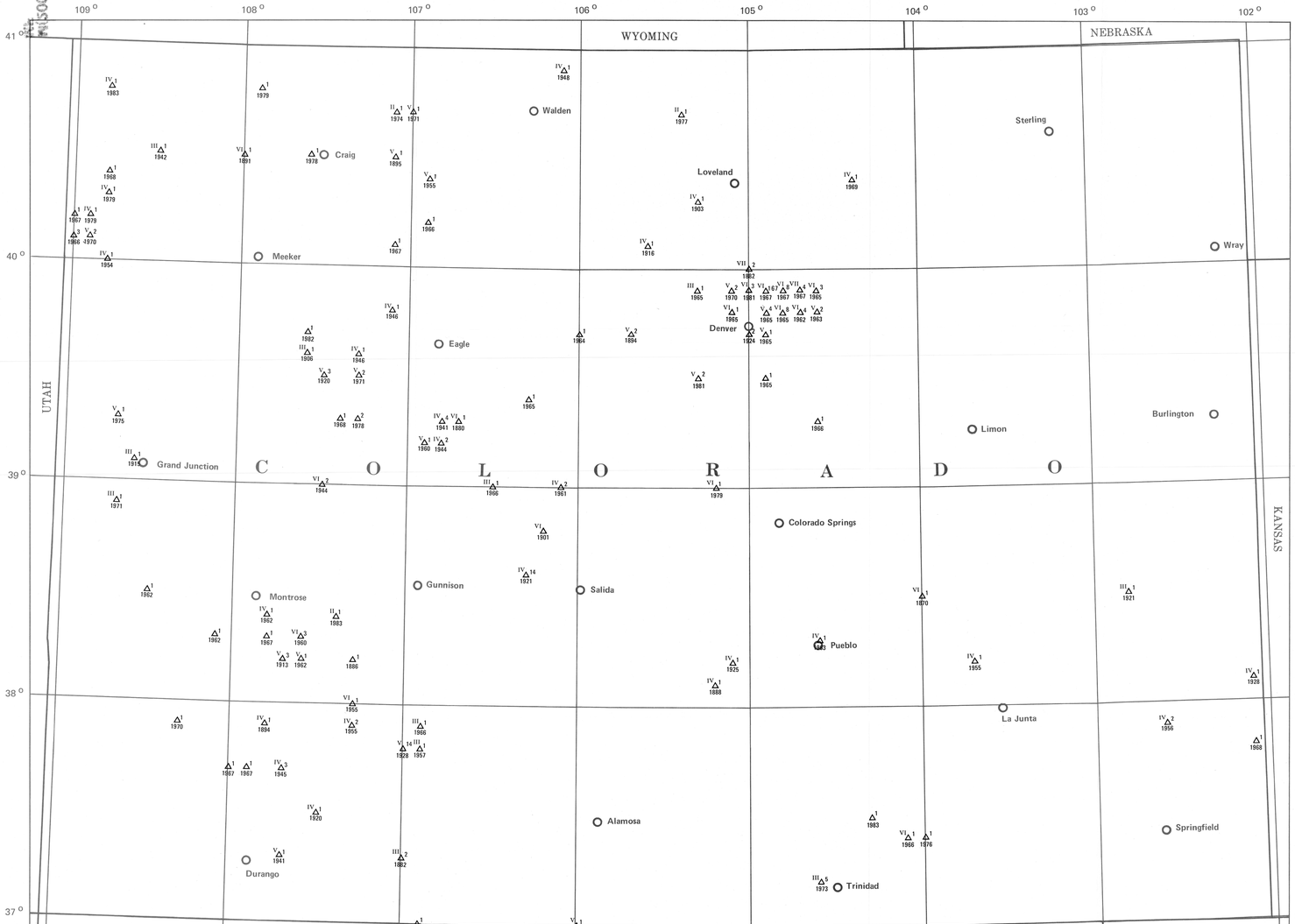
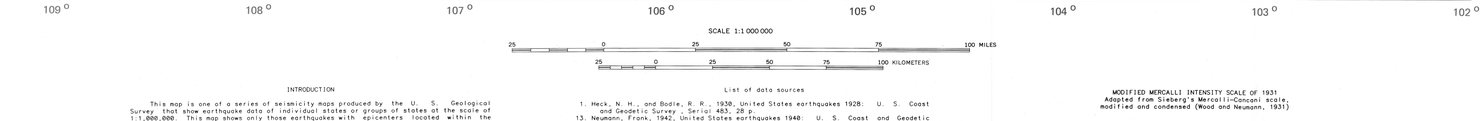
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF-2036





