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DEPARTMENT OF THE INTERIOR
CANADA

HON. CHARLES STEWART, *Minister*

W. W. CORY, C.M.G., *Deputy Minister*

PUBLICATIONS
OF THE
Dominion Observatory

OTTAWA

R. MELDRUM STEWART, M.A., *Director*

Vol. X

Bibliography of Seismology

No. 1

JANUARY, FEBRUARY, MARCH, 1929

BY

ERNEST A. HODGSON, M.A.

OTTAWA
F. A. ACLAND
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1929

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Bibliography of Seismology

January, February, March, 1929

This issue is the first of a series entitled "*Bibliography of Seismology*," which is to appear henceforward as a part of these Publications. Beginning with the first quarter of 1926, the Eastern Section of the Seismological Society of America published quarterly a "*Bibliographical Bulletin*". This new series is essentially a continuation of that earlier publication.

The *Bibliographical Bulletin* was compiled through the efforts of collaborators in various countries and was prepared at the Dominion Observatory under the editorship of the present writer. It was distributed in mimeographed form to the members of the Eastern Section, and was later re-issued in print in the *Bulletin of the Seismological Society of America*.

At its annual meeting, held April 30–May 1, 1929, in New York City, the Eastern Section decided to relinquish the bibliography provided other means could be found to carry it on. The work has, therefore, with the concurrence of the Eastern Section, been assumed by the Dominion Observatory.

The various lines of collaboration previously established are to be maintained and extended, to the end that the Bibliography of Seismology may serve, as nearly as may be, as a complete register of all papers, books or other publications dealing with seismology, pure or applied, or with other related subjects of interest to seismologists.

The assistance of collaborators is indicated by initials, appended to the items received from each. On the last page of this issue will be found a list of all who have so far assisted in the assembling of references or abstracts for the bibliography as published by the Eastern Section. Their co-operation in the past is much appreciated. It is hoped that they will continue to assist and that many others will join in the work, reporting, if possible with a brief abstract in each case, such papers, their own and others, as should be listed in this bibliography.

1. ABDALIAM, S., "Le grand tremblement de terre de l'Arménie le 22 octobre 1926," *La Nature*, No. 2764, 1, July 1, 1927.
2. AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, "Structure of Typical American Oil Fields," published by the American Association of Petroleum Geologists, 485 pages, 195 illustrations. Price (cloth) \$5, postpaid. Box 1852, Tulsa, Oklahoma, 1929.
Thirty papers on the programme of the Twelfth Annual Convention of the American Association of Petroleum Geologists at Tulsa, Oklahoma, March 24, 25, and 26, 1927; being a symposium on the relation of oil accumulation to structure.
3. ANDREOTTI, G., "Risultati ottenuti dallo studio di telesismi giapponesi registrati a Padova," *La Meteorologia pratica*, 9, No. 3, 107, May-June, 1928.

4. ANTEVS, ERNST, "Late Quaternary Changes of Level in Maine," *American Journal of Science*, Fifth Series, 15, No. 88, 319-336, April, 1928.

The paper presents the results of a study of the late Quaternary changes of level in Maine as carried out by the author in 1926-1927, "partly in collaboration with Mr. Robert W. Sayles, of Harvard University, and Professor J. W. Goldthwait, of Dartmouth College."

The author's table of contents is as follows:

"Late-glacial marine limit: Previous studies; Own determinations; Marine sediments near the marine limit; Marine limit in adjacent regions; Amount of the late-glacial depression; Time of the recording of the marine limit.

"Late-glacial and post-glacial rise of the land; Rise rapid; Rise not broken by oscillations or marked halts; Amount of the uplift.

"Post-glacial transgression.

"Changes of level in Maine as compared with those in other areas.

"References."

The references include thirty-two items—a useful bibliography for anyone interested in the study of the changes of level in the northern part of the Atlantic coast line.

5. ANTEVS, ERNST, "The Last Glaciation: With Special Reference to the Ice Retreat in North-eastern North America," *American Geographical Society, Research Series*, No. 17 (Shaler Memorial Series), x+292 pages, 9 plates. Price \$3.50. New York, 1928.

A review by C. E. P. Brooks appears in *Nature*, No. 3081, 122, 761-762, November 17, 1928.

