

EARTHQUAKE NOTES

Eastern Section, Seismological Society of America.
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Washington, D.C.

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NOTE--In order to conserve funds of the Section, the proceedings of the joint spring meeting were first published in the Transactions of the American Geophysical Union. Reprints were then ordered for the proceedings of the Section. These were bound in the usual manner as Volume 8, Numbers 1 and 2 of Earthquake Notes and mailed to those members of the Eastern Section who were not members of the Union. Those who held membership in both organizations received only the full Transactions of the American Geophysical Union.

PROSPECTUS

A copy of the prospectus prepared by the membership committee is enclosed with this number of Earthquake Notes. Members are requested to circulate this information among such of their acquaintances as are interested in earthquakes. It is believed that many desirable prospective members can be reached in this way. An application blank is enclosed for the use of those who wish to join the Society or its Eastern Section, or both.

FIRST SEISMOGRAPH IN THE UNITED STATES

The first seismograph to be placed in operation in the United States was installed at the Lick Observatory of the University of California in 1886 according to the Science News Letter of August 13, 1936. It will shortly be placed on exhibition at the Franklin Institute in Philadelphia.

It is interesting to note that the instrument was a three-component Ewing and that today some 50 years later only a small portion of the seismograph stations in this country, no matter how modern their equipment, have more than the two horizontal components.

ENGINEERING EXPERIMENT STATION BULLETIN

The University of Montana has issued a bulletin by Edward R. Dye, Assistant Professor of Civil Engineering, on "Earthquake-resisting structures." It is largely a result of, and is based on, the damage done during the quakes at Helena, Montana. (Bulletin No. 1, State College Series No. 100, Bozeman, Montana, January 1936--Published quarterly.)

INTERNATIONAL MEETINGS

The 1936 meeting of the International Union of Geodesy and Geophysics was held at Edinburgh, Scotland, in September. The following papers were presented at the Seismological Association meetings of the Union by seismologists from this country:

1. The continued elevation of lower Canada, by J. P. Delaney.
2. On deep-focus earthquakes, by B. Gutenberg and C. F. Richter.
3. Destructive swarm earthquakes in Montana, by N. H. Heck and Walter E. Maughan.
4. Revised table of travel-times for normal earthquakes, by J. B. Macelwane and C. G. Dahm.
5. Simple torsion pendulum as an accelerogram analyzer, by Frank Neumann (see description in Eastern Section Proceedings, 1936).
6. (a) Shaking-table investigations with teleseismic seismometers, and (b) The Galitzin seismometer--Discrepancies between Galitzin theory and the performance of a Wilip-Galitzin seismometer, by Frank Wenner and H. E. McComb.

B. Gutenberg, J. B. Macelwane, N. H. Heck, and Joseph Lynch were among those attending the seismological meetings from this country. Dr. Heck was elected President of the International Seismological Association for three years beginning January 1, 1937.

Dr. William Bowie, the retiring President of the Union, was present and presented papers relative to his field of work--geodesy. While attending the meetings, he received an honorary Doctor of Laws degree from the University of Edinburgh.

An invitation was extended and accepted to hold the 1939 meeting of the Union in Washington, D. C.

COMMISSION ON CONTINENTAL AND OCEANIC STRUCTURE

The International Seismological Association omitted one of the sessions at Edinburgh in order that members might take part in the formation of a new Commission on Continental and Oceanic Structure. Professor R. M. Field of Princeton University is Chairman of this Commission and J. A. Fleming is Secretary.

CATALOG OF EARTHQUAKE EPICENTERS

This catalog recently published by Miss Ethel F. Bellamy, University Observatory at Oxford, is regarded by her as a geographical index to the International Seismological Summary. It is probably the most complete world earthquake catalog issued to date. The catalog is accompanied by a map of the world (equal-area projection) on which the epicenters are plotted. It clearly shows concentration of activity in the Mediterranean area, the East Indian Archipelago, and the margins of the Pacific Ocean. Another map showing the seismological stations of the world indicates the possibility that a more uniform station-distribution might conceivably alter the picture of earthquake distribution in some respects.

