept., 1959.
- MATUMOTO, T., ASANO, S., and MATUZAWA, T. On the crustal structure derived from observations of the second Hokoda explosion. See no. 11947 of this list.
11944. MATUZAWA, T. On the crustal structure in north-east Japan by explosion seismic observations: *Earthquake Res. Inst. Bull.*, v. 37, pt. 1, 123-154, Tokyo, March, 1959.
11945. MATUZAWA, T. Movements of a galvanometer directly coupled to an electromagnetic seismographic pendulum: (in Japanese with English abstr.), *Zisin. J. Seismol. Soc. Japan*, ser. 2, v. 11, no. 4, 185-191, Tokyo, Dec., 1958, also *Geophysical Notes*, v. 12, no. 1, Contr. no. 12, Tokyo, June, 1959.
11946. MATUZAWA, T. Simple model of an earthquake field: (in Japanese), *Zisin. J. Seismol. Soc. Japan*, v. 12, no. 4, ser. 2, 202-203, Tokyo, Dec., 1959.
11947. MATUZAWA, T., MATUMOTO, T., and ASANO, S. On the crustal structure derived from observations of the second Hokoda explosion: *Earthquake Res. Inst. Bull.*, v. 37, pt. 3, 509-524, Tokyo, Sept., 1959.
- MAXWELL, A. E., and LILL, G. G. The earth's mantle. See no. 11916 of this list.
- McCLURE, C. D., SIMPSON, E. B., McDONAL, F. J., and LOPER, G. B. A new marine seismic system. See no. 11948 of this list.
11948. McDONAL, F. J., LOPER, G. B., McCLURE, C. D., and SIMPSON, E. B. A new marine seismic system: (abstr. only), *Geophysics*, v. 24, no. 5, p. 1136, Menasha, Dec., 1959.
- McDONAL, F. J., SENGBUSH, R. L., and LAWRENCE, P. L. Interpretation of synthetic seismograms. See no. 12112 of this list.
11949. McINTYRE, D. B., and CHRISTIE, J. M. The kinematics of faulting from seismic data: 385-393 in Hodgson, J. H., *Editor The Mechanics of Faulting*, with Special Reference to the Fault-plane Work. (See no. 11800 of this list). *Dom. Obs. Pub.*, v. 20, no. 2, Ottawa, 1959.
11950. McLAUGHLIN, R., and PROUT, J. A portable seismic magnetic tape recorder: *Earthquake Notes*, v. 30, no. 3, 26-33, Washington, Sept., 1959.
- McMILLAN, W. G., LATTER, A. L., LeLEVIER, R. E., and MARTINELLI, E. A. A method of concealing underground nuclear explosions. See no. 11903 of this list.
11951. MEADOR, J. G. Sparker and seismic reconnaissance traverse along the Mackenzie River, N.W.T., Canada: (abstr. only), *Can. Oil and Gas Ind.*, v. 12, no. 12, 58-59, Gardenvale, Dec., 1959.
11952. MEDVEDEV, S V., and PETROUCHEVSKY, B. A. Les principes méthodiques et essai de répartition de la séismicité en U.R.S.S.: *Bureau Central Séismologique International*, (UGGI), Trav. Sci. ser. A, 239-253, Strasbourg, 1959.
11953. MEEK, J. H. *Editor*. Report on the Canadian program for the International Geophysical Year, 1957-58: *Assoc. Comm. Geod. Geophys.*, National Res. Council, viii + 153 p. Ottawa, July, 1959.
11954. MELAMUD, A. YA. Transient processes in seismic prospecting apparatus: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 4, 471-485, Moscow, Apr., 1958. Translated by K. Syers in the English edition, 267-274, *Am. Geophys. Union*, Washington, Aug., 1959.

11955. MEMBERS OF THE SECTION OF SUPERSONICS, LABORATORY OF GEOPHYSICAL EXPLORATION. A supersonic impulse well-logging instrument: (In Chinese with English abstr.), *Acta Geophys. Sinica*, v. 8, no. 1, 84-93, Peking, 1959.
11956. MENARD, H. W. Minor lineations in the Pacific basin: *Geol. Soc. Am. Bull.*, v. 70, no. 11, 1491-1495, New York, Nov., 1959.
11957. MERRIAM, D. F., and HAMBLETON, W. W. Exploration geophysics in Kansas: 53-62 in Hambleton, W. W., Editor, Symposium on Geophysics in Kansas (reported as no. 11780 of this list), *State Geol. Surv. Kansas. Bull.* 137, Lawrence, July, 1959.
11958. MESCHERIKOV, J. A. Secular crustal movements of the east-European plain and associated problem. *Bureau Central Séismologique International, (UGGI), Trav. Sci.*, ser. A, v. 20, 261-275, Strasbourg, 1959.
- METZGER, J., and CRENN, Y. Quelques observations d'ondes de Rayleigh de séismes Atlantiques enregistrés a la bordure du continent Africain. See no. 11681 of this list.
- MIKHOTA, G. G., TULINA, YU. V., and KOSMINSKAYA, I. P. Crustal structure of the Pamir-Alai zone from seismic depth-sounding data. See no. 11890 of this list.
- MIKUMO, T., SHIMA, E., USAMI, T., ASANO, S., and DEN, N. On the travel-times of S-waves, derived from the explosion seismic observations. See no. 11601 of this list.
- MILLER, D. E., OFFICER, C. B., EWING, J. I., HENNIION, J. F., and HARKRIDER, D. G. Geophysical investigations in the Eastern Caribbean: summary of 1955 and 1956 cruises. See no. 11986 of this list.
- MILLER, D., and TOCHER, D. Field observations on effects of Alaska earthquake of 10 July 1958. See no. 12184 of this list.
11959. MILNE, A. R. Comparison of spectra of an earthquake T-phase with similar signals from nuclear explosions: *Seismol. Soc. Am. Bull.*, v. 49, no. 4, 317-329, Berkeley, Oct., 1959.
- MILNE, W. G., WHITE, W. R. H., and WILLMORE, P. L. Ripple Rock explosion and associated experiments. See no. 12229 of this list.
- MIRCHINK, M. F., and BALLAKH, I. YA. On the possibility of application of seismic surveying for direct prospecting for deposits of oil and gas. See no. 11607 of this list. GEOPHYS. ABSTR.
11960. MIYAMURA, S. Local earthquakes in Kii peninsula, central Japan. Part I. Reconnaissance observation of minor shocks at Gobo, Wakayama Prefecture: (in Japanese with summary in English), *Earthquake Res. Inst. Bull.*, v. 37, pt. 2, 347-358, Tokyo, June, 1959.
11961. MIYAMURA, S. Local earthquakes in Kii peninsula, central Japan. Part II. A brief review of seismicity in Wakayama Prefecture based on intensity investigations: (in Japanese with English summary), *Earthquake Res. Inst. Bull.*, v. 37, pt. 4, 593-608, Tokyo, 1959.
11962. MIYAMURA, S. Local earthquakes in Kii peninsula, central Japan. Part III. Temporary seismological network in the neighbourhood of Wakayama: (in Japanese with English summary), *Earthquake Res. Inst. Bull.*, v. 37, pt. 4, 609-635, Tokyo, 1959.
11963. MIYAMURA, S., and TSUJURA, M. Direction of approach and apparent velocity of near earthquake initial motion: (in Japanese with summary in English), *Earthquake Res. Inst. Bull.*, v. 37, pt. 2, 359-374, Tokyo, June, 1959.
- MIYAMURA, S., and TSUJURA, M. UHF multi-channel radio tele-recording seismograph. Part II. See no. 12191 of this list.
11964. MOGI, K. Experimental study of deformation and fracture of marble. (1st Paper) On the fluctuation of compression strength of marble and the relation to the rate of stress application: *Earthquake Res. Inst. Bull.*, v. 37, pt. 1, 155-170, Tokyo, March, 1959.
- MOH, Z. L., GOLDBERG, J. E. and BOGDANOFF, J. L. Forced vibration and natural frequencies of tall building frames. See no. 11761 of this list.
11965. MONAKHOV, F. I. Development of the microseismic method of tracing storms at sea: *Bureau Central Séismologique (UGGI), Trav. Sci.*, ser. A, v. 20, 181-191, Strasbourg, 1959.
11966. MONAKHOV, F. I., and DOLBILKINA, N. A. The structure of microseisms: *Akad. Nauk SSSR Izv.*, ser. Geofiz. no. 8, 937-945, Moscow, Aug., 1958. Translated by I. A. Mamantov in English edition, 537-541, *Am. Geophys. Union*, Washington, Nov., 1959.
11967. MOORE, D. G., and SHUMWAY, G. Sediment thickness and physical properties, Pigeon Point shelf, California: *J. Geophys. Res.*, v. 64, no. 3, 367-374, Washington, Mar. 1959.
11968. MORELLI, C. L'osservatorio geofisico sperimentale di Trieste: *Geofis. Teorica Appl. Bol.*, v. 1, no. 1, 3-26, Trieste, Mar., 1959.
11969. MORLAND, L. W. The propagation of plane irrotational waves through an elastoplastic medium: *Roy. Soc., London Phil. Trans.* v. 251, no. 997, 341-383, London, June 11, 1959.
11970. MOSKVIN, A. G., and SHEBALIN, N. V. Seismograph frequency characteristics at the station 'Pulkovo': *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 11, 1389-1393, Moscow, Nov., 1958. Translated by I. A. Mamantov in the English edition, 801-803, *Am. Geophys. Union*, Washington, Dec., 1959.
- MUELLER, S., LANDISMAN, M., SATO, Y., and EWING, M. Transient analysis of earthquake and explosion arrivals. See no. 11728 of this list.
- MULFORD, J. W., PARSONS, W. H., and RICHARDS, A. F. Capelinhos eruption of Fayal volcano, Azores, See no. 12004 of this list.
- MÜLLER, W. and PIERAU, H. Improvement of the quality of deep reflections by uniformly linear shotpoint arrays. See no. 12015 of this list.
- MUNK, W. H., SLICHTER, L. B., BENIOFF, H., HARRISON, J. C., and LACOSTE, L. Searching for the earth's free oscillations. See no. 11627 of this list.
11971. MURPHY, V. J., and ROCKETT, T. J. A shallow-zone seismic refraction study: *Bull. Geophys., Collège Jean-de-Brébeuf*, no. 5, 31-38, Montreal, Apr., 1959.
11972. MUSGRAVE, A. W. Wavefront charts and three-dimensional migrations: (abstr. only), *Geophysics*, v. 24, no. 5, p. 1131, Menasha, Dec., 1959.
11973. MUT, S. C. An evaluation of the long pilot cross-correlation technique: (abstr. only), *Geophysics*, v. 24, no. 5, p. 1143, Menasha, Dec., 1959.
11974. MYERS, W. H. Obtaining geological data from a qualitative analysis of seismograms: (abstr. only), *Geophysics*, v. 24, no. 5, 1123-1124, Menasha, Dec., 1959.
- NAFE, J. E., LANGSETH, M., DRAKE, C. L., and GAIBARPUERTAS, C. Estudios de prospección sísmica por refracción en el golfo de Cádiz. See no. 11705 of this list.