6. BAILEY, E. B., COLLET, L. W., and FIELD, R. M., "Paleozoic Submarine Landslips Near Quebec City," *The Journal of Geology*, 36, No. 7, 577-614, October-November, 1928.

Although this paper deals with events which are old historically, while still comparatively young geologically, it is of interest to those engaged in a study of the seismicity of Eastern Canada, by reason of the analysis of known faults near Quebec city, and the extended bibliography indicating earlier investigations in that region.

7. BAILEY, E. B., "The Ancient Mountain Systems of Europe and America," *The Scottish Geographical Magazine*, 44, No. 6, 321-334, November 15, 1928.
8. BLACKWELDER, ELIOT, "Mudflow as a Geologic Agent in Semiarid Mountains," *Bulletin of the Geological Society of America*, 39, No. 2, 465-483, June 30, 1928.
9. BLAU, L. W., "An Experimental Investigation of Forced Vibrations," *Journal of the Franklin Institute*, 206, No. 3, 355-378, September, 1928.

A correction note appears in the next number of the same journal at page 502.

10. BOGGS, SAMUEL W., "Physiography of the Roof of the Earth," *The Pan-American Geologist*, 50, No. 3, 189-200, October, 1928, and 50, No. 4, 271-282, November, 1928.

The article describes the physiography of Tibet.

11. BOWIE, WILLIAM, "Causes and Prediction of Earthquakes," (Reprint from book entitled "Papers in Honour of Charles Frederick Johnson—Trinity College, 1928"), Trinity College, Hartford, Conn.; specially circulated, 26 pages, 1928.

Discussion of isostasy with special relation to cause and prediction of earthquakes. Relation of erosion is brought out. Weakness of the earth's crust results in break after slight distortion and strain is relieved. Stresses brought about by processes which result in isostatic adjustment.

N.H.H.

12. BOWIE, WM., "Equilibrium of Outer Crust of Earth is Studied as Basis for Determining Cause of Earthquakes," *United States Daily*, February 14, 1929, Washington, D.C.

The above paper announces: "In these articles, presenting a Topical Survey of the Government, are shown the practical contacts of the various bureaus and divisions." The paper by Dr. Bowie is Article Seventeen—Isostasy; of Topic 40—Physical Science.

13. BRIDGMAN, P. W., "The Thermal Conductivity and Compressibility of Several Rocks under High Pressures," *The American Journal of Science*, 7, No. 38, 81-102, February, 1924.

The pressures used reached a maximum of 12,000 kg. per sq. cm. The last paragraphs of the author's summary read:

"*Geological Consequences.*—As far as the results on thermal conductivity go, only rough conclusions can be drawn, but it would seem that in view of the possible variations found with pressure and temperature one should be prepared in geological speculations to consider that thermal conductivity at a depth of several hundred miles may be several fold greater than the value now accepted.

"That the compressibility is different in different directions suggests that deep in the earth's crust, where there are large differential stresses, with the probability of much greater variations with direction than found here, it may be very far from the truth to represent the elastic behaviour as that of a single homogeneous isotropic solid with two elastic constants. One must furthermore be prepared for the earth's crust to act with different effective elastic constants according as the strains are large or small, and depending on past history."

R.A.D.

14. BRIDGMAN, P. W., "The Compressibility of Several Artificial and Natural Glasses," *The American Journal of Science*, Fifth Series, 10, No. 58, 359-367, October, 1925.

The specimens chosen for the experiments described in this paper were obtained from widely separated sources. The following excerpts may be quoted from the author's discussion of results:

"First, and most important, it is established that compressibility may increase with increasing pressure. In the substances measured here the increase has some intimate connection with the silica content. . . .

"The absolute magnitude of the effect is also of interest; the much lower compressibility of the silica free glass shows that in artificial glasses of the usual range of composition the silica supplies a highly compressible component.

"The interpretation of the results for the natural glasses is more uncertain. . . .

"It is evident that the abnormal variation with pressure of compressibility is associated in some way with the glassy as opposed to the crystalline condition. . . ."

R.A.D.

15. BRIDGMAN, P. W., "The Effect of Pressure on the Rigidity of Steel and Several Varieties of Glass," *Proceedings of the American Academy of Arts and Sciences*, 63, No. 10, 401-420, February, 1929.