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SEISMOLOGY IN NEW ZEALAND

"The report of Dr. C. E. Adams, Dominion Astronomer and Seismologist, for the year 1934, shows that the seismic activity of New Zealand was much greater during that year than in 1933, the number of earthquakes felt being 230 instead of 108. Of these, 158 were felt in the North Island only, 60 in the South Island only, and 12 in both islands.

"Owing to increased activity off the east coast of North Island and to other changes that have been reported along the coast, it is strongly recommended that a detailed marine survey should be carried out on the whole east coast, including soundings in the seas to the east of New Zealand." (Nature, London, Sept. 5, 1936.)

DYNAMIC DISTORTIONS IN STRUCTURES SUBJECTED TO SUDDEN EARTH SHOCK

The above is the subject of a paper appearing in the Proceedings of the American Society of Civil Engineers for May, 1936. The conclusion resulting from the study which was reported by Harry A. Williams, Assistant Professor of Civil Engineering, Stanford University, was as follows:

"The investigation indicates that if the ground is suddenly accelerated from rest or near rest, and then continues for a few cycles with a harmonic motion of constant period and amplitude, large displacements will be built up for a single-mass structure which is in a near-resonance condition. The tests made to date on a multi-story building model indicate that the same behavior can be expected of this type of structure. More study of this phase of the problem is being planned.

"In the model experiments a moderate amount of viscous damping did not materially decrease the amplitudes which occurred during the first few cycles. This experimental result does not necessarily mean that friction in buildings and other structures should be neglected entirely. Friction in the latter may be proportionately greater than it was in the model.

"The results of the investigation further emphasize the desirability of designing a structure with a period different from that of an expected earthquake."

JAPANESE EARTHQUAKES

An item in the Science Supplement for July 10, 1936, states that 4,000 perceptible earthquakes per year is the average for all Japan.

"Inasmuch as Japan is traversed by six earthquake zones and has in the past 340 years suffered from 27 major earthquakes which took the lives of 161,822 people, it is to be expected that this country should be particularly interested in earthquake prediction. But, although statistics have proved the correlation between quakes and barometric pressure, its gradient, precipitation, tides, etc., these are only the trigger; and as the late Dr. Suyehiro remarked, 'An unloaded gun cannot be fired by pulling the trigger.' Part of the task ahead is to learn when the gun is loaded, and with what."

AMATEUR SEISMOLOGICAL LEAGUE

A movement is under way in the California-Nevada region for the establishment of an Amateur Seismological League. It is expected that members will build or install instruments and then exchange data and ideas.

DATA NEEDED FOR DESIGN PURPOSES

Among the statements made in a paper by P. E. Stevens in the Engineering News-Record for July 23, 1936, the following should interest readers of Earthquake Notes:

"The determination of the forces which must be exerted within a structure to keep it intact when its foundation is abruptly and irresistably moved is unquestionably a problem in dynamics. The applied forces which must be dealt with are in reality inertia reactions resisting acceleration, and before they can be ascertained, it is necessary to know the values of the following elements of the problem:

1. The magnitude of the applied acceleration.
2. The rate of change in acceleration or \dot{a} .
3. The time through which each acceleration value acts.
4. The elastic properties of each path by which acceleration may be transmitted to each mass in the structure.
5. The damping effects of each such path.
6. The magnitude of all masses involved.

"Only the sixth item can be even closely estimated from any certain knowledge which is now available. Furthermore, academic solutions based on approximations may be very misleading."

FAULTS OF PANAMA REGION

R. A. Terry, a petroleum geologist, with wide experience in South and Central America, recently visited the Coast and Geodetic Survey. Terry and Olsson have traced numerous faults in the region of the Panama Canal. A tectonic map of the Panama Region is shown with accompanying note in the book by Schuchert entitled "Historical Geology, Antillean-Caribbean Region" (p. 564). The book was published in 1935 by John Wiley and Sons.