- NAFE, J. E., OLIVER, J. E., and BRUNE, J. N. A simplified method for the analysis and synthesis of dispersed wavetrains. See no. 11661 of this list.
11975. NANDA, J. N. Conversion of seismic waves: *J. Geophys. Res.*, v. 64, no. 11, p. 2032, Washington, Nov., 1959.
11976. NANDA, J. N. A proposed mechanism of generation of microseisms: *Bureau Central Séismologique International, (UGGI)*, Trav. Sci. ser. A. v. 20, 193-197, Strasbourg, 1959.
- NARANS, H. D., JR., BERG, J. W., JR., and COOK, K. L. Seismic studies of crustal structure in the eastern Basin and Range province. See no. 11633 of this list.
11977. NATURE. The following articles of interest to seismologists appeared in v. 183 of this periodical (London, 1959):—
 A Mongolian earthquake: no. 4658, p. 367, Feb. 7.
 Drilling a borehole to the earth's mantle: no. 4659, 436-437, Feb., 14.
 Russian contributions to the International Geophysical Year, no. 4668, 1087-1088, Apr., 18.
 Automatic reduction of geophysical data: no. 4669 1166-1168, Apr., 25.
 Characteristics of the Antarctic ice sheet: no. 4675, 1575-1577, June 6, 1959.
11978. NATURE. The following articles, of interest to seismologists, have appeared in v. 184 of this periodical (London, 1959):—
 Great earthquakes and the astronomical positions of Uranus: no. 4681, 177-178, July 18.
 Depth of isostatic compensation and Mohorovičić discontinuity, etc. in continental and oceanic areas: no. 4686, p. 629, Aug. 22.
 Tectonics in the USSR.: no. 4691, p. 942, Sept. 26.
 Yellowstone Park earthquake: no. 4691, 955-956, Sept. 26.
 The earth as viewed in 1959: no. 4692, 1007-8, Oct. 3, 1959.
 New geophysical observatory in Belgium: no. 4692, p. 1022, Oct. 3.
 Underground test explosions in Britain: no. 4698, 1532-1533, Nov. 14.
- NERSESOV, I. L., REISNER, G. I., GZOVSKY, M. V., and KRESTNIKOV, V. N. A comparison of tectonics and seismicity in the Garm region, Tadzhik SSR. I. See no. 11774 of this list.
11979. NEUMANN, F. Crustal structure in the Puget Sound area: *Bureau Central Séismologique International, (UGGI)*, Trav. Sci., ser. A, v. 20, 153-167, Strasbourg, 1959.
11980. NEUMANN, F. Analysis of earthquake intensity distribution maps: *Bureau Central Séismologique International, (UGGI)*, Trav. Sci., ser. A, v. 20, 213-222, Strasbourg, 1959.
11981. NISHIMURA, E., KISHIMOTO, Y., and TANAKA, Y. Observed secular tilting motion of the ground which preceded the occurrence of several destructive earthquakes: *Tellus*, v. 11, no. 1, 130-134, Stockholm, Feb., 1959.
11982. NITSCHKE, J., and POTT, G. Die Anwendung von Rechenautomaten zur Ermittlung der Tiefe und Neigung von Reflexionshorizonten: (abstr. only), *Geophys. Prospecting*, v. 7, no. 3, p. 371, The Hague, Sept., 1959.
11983. NOLTING, R. P. Areas where mis-tie occurs between two-receiver velocity log data and check shot data: 10-11 in Oklahoma Geophysical Society, Symposium on Continuous Velocity Logging (reported as no. 11989 of this list), *Shale Shaker*, v. 9, no. 9, Oklahoma City, 1959.
- NORTHROP, J., CLAY, C. S., and BLAIK, M. Some seismic profiles onshore and offshore Long Island, New York. See no. 11642 of this list.
11984. NUTTLI, O. W. The particle motion of the S wave: *Seismol. Soc. Am. Bull.*, v. 49, no. 1, 49-56, Berkeley, Jan., 1959.
- OAKESHOTT, G. B., GIANELLA, V. P., SLEMMONS, D. B., STEINBRUGGE, K. V., and TOCHER, D. Wonder, Nevada, earthquake of 1903. See no. 12125 of this list.
11985. OFFICER, C. B. Introduction to the theory of sound transmission, viii + 284 pages, *McGraw-Hill Book Company*, New York, 1959. A review appears in *Seismol. Soc. Am. Bull.*, v. 49, no. 3, p. 288, Berkeley, 1959.
11986. OFFICER, C. B., EWING, J. I., HENNION, J. F., HARKRIDER, D. G., and MILLER, D. E. Geophysical investigations in the eastern Caribbean, summary of 1955 and 1956 cruises: in *Physics and Chemistry of the Earth*, v. 3, 17-109, *Pergamon Press*, London and New York, 1959.
- OGURI, M., and KATAOKA, A. Effects of humidity and temperature on dynamic properties of rocks. See no. 11853 of this list.
- OGURI, M., and KATAOKA, A. Some dynamic properties of rocks at room temperatures. See no. 11854 of this list.
11987. OGURTSOV, K. I., and BUROVA, A. V. Intensities of longitudinal and transverse waves propagating at the boundary of a half-space: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 2, 157-164, Moscow, Feb., 1958. Translated by S. G. Zaderenko in the English edition, 93-96, *Am. Geophys. Union*, Washington, June, 1959.
- OKA, Y., and HIRAMATSU, Y. The fracture of rock around underground openings. See no. 11798 of this list.
11988. OKANO, K. Microseisms observed at Abuyama seismological observatory: (in Japanese with English summary) *Zisin, J. Seismol. Soc. Japan*, v. 12, no. 4, ser. 2, 182-190, Tokyo, Dec., 1959.
11989. OKLAHOMA GEOPHYSICAL SOCIETY. Symposium on Continuous Velocity Logging: *Shale Shaker*, v. 9, no. 9, 3-21, Oklahoma City, 1959. GEOPHYS. ABSTR.
11990. OKSA, D. R. Resolution and curved path computation of steep dip using an electronic computer: (abstr. only), *Geophysics*, v. 24, no. 5, 1131-1132, Menasha, Dec., 1959.
11991. OKURA, T. The zone of abnormal seismic intensity: (in Japanese with summary and captions in English), *Quart. J. Seismol.*, v. 24, no. 1, 19-24, Tokyo, June, 1959.
11992. OLIVER, J. Seismic waves in the intermediate period range: Appx. 8 to the report of the panel on seismic improvement (reported as no. 11635 of this list), 58-59 Washington, July, 1959.
11993. OLIVER, J. The phase compensation method of equalization: Appx. 9a to the report of the panel on seismic improvement (reported as no. 11635 of this list), 130-131, Washington, July, 1959.
11994. OLIVER, J. Ocean bottom seismographs, Appx. 11 to the report of the panel on seismic improvement (reported as no. 11635 of this list), 134-136, Washington, July, 1959.
- OLIVER, J. and BRUNE, J. N. The seismic noise of the earth's surface. See no. 11662 of this list.
- OLIVER, J. E., BRUNE, J. N., and NAFE, J. E. A simplified method for the analysis and synthesis of dispersed wavetrains. See no. 11661 of this list.

11995. OLIVER, J., DORMAN, J., and EWING, M. Surface-wave dispersion for oceanic paths: (abstr. only), *Geol. Soc. Am. Bull.*, v. 70, no. 12, pt. 2, p. 1738, Washington, Dec., 1959.
11996. OLIVER, J., DORMAN, J., and SUTTON, G. H. The second shear mode of continental Rayleigh waves: *Seismol. Soc. Am. Bull.*, v. 49, no. 4, 379-389, Berkeley, Oct., 1959.
11997. OLIVER, J., KOVACH, R., and DORMAN, J. An experimental and theoretical study of Rayleigh wave phase velocities: (abstr. only), *Geophysics*, v. 24, no. 5, p. 1140, Menasha, Dec., 1959.
11998. OLIVER, J., and MAJOR, M. Leaking modes and the PL phase: (abstr. only), *Earthquake Notes*, v. 30, no. 2, p. 18, Washington, June, 1959.
- OLIVER, J., ROMNEY, C., and PRESS, F. The need for fundamental research in seismology: a summary of the report of the panel on seismic improvement. See no. 12033 of this list.
11999. OPITZ, D. On seismic reflection velocity measurements: (in German), *Zeitschr. Angew. Geol.*, v. 5, no. 5, 223-226, Berlin, 1959. GEOPHYS. ABSTR.
- ORR, R. H., EVISON, F. F., and INGHAM, C. E. Thickness of the earth's crust in Antarctica. See no. 11723 of this list.
- ORR, B. H., and HATHERTON, T. Microseisms at Scott Base. See no. 11784 of this list.
- OSTENSO, N. A., and BENTLEY, C. R. Seismic methods and preliminary results, Marie Byrd Land, Antarctica. See no. 11628 of this list.
- OSTENSO, N., WOLLARD, G. P., and THIEL, E. C. Some results on ice thickness in Antarctica from seismic and gravity measurements. See no. 12240 of this list.
12000. PANNER, N. Die Ableitung der Magnitudengleichung für Oberflächenwellen für die seismische Station Collmberg: *Studia Geophys. et Geod.*, v. 3, no. 3, 242-255, Prague, 1959.
12001. PARKHOMENKO, I. S. Model experiments for studying the traversal of a head wave through a high-velocity layer: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 2, 196-209, Moscow, Feb., 1958. Translated by I. A. Mamantov in the English edition, 111-117, *Am. Geophys. Union*, Washington, June, 1959.
12002. PARKHOMENKO, I. S. The intensity of a head wave during its passage through a high-velocity layer, studied on models: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 4, 449-457, Moscow, Apr., 1958. Translated by K. Syers in the English edition, 255-259, *Am. Geophys. Union*, Washington, June, 1959.
- PARKHOMENKO, I. S., VASSIL'EV, YU. I., and KOVALEV, O. I. Study of the crystalline basement by the refracted wave method under conditions of partial masking. I. See no. 12201 of this list.
- PARKHOMENKO, I. S., VASSIL'EV, YU. I., and KOVALEV, O. I. Investigation of the incompletely masked crystalline basement by the refracted wave method II. See no. 12202 of this list.
- PARKHOMENKO, E. I. and VOLAROVICH, M. P. Piezoelectric effect of rocks. See no. 12209 of this list.
12003. PARRY, D. H. Exploratory coordination, Souris Valley area—Saskatchewan, Canada: (abstr. only), *Geophysics*, v. 24, no. 5, p. 1128, Menasha, Dec., 1959.
12004. PARSONS, W. H., RICHARDS, A. F., and MULFORD, J. W. Capelinhos eruption of Fayal volcano, Azores: (abstr. only), *J. Geophys. Res.*, v. 64, no. 8, p. 1119, Washington, Aug., 1959.
12005. PASSECHNIK, I. P. Seismic and air waves which arose during an eruption of the volcano Bezymyanny, on March 30, 1956: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 9, 1121-1126, Moscow, Sept., 1958. Translated by A. S. Ryall in the English edition, 650-653, *Am. Geophys. Union*, Washington, Nov., 1959.
12006. PĚČ K. Theorie der im elastischen Halbraum durch eine flächenförmige Quelle erregten Wellen, Part I: *Studia Geophys. et Geod.* v. 3, no. 2, 135-153, Prague, 1959.
- PEKERIS, C. L., ALTERMAN, Z., and JAROSCH, H. Oscillations of the earth. See no. 11589 of this list. BULL. SIGNAL.
12007. PEKERIS, C. L., LONGMAN, I. M., and LIFSON, H. Application of ray theory to the problem of long-range propagation of explosive sound in a layered liquid: *Seismol. Soc. Am. Bull.*, v. 49, no. 3, 247-250, Berkeley, July, 1959.
12008. PEOPLES, J. A., JR. A station seismograph calibration system, (abstr. only), *J. Geophys. Res.*, v. 64, no. 8, p. 1119, Washington, Aug., 1959.
12009. PERKINS, B., JR., and THOMPSON, A. A. Preliminary report on medium studies: Operation Hardtack, Apr.-Oct., 1958, Publ. ITR-1709, 27 P. available from *Office of Tech. Servs.*, Dept. of Comm., D. C., Washington, Aug., 1959.
12010. PERONACI, F. Sismicita dell'Iran: *Ann. Geofis.*, v. 11, no. 1, 55-68, Rome, 1958. An abstract with discussion by V. V. Belousov and reply by F. Peronaci. appears in *IUGG Chronicle*, no. 22, 218-219, Paris, July, 1959. BULL. SIGNAL.
12011. PERRET, W. R. Surface and subsurface strong motion measurements: Operation Hardtack, Apr.-Oct., 1958, Publ. ITR-1703, 66 p., available from *Office of Tech. Servs.*, Dept. of Comm., Washington, Aug., 1959.
12012. PESELNICK, L., and ZIETZ, I. Internal friction of fine-grained limestones at ultrasonic frequencies: *Geophysics*, v. 24, no. 2, 285-296, Menasha, Apr., 1959. A discussion by S. Treitel and a reply by L. Peselnick and I. ZIETZ appear in *Geophysics*, v. 24, no. 4, 823-824, Menasha, Oct., 1959.
12013. PETERSCHMITT, E. Ondes séismiques engendrés par des effondrements dans le bassin minier de Briey, *Acad. Sci. Paris Comptes Rendus*, v. 248, no. 26, 3728-3729, Paris, 1959. GEOPHYS. ABSTR.
- PETROUCHEVSKY, B. A., and MEDVEDEV, S. V. Les principes méthodiques et essai de répartition de la sismicité en U.R.S.S. See no. 11952 of this list.
- PHINNEY, R. A., POOLEY, R. N., and BUNCE, E. T. Seismic refraction observations in Buzzards Bay, Massachusetts, See no. 11665 of this list.
12014. PICKHARDT, H. E., and HOLLY, L. M. Sonic log proves valuable porosity tool: *World Oil*, v. 149, no. 4, 65-68 and 120, Houston, 1959. GEOPHYS. ABSTR.
12015. PIERAU, H., and MÜLLER, W. Improvement of the quality of deep reflections by uniformly linear shotpoint arrays: (abstr. only), *Geophys. Prospecting*, v. 7, no. 3, p. 372, The Hague, Sept., 1959.
12016. PLOUFF, D., KELLER, G. V., FRISCHKNECHT, F. C., and WAHL, R. R. Geophysical studies on I.G.Y. drifting station Bravo (T3), 1958 to 1959: (abstr. only), *Can. Oil and Gas Ind.*, v. 12, no. 12, p. 59, Gardenvale, Dec., 1959.
12017. POMEROY, P. Background and storm microseisms in the period range 11-22 seconds (abstr. only), *J. Geophys. Res.*, v. 64, no. 8, p. 1120, Washington, Aug., 1959.