INTRODUCTION

This map is one of a series of seismicity maps produced by the U. S. Geological Survey that show earthquakes of different magnitudes, ranges of states at the scale of 1:1,000,000. This map shows only those earthquakes with epicenters located within the boundaries of Colorado and earthquakes in nearby states may have been felt or may have caused damage in Colorado.

The data in table 1 were used to compile the seismicity map; these data are a corrected, expanded, and updated (through 1983) version of the data used by Algermissen (1969) for a study of seismic risk in the United States. The locations and intensities of some earthquakes were revised and intensities were assigned where none had been before. Many earthquakes were added to the original list from new data sources as well as from some old data sources that had not been previously used. The data in table 1 represent best estimates of the location of the epicenter, magnitude, and intensity of each earthquake on the basis of historical and current information. Some of the data have changed from earlier issues in table, but not all, especially for earthquakes that occurred before seismic instruments were universally used.

The latitude and longitude coordinates of each epicenter were rounded to the nearest tenth of a degree and sorted so that all identical locations were grouped and counted. These locations are represented on the map by a triangle. The number of earthquakes at each location is shown on the map by the arabic number to the right of the triangle. A Roman numeral to the left of a triangle is the maximum Modified Mercalli intensity (Wood and Neumann, 1931) of all earthquakes at that geographic location. The absence of an intensity value indicates that no intensities have been assigned to earthquakes at that location. The year shown below each triangle is the latest year for which the maximum intensity was recorded.

EXPLANATION OF THE TABLE

The data in table 1 are listed chronologically in the following categories: date, origin time in Coordinated Universal Time (UTC), N. latitude, W. longitude, depth, hypocenter quality and reference, magnitude, intensity, and a list of sources for each entry reference. The letter F is recorded in the intensity column if an earthquake was felt but not enough information was available to assign an intensity value. Table 1 has some basic limitations in terms of the size (magnitude or intensity) of the earthquakes listed. All felt earthquakes or those of equal magnitude greater than 2.5 are listed. If the magnitude was computed and the earthquake was felt or an epicenter published, it was included in the earthquake list. The low-magnitude events located in recent years with data from dense seismograph networks have not been included.

Listed below is an explanation of the symbols and codes used in table 1:

1. Leaders (...) indicate information not available.
2. Latitude and longitude are listed to a hundredth of a degree if they have been published with that degree of accuracy or precision; however, most locations only have assigned locations based on felt or damage information and are listed in table 1 only to the nearest degree or tenth of a degree. An asterisk (*) after the tenth of the longitude indicates that the latitude and longitude were not given in the source reference but were assigned by the compilers of the data file. A letter S after the tenth of the longitude indicates that the event is an explosion, a suspected explosion, a rockburst, or some other nontectonic event; these have not been plotted on the map. A question mark (?) to the right of the longitude indicates that published descriptions of the event are inconclusive and it may or may not be an earthquake.
3. The letter code in the HYPOCENTER, QUAL column is defined below.
   a. Determinations of instrumental hypocenters are estimated to be accurate within the ranges of latitude and longitude (in decimal degrees) listed below; each range is letter coded as indicated:

A	0.0–0.1
B	0.1–0.2
C	0.2–0.5
D	0.5–1.0
E	1.0 or larger

   b. Determinations of noninstrumental epicenters from felt data are estimated to be accurate within the ranges of latitude and longitude (in decimal degrees) listed below; each range is letter coded as indicated:

F	0.0–0.5
G	0.5–1.0
H	1.0–2.0
I	2.0 or larger

4. The reference identification numbers in the HYPOCENTER, REF and INTENSITY, REF columns indicate the sources of the hypocenter and intensity data. They are listed in numerical order in the list of data sources.
5. The magnitudes listed under USGS are mb (modified from Gutenberg and Richter, 1956) or Ms (Bath, 1966) values published in the Preliminary Determination of Epicenters (PDE) by the National Earthquake Information Center, U. S. Geological Survey and predecessor organizations. Associated with the magnitude values listed under OTHER are the source code and type. Type is defined by mb (Gutenberg and Richter, 1956), MD (duration or coda length), ML (Richter, 1958), Mw (Kanamori, 1973). Magnitudes computed solely from epicentral intensity have not been included. Moment magnitudes (Mw) are listed by value and source. They were computed using the formula by Hanks and Kanamori (1979). The source codes are listed below:

   BRK – Seismograph Station, University of California, Berkeley, Calif.
   GOL – Geophysical Observatory, Colorado School of Mines, Golden, Colo.
   GS – National Earthquake Information Center (and predecessor organizations), U. S. Geological Survey, Golden, Colo.
   NUT – Nuttli, O. W., Bollinger, G. A., and Griffiths, D. W. 1979, Seismological Society of America Bulletin, v. 69, no. 3, p. 893–909.
   UU – University of Utah, Salt Lake City, Utah.

6. An asterisk (*) in the INTENSITY, MM column indicates that the intensity was assigned by the compiler on the basis of the available data at the time the catalog was compiled.

REFERENCES

Algermissen, S. T., 1969, Seismic risk studies in the United States: Fourth World Conference on Earthquake Engineering, Santiago, Chile, January 13–18, 1969, Proceedings, v. 1, p. 14–27.

Bath, Markus, 1966, Earthquake energy and magnitude, in Physics and chemistry of the Earth, v. 7: New York, Pergamon Press, p. 115–165.

Gutenberg, Beno, 1945, Amplitudes of surface waves and magnitudes of shallow earthquakes: Seismological Society of America Bulletin, v. 35, no. 1, p. 3–12.

Gutenberg, Beno, and Richter, C. F., 1956, Magnitude and energy of earthquakes: Annali di Geofisica, v. 9, no. 1, p. 1–15.

Hanks, T. C., and Kanamori, Hiroo, 1979, A moment magnitude scale: Journal of Geophysical Research, v. 84, no. B5, p. 2348–2350.

Nuttli, O. W., 1973, Seismic wave attenuation and magnitude relations for eastern North America: Journal of Geophysical Research, v. 78, no. 5, p. 876–885.

Richter, C. F., 1958, Elementary seismology: San Francisco, W. H. Freeman and Co., 768 p.

Wood, H. O., and Neumann, Frank, 1931, Modified Mercalli intensity scale of 1931: Seismological Society of America Bulletin, v. 21, no. 4, p. 277–283.