Terry has also investigated the faults in the Puerto Armuelles region near the Costa Rican border where destructive shocks occurred in July, 1934. It is not known whether results of this study have been published.

SEISMOLOGY IN WASHINGTON STATE

At the request of L. K. Armstrong of the Washington Natural Resources Association, O. W. Swainson attended a meeting of that Association at Everett, Washington, during October and presented a paper by F. P. Ulrich who is in charge of seismological survey work for the Coast and Geodetic Survey in California.

NEW STRONG-MOTION STATIONS

In recent months strong-motion stations have been installed at Hawthorne, Nevada, and at branches of the University of Montana in Butte, Missoula, and Bozeman, Montana. Considerable interest in the strong-motion work of the Coast and Geodetic Survey was aroused in the State of Washington and surrounding territory after a series of shocks were felt in the region of Walla Walla in July, 1936.

TELESEISMIC STATIONS

A new Benioff vertical instrument is being installed by Professor Jacobs at the University of Vermont.

The Coast and Geodetic Survey station at Tucson is now operating a vertical Benioff with both long-period and short-period galvanometers.

A single-component Wood-Anderson seismograph has been installed at Butte, Montana, and is in charge of Professor George L. Shue of the University of Montana.

Mrs. M. M. Seeburger of the Des Moines, Iowa, seismograph station recently visited the Coast and Geodetic Survey in regard to the work of the station. As a result of the visit the Survey is loaning her two seismograph recorders in order that the present instrument may be adapted for photographic recording. The change is expected to be made about January 1, 1937.

SEISMIC FORCES AND THE SAN FRANCISCO-OAKLAND BAY BRIDGE

The following statement appears in the Engineering News-Record for November 26, 1936: "The stresses in the superstructure were calculated for seismic forces equal to 10 per cent of gravity acting in any direction. The stresses set up by these horizontal forces, however, were not of sufficient magnitude to call for increase of section beyond that required by dead, live, temperature, and wind loads."

CISTERN FOR FIRE FIGHTING AFTER EARTHQUAKES

According to the Engineering News-Record of August 13, 1936, the early day system of water storage is being enlarged in San Francisco. Large cisterns have been located at street intersections throughout the city where earthquakes might damage water mains. Pipe connections are omitted to prevent possible loss from fracture. Nineteen additional units have now been provided for with a \$2,000,000 bond issue. When these are completed, there will be a chain of cisterns entirely across the city with none of them more than 1,000 feet apart. The standard capacity is 75,000 gallons.

EARTHQUAKE-PROOF EARTH DAMS

Five storage dams on water-deposited soils over the shattered and shaken bed rock between the historic San Andreas and Hayward faults in California have earthquake-resisting sections.

Frankly accepting the possibility in this district of seismic earth disturbance perhaps of major magnitude, it was planned to produce an earth fill that would readjust itself after rupture to restore water tightness. This, which is the consensus of the expert thought, brought into consultation, has been accomplished by a modified disposition of pervious and impervious sections of the fill. Some three pages are given to a discussion of this work in the Engineering News-Record for July 2, 1936.

DESIGNING BRIDGE TOWERS 708 FEET HIGH

This article in the Engineering News-Record, October 8, 1936, has reference to the Golden Gate suspension bridge. The following portions of the article are of interest here:

"While the determination of stresses due to dead load, live load, wind, and temperature presented a well-defined problem subject to entirely satisfactory solution, it must be admitted that stresses due to seismic forces could not be evaluated with equal certainty. The towers, homogeneous, flexible shafts of steel, are anchored to massive concrete piers which are founded on rock. Although no one can predict just how a flexible shaft of this character will respond to an earthquake, some conclusions can be drawn as to its stability under these forces.

"In the judgment of engineers who have investigated destructive effects of earthquakes, these towers may be subjected to earthquake vibrations of very small amplitude (a fraction of an inch) and accelerating forces amounting possibly to 5 per cent of gravity. In the completed structure, the transverse deflection of the towers under the design wind load is more than ten times any expected movement of the pier tops, and the stresses from transverse wind will be more than double the stresses due to transverse earthquake forces. Due to the great flexibility of the tower in the longitudinal direction, stresses from longitudinal earthquake forces (5 per cent of gravity) will not exceed 50 per cent of the longitudinal wind stresses.