12018. POMEROY, P. W., and SUTTON, G. H. The use of galvanometers as band rejection filters in electromagnetic seismographs: (abstr. only), *Earthquake Notes*, v. 30, no. 2, p. 17, Washington, June, 1959.
- POOLEY, R. N., BUNCE, E. T., and PHINNEY, R. A. Seismic refraction observations in Buzzards Bay, Massachusetts. See no. 11665 of this list.
12019. POPOV, I. I. A short-period vertical magnetic recovery force seismograph: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 6, 783-786, Moscow, June, 1958. Translated by K. Syers in the English edition, no. 6, 445-447, *Am. Geophys. Union*, Washington, Dec., 1959.
12020. POSGAY, K. The location of a seismic experimental area: (in Hungarian with English abstr.), *Geofiz. Közlem.*, v. 8, no. 1-2, 85-88, Budapest, 1959.
12021. POSPELOV, G. L. On the 'hearth zone' of the earth's crust, the 'magmatogene corona of the earth, 'areas of magmatism' and 'structural associations of intrusives': (in Russian), *Akad. Nauk SSSR Izv.*, ser. Geol., no. 3, 19-35, Moscow, 1959. GEOPHYS. ABSTR.
- POTT, G. and NITSCHKE, J. Die Anwendung von Rechenautomaten zur Ermittlung der Tiefe und Neigung von Reflexionshorizonten. See no. 11982 of this list.
12022. PRATT, G. The seismic and gravitational investigations, Commonwealth Trans-Antarctic Expedition: *Geog. J.*, v. 125, pt. 3-4, 351-354, London, Sept.-Dec., 1959.
12023. PRESS, F. Some implications on mantle and crustal structure from G waves and Love waves: *J. Geophys. Res.*, v. 64, no. 5, 565-568, Washington, May, 1959.
12024. PRESS, F. Elastic wave radiation from faults in ultrasonic models: 271-277 in Hodgson, J. H., *Editor*, *The Mechanics of Faulting, with Special Reference to the Fault-plane Work*. (See no. 11800 of this list). *Dom. Obs. Pub.*, v. 20, no. 2, Ottawa, 1959.
12025. PRESS, F. New results on mantle and crustal structure: (abstr. only), *J. Geophys. Res.*, v. 64, no. 8, p. 1120, Washington, Aug., 1959.
12026. PRESS, F. New results on mantle and crustal structure: (abstr. only), *Geol. Soc. Am. Bull.*, v. 70, no. 12, pt. 2, 1740-1741, Washington, Dec., 1959.
12027. PRESS, F. Further studies of the phase velocity method of exploration: (abstr. only), *Geophysics*, v. 24, no. 5, 1140-1141, Menasha, Dec., 1959.
12028. PRESS, F. Aftershocks as a means of identification of earthquakes: (Appx. 4 to the report of the panel on seismic improvement reported as no. 11635 of this list), page 42, Washington, July, 1959.
12029. PRESS, F. Long-period surface and body waves: (Appx. 5 to the report of the panel on seismic improvement reported as no. 11635 of this list), 43-45 Washington, July, 1959.
12030. PRESS, F., and DEWART, G. Extent of the Antarctic continent: *Science*, v. 129, no. 3347, 462-463, Washington, Feb., 20, 1959. An abstract appears in *Geol. Soc. Am. Bull.*, v. 70, no. 12, pt. 2, p. 1741, Washington, Dec., 1959.
- PRESS, F., and EWING, M. Determination of crustal structure from phase velocity of Rayleigh waves. Part III: The United States. See no. 11729 of this list.
12031. PRESS, F., and GRIGGS, D. Improved equipment for existing seismic stations: (Appx. 1 to the report of the panel on seismic improvement reported as no. 11635 of this list), 17-18, Washington, July, 1959.
12032. PRESS, F., and GRIGGS, D. Geophysical investigation of continental crustal structure: (Appx. 10 to the report of the panel on seismic improvement reported as no. 11635 of this list), 132-133, Washington, July, 1959.
- PRESS, F., and HEALY, J. H. Further model study of the radiation of elastic waves from a dipole source. See no. 11787 of this list.
- PRESS, F., HEALY, J. H., and AKI, K. Model seismology studies of surface waves. See no. 11786 of this list.
- PRESS, F., KOBAYASHI, N., and TAKEUCHI, H. Mantle Rayleigh waves and mantle structure. See no. 12165 of this list.
- PRESS, F., KOBAYASHI, N., and TAKEUCHI, H. Rayleigh-wave evidence for the low-velocity zone in the mantle. See no. 12164 of this list.
12033. PRESS, F., OLIVER, J., and ROMNEY, C. The need for fundamental research in seismology; a summary of the report of the panel on seismic improvement: *Am. Geophys. Union Trans.*, v. 40, no. 3, 212-221, Washington, Sept., 1959.
- PRESS, F., RANKAMA, K., RUNCORN, S. K., and AHRENS, L. H., *Editors*, *Physics and Chemistry of the Earth*. See no. 11584 of this list.
- PROSVIRNIN, V. M., and RYKUNOV, L. N. Distortion of the azimuths of a source of microseisms, caused by conditions of their propagation. See no. 12083 of this list.
- PROUT, J., and McLAUGHLIN, R. A portable seismic magnetic tape recorder. See no. 11950 of this list.
12034. PUCHKOV, S. V. Fundamentals of a complex method of seismic zoning: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 1, 107-115, Moscow, Jan., 1958. Translated by K. Syers in the English edition, 61-65, *Am. Geophys. Union*, Washington.
12035. QUAM, L. O. Arctic drifting station: *Am. Geophys. Union Trans.*, v. 40, no. 3, 222-224, Washington, Sept., 1959.
12036. QUARLES, M., JR. Diffraction and other types of distortion of seismograph records as aids to fault interpretation: (abstr. only), *Geophys. Prospecting*, v. 7, no. 1, p. 130, The Hague, Mar., 1959.
12037. RAMIREZ, J. E., S. J. El volcan submarino de Galerazamba: *Rev. Acad. Colomb. Cienc. Exact., Físicas y Naturales*, v. 10, no. 41, 301-313, Bogota, 1959.
12038. RAND CORPORATION. A method of concealing underground nuclear explosions: Rept. 2347, *The Rand Corp.*, iii + 13p., Santa Monica, Mar., 1959.
- RANKAMA, K., RUNCORN, S. K., AHRENS, L. H., and PRESS, F., *Editors*, *Physics and Chemistry of the Earth*. See no. 11584 of this list.
12039. RANTSMAN, YE. YA. Geomorphology and seismicity of the Surkhov river valley: (in Russian), *Akad. Nauk SSSR Dokl.* v. 124, no. 1, 171-174, Moscow, 1959. GEOPHYS. ABSTR.
12040. REICHENBACH, R., and SCHMIDT, G. Results of surface reflection seismic measurements in the siderite district of the Siegerland: *Geophys. Prospecting*, v. 7, no. 3, 291-299, The Hague, Sept., 1959.
- REISNER, G. I., GZOVSKY, M. V., KRESTINIKOV, V. N., and NERSESOV, I. L. A comparison of tectonics and seismicity in the Garm region, Tadzhik SSR. I. See no. 11774 of this list.
12041. REITAN, P. H. A hypothesis accounting for a two-phase orogenic cycle: *J. Geol.*, v. 67, no. 2, 129-134, Chicago, Mar., 1959.
12042. RESEARCH GROUP FOR EXPLOSION SEISMOLOGY. Observations of seismic waves from four explosions near the Kamaisi mine: *Earthquake Res. Inst. Bull.*, v. 37, pt. 1, 89-121, Tokyo, March, 1959.
12043. RESEARCH GROUP FOR EXPLOSION SEISMOLOGY. Observations of seismic waves from the second Hokoda explosion: *Earthquake Res. Inst. Bull.*, v. 37, pt. 3, 495-508, Tokyo Sept., 1959.

- RESLER, R. C., and BERG, J. W., JR. Investigation of local earthquakes February 13, 1958, near Wallsburg, Utah. See no. 11634 of this list.
- REVERDY, X., LAGARDE, A., and DESBRANDES, R. Contribution à l'étude de la vitesse des ondes sismiques. See no. 11696 of this list. GEOPHYS. ABSTR.
12044. REZANOV, I. A. The Ashkhabad earthquake of 1948 and its geological background: *Akad. Nauk SSSR Izv., ser. Geofiz.*, no. 6, 713-728, Moscow, June, 1958. Translated by I. A. Mamantov in the English edition, 407-413, *Am. Geophys. Union*, Washington, Oct., 1959.
- RICHARD, H., and LEDOUX, Y. Sismique réflexion en tectonique calme: compositions, correlations etc. See no. 11909 of this list.
- RICHARDS, A. F., MULFORD, J. W., and PARSONS, W. H. Capelinhos eruption of Fayal volcano, Azores. See no. 12004 of this list.
12045. RICHARDS, T. C. The evolution of the geophone: *Bureau Central Séismologique International, (UGGI), Trav. Sci., ser. A.*, 169-180, Strasbourg, 1959.
12046. RICHARDS, T. C. Broadside refraction shooting: *Geophysics*, v. 24, no. 4, 725-748, Menasha, Oct., 1959.
12047. RICHARDS, T. C. Wide-angle reflections and their application to finding limestone structures in the foothills of western Canada: (abstr. only), *Geophysics*, v. 24, no. 12, 1126-1127, Menasha, Dec., 1959.
12048. RICHARDS, T. C., and WALKER, D. J. Measurement of the thickness of the earth's crust in the Albertan plains of western Canada: *Geophysics*, v. 24, no. 2, 262-284, Menasha, Apr., 1959. An abstr. appears in *Geophysics*, v. 23, no. 5, p. 1072, Menasha, Dec., 1958.
12049. RICHTER, C. F. Elementary Seismology: viii + 768 p., W. H. Freeman & Co., San Francisco, 1958. Reviews appear in *Seismol. Soc. Am. Bull.* v. 49, no. 1, p. 119, Berkeley, 1959; *Nature*, v. 183, no. 4663, p. 708, London Mar. 14, 1959; *Tellus*, v. 11, no. 2, 257-258, Stockholm, May, 1959; *Gerlands Beitr. Geophys.*, v. 68, no. 3, 190-192, Leipzig, 1959; *Am. Geophys. Union Trans.* v. 40, no. 4, 353-354, Washington, Dec., 1959.
12050. RICHTER, C. F. Seismic regionalization: *Seismol. Soc. Am. Bull.*, v. 49, no. 2, 123-162, Berkeley, April, 1959. An abstract appears in *Geol. Soc. Am. Bull.*, v. 69, no. 12, pt. 2, p. 1701, New York, Dec., 1958.
12051. RICHTER, C. F. New dimensions in seismology: *Science*, v. 128, no. 3317, 175-182, Washington, July 25, 1958. Abstracts appear in *Geophys. Abstr.* no. 174, p. 212, Washington, July-Sept., 1958, and *Geophys. Prospecting*, v. 7, no. 3, p. 375, The Hague, Sept., 1959.
12052. RICHTER, C. F. Current studies of minor earthquakes: (abstr. only), *Geol. Soc. Am. Bull.*, v. 70, no. 12, pt. 2, p. 1743, Washington, Dec., 1959.
- RICHTER, C. F., ALLEN, C. R., and ST. AMAND, P. Geologic structure and seismicity in southern California and adjacent areas. See no. 11588 of this list.
12053. RIKITAKE, T. Studies of the thermal state of the earth. The second paper; heat flow associated with magma intrusion: *Earthquake Res. Inst. Bull.*, v. 37, pt. 2, 233-243, Tokyo, June, 1959.
12054. RIKITAKE, T. Geophysical evidence of the olivine-spinel transition hypothesis in the earth's mantle: *Earthquake Res. Inst. Bull.*, v. 37, pt. 3, 423-431, Tokyo, Sept., 1959.
12055. RINGWOOD, A. E. On the chemical evolution and densities of the planets: *Geochim. Cosmochim. Acta*, v. 15, 257-283, London, 1959.
12056. RINGWOOD, A. E. Constitution of the mantle—a revision: *Geochim. Cosmochim. Acta*, v. 16, no. 1-3, 192-193, London, 1959. GEOPHYS. ABSTR.
12057. RINNE, J. E. Earthquake design criteria for stack-line structure: *Am. Soc. Civ. Engrs. Proc., J. Struct. Div.*, v. 84, no. 7, pt. I, 1857.63-1857-69, New York, 1958; v. 85, no. 1, pt. I, 131-133, 1959. BULL. SIGNAL
12058. RITSEMA, A. R. On the focal mechanism of southeast Asian earthquakes: 341-368 in Hodgson, J. H., Editor, *The Mechanics of Faulting, with Special Reference to the Fault-plane Work.* (See no. 11800 of this list). *Dom. Obs. Pub.*, v. 20, no. 2, Ottawa, 1959.
12059. RITSEMA, A. R. Note on the azimuth deviations of P-waves recorded at Djakarata station: *Geofis. Pura e Appl.*, v. 43, 159-166, Milan, May-Aug., 1959.
12060. RIZNICHENKO, YU. V. On the application of the ultrasonic pulse method to seismological problems: *Bureau Central Séismologique International, (UGGI), Trav. Sci., ser. A.* v. 20, 305-309, Strasbourg, 1959.
12061. RIZNICHENKO, YU. V. On quantitative determination and mapping of seismic activity: *Annali Geofis.*, v. 12, no. 2, 227-237, Rome, Apr.-May, 1959. An abstract appears in *I.U.G.G. Chronicle*, no. 22, p. 219, Paris, July, 1959.
12062. RIZNICHENKO, YU. V. The mass determination of the coordinates of local earthquakes and of the velocities of seismic waves in the source areas: *Akad. Nauk SSSR Izv., ser. Geofiz.*, no. 4, 425-437, Moscow, Apr., 1958. Translated by I. A. Mamantov in the English edition, 243-248, *Am. Geophys. Union*, Washington, Aug., 1959.
12063. RIZNICHENKO, YU. V. The study of seismic conditions: *Akad. Nauk SSSR Izv., ser. Geofiz.*, no. 9, 1057-1074, Moscow, Sept., 1958. Translated by I. A. Mamantov in the English edition, 615-622, *Am. Geophys. Union*, Washington, Nov., 1959.
- RIZNICHENKO, YU. V., VEYTSMAN, P. S., and KOSMINSKAYA I. P. New deep seismic sounding data on the structure of the earth's crust and on mountain roots. See no. 12221 of this list.
12064. ROARK, J. J. A survey of Soviet geophysical literature: *Geophysics*, v. 24, no. 5, 910-915, Menasha, Dec., 1959.
12065. ROBEL, F. Die Erdbebenstation Bensberg bei Köln: *Zeitschr. Geophys.*, v. 25, no. 1, 16-32, Würzburg, 1959.
- ROBERTS, A. C., LUSKIN, B., and BECKMANN, W. C. Sub-bottom depth recorder. See no. 11618 of this list.
12066. ROBINSON, W. B. Presentation of a velocity mis-tie: 7-9 in Oklahoma Geophysical Society, Symposium on Continuous Velocity Logging, (reported as no. 11989 of this list), *Shale Shaker*, v. 9, no. 9 Oklahoma City, 1959. GEOPHYS. ABSTR.
12067. ROCARD, Y. L'amplification électronique et les séismographes: *Annales Géophys.*, v. 15, no. 3, 418-421, Paris, 1959.
12068. ROCARD, Y. Petits mouvements de la terre dus aux fluctuations des vents: *Annales Géophys.*, v. 15, no. 4, 551-554, Paris, Oct.-Dec., 1959.
- ROCARD, Y., and HIEBLOT, J. Contribution à la théorie des microséismes. See no. 11795 of this list.
- ROCARD, Y., and MATHEY, R. Performances de certains séismographes à courte période. See no. 11936 of this list.
- ROCKETT, T. J., and MURPHY, V. J. A shallow-zone seismic refraction study. See no. 11971 of this list.