List of data sources

1. Heck, N. H., and Bodle, R. R., 1930, United States earthquakes 1928: U. S. Coast and Geodetic Survey, Serial 483, 28 p.
13. Neumann, Frank, 1942, United States earthquakes 1940: U. S. Coast and Geodetic Survey, Serial 647, 74 p.
14. Neumann, Frank, 1943, United States earthquakes 1941: U. S. Coast and Geodetic Survey, Serial 655, 41 p.
17. Bodle, R. R., 1946, United States earthquakes 1944: U. S. Coast and Geodetic Survey, Serial 682, 43 p.
18. Bodle, R. R., and Murphy, L. M., 1947, United States earthquakes 1945: U. S. Coast and Geodetic Survey, Serial 699, 38 p.
19. Bodle, R. R., and Murphy, L. M., 1948, United States earthquakes 1946: U. S. Coast and Geodetic Survey, Serial 714, 49 p.
21. Murphy, L. M., and Ulrich, F. P., 1951, United States earthquakes 1948: U. S. Coast and Geodetic Survey, Serial 746, 50 p.
25. Murphy, L. M., and Cloud, W. K., 1954, United States earthquakes 1952: U. S. Coast and Geodetic Survey, Serial 773, 112 p.
27. Murphy, L. M., and Cloud, W. K., 1956, United States earthquakes 1954: U. S. Coast and Geodetic Survey, Serial 793, 110 p.
28. Murphy, L. M., and Cloud, W. K., 1957, United States earthquakes 1955: U. S. Coast and Geodetic Survey, 453 p.
29. Brazee, R. J., and Cloud, W. K., 1958, United States earthquakes 1956: U. S. Coast and Geodetic Survey, 78 p.
30. Brazee, R. J., and Cloud, W. K., 1959, United States earthquakes 1957: U. S. Coast and Geodetic Survey, 108 p.
33. Talley, H. C., and Cloud, W. K., 1962, United States earthquakes 1960: U. S. Coast and Geodetic Survey, 90 p.
34. Lander, J. F., and Cloud, W. K., 1963, United States earthquakes 1961: U. S. Coast and Geodetic Survey, 106 p.
35. Lander, J. F., and Cloud, W. K., 1964, United States earthquakes 1962: U. S. Coast and Geodetic Survey, 114 p.
36. Cloud, W. K., and von Hake, C. A., 1965, United States earthquakes 1963: U. S. Coast and Geodetic Survey, 69 p.
38. Coffman, J. L., von Hake, C. A., and Stover, C. W., 1982, Earthquake history of the United States, Rev. ed.: U. S. National Oceanic and Atmospheric Administration and U. S. Geological Survey, Publication No. 41-1(through 1980), 258 p.
39. Coffman, J. L., and Cloud, W. K., 1967, United States earthquakes 1977: U. S. National Oceanic and Atmospheric Administration and U. S. Geological Survey, 81 p.
40. von Hake, C. A., and Cloud, W. K., 1968, United States earthquakes 1968: U. S. Coast and Geodetic Survey, 90 p.
41. Coffman, J. L., and Cloud, W. K., 1970, United States earthquakes 1968: U. S. Environmental Science Services Administration, 111 p.
42. von Hake, C. A., and Cloud, W. K., 1971, United States earthquakes 1969: U. S. National Oceanic and Atmospheric Administration, 80 p.
43. Coffman, J. L., and von Hake, C. A., 1972, United States earthquakes 1970: U. S. National Oceanic and Atmospheric Administration, 81 p.
44. Coffman, J. L., and von Hake, C. A., 1973, United States earthquakes 1971: U. S. National Oceanic and Atmospheric Administration, 174 p.
45. Coffman, J. L., and von Hake, C. A., 1974, United States earthquakes 1972: U. S. National Oceanic and Atmospheric Administration, 119 p.
46. Coffman, J. L., Person, W. J., Parrish, J. G., Corvier, D. L., Covington, P. A., Dunphy, G. J., Irby, W. L., Person, W. J., and Stover, C. W., 1975, United States earthquakes 1973: U. S. National Oceanic and Atmospheric Administration and U. S. Geological Survey, 112 p.
47. Coffman, J. L., and Stover, C. W., 1976, United States earthquakes 1974: U. S. National Oceanic and Atmospheric Administration and U. S. Geological Survey, 135 p.
48. Coffman, J. L., and Stover, C. W., 1977, United States earthquakes 1975: U. S. National Oceanic and Atmospheric Administration and U. S. Geological Survey, 136 p.
58. Reid, H. F., Unpublished earthquake catalog, includes card index, newspaper clippings, personal letters, John Hopkins University, Baltimore, MD.
72. U. S. Weather Bureau, Abstracts of earthquake reports for the United States, 1967 through 1974.
74. U. S. Geological Survey, Preliminary determination of epicenters Report, January 1961–present, formerly by the U. S. Coast and Geodetic Survey, U. S. Environmental Science Services Administration, and U. S. National Oceanic and Atmospheric Administration.