"The influence of earthquake forces on the design of the towers was a determining factor only in proportioning the anchorage to the piers so as to provide against earthquake while the towers were standing alone on the piers without the stabilizing effect of the cables and the suspended structure."

ACCELEROGRAPH AT TEXAS EXPOSITION

A complete accelerograph was built and exhibited by the Coast and Geodetic Survey at the Texas Exposition, where it attracted considerable interest.

BORGER, TEXAS, SHOCK OF JUNE 19, 1936

A report on the felt effects of this shock has been completed by E. H. Sellards of the Bureau of Economic Geology at the University of Texas, Austin, Texas.

EPICENTERS

Since the last issue the following epicenters have been located. Through cooperation of Science Service data are exchanged between the Coast and Geodetic Survey and the Central Office of the Jesuit Seismological Association. The following are means of the two determinations when both are available. The organizations making the determinations are indicated by STL for St. Louis and CS for Coast and Geodetic Survey.

Date	Time G.C.T.	Lat.	Long.	Organizations and remarks
	h m	°	°	
1935				
Dec. 20	18 36.9	10.0 S	160.0 E	STL, approximate location
Dec. 24	12 24.2	4.0 N	77.5 W	STL
Dec. 28	2 35.2	2.7 S	98.2 E	STL, CS
1936				
Jan. 2	22 34.1	1.0 S	97.0 E	STL
Jan. 14	14 12.4	28.1 S	62.9 W	STL, CS, 590 km deep
Feb. 15	12 46.8	5.2 S	132.5 E	STL, CS
Feb. 28	3 03.6	53.0 N	162.0 W	STL, 60 km deep
Mar. 20	18 46.6	12.0 N	83.0 W	STL, approximate location
Mar. 25	8 58.9	56.0 N	32.0 W	STL, approximate location
Apr. 1	2 09.3	2.7 N	123.7 E	STL, CS, 75 km deep
Apr. 19	5 07.2	8.5 S	156.0 E	STL, CS
Apr. 23	23 14.5	49.2 N	178.0 E	STL, CS, 100 km deep
Apr. 27	6 31.0	16.2 N	87.4 W	STL, CS, 60 km deep
May 8	9 11.7	0.5 N	108.0 E	STL, approximate location
May 11	17 27.5	6.5 S	150.5 E	STL, approximate location
May 20	3 05.3	8.1 S	159.8 E	STL, CS
May 27	6 19.4	26.6 N	84.7 E	STL, CS
May 28	18 49.1	9.5 N	103.7 W	STL, CS, about 270 km deep
June 3	9 15.3	40.4 N	126.0 W	STL, CS, 50 km deep
June 7	4 38.2	72.5 N	6.0 W	STL
June 10	8 23.4	10.4 S	146.0 E	STL, CS, about 150 km deep
June 10	18 53.2	39.0 N	33.0 W	STL
June 14	17 01.5	37.0 N	35.5 E	STL
June 20	3 24.1	35.7 N	100.3 W	STL
June 22	19 27.1	11.0 N	43.0 W	STL, approximate location
June 27	21 13.5	43.0 N	147.5 E	STL, 50 km deep
June 29	14 30.3	39.0 N	70.5 E	STL, 100 km deep
June 30	15 06.8	51.2 N	160.6 E	STL, CS, 50 km deep
July 5	19 55.2	3.0 N	124.0 E	STL, CS, 70 km deep
July 13	11 12.4	23.5 S	70.1 W	STL, CS, 60 km deep
July 16	7 07.8	46.1 N	118.2 W	STL, CS
July 26	7 36.9	24.0 S	71 W	CS
July 31	17 40.9	22.4 N	110.8 W	STL, CS, 40 km deep
Aug. 18	7 07.1	17.0 N	104.5 W	STL, 80 km deep
Aug. 22	6 51.6	22.2 N	121.4 E	STL, CS, 50 to 60 km deep
Aug. 23	21 12.3	5.8 N	95.4 E	STL, possibly 90 km deep
Sep. 19	1 02.0	4.3 N	97.8 E	STL, 100 km deep
Sep. 25	12 53.5	43.0 N	129.6 W	STL, CS, 80 km deep
Oct. 5	9 44.6	2.5 N	126.2 E	STL, CS, 100 km deep