12069. ROETHLISBERGER, H. Seismic refraction soundings in permafrost near Thule, Greenland: (abstr. only), *Can. Oil and Gas Ind.*, v. 12, no. 12, p. 60, Gardenvale, Dec., 1959.
12070. ROEVER, W. L., and VINING, T. F. Propagation of elastic wave motion from an impulsive source along a fluid/solid interface. Part I. Experimental pressure response: *Roy. Soc. London Phil. Trans.*, v. 251, no. 1000, 455-465, London, Sept. 15, 1959.
12071. ROMNEY, C. Short-period shear waves and their application to discriminating between earthquakes and explosions: (Appx. 2 to the report of the panel on seismic improvement reported as no. 11635 of this list), 19-21, Washington, July, 1959.
12072. ROMNEY, C. Deep-hole detection techniques: (Appx. 18 to the report of the panel on seismic improvement reported as no. 11635 of this list), 186-193, Washington, July, 1959.
12073. ROMNEY, C. Amplitudes of seismic body waves from underground nuclear explosions: *J. Geophys. Res.*, v. 64, no. 10, 1489-1498, Washington, Oct., 1959.
12074. ROMNEY, C. Seismic effects from underground nuclear explosions: (abstr. only), *Geol. Soc. Am. Bull.*, v. 70, no. 12, pt. 2, p. 1743, Washington, Dec., 1959.
- ROMNEY, C., PRESS, F., and OLIVER, J. The need for fundamental research in seismology; a summary of the report of the panel on seismic improvement. See no. 12033 of this list.
12075. ROSEMAN, H. Der Einflub der Ankopplung des Seismometers an den Untergrund auf die Energieübertagung: *Freiberger Forschung.*, v. 64, 63 p. Berlin, 1959.
12076. ROSENBAUM, J. H. The long-time response of a layered elastic medium to explosive sound: (abstr. only), *J. Geophys. Res.*, v. 64, no. 8, 1121-1122, Washington, Aug., 1959. An abstract also appears in *Geophysics*, v. 24, no. 5, p. 1139, Menasha, Dec., 1959.
12077. RÖSLER, R. Theoretische Untersuchungen zur Druckabhängigkeit der Körperschallgeschwindigkeit: *Gerlands Beitr. Geophys.*, v. 68, no. 1, 21-30, Leipzig, 1959.
12078. ROUTLEDGE, N. O. Russian contribution to the International Geophysical Year: *Nature*, v. 183, no. 4668, 1087-1088, London, 1959. GEOPHYS. ABSTR.
12079. RUEHMKORF, N. A. Prospection séismique en Campine belge: *Annales Mines Belgique*, no. 5, 535-542, Brussels, 1959. GEOPHYS. ABSTR.
- RUNCORN, S. K., AHRENS, L. H., PRESS, F., and RANKAMA, K. *Editors*, Physics and Chemistry of the Earth. See no. 11584 of this list.
12080. RUPNIK, J. J. Case history of the Dunes pool, Pawnee County, Kansas: 297-308 in Hambleton W. W., *Editor*, Symposium on Geophysics in Kansas (reported as no. 11780 of this list), *State Geol. Surv. Kansas. Bull.* 137, Lawrence, July, 1959.
12081. RUTLEY, J. I. A. The demolition of Ripple Rock: *The Internat. Hydrographic Rev.*, v. 36, no. 1, 19-28, Monaco, July, 1959.
12082. RYKUNOV, L. N. The study of a decrease of P-waves amplitudes in the shadow zone on the earth's model: *Bureau Central Séismologique International*, (UGGI), Trav. Sci., ser. A, 123-127, Strasbourg, 1959.
12083. RYKUNOV, L. N. and PROSVIRNIN, V. M. Distortion of the azimuths of a source of microseisms, caused by conditions of their propagation: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 8, 1026-1028, Moscow, Aug., 1958. Translated by I. A. Mamantov in the English edition, 589-591, *Am. Geophys. Union*, Washington, Nov., 1959.
12084. SACHS, D. C., and SWIFT, L. M. Underground explosion effects: Operation Teapot. Nevada Test Site. Feb-May, 1955, Publ. WT-1106 (Del.), 116 p. available from *Office of Tech. Servs., Dept. of Comm.*, Washington 25, D. C., Washington, July, 1959.
- SACHS, D. C., WELLS, W. M., and SWIFT, L. M. Earth motion measurements. Part I. Seismic studies and cavity studies. See no. 12154 of this list.
- SACKS, I. S., and HALES, A. L. Evidence for an intermediate layer from crustal structure studies in the eastern Transvaal. See no. 11777 of this list.
12085. SAKAI, K. On the earthquake of Dec. 31, 1957 in southern part of Fukui Pref.: (in Japanese), *Quart. J. Seismol.*, v. 24, no. 1, 25-27, Tokyo, June, 1959.
12086. SANDSTROM, H. Geophysical methods in glaciology: Operation "Hazen", Publ. D Phys. R (G) Hazen 3 of Def. Res. Bd., *Dept. National Def.*, Canada. vi + 52 p. Ottawa, May, 1959.
12087. SANTÔ, T. A. Investigations into microseisms using the observational data of many stations in Japan. (Part 1) —On the origin of microseisms: *Earthquake Res. Inst. Bull.*, v. 37, pt. 2, 307-325, Tokyo, June, 1959.
12088. SANTÔ, T. A. Investigations into microseisms by the observational data of many stations (Part II)—Further considerations on the origin of microseisms: *Earthquake Res. Inst. Bull.*, v. 37, pt. 3, 483-494, Tokyo, Sept., 1959.
12089. SATÔ, R. On the determination of crustal structure by the dispersion curves of surface waves (III): (in Japanese with English summary), *Zisin, J. Seismol. Soc. Japan*, v. 12, no. 4, ser. 2, 191-201, Tokyo, Dec., 1959.
12090. SATÔ, Y. Numerical integration of the equation of motion for surface waves in a medium with arbitrary variation of material constants: *Seismol. Soc. Am. Bull.*, v. 49, no. 1, 57-78, Berkeley, Jan., 1959.
- SATÔ, Y., EWING, M., and LANDISMAN, M. The distortion of pulse-like earthquake signals by seismographs. See no. 11901 of this list.
- SATÔ, Y., EWING, M., and LANDISMAN, M. Surface wave dispersion in elastic media having gradients in their physical properties. See no. 11902 of this list.
- SATÔ, Y., EWING, M., MUELLER, S., and LANDISMAN, M. Transient analysis of earthquake and explosion arrivals. See no. 11728 of this list.
12091. SATÔ, Y., and YAMAGUCHI, R. Velocity equation of Love waves propagated in multi-layered media: (in Japanese with English abstr.), *Zisin, J. Seismol. Soc. Japan*, ser. 2, v. 12, no. 2, 61-67, Tokyo, July, 1959.
12092. SAVARENSKY, E. F. Seismology in the Chinese People's Republic: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 6, 765-769, Moscow, June, 1958. Translated by A. E. Scheidegger in the English edition, 433-436, *Am. Geophys. Union*, Washington, Oct., 1959.
12093. SAVARENSKY, E. F. Results of seismic investigations in the USSR: *Bureau Central Séismologique International*, (UGGI), Trav. Sci., ser. A. 203-212, Strasbourg, 1959.
12094. SAVARENSKY, E. F. Determination of earthquake magnitude and intensity in the USSR: *Annali Geofis.*, v. 12, no. 3, 369-376, Rome, July-Sept., 1959. An abstract appears in *IUGG. Chronicle*, no. 22, 216-217, Paris, July, 1959.
12095. SAVARENSKY, E. F., LYSENKO, L. N., and KOMPANETS M. V. Microseisms in Lake Issyk-kul' as observed by the seismic station at Rybach'e: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 8, 1015-1019, Moscow Aug., 1958. Translated by I. A. Mamantov in the English edition, 583-585, *Am. Geophys. Union*, Washington, Nov., 1959.