75. von Hake, C. A., and Cloud, W. K., 1967, United States Earthquakes 1965: U. S. Coast and Geodetic Survey, 81 p.
81. von Hake, C. A., and Cloud, W. K., 1968, United States earthquakes 1966: U. S. Coast and Geodetic Survey, 110 p.
84. Woollard, G. P., 1968, A catalogue of earthquakes in the United States prior to 1925 based on unpublished data compiled by Harry Fielding Reid and supplemented by sources prior to 1930: Hawaii Institute of Geophysics, University of Hawaii, Data Report No. 18, 163 p.
85. Person, W. J., Simon, R. B., Stover, C. W., and Minach, J. H., 1978, Earthquakes in the United States, April–June 1977: U. S. Geological Survey Circular 788-A, 27 p.
98. Stover, C. W., Simon, R. B., and Person, W. J., 1979, Earthquakes in the United States, July–September 1978: U. S. Geological Survey Circular 788-C, 26 p.
105. Docekal, Jerry, 1970, Earthquakes of the stable interior, with emphasis on the Midcontinent, v. 2: Lincoln, Nebr., University of Nebraska, Ph.D. dissertation; available from Ann Arbor, Mich., University Microfilms Ltd., 332 p.
218. U. S. Coast and Geodetic Survey, Seismological Reports, July 1928 through December 1927.
240. Stover, C. W., and von Hake, C. A., 1980, United States earthquakes 1978: U. S. Geological Survey and U. S. National Oceanic and Atmospheric Administration, 212 p.
259. U. S. Coast and Geodetic Survey, Abstracts of earthquake reports for the Pacific Coast and Mountain Stations, especially the Western Mountain Area, 1934 to December 31, 1965, and 1933 abstracts from the San Francisco office, U. S. Department of Commerce.
262. Stover, C. W., and von Hake, C. A., 1981, United States earthquakes 1979: U. S. Geological Survey and U. S. National Oceanic and Atmospheric Administration, 170 p.
265. International Seismological Summary, 1918–1963.
266. U. S. Coast and Geodetic Survey, Seismological Bulletin MSI 1 through MSI 316, January 1934 through May 1967.
271. Rockwood, C. G., 1883, Notes on American earthquakes, No. 12: American Journal of Science, v. 25, third series, p. 353–360.
272. Shepherd, W. J., Seismological reports for October 1914 to June 1924: U. S. Weather Bureau, Monthly Weather Review, Section V-Seismology.
273. Hadsell, F. A., 1968, History of earthquake activity in Colorado: in Geophysical and geological studies of the relationship between the Denver earthquakes and the Rocky Mountain Arsenal well: Colorado School of Mines Quarterly, v. 63, no. 1, p. 57–72.
274. Herrmann, R. B., Park Som-Kuen, and Wong Chien-Ying, 1981, The Denver Earthquakes of 1967–1968: Seismological Society of America Bulletin, v. 71, no. 3, p. 731–745.
275. Major, M. W., and Simon, R. B., 1968, A seismic study of the Denver (Derby) earthquakes: in Geophysical and geological studies of the relationship between the Denver earthquakes and the Rocky Mountain Arsenal well, Colorado School of Mines Quarterly, v. 63, no. 1, p. 9–55.
276. Pressgrove, R. D., 1979, The seismicity of Colorado: An estimate of seismic hazard derived from instrumental data: Golden, Colo., Colorado School of Mines Master of Science Thesis, 81 p.
283. Dames and Moore, 1981, Geologic and seismologic investigations for Rocky Flats Plant: Golden, Colo., Department of Energy, v. 1, chapter B.8, p. B-8-1 to B-8-44.
296. Kirkham, R. M., and Rogers, W. P., 1981, Earthquake potential in Colorado: Colorado Geological Survey Bulletin 43, 171 P.
298. Arabasz, W. J., Smith, R. B., and Richins, W. D., 1979, Earthquake studies in Utah 1850 to 1978: University of Utah, Department of Geology and Geophysics, 552 p.
325. Stover, C. W., 1984, United States earthquakes 1981: U. S. Geological Survey Publication 1182, 175 p.
331. Oaks, Sherry, 1983, U. S. Geological Survey, unpub data from the newspaper "The Rocky Mountain News", August 13, 1962.
350. Stover, C. W., 1985, United States earthquakes, 1982: U. S. Geological Survey Publication 1655, 142 p.
360. Stover, C. W., 1986, United States earthquakes, 1983: U. S. Geological Survey Bulletin 1698, 197 p.