The paper presents the results of a determination of the rigidity or shearing modulus under pressure, of various samples of steel and glass, by means of the sliding contact potentiometer method of measuring small displacements.

R.A.D.

16. BROWN, Ernest W., "The Stability of the Earth as a Timekeeper," *Travaux de la Section de Géodésie de l'Union géodésique et géophysique internationale*, Tome 4 (Rapports généraux établis à l'occasion de la deuxième assemblée générale, Madrid, 24 septembre-8 octobre 1924), 2 pages, Paris, 1927.

The concluding paragraph reads: "Hence, finally, to sum up, the only knowledge we have at the present time of a change in the rate of the Earth's rotation is that produced by tidal friction in shallow seas of the amount indicated above."

N.J.O.

17. BYERLY, Perry, "Dispersion of Energy Without Dispersion of Frequencies in Transverse Elastic Waves in the Earth," *Bulletin of the Seismological Society of America*, 14, No. 2, 90-135, June, 1924.

18. CHAMBERLIN, T. C., "The Two Solar Families," published by the University of Chicago Press, 333 pages. Price \$2.50. Chicago, 1928.

A review signed C.A.C. appears in the *Journal of the Royal Astronomical Society of Canada*, for February, 1929, at pages 108-109.

- COLLET, L. W., BAILEY, E. B., and FIELD, R. M., "Palaeozoic Submarine Landslips Near Quebec City." See No. 6 of this list.
19. DELAUNEY, L., "Tremblements de terre et volcans," *Revue de France*, 123, December 1, 1923; reprinted in *Matériaux pour l'Étude des Calamités*, April-June, 1924.
20. DEQUERVAIN, A., "Über die Herdtiefenberechnung aus einer oder zwei herdnahen Stationen und die hierzu erforderliche Zeitgenauigkeit," *Gerlands Beiträge zur Geophysik*, 13, Heft 2, 148-162, 1913.
21. EDITOR, MANUFACTURERS RECORD, "Some Fallacious Arguments Used against Reservoirs in Flood Control," *Manufacturers Record*, 94, No. 22, 43, November 29, 1928.

In discussion of the subject the statement is made that earthquake possibilities are not a factor, since consulting engineers in earthquake regions state that large dams would probably not be affected by great earthquakes. (The point is overlooked that such general changes of level as occurred in the New Madrid earthquake and others would affect all such structures.)

N.H.H.

22. EVANS, Sir Arthur, "The Palace of Minos" (A comparative account of the successive stages of the early Cretan civilization as illustrated by the discoveries at Knossus.) Vol. II, Parts 1 and 2, xxii+844 pages, illustrations, plans and 30 supplementary plates. Price 7 guineas. Macmillan Co., London, 1928.

Crete is subject to earthquakes. The effects of the earthquakes on the earlier palaces of Crete and the resulting modifications in construction in later palaces are an interesting phase of the detailed record of these archaeological explorations.

A review signed E.A.P. appears in the *Geographical Journal*, 72, No. 6, 559-562, December, 1928.

23. EVE, A. S. and KEYS, D. A., "Geophysical Methods of Prospecting," United States Department of Commerce, Bureau of Mines, Technical Paper No. 240, 26 pages, Washington, 1927.

Technical Paper No. 434 by the same authors deals with "Geophysical Prospecting—Some Electrical Methods."

N.H.H.—USCGS.

- FIELD, R. M., BAILEY, E. B., and COLLET, L. W., "Palaeozoic Submarine Landslips near Quebec City." See No. 6 of this list.

24. GERLANDS BEITRÄGE ZUR GEOPHYSIK, "Seismische Funkmeldungen der U.S.A.," *Gerlands Beiträge zur Geophysik*, 21, Heft 1, 135-137, 1929.

An outline of the recently completed arrangements for broadcasting the data derived at seismic stations in the United States and Canada for the larger earthquakes.

25. GESZTI, Josef, "Zusammenschub der Erdrinde," *Gerlands Beiträge zur Geophysik*, 21 Heft 1, 36-78, 1929.

The paper is a discussion of the deformations of the earth's crust on the hypothesis that it may be considered as a plastic material.