12096. SAVARENSKY, E. F., and SHI H-YUNG, M. Studying the seismic activity in the territory of China: (in Chinese) *Acta Geophysica Sinica*, v. 8, no. 1, 2-6, Peking, Aug., 1959.
12097. SAVIT, C. H. Criteria for recognizing likely electronic computer applications: (abstr. only), *Geophysics*, v. 24, no. 5, p. 1132, Menasha, Dec., 1959.
12098. SAX, W. A. Recognition and use of cross energy on seismic records: (abstr. only), *Geophysics*, v. 24, no. 5, 1124-1125, Menasha, Dec., 1959.
- SCHAD, A., and ANDRES, J. Seismische Kartierung von Bruchzonen im mittleren und nördlichen Teil des Oberrheintalgraben und deren Bedeutung für die Ölsammlung. See no. 11593 of this list.
GEOPHYS. ABSTR.
12099. SCHÄFFNER, H.-J. Die Grundlagen und Auswerteverfahren zur seismischen Bestimmung von Erdbebenmechanismen: *Freiberger Forschung*, v. 63, 184 p., Berlin, June, 1959.
12100. SCHEIDEGGER, A. E. Note on the tectonics of Kern County, California, as evidenced by the 1952 earthquakes: *J. Geophys. Res.*, v. 64, no. 10, 1499-1501, Washington, Oct., 1959.
12101. SCHEIDEGGER, A. E. Statistical analysis of recent fault-plane solutions of earthquakes: *Seismol. Soc. Am. Bull.*, v. 49, no. 4, 337-347, Berkeley, 1959.
12102. SCHEIDEGGER, A. E. Seismic evidence for the tectonics of central and western Asia: *Seismol. Soc. Am. Bull.*, v. 49, no. 4, 369-378, Berkeley, Oct., 1959.
12103. SCHEIDEGGER, A. E. Stresses in the earth's crust: (abstr. only), *Geol. Soc. Am. Bull.*, v. 70, no. 12, pt. 2, 1746-1747, Washington, Dec., 1959.
12104. SCHMIDT, G. Results of underground-seismic reflection investigations in the siderite district of the Siegerland: *Geophys. Prospecting*, v. 7, no. 3, 287-290, The Hague, Sept., 1959.
- SCHMIDT, G., and REICHENBACH, R. Results of surface reflection seismic measurements in the siderite district of the Siegerland. See no. 12040 of this list.
12105. SCHMIDT, O. J., and LEVIN, B. J. Origin and composition of the earth: *Bureau Central Séismologique International (UGGI)*, Trav. Sci., ser. A., v. 20, 311-322, Strasbourg, 1959.
12106. SCIENCE. The following articles, of interest to seismologists, have appeared in v. 129, of this periodical Washington, 1959:—
International Geophysical Year: no. 3340, 20-22, Jan. 2.
Underground nuclear test data: no. 3344, 258-259, Jan. 30.
12107. SCIENCE. The following articles, of interest to seismologists, have appeared in v. 130 of this periodical, Washington, 1959:—
More seismic research asked to improve atomic test detection: no. 3366, 26-28, July 3.
\$53 million asked for 2-year seismic research program: no. 3367, 86-88, July 10.
12108. SCIENCE NEWS LETTER. Articles of interest to seismologists have appeared in various issues of v. 75 of this periodical (Washington, 1959) as follows:—
Map drawn showing underside of U.S.: no. 3, p. 40, Jan. 17.
Seismograph jiggles cured by new device: no. 8, p. 119, Feb. 21.
Statistics released on Alaska earthquake: no. 9, p. 137, Feb. 28.
Antarctic continent smaller than ice sheet: no. 10, p. 150 Mar. 7.
Study earth's interior: no. 15, p. 229, Apr. 1.
Pacific's white ash shows possible comet collision: no. 15, p. 232, Apr. 11.
Rare earthquake in South American Strait: no. 18, p. 276, May 2.
12109. SCIENCE NEWS LETTER. Articles of interest to seismologists have appeared in various issues of v. 76 of this periodical (Washington, 1959) as follows:—
Moonquake recorder slated for construction: no. 7, p. 99, Aug. 15.
Spot underground A-Test: no. 8, p. 115, Aug. 22.
Survey earthquake effects: no. 14, p. 211, Oct. 3.
Yellowstone geysers returning to normal: no. 16, p. 257, Oct. 17.
Man to pierce earth's crust: no. 18, p. 290, Oct. 31.
Earth's interior is cooler than previously believed: no. 20, p. 325, Nov., 14.
Geophysics cooperation continues world-wide: no. 25, 416-417, Dec., 19.
Earth solid to the core: no. 26, p. 429, Dec. 26.
12110. SEABROOKE, D. S. Anomalous events on the reflection seismogram: (abstr. only), *Geophysics*, v. 24, no. 5, 1124, Menasha, Dec., 1959.
12111. SEISMOLOGICAL SECTION, JAPANESE METEOROLOGICAL AGENCY. On the ground conditions of seismograph room of weather stations attached to J.M.A. (3rd report): (in Japanese), *Quart. J. Seismol.*, v. 23, no. 4, 171-176, Tokyo, Mar., 1959.
12112. SENBUSH, R. L., LAWRENCE, P. L., and MCDONAL, F. J. Interpretation of synthetic seismograms: (abstr. only), *Geophysics*, v. 24, no. 5, p. 1123, Menasha, Dec., 1959.
12113. SENSU, T. On the time interval distribution of aftershocks: (in Japanese with English summary), *Zisin. J. Seismol. Soc. Japan*, v. 12, no. 4, ser. 2, 149-161, Tokyo, Dec., 1959.
- SERDYUKOVA, A. S., and BARANOV, V. I. Radiogenic heat. See no. 11608 of this list.
GEOPHYS. ABSTR.
12114. SERIFF, A. J. The response of seismometers in series and parallel connections: *Geophysics*, v. 24, no. 1, 49-63, Menasha, Feb., 1959.
12115. SHABLINSKAYA, N. V. Tectonic structure of the second structural stage of the Vagay-Ishim interfluvium according to seismic data: (in Russian), *Vses. neft. Nauch. Geol. Razved. Inst. Trudy*, no. 131, 169-181, Leningrad, 1959.
GEOPHYS. ABSTR.
12116. SHALEM, N. Active tectonics in the Levant in the light of seismicity: (abstr. only), *IUGG. Chronicle*, no. 22, p. 219, Paris, July, 1959.
12117. SHAMINA, O. G., and SILAEVA, O. I. The propagation of elastic pulses in free boundary layers of finite thickness: *Akad. Nauk SSSR Izv. ser. Geofiz.*, no. 3, 302-316, Moscow, Mar., 1958. Translated by I.A. Mamantov in the English edition, 168-174, *Am. Geophys. Union*, Washington, July, 1959.
- SHAMINA, O. G., and SILAEVA, O. I. The distribution of elastic pulses in cylindrical specimens. See no. 12123 of this list.
12118. SHAO-HSIEH, H. Type-581 seismograph: *Science Record*, v. 3, no. 10, 462-468, Peking, Oct., 1959.
BULL SIGNAL.
12119. SHEBALIN, N. V. Correlation between magnitude and intensity of earthquakes; asthenosphere: *Bureau Central Séismologique International (UGGI)* Trav. Sci., ser. A. 31-37, Strasbourg, 1959.

- SHEBALIN, N. V., and MOSKVINA, A. G. Seismograph frequency characteristic at the station 'Pulkovo'. See no. 11970 of this list.
- SHIDA, I., and KISHINOUE, F. Tripartite observations of microseisms in Yamagata city. See no. 11861 of this list.
- SHIDA, I., and KISHINOUE, F. Tripartite observations of microseisms at Sakata (Second Paper), See no. 11862 of this list.
- SHIDA, I., and KISHINOUE, F. Tripartite observations of microseisms in Shōnai plain, Yamagata Prefecture. See no. 11863 of this list.
- SHI H-YUNG, M., and SAVARENSKY, E. F. Studying the seismic activity on the territory of China. See no. 12096 of this list.
- SHIMA, E., USAMI, T., ASANO, S., DEN, N., and MIKUMO, T. On the travel-times of S-waves, derived from the explosion seismic observations. See no. 11601 of this list.
12120. SHLANGER, A. Free non-radial vibrations of the earth: *Geofis. Pura e Appl.*, v. 43, 23–35, Milan, May-Aug., 1959.
12121. SHNEIDEROV, A. J. Microseisms due to magnetostriction and electrostriction in some ferrous and polarized rock deposits: (abstr. only), *J. Geophys. Res.*, v. 64, no. 8, p. 1124, Washington, Aug., 1959.
12122. SHNEYERSON, M. B. Evaluation of the accuracy of a differential method of interpretation of data of KMPV under the conditions of the Russian platform: (in Russian), *Razved. Promyslov. Geofiz.*, no. 27, 3–14, Moscow, 1959. GEOPHYS. ABSTR.
- SHUMWAY, G., and MOORE, D. G. Sediment thickness and physical properties: Pigeon Point Shelf, California. See no. 11967 of this list.
12123. SILAEVA, O. I., and SHAMINA, O. G. The distribution of elastic pulses in cylindrical specimens: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 1, 32–45, Moscow, Jan., 1958. Translated by V. Poppe in the English edition, 17–24, *Am. Geophys. Union*, Washington.
- SILAEVA, O. I., and SHAMINA, O. G. The propagation of elastic pulses in free boundary layers of finite thickness. See no. 12117 of this list.
- SIMPSON, E. B., McDONAL, F. J., LOPER, G. B., and McCLURE, C. D. A new marine seismic system. See no. 11948 of this list.
12124. SKURIDIN, G. A., and GVOZDEN, A. A. Boundary conditions for jumps in solutions of dynamic equations of the theory of elasticity with discontinuities: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 2, 145–156, Moscow, Feb., 1958. Translated by S. G. Zaderenko in the English edition, 87–92, *Am. Geophys. Union*, Washington, June, 1959.
12125. SLEMMONS, D. B., STEINBRUGGE, K. V., TOCHER, D., OAKESHOTT, G. B., and GIANELLA, V. P. Wonder, Nevada, earthquake of 1903: *Seismol. Soc. Am. Bull.*, v. 49, 3, 251–265, Berkeley, July, 1959.
- SLICHTER, L. B., BENIOFF, H., HARRISON, J. C., LACOSTE, L., and MUNK, W. H. Searching for the earth's free oscillations. See no. 11627 of this list.
12126. SMITH, M. W. History of the Windom pool, McPherson and Rice Counties, Kansas: 309–320 in Hambleton, W. W., *Editor*, Symposium on Geophysics in Kansas (reported as no. 11780 of this list), *State Geol. Surv. Kansas*, Bull. 137, Lawrence, July, 1959.
- SOKOLOV, V. N., and ATLASOV, I. P. Main features of the tectonic development of the central Soviet Arctic. See no. 11602 of this list.
12127. SOLONENKO, V. P. On the seismic regionalization of the territory of the Mongolian People's Republic: (in Russian), *Akad. Nauk SSSR Dokl.*, v. 127, no. 2, 419–422, Moscow, 1959. GEOPHYS. ABSTR.
12128. SOLOV'EV, S. L. Conference on the problem of tsunamis and the seismicity of the Far East: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 3, 422–423, Moscow, Mar., 1958. Translated by A. S. Ryll in the English edition, 240–241, *Am. Geophys. Union*, Washington, July, 1959.
12129. SOLOV'EV, S. L. The north Baikal earthquake of April 29, 1917: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 4, 536–542, Moscow, Apr., 1958. Translated by I. A. Mamantov in the English edition, 299–303, *Am. Geophys. Union*, Washington, Aug., 1959.
12130. SOLOV'EV, S. L. Amplitude variations with distance in the ground particle motion of surface waves of Kurilo-Kamchatka earthquakes: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 11, 1323–1334, Moscow, Nov., 1958. Translated by I. A. Mamantov in the English edition, 762–770, *Am. Geophys. Union*, Washington, Dec., 1959.
12131. SOLOV'EV, S. L. Magnitude and energy of earthquakes: *Bureau Central Séismologique International*, (UGGI), Trav. Sci., ser. A. 39–53, Strasbourg, 1959.
12132. SOSKE, J. L. The blind zone problem in engineering geophysics: *Geophysics*, v. 24, no. 2, 359–365, Menasha, Apr., 1959.
- SPARKS, N. R., and MARTNER, S. T. The electroseismic effect. See no. 11934 of this list.
12133. SPENCER, T. W. Method of generalized reflection and transmission coefficients: (abstr. only), *Geophysics*, v. 24, no. 5, p. 1142, Menasha, Dec., 1959.
12134. SPLITTGERBER, H. Zur Frage der Schadensmöglichkeiten bei Sprengerschütterungen: (abstr. only), *Geophys. Prospecting*, v. 7, no. 3, p. 369, The Hague, Sept., 1959.
12135. SPONHEUER, W. Die Tiefen der Erdbebenherde in Deutschland auf Grund makroseismischer Berechnungen: *Annali Geofis.*, v. 11, no. 3–4, 157–617, Rome, July-Oct., 1958. An abstract by W. Sponheuer, discussions by W. Hiller, M. Peterschmitt, G. Grenet, V. Karnik, B. Kunz and replies by W. Sponheuer, appear in *IUGG Chronicle*, no. 22, p. 217, Paris, July, 1959.
- STAKHOVSKAYA, Z. I., and VOLAROVICH, M. P. The study of Young's modulus of rock samples under pressures of up to 5000 kg/cm² by the method of bending. See no. 12210 of this list.
- STAKHOVSKAYA, Z. I., VOLAROVICH, M. P., and BALASHOV, D. B. An investigation of elastic properties of rocks at high pressures. See no. 12208 of this list.
12136. ST. AMAND, P. Circum-Pacific orogeny: 403–411 in Hodgson, J. H., *Editor*, The Mechanics of Faulting, with Special Reference to the Fault-plane Work. (See no. 11800 of this list). *Dom. Obs. Pub.*, v. 20, no. 2, Ottawa, 1959.
- ST. AMAND, P., RICHTER, C. F., and ALLEN, C. R. Geologic structure and seismicity in southern California and adjacent areas. See no. 11588 of this list.
12137. STAUDER, W., S. J. A mechanism study; the earthquake of Oct. 24, 1927: *Geofis. Pura e Appl.*, v. 44, 135–143, Milan, Sept.-Dec., 1959.
12138. STAUDER, W., S. J. Alaska earthquake of July 10, 1958: (abstr. only), *Geol. Soc. Am. Bull.*, v. 70, no. 12, pt. 2 p. 1750, Washington, Dec., 1959.
- STAUDER, W., S. J., and BYERLY, P. Motion at the source of an earthquake. See no. 11667 of this list.