MODIFIED MERCALLI INTENSITY SCALE OF 1931
Adapted from Sieberg's Mercalli–Cancani scale,
modified and condensed (Wood and Neumann, 1931)

I. Not felt – or, except rarely under especially favorable circumstances. Under certain conditions, on and outside the boundary of the area in which a great shock is felt, sometimes birds, animals, reported uneasy or disturbed; sometimes dizziness or nausea experienced; sometimes trees, structures, liquids, bodies of water, may sway—doors may swing, very slowly.

II. Felt indoors by few, especially on upper floors, or by sensitive or nervous persons. Also, as in grade I, but often more noticeably: sometimes hanging objects may swing, especially when delicately suspended; sometimes trees, structures, liquids, bodies of water, may sway, doors may swing, very slowly; sometimes birds, animals, reported uneasy or disturbed; sometimes dizziness or nausea experienced.

III. Felt indoors by several, motion usually rapid vibration. Sometimes not recognized to be an earthquake at first. Duration estimated in some cases. Vibration like that due to passing of light, or lightly loaded trucks, or heavy trucks some distance away. Hanging objects may swing slightly. Movements may be appreciable on upper levels of tall structures. Rocked standing motor cars slightly.

IV. Felt indoors by many, outdoors by few. Awakened few, especially light sleepers. Frightened no one, unless apprehensive from previous experiences. Vibration like that due to passing of heavy or heavily loaded trucks. Sensation like heavy body striking building or falling of heavy objects inside. Rattling of dishes, windows, doors; glassware and crockery clink and clash. Creaking of walls, frame, especially in the upper range of this grade. Hanging objects quiver. Trees, bushes shaken in some instances. Disturbed liquids in open vessels slightly. Rocked standing motor cars noticeably.

V. Felt indoors by practically all, outdoors by many or most; outdoors direction estimated. Awakened many, or frightened few; frightened few excitement, a few ran outdoors. Buildings trembled throughout. Broke dishes, glassware to some extent. Cracked windows—in some cases, but not generally. Overturned vases, unstable objects, in many instances, with occasional fall. Hanging objects, doors, swing generally or considerably. Knocked pictures against walls or swung them out of place. Opened, or closed, doors, shutters, abruptly. Pendulum clocks stopped, started, or ran fast or slow. Moved small objects, furnishings, the latter to slight extent. Spilled liquids in small amounts from well-filled open containers. Trees, bushes shaken slightly.

VI. Felt by all, indoors and outdoors. Frightened many, excitement general, some alarm, many ran outdoors. Awakened all. Persons walked unsteadily. Trees, bushes, shaken slightly to moderately. Liquid set in strong motion. Small bells ring—church, schools, etc. Damage slight in poorly built buildings. Fall of plaster in small amount. Cracked plaster somewhat, especially fine cracks, chimneys in some instances. Broke dishes, glassware, in considerable quantity, also windows. Fall of knick-knacks, books, pictures. Overturned furniture in many instances. Moved furnishings of moderately heavy kind.

VII. Frightened all—general alarm, all ran outdoors. Some, or many, found it difficult to stand. Noticed by persons driving motor cars. Trees and bushes shaken moderately to strongly. Waves on ponds, lakes, and running water. Water turbid with mud stirred up. Incaving to some extent of sand or gravel stream banks. Caused large church bells, etc. Suspended objects made to quiver. Damage negligible in buildings of good design and construction, slight to moderate in well-built ordinary buildings, considerable in poorly built or badly designed buildings, adobe houses, old walls (especially where laid up without mortar), spires, etc. Fall of plaster in considerable to large amount, also some stucco. Broke numerous windows, furniture to some extent. Shook down loosened brickwork and tiles. Broke weak chimneys at the level of the roofline (sometimes damaging roofs). Fall of unbraced parts of chimneys of buildings. Dislodged bricks and stones. Overturned heavy furniture, with damage from breaking. Damage considerable to concrete irrigation ditches.

VIII. Fright general—alarm approaches panic. Disturbed persons driving motor cars. Trees shaken conspicuously—branches, trunks, broken. Limbs and trees thrown down. Ejected sand and mud in small amounts. Changes, temporary or permanent: in flow of springs, dry wells; dry wells reservoirs; water level in wells. Waves on lakes, ponds, waters. Damage slight in structures (brick) built especially to withstand earthquakes. Considerable in ordinary substantial buildings, with partial collapse; racked, tumbled down, wooden houses in some cases; threw out panel walls in frame structures, broke off decayed pilings. Fall of walls. Cracked, broke, solid stone walls seriously. Wet ground to some extent, also on steep slopes. Twisting, fall, of chimneys, columns, monuments, also factory stacks, towers. Moved conspicuously, overturned, very heavy furniture.

IX. Panic general. Cracked ground conspicuously. Damage considerable in (masonry) structures built especially to withstand earthquakes. Threw out of plumb some wood-frame houses built especially to withstand earthquakes; great in ordinary substantial (masonry) buildings, some collapse in large part; or wholly shifted frame buildings off foundations, racked frames, serious to reservoirs; underground pipes somewhat broken.