26. GORANSON, Roy W., "The Density of the Island of Hawaii and the Density Distribution in the Earth's Crust," *American Journal of Science*, Fifth Series, 16, No. 92, 89-120, August, 1928.

In making reference to seismological evidence on page 105 the author makes a statement which should be emphasized by being quoted here. He says: "One of the few sources of direct data relative to the interior of the earth is provided by interpretations of seismological records. Geologists, in building up theories of the earth's interior, have therefore used these interpretations by the seismologists as though they were incontrovertible facts. Although most of our knowledge of the earth's interior will come from this source, nevertheless we should not lose sight of the fact that the data themselves need refining by decreasing the experimental errors; that the mathematical development used in the computations is based on hypotheses some of which the data themselves are not accurate enough to establish with certainty, and furthermore the data indicate that the laws of

reflection and refraction assumed for the mathematical computations are not obeyed exactly; that our knowledge of the physical characteristics of the prevailing rocks and minerals is far from being complete and is capable of greater accuracy. Seismologists realize this and are striving for more accurate data and more trustworthy interpretations of these data, but sometimes we who are less familiar with the details of their work do not realize this as fully as we should."

In the opinion of the reviewer this is a most timely, concise, line-for-line-and-word-for-word-important comment. The fact that the author, after the above prefatory remarks, proceeds to use the seismological evidence for what it is worth (and it is worth a great deal) adds weight to his analysis as quoted above. E.A.H.

27. GUTENBERG, B., "Der Aufbau der Erdkruste in Europa," *Geologische Rundschau*, 19, Heft 6, 433-439, 1928.

The paper is illustrated by four text-figures. It presents the data obtained by means of seismic observations as to structure of the upper earth layers in Europe. A bibliography of eight items is appended.

28. GUTENBERG, B., "Bodenunruhe durch Brandung und durch Frost," *Forschungen und Fortschritte* (Nachrichtenblatt der Deutschen Wissenschaft und Technik), 4, Nr. 34, 357-358, Berlin, December 1, 1928.

The article is illustrated by means of three text-figures. It is a popular presentation of the subject. A footnote lists some of the technical articles by the same author dealing with this subject.

29. HECK, N. H., "Earthquake History of the United States Exclusive of the Pacific Region," United States Department of Commerce, Coast and Geodetic Survey, Special Publication No. 149, 61 pages. 15 cents, from Superintendent of Documents, Government Printing Office. Washington, D.C., 1928.

The earthquakes are classified into four groups:—

- (1) Northeastern Region
- (2) Eastern Region
- (3) Middle Western Region
- (4) Western Mountain Region

Each group is arranged chronologically and gives the outstanding data with regard to each earthquake recorded.

A map shows the location of the reports in graphical form, and a final tabulation gives a chronological list of the quakes reported, indicating the State or States in which each was felt.

The report is introduced by a general description of the plan of the book, followed by an outline of the "Earthquake Condition in the Various States."

30. (1) HECK, N. H., "Research on Conditions in Earth's Interior is Conducted Through Studies of Earthquakes," *United States Daily*, Washington, D.C., February 16, 1929.

The above paper announces: "In these articles, presenting a Topical Survey of the Government, are shown the practical contacts of the various bureaus and divisions." The paper by Commander Heck is Article Nineteen—Exploring the Earth's Interior, of Topic 40—Physical Science. J.J.W.

30. (2) HECK, N. H., "Earthquakes in Northeastern States Studied to Determine Probability of Recurrences," *United States Daily*, Washington, D.C., March 26, 1929.

This paper is Article Fifty of the Series announced in item 30 (1) above. J.A.P.

30. (3) HECK, N. H., "Information Gathered on Effects of Earthquakes to Determine Causes and Probable Frequency," *United States Daily*, Washington, D.C., March 27, 1929.

This paper is Article Fifty-one of the Series announced in item 30 (1) above. J.A.P.

31. HÉE, A., "Sur la fréquence des tremblements de terre dans la période de dix années (1911-1920)," *Revue générale des Sciences*, 683, Paris, 1924.