12139. STEINBRUGGE, K. V., BUSH, V. R., and ZACHER, E. G. San Francisco earthquake of March 22, 1957; engineering observations: (abstr. only), *Geol. Soc. Am. Bull.*, v. 70, no. 12, pt. 2, 1750-1751, Washington, Dec., 1959.
- STEINBRUGGE, K. V., TOCHER, D., OAKESHOTT, G. B., GIANELLA, V. P., and SLEMMONS, D. B. Wonder, Nevada, earthquake of 1903. See no. 12125 of this list.
- STEINBRUGGE, K. V., ZACHER, E. G., MARION, W. C., and TOCHER, D. Creep on the San Andreas fault. See no. 12185 of this list.
- STELZNER, J., and VANĚK, J. Bestimmung der Magnitudengleichungen für Jena. See no. 12200 of this list.
12140. STILKE, G. On elastic surface waves at a cylindrical hole in an infinite solid: *Geophys. Prospecting*, v. 7, no. 3, 273-286, The Hague, Sept., 1959.
12141. STONELEY, R. The passage of Rayleigh waves across the ocean floor: (abstr. with discussion by I. Lehmann), *IUGG Chronicle*, no. 22, 224-225, Paris, July, 1959.
12142. STREET, K. Need for high explosive and nuclear tests for research program: (Appx. 7 to the report of the panel on seismic improvement reported as no. 11635 of this list), 52-57, Washington, July, 1959.
12143. STRICK, E. Propagation of elastic wave motion from an impulsive source along a fluid/solid interface. Part II. Theoretical pressure response: *Roy. Soc. London Phil. Trans.* v. 251, no. 1000, 465-488, London, Sept. 15, 1959.
12144. STRICK, E. Propagation of elastic wave motion from an impulsive source along a fluid/solid interface. Part III. The pseudo-Rayleigh wave: *Roy. Soc. London Phil. Trans.* v. 251, no. 1000, 488-509, London, Sept. 15, 1959.
12145. STROBACH, K. Stereoskopische Vektorregistrierung: *Zeitschr. Geophys.* v. 23, no. 6, 306-315, Würzburg, 1957. An abstract by K. Strobach, with discussions by F. Gassman and W. Hiller, and replies by K. Strobach, appear in *IUGG Chronicle*, no. 22, p. 225, Paris, July, 1959.
- STRUK, YE. V., BRANDT, S. B., and TABULEVICH, V. N. Automatic receiving of time signals by seismic station 'Makhachkala'. See no. 12156 of this list.
- STUDER, M., O. P., and BIRKENHAUER, H. F. Correlation between displacement and acceleration from quarry blasting. See no. 11641 of this list.
12146. SULTANOVA, Z. Z. Processing of observations for earthquakes of Azerbaydzhan: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 3, 398-404, Moscow, Mar., 1958. Translated by A. S. Ryall in the English edition, 224-228, *Am. Geophys. Union*, Washington, July, 1959.
- SUPPIGER, E. W., and FREESTON, W. D. A note on Mohr's stress circles. See no. 11735 of this list.
12147. SUTHERLAND, M. The damndest finest ruins: 216 p., 8p. photos, *Coward-McCann*. New York, 1959. This is described by the publishers as "the full story of San Francisco's great earthquake-fire." A review appears in *The New Yorker Magazine*, Oct. 31, 1959, p. 195.
- SUTTON, G. H., DRAKE, C. L., and EWING, M. Continental margins and geosynclines; the east coast of North America north of Cape Hatteras. See no. 11704 of this list.
12148. SUTTON, G. H. MAJOR, M., and EWING, M. Oceanic Rayleigh-wave dispersion in the period range 15-140 seconds; the group-velocity maximum and associated Airy phase: (abstr. only), *Geol. Soc. Am. Bull.*, v. 70, no. 12, pt. 2, page 1751, Washington, Dec., 1959.
- SUTTON, G. H., OLIVER, J., and DORMAN, J. The second shear mode of continental Rayleigh waves. See no. 11996 of this list.
- SUTTON, G. H., and POMEROY, P. W. The use of galvanometers as band rejection filters in electromagnetic seismographs. See no. 12018 of this list.
- SUTTON, G. H., WORZEL, J. L., and Talwani, M. A crustal section across the Puerto Rico trench. See no. 12167 of this list.
12149. SUYEHIRO, S. Aftershock sequences of the Izu earthquake of August, 1956: *Papers in Meteorol. Geophys.*, v. 9, nos. 3, 4, 193-203, Tokyo, Jan., 1959.
12150. SUYEHIRO, S. Fine recording in time direction for seismological observation: *Papers in Meteorol. Geophys.*, v. 10, no. 1, 44-50, Tokyo, Sept., 1959.
12151. SUZUKI, Z., and ISHIGAKI, A. On converted waves by a narrow canal on the surface of a semi-infinite elastic medium: *Sci. Repts. Tôhoku Univ.*, ser. 5. Geophys., v. 10, no. 2, 71-79, Sendai, July, 1958. A review appears in *Geophysics*, v. 25, no. 1, 341-342, Menasha, Feb. 1960.
12152. SUZUKI, Z., and ISHIGAKI, A. On the shielding effect of various types of canals: (in Japanese with English summary), *Zisin. J. Seismol. Soc. Japan*, v. 12, no. 3, ser. 2, 130-136, Tokyo, Sept., 1959.
12153. SUZUKI, Z., and ISHIDA, H. A simple method to determine the damping constant of a seismograph from the record of its free oscillation when the damping is nearly critical: (Appx.) (in Japanese), *Zisin. J. Seismol. Soc. Japan*, v. 12, no. 3, ser. 2, 142-143, Tokyo, Sept., 1959.
- SWIFT, L. M., and SACHS, D. C. Underground explosion effects. See no. 12084 of this list.
12154. SWIFT, L. M., SACHS, D. C., and WELLS, W. M. Earth motion measurements. Part I. Seismic studies and cavity studies; operation Hardtack, Apr.-Oct., 1958: Publ. ITR-1702, 58 p. available from *Office of Tech. Servs., Dept. of Comm.*, Washington 25, D. C., Washington, Aug., 1959.
12155. SZENDREI, M. E. An experimental investigation of the propagation of a sonic pulse along the surface of a semi-infinite medium: *Geofis. Pura e Appl.*, v. 43, 36-44, Milan, May-Aug., 1959.
12156. TABULEVICH, V. N., STRUK, YE. V., and BRANDT, S. B. Automatic receiving of time signals by seismic station 'Makhachkala': *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 9, 1137-1138, Moscow, Sept., 1958. Translated by J. S. Sweet in the English edition, p. 660, *Am. Geophys. Union*, Washington, Nov., 1959.
12157. TAKADA, M. On the observing instruments and telemetrical devices of extensometers and tiltmeters at Ide Observatory: *Disaster Prevention Res. Inst. Bull.*, no. 27, 1-27, Kyôto, Jan., 1959.
12158. TAKADA, M. On the crustal strain accompanied by a great earthquake: *Disaster Prevention Res. Inst. Bull.*, no. 27, 29-46, Kyôto, Jan., 1959.
12159. TAKAGI, S. Investigation of the rumbling of the earth: (in Japanese), *Quart. J. Seismol.*, v. 24, no. 1, 29-30, Tokyo, June, 1959.
- TAKASAKI, K. J., and EATON, J. P. Seismological interpretation of earthquake-induced water-level fluctuations in wells. See no. 11716 of this list.
12160. TAKEUCHI, H. General solutions of equations of some geophysical importance: *Seismol. Soc. Am. Bull.*, v. 49, no. 3, 273-283, Berkeley, July, 1959. A paper of the same title, in Japanese, appears in *Zisin. J. Seismol. Soc. Japan*, ser. 2, v. 9, no. 4, 189-199, Tokyo, Mar. 1957.

12161. TAKEUCHI, H. A comment on the flattening of the group velocity curve of mantle Rayleigh waves with periods about 500 sec.: *Seismol. Soc. Am. Bull.*, v. 49, no. 4, 365-368, Berkeley, Oct. 1959.
12162. TAKEUCHI, H. Torsional oscillations of the earth and some related problems: *Geophys. J.*, v. 2, 89-100, London June, 1959.
12163. TAKEUCHI, H., and KOBAYASHI, N. Surface waves propagating along a free surface of a semi-infinite elastic medium of variable density and elasticity, Part I: (in Japanese with English summary), *Zisin, J. Seismol. Soc. Japan*, v. 12, no. 3, ser. 2, 115-121, Tokyo, Sept., 1959. Also appears in *Geophys. Notes*, Geophys. Inst., Tokyo, v. 12, no. 2, Tokyo, 1959.
12164. TAKEUCHI, H., PRESS, F., and KOBAYASHI, N. Rayleigh-wave evidence for the low-velocity zone in the mantle: *Seismol. Soc. Am. Bull.*, v. 49, no. 4, 355-364, Berkeley, Oct., 1959.
12165. TAKEUCHI, H., PRESS, F., and KOBAYASHI, N. Mantle Rayleigh waves and mantle structure: (abstr. only), *Geol. Soc. Am. Bull.*, v. 70, no. 12, pt. 2, p. 1752, Washington, Dec., 1959.
12166. TAL'VIRSKIY, D. B. Seismic prospecting of the basement in the southern part of the Tobol zone of the West Siberian Lowland: (in Russian), *Priklad. Geofiz.*, no. 22, 3-23, Moscow, 1959. GEOPHYS. ABSTR.
12167. TALWANI, M., SUTTON, G. H., WORZEL, J. L. A crustal section across the Puerto Rico trench: *J. Geophys. Res.*, v. 64, no. 10, 1545-1555, Washington, Oct., 1959.
12168. TALWANI, M., WORZEL, J. L., and EWING, M. Gravity anomalies and crustal section across the Tonga trench: (abstr. only), *J. Geophys. Res.*, v. 64, no. 8, 1126-1127, Washington, Aug., 1959.
12169. TAMRAZIAN, G. P. On the seismic activity of the north-west border area of the Pacific Ocean: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 5, 664-668, Moscow, May, 1958. Translated by A. E. Scheidegger in the English edition, 378-381, *Am. Geophys. Union*, Washington, Sept., 1959.
- TANAKA, T., YOSHIKAWA, S., and KANAI, K. Comparative studies of earthquake motions on the ground and underground. Multiple reflection problem. See no. 11846 of this list.
12170. TANAKA, Y. Investigation of volcanic activity of Torishima (I): (in Japanese with summary and captions in English), *Quart. J. Seismol.*, v. 23, no. 4, 155-169, Tokyo, Mar., 1959.
- TANAKA, Y., NISHIMURA, E., and KISHIMOTO, Y. Observed secular tilting motion of the ground which preceded the occurrence of several destructive earthquakes. See no. 11981 of this list.
12171. TANDON, A. N. The Rann of Cutch earthquake of 21 July 1956: *Indian J. Meteorol. Geophys.*, v. 10, no. 2, 137-146, New Delhi, 1959. GEOPHYS. ABSTR.
12172. TARDI, P. Enregistrements séismiques de grandes explosions dans les Alpes occidentales en septembre 1958: *Acad. Sci. Paris Comptes Rendus* v. 248, no. 8, 1069-1072, Paris, 1959. GEOPHYS. ABSTR.
12173. TATEVOSYAN, L. K. Several features of the deep structure of the earth's crust in Azerbaydzhan from gravimetric data: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 5, 643-647, Moscow, May, 1958. Translated by A. S. Ryall in the English edition, 363-366, *Am. Geophys. Union*, Washington, Sept., 1959.
- TAYLOR, G. L., and WIDESS, M. B. Seismic reflections from layering within the Precambrian basement complex, Oklahoma. See No. 12225 of this list.
12174. TAZIME, K. An application of the Ray theory to stratified layers (10), (11), (12), (13:) (in Japanese), *Zisin, J. Seismol. Soc. Japan*, ser. 2, v. 12, no. 1, 25-33, Tokyo, Mar., 1959.
12175. TAZIME, K. An application of the ray theory to stratified layers (14): (in Japanese), *Zisin, J. Seismol. Soc. Japan*, v. 12, no. 3, ser. 2, 137-140, Tokyo, Sept., 1959.
12176. TAZIME, K. Ray-theoretical interpretation on the Airy phase: (in Japanese), *Zisin, J. Seismol. Soc. Japan*, v. 12, no. 3, ser. 2, 140-142, Tokyo, Sept., 1959.
12177. TEISSEYRE, R. The mechanism of the earthquakes in terms of the dislocation theory: *Annali Geofis.*, v. 12, no. 2, 179-188, Rome, Apr.-May, 1959. An abstract appears in *IUGG Chronicle*, no. 22, p. 227, Paris, July, 1959.
- TEISSEYRE, R., and DROSTE, S. The mechanism of earthquakes according to dislocation theory. See no. 11707 of this list.
- TELLER, E., LATTER, A. L., and MARTINELLI, E. A. Seismic scaling law for underground explosions. See no. 11904 of this list.
12178. TEUPSER, Ch. Empfindlichkeitsregler für elektrodynamische Seismographen: *Gerlands Beitr. Geophys.*, v. 68, no. 2, 90-103, Leipzig, 1959.
12179. TEUPSER, Ch. Eine Methode zur Bestimmung des Rückwirkungsfaktors bei Seismometern vom Typ Galitzin: *Studia Geophys. et Geod.*, v. 3, no. 1, 92-93, Prague, 1959.
- THIEL, E. C., OSTENSO, N., and WOOLLARD, G. P. Some results on ice thickness in Antarctica from seismic and gravity measurements. See no. 12240 of this list.
12180. THIRLAWAY, H. I. S. Geophysics in Pakistan: *Geophys. J.*, v. 2, no. 3, 241-247, London, Sept., 1959.
- THIRLAWAY, H. I. S., and AHMAD, M. The application of integrated geophysical surveys for estimating ground water resources in the mountain valleys of West Pakistan. See no. 11583 of this list. GEOPHYS. ABSTR.
- THOMPSON, A. A., and PERKINS, B., Jr. Preliminary report on medium studies. See no. 12009 of this list.
12181. THOMSON, W. T. Spectral aspect of earthquakes: *Seismol. Soc. Am. Bull.*, v. 49, no. 1, 91-98, Berkeley, Jan., 1959.
12182. TILLOTSON, E. Recent earthquakes in the U.K.: (abstr. only), *IUGG Chronicle*, no. 22, p. 216, Paris, July, 1959.
12183. TIXIER, M. P., ALGER, R. P., and DOH, C. A. Sonic logging: *J. Petrol. Technol.*, v. 11, no. 5, 106-114, New York, 1959. GEOPHYS. ABSTR.
12184. TOCHER, D., and MILLER, D. Field observations on effects of Alaska earthquake of July 1958: *Science*, v. 129, no. 3346, 394-395, Washington, Feb., 1959. An abstract appears in *Geol. Soc. Am. Bull.*, v. 70, no. 12, pt. 2, p. 1753, Washington, Dec., 1959.
- TOCHER, D., OAKESHOTT, G. B., GIANELLA, V. P., SLEMMONS, D. B., and STEINBRUGGE, K. V. Wonder, Nevada, earthquake of 1903. See no. 12125 of this list.
12185. TOCHER, D., STEINBRUGGE, K. V., ZACHER, E. G., and MARION, W. C. Creep on the San Andreas fault: (abstr. only), *Geol. Soc. Am. Bull.*, v. 70, no. 12, pt. 2, p. 1753, Washington, Dec., 1959.
12186. TOLSTOY, I. Modes, rays, and travel times: *J. Geophys. Res.*, v. 64, no. 7, 815-821, Washington, July, 1959.
12187. TREITEL, S. On the attenuation of small-amplitude plane stress waves in a thermoelastic solid: *J. Geophys. Res.*, v. 64, no. 6, 661-665, Washington, June, 1959.