BUILDING VIBRATION WORK

Lieutenant W. D. Patterson of the Coast and Geodetic Survey recently began an assignment measuring vibration periods of certain buildings belonging to the Veterans Administration in California.

PUBLICATIONS BY MEMBERS OF THE EASTERN SECTION

"Introduction to theoretical seismology" by J. B. Macelwane and F. W. Schon has been published in two parts by John Wiley and Sons as follows: Part I--Geodynamics (366 pages) by Macelwane (1936); Part II--Seismometry (149 pages) by Schon (1932).

The above books, as the titles indicate, are technical and probably the most complete treatments of theoretical seismology that have been published in the English language.

"Earthquakes" by N. H. Heck (222 pages), published by Princeton University Press (1936). This book discusses earthquakes from the popular viewpoint but with scientific correctness in an effort to make the subject understood by the average reader.

"Selection, installation, and operation of seismographs" by H. E. McComb (42 pages), Special Publication No. 206 of the Coast and Geodetic Survey. This is a general discussion of different types of seismograph equipment without going into technical and theoretical details.

LECTURES BY SECTION MEMBERS

Dr. E. A. Hodgson of the Dominion Observatory, Ottawa, Canada, gave a series of comprehensive lectures on seismology at the University of Toronto during November. The subjects of the lectures were as follows:

- I. The development and present status of seismology.
- II. Seismographs: Fundamental principles; descriptions of typical instruments.
- III. Seismograph records: Routine interpretation; special studies; deductions.
- IV. Outstanding trends in present-day seismological research.
- V. Seismic prospecting with special reference to present practice.

It is understood that Dr. Hodgson plans to publish these lectures later.

Dr. J. B. Macelwane, President of the Jesuit Seismological Association, is scheduled to deliver a series of seismological lectures at Boston College about the middle of December, 1936.

GRAVITY EXPEDITION

A submarine expedition is being organized with the aid of the United States Navy to make gravity observations in the Caribbean and West Indies areas. The National Research Council and the Coast and Geodetic Survey are cooperating.

ERRATA

The 9th line from the bottom of page 114 of the Proceedings of the 1936 meeting should read "---the angular displacement of the pendulum-mass will be $(T_e^2/T_0^2) \theta$ which will be called θ' ."

RULES AND REGULATIONS

The following Rules and Regulations for the Eastern Section, Seismological Society of America, having been given a year's trial, were adopted at the 1936 spring meeting of the Section:

Section 1--The Constitution of the Seismological Society of America provides for the authorization of sections of the Society, prescribes in general how sections shall be organized, and states how such sections shall be related to the Society. The following rules and regulations shall serve only as a guide to the officers of the Eastern Section and its Executive Committee in the execution of their duties.

Officers

Section 2--The Constitution of the Seismological Society of America specifies that a Section shall have an Executive Committee consisting of five members of the Society, four of whom shall be the officers of the Section, namely: A Chairman, a Vice-Chairman, a Secretary, and a Treasurer.

These officers and the other member of the Executive Committee shall be elected at the annual meeting of the Section, for a term of one year beginning the July 1st following their election. No member shall hold the same office for more than two years in succession.

The Chairman and Vice-Chairman

Section 3--The Chairman shall preside at meetings of the Section and of the Executive Committee. He shall appoint all necessary committees excepting those committees which are to be elected by the Executive Committee. In absence of the Chairman, his duties shall be performed by the Vice-Chairman. In the event of the office of Chairman becoming vacant, the Vice-Chairman shall become acting Chairman for the balance of the unexpired term of the Chairman. In the absence of both Chairman and Vice-Chairman, the duties of the Chairman shall be performed by the fifth member of the Executive Committee, or in his absence by the Secretary, or in the absence of both, by the Treasurer.