32. HEHGLANS, F. W., "Über Piezoquarzplatten als Sender und Empfänger hochfrequenter akustischer Schwingungen," *Annalen der Physik*, 86, No. 12, 587-628, 1928. J.B.M.
33. HOFFMEISTER, J. Edward and LADD, Harry S., "Falcon, the Pacific's Newest Island," *The National Geographic Magazine*, 54, No. 6, 757-766, December, 1928.
34. HOLMES, Arthur, "Continental Drift," *Nature*, No. 3073, 122, 431-433, September 22, 1928.
35. IMAMURA, A., "The Tazima Earthquake of 1925," *Bulletin of the Imperial Earthquake Investigation Committee*, 10, No. 3, 71-107, Tokyo, October, 1928.
- Accompanied by a sketch map showing the geology of the region affected, together with the isoseismals of the quake and the resulting changes in level; a second sketch map showing the isoseismals and the direction of the initial phase for the Japanese islands; five plates showing reproductions of seismograph records; thirty-two reproductions of photographs showing destruction caused by the quake; and finally a map showing graphically the damage by quake and fire at the town of Toyo-oka; A similar map for Tuiyama cove and Kumihama bay.
- This paper appears in the same issue of the *Bulletin of the Imperial Earthquake Investigation Committee* as the article by N. Yamasaki (No. 100 of this list) entitled: "On the Cause of the Tajima Earthquake of 1925."
36. INGLADA ORS, V., "El período de las ondas de la fase final de los sismogrammas," *Ibérica*, No. 493, Tortosa, September 15, 1923.
37. INGLADA ORS, V., "Procedimientos expeditos de localización de focos sísmicos," *Memorias de la Real Sociedad española de Historia natural*, 13, Memoria 3a, Madrid, June 20, 1927.
38. INGLADA ORS, V., "La condición isostática de la corteza terrestre," Conferencia dada en el Instituto Español de Oceanografía el 17 de Febrero de 1927. Ministerio de Marina, Dirección general de Pesca; Notes y Resúmenes, Serie II, No. 18, Madrid, 1927.
39. JAKOBSEN, B. F., "Relation between Earthquakes and Engineering Substructures," *Proceedings American Society of Civil Engineers*, 55, No. 1, 219, January, 1929.
40. JEFFREYS, H., "The Compression of the Earth's Crust in Cooling," *Philosophical Magazine*, Sixth Series, 32, 575-591, December, 1916.
41. JEFFREYS, H., "On Certain Geological Effects of the Cooling of the Earth," *Proceedings of the Royal Society*, Series A, 100, 122-149, November 1, 1921.
42. JEFFREYS, H., "The Stability of a Layer of Fluid Heated Below," *Philosophical Magazine*, Seventh Series, 2, 833-844, October, 1926.
43. JEFFREYS, H., "On the Earth's Thermal History and Some Related Geological Phenomena," *Gerlands Beiträge zur Geophysik*, 18, Heft 1-2, 1-29, 1927.
44. KERFORNE, F., "Revue sismologique de l'ouest pour 1923," *Bulletin de la Société minéralogique et géologique de Bretagne*, 5, Fascicule 1, 59, 1924.
- KEYS, D. A. and EVE, A. S., "Geophysical Methods of Prospecting." See No. 23 of this list.
45. KÖHLER, R., "Feldapparatur zur Registrierung von Zeit-Zeichen," *Zeitschrift für Geophysik*, 4, Heft 5, 225-226, 1928.
46. KOTO, Bundjirô, "The Twin Earthquake of Tango, in 1927," *Gerlands Beiträge zur Geophysik*, 20, Heft 3-4, 308-311, 1928.
47. KRIGE, A. V., "An Examination of the Tertiary and Quaternary Changes of Sea-Level in South Africa; with special stress on the evidence in favour of a recent world-wide

sinking of ocean level," *Annals, University of Stellenbosch*, 5, Section A, No. 1, 81 pages, 5 plates, one large map, Cape Town, May, 1927.

A review by Ernst Antevs is given in the *American Journal of Science*, Fifth Series, 16, No. 93, 276-278, September, 1928. The first paragraph of the review reads as follows: "This paper gives the results of a remarkable study, begun at the suggestion of Professor R. A. Daly, of the whole coast of the Union of South Africa, excluding Zululand, representing fully 1,800 miles (2,900 km.). It deals with the changes of level of land and sea, with the fluctuations of the shoreline, the title being misleading.