12188. TRESKOV, A. A. Differential method of determining the depth of focus of a near earthquake: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 4, 543-549, Moscow, Apr., 1958. Translated by A. S. Ryall, Jr., in the English edition, 304-307, *Am. Geophys. Union*, Washington, Aug., 1959.
- TROREY, A. W., WERTH, G. C., and LIU, D. T. Offshore singing—field experiments and theoretical interpretation. See no. 12222 of this list.
12189. TRYGGVASON, E. Longitudinal wave velocities in the Earth's crust in Iceland: (in Icelandic with English abstr.), *Náttúrufrae.*, v. 29, 80-84, Reykjavik, 1959.
12190. TRYGGVASON, E. Earthquakes in Iceland during the years 1956, 1957, and 1958: (in Icelandic with English abstr.), *Náttúrufrae.* v. 29, 84-91, Reykjavik, 1959.
- TSUJURA, M., and AKI, K. Correlational study of near earthquake waves. See no. 11586 of this list.
12191. TSUJURA, M., and MIYAMURA, S. UHF multi-channel radio tele-recording seismograph. Part II: (in Japanese with English summary), *Earthquake Res. Inst. Bull.*, v. 37, pt. 1, 193-206, March, 1959.
- TSUJURA, M., and MIYAMURA, S. Direction of approach and apparent velocity of near earthquake initial motion. See no. 11963 of this list.
12192. TUKEY, J. Equalization and pulse shaping techniques applied to the determination of initial sense of Rayleigh waves: (Appx. 9 to the report of the panel on seismic improvement reported as no. 11635 of this list), 60-129, Washington, July, 1959.
- TULINA, YU. V., KOSMINSKAYA, I. P., and MIKHOTA, G. G. Crustal structure of the Pamir-Alai zone from seismic depth-sounding data. See no. 11890 of this list.
12193. TULLOS, F. N., and CUMMINGS, L. C., Jr. An analog seismic correlator: (abstr. only), *Geophysics*, v. 24, no. 5, p. 1133, Menasha, Dec., 1959.
- TUVE, M. A., WETHERILL, G. W., ALDRICH, L. T. and BASS, M. N. The earth's crust—seismic studies. See no. 11587 of this list.
12194. TUYEZOV, I. K. Use of the method of reflected waves for prospecting the second structural-tectonic stage in the southern part of the West Siberian Lowland (Central Pri-Irtysh): (in Russian), *Razved. Promyslov. Geofiz.* no. 27, 29-43, Moscow, 1959.
- GEOPHYS. ABSTR.
- TVALTVADZE, G. K., and BALAVADZE, B. K. The structure of the earth's crust in Georgia according to geophysical data. See no. 11606 of this list.
- ÜBERSCHAR, H. J., and LODE, W. Reflexionsseismische Überschüssung von Geländehindernissen am Beispiel einer Rheinüberschüssung. See no. 11918 of this list.
- UCHMAN, J., WOJTCZAK, B., and HORDEJUK, J. A new type short-period seismograph SK-58. See no. 11809 of this list.
12195. ULLMANN, W. Das Problem der konstanten Übertragungsfaktoren eines mechanischen Empfängers: 33 p. *Akademie-Verlag*, Berlin, 1958. A review appears in *Seismol. Soc. Am. Bull.*, v. 49, no. 1, p. 119, Berkeley, 1959.
- USAMI, T., ASANO, S., DEN, N., MIKUMO, T., and SHIMA, E. On the travel-times of S-waves, derived from the explosion seismic observations. See no. 11601 of this list.
12196. U. S. COAST AND GEODETIC SURVEY. Hebgen Lake, Montana earthquakes, August 1959: Mimeographed prelim. rept., September, 1959.
12197. U. S. GEOLOGICAL SURVEY. Geological Survey undertakes: concentrated investigation of Montana earthquake. *GeoTimes*, v. 4, no. 3, p. 12, Washington, Oct., 1959.
12198. VACQUIER, V. Measurement of horizontal displacement along faults in the ocean floor: *Nature*, v. 183, no. 4659, 452-453, London, Feb., 14, 1959.
12199. VANĚK, J. Die Amplituden von PP- und SS-Wellen in der Nähe von 40° und die Struktur des äusseren Erdmantels: *Annali Geofis.*, v. 12, no. 2, 239-247, Rome, Apr.-May, 1959. An abstract with discussions by R. Stoneley, and V. I. Keylis-Borok, and replies by J. Vaněk, appear in *IUGG Chronicle*, no. 22, 230-231, Paris, July, 1959.
12200. VANĚK, J., and STELZNER, J. Bestimmung der Magnitudengleichungen für Jena: *Gerlands Beitr. Geophys.* v. 68, no. 2, 75-89, Leipzig, 1959.
- VANĚK, J., ZÁTOPEK, A., and KÁRNÍK, V. Contribution au problème des magnitudes unifiées. See no. 11849 of this list.
- VAN RYEN, W. M. L., KOEFOED, O., and KUIPER, J. Laboratory determinations of elastic properties of some limestones. See no. 11894 of this list.
12201. VASSIL'EV, YU. I., KOVALEV, O. I., and PARKHOMENKO, I. S. Study of the crystalline basement by the refracted wave method under conditions of partial masking. I: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 3, 317-329, Moscow, Mar. 1958. Translated by K. Syers in the English edition, 175-182, *Am. Geophys. Union*, Washington, July, 1959.
12202. VASSIL'EV, YU. I., KOVALEV, O. I., and PARKHOMENKO, I. S. Investigation of the incompletely masked crystalline basement by the refracted wave, method II: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 5, 569-581, Moscow, May, 1958. Translated by I. Emin in the English edition, 323-328, *Am. Geophys. Union*, Washington, Sept., 1959.
12203. VEYTSMAN, P. S., KOSMINSKAYA, I. P., and RIZNICHENKO, YU. V. New deep seismic sounding data on the structure of the earth's crust and on mountain roots: *Bureau Central Séismologique International*, (UGGI), Trav. Sci., ser. A, v. 20, 97-112, Strasbourg, 1959.
12204. VELDKAMP, J. Some Sumatra earthquakes: *Annali Geofis.*, v. 12, no. 2, 249-255, Rome, Apr.-May, 1959. An abstract with discussion by R. E. Ingram, and reply by J. Veldkamp appears in *IUGG Chronicle*, no. 22, p. 226, Paris July, 1959.
12205. VERSTAPPEN, H. Th. Geomorphology and crustal movements of the Aru Islands in relation to the Pleistocene drainage of the Sahul shelf: *Am. J. Sci.*, v. 257, no. 7, 491-502, New Haven, 1959.
12206. VESANEN, E. Rapport sur l'activité séismique en Finlande: (abstr. only), *IUGG Chronicle*, no. 22, p. 221, Paris, July, 1959.
12207. VESHNYAKOV, N. V. On some errors connected with the determination of the azimuth of microseisms by the tripartite net method: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 8, 1020-1025, Moscow, Aug., 1958. Translated by I. A. Mamantov in the English edition, 586-588, *Am. Geophys. Union*, Washington, Nov., 1959.
- VINING, T. F., and ROEVER, W. L. Propagation of elastic wave motion from an impulsive source along a fluid/solid interface. Part I. Experimental pressure response. See no. 12070 of this list.
- VIOLET, C. E., JOHNSON, G. W., and HIGGINS, G. H. Underground nuclear detonations. See no. 11842 of this list.