The Secretary

Section 4--The Secretary shall conduct the general correspondence of the Section and of the Executive Committee; keep in touch with the Chairman and other members of the Executive Committee in regard to matters of policy not provided for in the Constitution or in these regulations; prepare notices of appointments of committees (excepting those appointed during and for the period of an annual meeting) for the signature of the Chairman; shall present to the Chairman immediately before each session of an annual meeting a memorandum covering items of business to be acted upon at that session; keep the minutes of all Section meetings and meetings of the Executive Committee, and prepare the minutes of the annual meeting for publication; notify the membership of the time and place of all Section meetings; prepare and mail to the membership programs of

all meetings; for the Executive Committee he shall act on all applications for membership in the Section, subscriptions to Earthquake Notes, and resignations from the Section; make all necessary changes in the mailing list and keep a register of members showing dates of affiliation with the Section, transfers, resignations, deaths, etc., and shall make an annual report which shall be read at the annual meeting of the Section; shall notify the members of the new Executive Committee of their election. On the Membership List which he is required to submit to the Secretary of the Society on December 31 of each year (Article XVII, Section 7) it shall be indicated after each name on the list whether the individual or organization is a member, associate member (as provided for in Sections 4 and 5, Article XVII), or is a subscriber to Earthquake Notes. Necessary information for compilation of this list shall be obtained in advance from the latest available list of members of the Society. At the expiration of his term of office, he shall turn over to his successor, as Secretary, all Section records in his possession. If the office of Secretary becomes vacant, the Executive Committee shall elect a person to fill out the remainder of the unexpired term.

The Treasurer

Section 5--The Treasurer shall, under the direction of the Executive Committee, have charge of the funds of the Section. On or before July 15 of the year of his election, he shall prepare a budget for the term of his office, which shall be submitted through the Secretary of the Section to the Executive Committee for consideration; shall make disbursements in accordance with the budget as approved or otherwise authorized by the Executive Committee. He shall keep a record of members and subscribers to Earthquake Notes showing dates of receipts of dues and subscriptions and a record of all miscellaneous receipts. On or before December 15 of each year he shall report to the Executive Committee, through the Secretary, the standing of all individuals and organizations on the mailing list of the Section, a copy of which he shall obtain from the Secretary. He shall forward to the Secretary all notices sent to him regarding changes in membership or subscriptions to Earthquake Notes. He shall send out dues notices before January 20 of each year and collect the annual dues; shall pay all vouchers covering proper expenditures which have been approved by the Secretary acting for the Executive Committee and which are in accordance with the budget; shall make petty disbursements for necessary postage, etc.; shall keep a journal showing dates of all receipts and disbursements of all funds of the Section (and of all funds of the Society which he may be obliged to handle); shall advance funds to officers, committees, or members only in accordance with the budget or upon authorization by the Executive Committee acting through the Secretary; and he shall submit an annual report at the first business session of the annual meeting, such report to cover the period from the date of the last annual report of the Treasurer to the date of audit of his accounts. At the expiration of this term of office, he shall turn over to his successor as Treasurer all Section funds, accounts, documents, etc., in his possession, together with a complete statement of the condition of the Treasury from the date of the last approved annual report to such date of expiration of office. He shall also notify the Secretary of the Section of such transfer of accounts, funds, etc.

If the office of Treasurer becomes vacant, the Executive Committee shall elect a person to fill out the remainder of the unexpired term.

The Executive Committee

Section 6--The Executive Committee shall have general charge of the affairs of the Section. The Chairman may call a meeting of this Committee at any time

during his term of office that he can obtain a quorum for the transaction of business. Three members shall constitute a quorum provided one is the Chairman or other officer acting for and on behalf of the Chairman. At other times the members of the Executive Committee may transact any item of business by mail, through the Secretary, and any member of the Executive Committee may at any time offer suggestions to the Committee through the Secretary relative to meetings, programs, policies, etc.