Since the early Tertiary, South Africa has, according to this study, undergone, besides smaller fluctuations of level: (1) Tertiary-Quaternary emergence; (2) Quaternary emergence, and (3) late-Quaternary emergence. However, the history will, no doubt, prove to be more complicated."

48. KUNITOMI, S., "Note on the Destructive Earthquake of Middle Etigo, occurred on October 27, 1927," *The Geophysical Magazine*, 1, No. 5, 238-254, Tokyo, 1928.
49. LACOSTE, J., "Sur le mouvement microséismique à Strasbourg," *Comptes rendus de l'Académie des Sciences*, 179, 568, Paris, 1924.
- LADD, HARRY S. and HOFFMEISTER, J. EDWARD, "Falcon, the Pacific's Newest Island." See No. 33 of this list.
50. LAMB, HORACE, "The Propagation of Tremors over the Surface of an Elastic Solid," *Philosophical Transactions, Royal Society, Series A*, 203, 1-42, London, 1904.
51. LAWSON, ANDREW C., "The Geological Implications of the Doctrine of Isostasy," *Bulletin of the National Research Council*, 8, Part 4, No. 46, Washington, June, 1924.
52. LINK, THEODORE A., "En Échelon Folds and Arcuate Mountains," *Journal of Geology*, 36, No. 6, 526-538, August-September, 1928.
- The author's abstract reads: "En échelon folds and miniature arcuate mountain systems were produced experimentally in several ways. Differential stress transmission in the horizontal plane, through rigid materials bordering incompetent beds, gave rise to en échelon folds the arcuate systems even though non-rotational compression was applied. The same phenomena were also produced by applying differential (rotational) compression in the horizontal plane against homogeneous materials.
- Application of principles derived from the performed experiments are made to specify examples in nature."
53. LOVE, A. E. H., "Some Problems of Geodynamics—Being an Essay to which the Adams Prize in the University of Cambridge was adjudged in 1911," Cambridge University Press: 178 pages, royal octavo. Price \$6.75. London, 1911. Second Edition, 1928.
- Chapter XI of this book, comprising pages 144-178, deals with the "Theory of the Propagation of Seismic waves," and forms the classic presentation of the theory of the "Love-Waves" which appear in the surface-wave section of the seismogram.
54. LYNCH, EDWARD, "Solar Physics and Earthquakes," published by the Tribune News Publishing Co., 40 pages. South Gate, Los Angeles Co., California, 1928.
- The publication is accompanied by tables and diagrams which give the results of a study of comparison of solar activity and records of destructive earthquakes. Various theories are reviewed, with however, too much tendency to accept theories as established which are not yet generally accepted as to earthquake causes and condition of interior of earth. Statistics are worthy of investigation by the student of seismicity.
- N.H.H.—USCGS
55. MACCARTHY, GERALD R., "Experiments in Underthrusting," *American Journal of Science*, Fifth Series, 16, No. 91, 51-67, July, 1928.
56. MAINKA, C., "Ergebnisse der Erdbebenstation Adventbay auf Spitzbergen in der Zeit vom 27. Oktober 1911 bis 18. Juni 1912," *Gerlands Beiträge zur Geophysik*, 13, Heft 3 (Kleine Mitteilungen), 103-113, 1914.

57. MASCART, J., "Les tremblements de terre et la météorologie," *Bulletin de l'Observatoire de Lyons*, **199**, October 1923.
58. MAURAIN, Ch., "Propagation dans le sol et dans l'air des ondes produites par de fortes explosions," *Comptes rendus des Congrès de l'Association française pour l'Avancement des Sciences, Liège*, **362**, 1924.
59. MAURAIN, Ch., "Isostasie et Séismologie," *Comptes rendus des Congrès de l'Association française pour l'Avancement des Sciences, Grenoble*, **264**, 1925.
60. MCKINLEY, Carl, "A Descriptive Narrative of the Earthquake of August 31, 1886," prepared expressly for the Year Book of the City of Charleston, S.C., for 1886. Walker, Evans and Cogswell Co., 97 pages, Charleston, 1887.

This graphic account was written by a newspaper man who experienced the earthquake and the trying days which followed and who was in an exceptionally good position to obtain information from others also.

61. MILLER, Wm. J., "Geology of Deep Spring Valley, California," *Journal of Geology*, **36**, No. 6, 510-525, August-September, 1928.