12208. VOLAROVICH, M. P., BALASHOV, D. B., and STAKHOVSKAYA, Z. I. An investigation of elastic properties of rocks at high pressures: *Bureau Central Séismologique International, (UGGI)*, Trav. Sci. ser. A. v. 20, 277-287, Strasbourg, 1959.
12209. VOLAROVICH, M. P., and PARKHOMENKO, E. I. Piezoelectric effect of rocks: *Bureau Central Séismologique International, (UGGI)*, Trav. Sci. ser. A. v. 20, 289-304, Strasbourg, 1959.
12210. VOLAROVICH, M. P., and STAKHOVSKAYA, Z. I. The study of Young's modulus of rock samples under pressures of up to 5000 kg/cm² by the method of bending: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 5, 582-593, Moscow, May, 1958. Translated by N. Kadinsky in the English edition, 329-335, *Am. Geophys. Union*, Washington, Sept., 1959.
12211. VOUTE, C. The Assab region, its geology and history during the quaternary period: *Bull. Geophys. Obs., Fac. Sci., Univ. Coll. Addis Ababa*, v. 1, no. 2, 73-101, Addis Ababa, July, 1959.
12212. VVEDENSKAYA, A. V. Displacements in the surface of a fracture, accompanied by slip: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 2, 175-183, Moscow, Feb., 1958. Translated by Mrs. L. Rutgers in the English edition, 102-105, *Am. Geophys. Union*, Washington, June, 1959.
12213. VVEDENSKAYA, N. A. Instrumental observations of weak earthquakes as a basis for the establishing of seismic regions: *Akad. Nauk SSSR Izv.* ser. Geofiz., no. 2, 210-224, Moscow, Feb., 1958. Translated by I. A. Mamantov in the English edition, 118-124, *Am. Geophys. Union*, Washington, June, 1959.
12214. VVEDENSKAYA, N. A. Time relationships of seismic activity changes in adjacent epicentral zones: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 11, 1394-1398, Moscow, Nov., 1958. Translated by I. A. Mamantov in the English edition, 804-809, *Am. Geophys. Union*, Washington, Dec., 1959.
12215. VVEDENSKAYA, A. V., and BALAKINA, L. M. On some peculiarities of the displacement fields of the longitudinal and transverse waves propagating in the earth's mantle: *Bureau Central Séismologique International, (UGGI)*, Trav. Sci. ser. A, 145-149, Strasbourg, 1959. A paper of the same name appears in *Akad. Nauk. SSSR Izv.*, ser. Geofiz., no. 8, 1052-1054, 1957. See no. 11524.
12216. WADATI, K., and HIRONO, T. Abnormal distribution of seismic intensity observed in Japan: *Bureau Central Séismologique International, (UGGI)*, Trav. Sci., ser. A. 223-238, Strasbourg, 1959.
- WAHL, R. R., PLOUFF, D., KELLER, G. V., and FRISCHKNECHT, F. C. Geophysical studies on I.G.Y. drifting station Bravo (T3), 1958 to 1959. See no. 12016 of this list.
12217. WALDIE, A. D. The weight dropping technique—its current developments in the United States and Libya: (abstr. only), *Geophysics*, v. 24, no. 5, p. 1126, Menasha, Dec., 1959.
- WALKER, D. J., and RICHARDS, T. C. Measurement of the thickness of the earth's crust in the Albertan plains of western Canada. See no. 12048 of this list.
- WALLACE, C. H., CARE, J. L., and BROOKS, L. Geophysical case history of the Engel pool. See no. 11673 of this list.
12218. WATANABE, H. A rotational strain seismometer: (in Japanese with English summary), *Zisin. J. Seismol. Soc. Japan*, v. 12, no. 4, ser. 2, 162-170, Tokyo, Dec., 1959.
- WATANABE, Y., and KISHINOUE, F. An electromagnetic horizontal seismograph for recording microseisms. See no. 11864 of this list.
12219. WEBER, J. R. Comparison of gravitational and seismic depth determinations on the Gilman glacier and adjoining ice cap in northern Ellesmere Island: (abstr. only), *Can. Oil and Gas Ind.*, v. 12, no. 12, p. 63, Gardenvale, Dec., 1959.
12220. WEBER, M. Die Laufzeitfunktion und ihre Interpretation in der Refraktionsseismik des einachsigen inhomogenen Körpers: *Geofis. Pura e Appl.*, v. 43, 167-181, Milan, May-Aug., 1959. Also appears in *Mitteil. Inst. Geophys.* no. 36, Zurich, Aug., 1959.
12221. WEBER, M. Das ebene n-Schichtenproblem der Reflektionsseismik mit konstanten Frontgeschwindigkeiten, beliebigen Neigungen und beliebiger Lage der Quelle: *Geof. Pura e Appl.*, v. 43, 12-22, Milan, May-Aug., 1959. Also in *Mitteil. Inst. Geophys.* no. 36, Zurich, Aug., 1959.
- WELLS, W. M., SWIFT, L. M., and SACHS, D. C. Earth motion measurements. Part I. Seismic studies and cavity studies. See no. 12154 of this list.
- WENTWORTH, C. K., FRASER, G. D., and EATON, J. P. The tsunami of March 9, 1957, on the Island of Hawaii. See no. 11734 of this list.
12222. WERTH, G. C., LIU, D. T., and TROREY, A. W. Offshore singing-field experiments and theoretical interpretation: *Geophysics*, v. 24, no. 2, 220-232, Menasha, Apr., 1959. An abstract appears in *Geophysics*, v. 23, no. 5, p. 1055, Menasha, Dec., 1958.
12223. WESTPHAL, J. A. A seismic migration analog computer: (abstr. only), *Geophysics*, v. 24, no. 5, 1125-1126, Menasha, Dec., 1959.
- WETHERILL, G. W., ALDRICH, L. T., BASS, M. N., and TUVE, M. A. The earth's crust—seismic studies. See no. 11587 of this list.
12224. WHITE, J. E., and BRUCE, C. R. A technique for resolving over-lapping refraction arrivals: (abstr. only), *Geophysics*, v. 24, no. 5, 1142-1143, Menasha, Dec., 1959.
- WHITE, W. R. H., WILLMORE, P. L., and MILNE, W. G. Ripple Rock explosion and associated experiments. See no. 12229 of this list.
12225. WIDESS, M. B., and TAYLOR, G. L. Seismic reflections from layering within the Precambrian basement complex Okalahoma: *Geophysics*, v. 24, no. 3, 417-425, Menasha, July, 1959. An abstract appears in *Geophysics*, v. 23, no. 5, p. 1058, Menasha, Dec., 1958.
12226. WILLIAMS, M. L. The stresses around a fault or crack in dissimilar media: *Seismol. Soc. Am. Bull.*, v. 49, no. 2, 199-204, Berkeley, April, 1959.
12227. WILLIS, D. E., and JOHNSON, J. C. Some seismic results using magnetic tape recording: *Earthquake Notes*, v. 30, no. 3, 21-25, Washington, Sept., 1959.
12228. WILLMORE, P. L. The application of the Maxwell impedance bridge to the calibration of electromagnetic seismographs: *Seismol. Soc. Am. Bull.*, v. 49, no. 1, 99-114, Berkeley, Jan., 1959.
12229. WILLMORE, P. L., MILNE, W. G., and WHITE, W. R. H. Ripple Rock explosion and associated experiments: (abstr. only), *Geol. Soc. Am. Bull.*, v. 70, no. 12, pt. 2, p. 1754, Washington, Dec., 1959.
12230. WILSON, C. D. V. Geophysical investigations in the Vale of Clwyd: *Liverpool and Manchester Geol. J.*, v. 2, pt. 2, 253-270, Liverpool, 1959. GEOPHYS. ABSTR.

12231. WILSON, J. TUZO One Chinese Moon: xiii + 274 p., Longman, Green and Co., Toronto, New York and London, 1959. This is a popular account of Prof. Wilson's tour of China as a guest of the Academia Sinica, but it contains many valuable descriptions of seismologists and of seismological installations. The final chapter of the book presents a very acute analysis of the international situation as seen through the eyes of an internationally distinguished scientist.
12232. WILSON, J. TUZO Geophysics and continental growth: *Am. Scientist*, v. 47, no. 1, 1-24, New Haven, 1959. GEOPHYS. ABSTR.
12233. WILSON, J. TUZO Geophysical Institutes of the U.S.S.R. and of the People's Republic of China: *Am. Geophys. Union Trans.*, v. 40, no. 1, 3-24, Washington, Mar. 1959.
12234. WILSON, J. TUZO Evolution of the crust and its rock associations geophysics and continental growth: *Bureau Central Séismologique International, (UGGI), Trav. Sci.*, ser. A, v. 20, 413-417, Strasbourg, 1959.
12235. WILSON, JAMES T. Comparison of some earthquakes in eastern and western United States: (abstr. only), *Geol. Soc. Am. Bull.*, v. 70, no. 12, pt. 2, p. 1755, Washington, Dec., 1959.
12236. WINCHELL, R. L. Law Southeast pool—a successful seismic discovery in Graham County, Kansas: 335-349 in Hambleton, W. W., Editor, Symposium on Geophysics in Kansas (reported as no. 11780 of this list), *State Geol. Surv. Kansas, Bull.* 137, Lawrence, July, 1959.
12237. WITKIND, I. J. The Hebgen Lake earthquake: *GeoTimes*, v. 4, no. 3, 13-14, Washington, Oct., 1959.
- WOJTCZAK, B., HORDEJUK, J., and UCHMAN, J. A new type short-period seismograph SK-58. See no. 11809 of this list.
12238. WOOD, A. B. A comparison of well velocity methods in south Texas: *Geophysics*, v. 24, no. 3, 443-450, Menasha July, 1959. An abstract appears in *Geophysics*, v. 23, no. 5, p. 1060, Menasha, Dec., 1958.
- WOODS, H. D., and JAMES, L. B. Engineering geology in the California Department of Water Resources. See no. 11833 of this list.
12239. WOOLLARD, G. P. Crustal structure from gravity and seismic measurements: *J. Geophys. Res.*, v. 64, no. 10, 1521-1544, Washington, Oct., 1959.
12240. WOOLLARD, G. P., THIEL, E. C., and OSTENSO, N. Some results on ice thickness in Antarctica from seismic and gravity measurements: (abstr. only), *Geophys. Prospecting*, v. 7, no. 1, p. 127, The Hague, Mar., 1959.
12241. WORZEL, J. L. Extensive deep sea sub-bottom reflections identified as white ash: *U.S. National Acad. Sci. Proc.*, v. 45, no. 3, 349-355, Washington, Mar., 1959.
- WORZEL, J. L., EWING, M., and TALWANI, M. Gravity anomalies and crustal section across the Tonga trench. See no. 12168 of this list.
- WORZEL, J. L., TALWANI, M., and SUTTON, G. H. A crustal section across the Puerto Rico trench. See no. 12167 of this list.
- WYRICK, R. F., DIETZ, F. T., HERSEY, J. B., and BUNCE, E. T. Geophysical investigation of the continental margin between Cape Henry, Virginia, and Jacksonville, Florida. See no. 11791 of this list.
12242. WYROBEK, S. M. Well-velocity determinations in the English Trias, Permian and Carboniferous: *Geophys. Prospecting*, v. 7, no. 2, 218-230, The Hague, June, 1959.
12243. YAKOVLEVA, O. A. Information on the earthquake in the northern region of Moscow State, 1626: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 3, p. 423, Moscow, Mar., 1958. Translated by A. S. Ryall in the English edition, p. 241, *Am. Geophys. Union*, Washington, July, 1959.
- YAMAGUCHI, R., and SATÔ, Y. Velocity equation of Love waves propagated in multi-layered media. See no. 12091 of this list.
12244. YAMAGUCHI, S. On the sensitivity of clay: *Disaster Prevention Res. Inst. Bull.*, no. 28, 30 p., Kyôto, Mar., 1959.
12245. YANOVSKAYA, T. B. On the determination of the dynamic parameters of the focus hypocenter of an earthquake from records of surface waves I: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 3, 289-301, Moscow, Mar., 1958. Translated by G. M. Volkoff in the English edition, 161-167, *Am. Geophys. Union*, Washington, July, 1959.
12246. YANOVSKAYA, T. B. The dispersion of Rayleigh waves in a spherical layer: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 7, 801-817, Moscow, July, 1958. Translated by P. W. Pomeroy in the English edition, 461-467, *Am. Geophys. Union*, Washington, Nov., 1959.
12247. YOSHIDA, K. A hypothesis on transmission of energy of tsunami waves: *Records of Oceanographic Works in Japan*, v. 5, no. 1, 14-37, Tokyo, Feb., 1959, also *Geophysical Notes*, v. 12, no. 1, Contr. 12, Tokyo, June, 1959.
12248. YOSHIMURA, J. Seismicity in Kyûshû District: (Japanese with English summary), *Quart. J. Seismol.*, v. 24, no. 2, 35-39, Tokyo, Sept., 1959.
12249. YOSHIYAMA, R. Maximum amplitude and epicentral distance—proposed a theoretical elucidation of empirical formulas and some development: *Earthquake Res. Inst. Bull.*, v. 37, pt. 3, 389-404, Tokyo, Sept., 1959.
- YOSHIKAWA, S., KANAI, K., and TANAKA, T. Comparative studies of earthquake motions on the ground and underground. Multiple reflection problem. See no. 11846 of this list.
- ZACHER, E. G., MARION, W. C., TOCHER, D., and STEINBRUGGE, K. V. Creep on the San Andreas fault. See no. 12185 of this list.
- ZACHER, E. G., STEINBRUGGE, K. V., and BUSH, V. R. San Francisco earthquake of March 22, 1957: engineering observations. See no. 12139 of this list.
- ZÁTOPEK, A., KÁRNÍK, V. and VANĚK, J. Contribution au problème des magnitudes unifiées. See no. 11849 of this list.
12250. ZHARKOV, V. N. On the physical nature of wave guides (low-velocity layers) in the upper parts of the mantle at depths of 50-200 km: (in Russian), *Akad. Nauk SSSR Dokl.*, v. 125, no. 4, 771-774, Moscow, 1959. GEOPHYS. ABSTR.
12251. ZHBANOV, G. I. Seismic logging of shot wells by means of a hammer: (in Russian) *Razved. Promyslov. Geofiz.* no. 27, 14-18, 1959. GEOPHYS. ABSTR.
- ZIETZ I., and PESELNICK, L. Internal friction of fine-grained limestones at ultrasonic frequencies. See no. 12012 of this list.
- ZUCKERNIK, V. B., and KARUS, E. V. An ultrasonic apparatus for studying the physical and mechanical properties of rocks intersected by a drill-hole. See no. 11851 of this list.

12252. ZVOLINSKY, N. V. Reflected waves and head waves arising at a plane interface between two elastic media II: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 1, 3-16, Moscow, Jan., 1958. Translated by A. E. Scheidegger in the English edition, 1-7, *Am. Geophys. Union*, Washington.
12253. ZVOLINSKY, N. V. Reflected and head waves originating at a plane interface separating two elastic media III: *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 2, 165-174, Moscow, Feb., 1958. Translated by J. H. Fishwick in the English edition, 97-101, *Am. Geophys. Union*, Washington, June, 1959.
12254. ZVOLINSKY, N. V. Basic problems of the theory of surface waves: (abstr. only), *Akad. Nauk SSSR Izv.*, ser. Geofiz., no. 12, 1523-1524, Moscow, Dec., 1958. Translated by I. A. Mamantov in the English edition, 890-891, *Am. Geophys. Union*, Washington, Jan., 1960.

SUBJECT INDEX FOR THE YEAR 1959

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