As of September 1 of each year, the Executive Committee shall decide upon a budget covering the period from that date to August 31 of the following year, and shall appoint an Editorial Committee of three (designating the Chairman) to serve for the same period.

On or before March 1 of each year the Executive Committee shall act upon the Treasurer's report of the standing of individuals and organizations on the mailing list. Unless contrary action is taken, those individuals or organizations more than two and one-half years in arrears in payment of dues or subscriptions to Earthquake Notes shall be removed from the mailing list.

Other Committees

Section 7, Auditing Committee--A Committee consisting of two members of the Society shall be appointed at least six weeks in advance of the annual meeting to audit the accounts of the Treasurer. This Committee shall prepare a report of such audit for presentation at the next annual meeting of the Section.

Membership Committee--A Committee consisting of three members or associate members, the Chairman of which shall be a member of the Society, shall be appointed not later than September 1 of each year for the purpose of bringing to the attention of those interested in seismology the advantages of membership in the Society and the Section.

Editorial Committee--There shall be an Editorial Committee consisting of three members or associate members, the Chairman of which shall be a member of the Society and he shall serve as the Editor of Earthquake Notes and the Proceedings of Meetings. It shall be the duty of this Committee to read and review all copy intended for these publications. Excepting scientific papers or abstracts prepared by authors and notices to the membership prepared by the Secretary, all copy shall be approved by at least two members of the Committee before publication.

Meetings

Section 8--There shall be an annual meeting of the Section between April 1 and June 30 of each year at such time and place as may be arranged by the Secretary acting for and with the consent of the Executive Committee. The order of business of the first session of the annual meeting shall be as follows:

- (1) Reading of minutes of last meeting, (2) reports of officers, (3) report of Auditing Committee, (4) appointment of Nominating Committee for the five members of the Executive Committee, (5) appointment of Resolutions Committee, (6) reports of Standing or Special Committees, (7) unfinished business, (8) new business, (9) presentation of papers.

The order of business at the second or third sessions of the annual meeting shall be as follows:

- (1) Report of Nominations Committee, (2) election of Executive Committee, (3) report of Resolutions Committee, (4) unfinished business, (5) new business, (6) presentation of papers, (7) adjournment.

Amendments

Section 9--These rules and regulations of the Section may be amended by a two-thirds vote of those members present at the last session of an annual meeting provided the proposed amendment is presented formally at the first session of the same annual meeting.

CASUALTIES AND DAMAGE IN PRINCIPAL EARTHQUAKES OF THE UNITED STATES
(Compiled from Freeman's "Earthquake Damage and Earthquake Insurance"
and other sources)

Earthquake	Number of lives reported lost.
New Madrid, Mo., 1811	Several
Owens Valley, Calif., 1872	30
Charleston, S. C., 1886	100
San Francisco, Calif., 1868	30
California Earthquake and Fire, 1906	700
Calexico-Mexicali, Calif., 1915	10
Santa Barbara, Calif., 1925	7
Long Beach, Calif., 1933	120
Montana, 1935	4
Total	1,001

	Damage.
San Francisco, Calif., 1865	\$200,000
San Francisco, Calif., 1868	300,000
Owens Valley, Calif., 1872	100,000
Charleston, S. C., 1886	5,500,000
California Earthquake, 1906 (Fire loss about \$400,000,000)	24,000,000
Imperial Valley, Calif., 1915, 1927, 1930	1,000,000
San Jacinto, Calif., 1918	200,000
Inglewood, 1920, and Whittier, 1929 (Calif.)	150,000
Santa Barbara, Calif., 1925	6,230,000
Three Forks Region, Mont., 1925	300,000
Long Beach, Calif., 1933	41,000,000
Helena, Mont., 1935	3,500,000
Total	\$ 82,480,000
Fire Loss, California, 1906	400,000,000
Grand Total	\$482,480,000