The following is an excerpt from the author's abstract: ". . . The recency of the dislocation along the main fault is proved by many miles of sharply faulted alluvial cones; the occurrence of river beds on the top of a great fault block; and a field of very fresh lava which has been dislocated 1,500 feet, vertically. . . ."

62. MOHOROVIČIĆ, S., "Die reduzierte Laufzeitkurve und die Abhängigkeit der Herdtiefe eines Bebens von der Entfernung des Inflexionspunktes der primären Laufzeitkurve. (1 Mitteilung: Die Ausbreitung der Erdbebenstrahlen in den obersten Schichten der Erde.)," *Gerlands Beiträge zur Geophysik*, **13**, Heft 3, 217-240, 1914.
63. MONTESSUS DE BALLORE, F., "Tremblements de terre d'origine épirogénique probable dans le Michigan et le Wisconsin," *Comptes rendus de l'Académie des Sciences de France*, **155**, 1042-1043, Paris, November, 1912.
64. NATHAN, Mathew, et al., "Geophysical Surveying Report of a Sub-Committee of the Committee of Civil Research," issued by the Empire Marketing Board, Publication No. 6, 21 pages, November, 1927.

It is priced at 7 shillings (postpaid) and may be obtained from His Majesty's Stationery Office, Adastral House, Kingsway, London, W.C. 2.

It is the work of a committee composed of the following:

Matthew Nathan
G. P. Lenox-Conyngham
T. W. Edgeworth David
H. S. Winterbotham
W. F. T. McLintock
G. F. Herbert Smith.

The Secretary to the Sub-committee is A. F. Hemming, 2 Whitehall Gardens, London, S.W.1.

65. NATURE, "The Circulation of Seismological Information by Wireless Telegraphy," *Nature*, No. 3086, **122**, 968, December 22, 1928, and No. 3091, **123**, 148-149, January 26, 1929.

The first of these articles deals with the arrangements made for broadcasting early information concerning important earthquakes. The second gives the location obtained in this way for the Kamchatka earthquake of January 13, 1929.

66. NEUMANN, Frank, "Seismological Report, October, November, December, 1926," United States Department of Commerce, Coast and Geodetic Survey, Serial No. 431; may be obtained from the Superintendent of Documents, Government Printing Office at the nominal price of 10 cents: Washington, 1928.

Besides the regular reports on the earth tremors for the last quarter of 1926, the publication gives a "Seismological Summary for 1926," showing for the entire year the distribution of the earthquakes in geographical position.

67. NEUMANN, Frank, "Seismological Records," *United States Daily*, Washington, D.C., February 20, 1929.

The article describes the work of the Coast Survey in collecting seismological data, and the uses to which the data are put. The geophysical nature of the work is emphasized, also its international aspects. The general nature of seismic activity is described. F.N.

68. OMORI, F., "Note on the Nature of Destructive Earthquake Vibration," *Imperial Earthquake Investigation Committee, Seismological Notes*, No. 5, 1-7, March, 1923.

The same issue contains an article by the same author entitled "Note on the Destructive Formosa Earthquake of 1922, pages 9-16.

69. PARSONS, A. T., "Geophysical Foundation Study by Explosion-Wave Method," *Engineering News-Record*, **102**, No. 7, 273-275, February, 14, 1929.

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72. RAYLEIGH, Lord, "On Waves Propagated Along the Plane Surface of an Elastic Solid," *Proceedings of the London Mathematical Society*, **17**, 4-11, 1885. Published also as pages 441-447 of Volume II (1881-1887) of his collection "Scientific Papers," Cambridge University Press, London, 1900.

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75. ROTHÉ, E., "Les échelles employées en séismologie," *Comptes rendus des Congrès de l'Association française pour l'Avancement des Sciences, Liège*, **364**, 1924.

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77. ROTHÉ, E., "Sur la nature des maximums inscrits dans les séismogrammes," *Comptes rendus de l'Académie des Sciences*, **183**, 136, 1926.

78. ROTHÉ, E., et al., "Annuaire de l'Institut de Physique du Globe," Bureau central séismologique français, Deuxième Partie (Séismologie), 107 pages, 1923.

Following an introduction by Rothé, the instrumental constants and the personnel of the collaborating stations are listed. Part I then tabulates the earthquakes registered during 1923. Part II is devoted to a tabulation of the microseismic activity registered. Part III, prepared by Rothé and Madame Hée, deals with "Les Tremblements de Terre en France et aux Colonies." The seismicity is discussed regionally. Part IV, prepared by Rothé, deals with "Macroséismes signalés," listing the data regarding earthquakes of marked intensity experienced in other countries during the year and reported to Strasbourg by the consuls of France stationed in those countries. On pages 104-105, C. Bois presents a "Note sur les sismes en équateur pendant l'année 1923." On page 106 Rothé gives a short report on the Chinese earthquake of March 24, 1923, and on page 107 the same author presents an obituary of Alfred Angot (1849-1924) and Charles Dufour (1866-1923).

79. ROTHÉ, E., et al., "Annuaire de l'Institut de Physique du Globe," Bureau central séismologique français, Deuxième Partie (Séismologie), 99 pages, Strasbourg, 1925.

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81. RUSSELL, H. J., "The Land Forms of Surprise Valley, Northwestern Great Basin," *University of California Publications in Geography*, **2**, 323-358, 1927.

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83. SAVERIO ZANON, P. F., "Il sismografo, 'Agamennone' a pendoli orizzontali modificato," Estratto dal *Bollettino della Società sismologica italiana*, **26**, Fascicule 5-6, Selci, 1926.

84. SCHAFFER, FRANZ X., "Major Earth Features and Their Transformation," *Pan-American Geologist*, **50**; No. 2, 121-130, September, 1928.

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85. SCHUMANN, R., "Zu den Beziehungen zwischen Polhöschwankung und Erdbebenhäufigkeit," *Gerlands Beiträge zur Geophysik*, **13**, Heft 1 (Kleine Mitteilungen), 2-9, 1913.

86. SCHWEYDAR, W., "Notiz zu der Abhandlung von R. Spitaler: Die Achsenschwankungen der Erde als Ursache der Auslösung von Erdbeben," *Gerlands Beiträge zur Geophysik*, **13**, Heft 2 (Kleine Mitteilungen), 53-55, 1913.
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A review by B. Gutenberg, appears in *Petermanns Mitteilungen*, **74**, Heft 9-10, 309, 1928.
91. STÖLTING, H., "Zu Wegeners Kontinental-Verschiebungstheorie," *Gerlands Beiträge zur Geophysik*, **21**, Heft 1, 112-115, 1929.
92. TALMAN, Charles F., "What's Inside the Globe?" *Nature Magazine* (Washington, D.C.), **12**, No. 6, 385, December, 1928. J.B.M.
93. TSUBOI, Chuji, "On the Postseismic Block Movements in the Tango Earthquake District," *Proceedings of the Imperial Academy (Japan)*, **4**, No. 9, 529-532, November, 1928.
94. TURNER H. H., "The International Seismological Summary for 1925, January, February, March," 1-80, Oxford, 1928.
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96. ULLER, Karl, "Die elastischen Wellen von elementarer Schwankungsform in schweren, festen und isotropen Mitteln," *Gerlands Beiträge zur Geophysik*, **20**, Heft 3-4, 397-409, 1928.
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98. WALKER, George W., "Surface Reflexion of Earthquake Waves," *Philosophical Transactions of the Royal Society of London*, Series A, **218**, 373-393, London, 1919.
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The above paper announces: "In these articles, presenting a Topical Survey of the Government, are shown the practical contacts of the various bureaus and divisions." The paper by Dr. Wenner is Article Twenty—Earthquakes; of Topic 40—Physical Science.

J.J.W.

99. (2) WENNER, Frank, "New Type of Seismometer Developed to Obtain Accurate Records of Smaller Earthquakes," *United States Daily*, Washington, D.C., February 19, 1929.

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100. YAMASAKI, N., "On the Cause of the Tajima Earthquake of 1925," *Bulletin of the Imperial Earthquake Investigation Committee*, 10, No. 3, 109-113, Tokyo, October, 1928.

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This paper appears in the same issue of the *Bulletin of the Imperial Earthquake Investigation Committee* as that by A. Imamura (No. 35 of this list) entitled "The Tazima Earthquake of 1925."

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