X. Cracked ground, especially when loose and wet, up to widths of several inches; fissures up to a yard in width ran parallel to canal and stream banks. Landslides considerable from river banks and steep coasts. Shifted sand and mud horizontally on beaches and flat land. Changed level of water in wells. Threw water on banks of canals, lakes, rivers, etc., in large amounts. Damage serious to dams, dikes, embankments. Severe to well-built wooden structures and bridges, some destroyed. Developed dangerous cracks in excellent brick walls. Destroyed most masonry and frame structures, also their foundations. Bent railroad rails slightly. Tore apart, or crushed endwise, pipe lines buried in earth. Open cracks and broad wavy folds in cement pavements and asphalt road surfaces.

XI. Disturbances in ground many and widespread, varying with ground material. Broad fissures, earth slumps and land slips in soft, wet ground. Ejected sand and mud in large amounts charged with sand and mud. Caused seo-waves ("tidal" waves) of significant magnitude. Damage severe to wood-frame structures, especially near shock centers. Great to dams, dikes, embankments often for long distances. Few, if any (masonry) structures remained standing. Destroyed large well-built bridges by wrecking of supporting piers, or pilings. Affected yielding wooden bridges less. Bent railroad rails greatly, and thrust them endwise. Put pipe lines buried in earth completely out of service.

XII. Damage total—practically all works of construction damaged greatly or destroyed. Disturbances in ground great and varied, numerous shearing cracks. Landslides, falls of rock of significant character, slumping of river banks, etc., numerous and extensive. Wrecked lines, broke, tore off, large rock masses. Fault slips in firm rock, with notable horizontal and vertical offset displacements. Water channels, surface and underground, disturbed and modified greatly. Dammed lakes, produced waterfalls, deflected rivers, etc. Waves seen on ground surfaces (actually seen, probably, in some cases). Distorted lines of sight and level. Threw objects upward into the air.

Table 1.—Chronological listing of earthquakes for the State of Colorado

DATE YEAR MONTH DAY	ORIGIN TIME (UTC) H M S	LAT.	LONG.	DEPTH (KM)	HYPOCENTER QUAL	REF	MAGNITUDE USGS (mb) (Ms)	MAGNITUDE OTHER	MAGNITUDE MOMENT (M)	INTENSITY MM	INTENSITY REF
1870 DEC 04	12 00 ...	38.5 N.	104.0 W.	...	H	273	...	...	...	VI	273
	Near Pueblo, Colorado. Many people were awakened by a violent jar. The shock was felt over an area of 62,000 sq mi.										
1871 NOV 09	17 00 ...	39.7 N.	105.7 W.	...	G	273	...	...	...	IV	273
1880 SEP 13	07 00 ...	39.3 N.	106.7 W.	?	G	273	...	...	...	VI	273
	Aspen, Colorado. People were awakened and rushed out of their tents; people had difficulty in movement; people heard a rumbling noise like distant thunder. An avalanche was reported on Aspen Mountain starting at 1:00 A.M. and lasting all the next morning (Denver Tribune, September 21, 1880).										
1882 FEB 12	05 30 ...	37.3 N.	107.0 W.	*	G	271	...	...	...	F	271
1882 MAY 12	03	37.3 N.	107.0 W.	*	G	271	...	...	...	III+	271
1882 NOV 08	01 30 ...	40.0 N.	105.0 W.	...	I	38	...	...	...	VII	273
	This location is near Denver, Colorado; however, a possible location in the Piceance Basin of western Colorado has been suggested (Ref. 283). In Denver, bolts connecting an engine driving pulley were snapped or bent in the electric light building. People ran outside. Buildings trembled violently. Felt most severely in the Denver downtown area. Minor damage such as broken and fallen plaster, broken windows occurred in Boulder and Louisville, Colorado, and at Point of Rocks and Rawlins, Wyoming. The shock was reported felt in Salt Lake City, Utah. Felt area was estimated from 260,000 to 407,000 sq km.										
1882 NOV 08	11 45 ...	40.0 N.	105.0 W.	...	I	283	...	...	...	F	283
1882 NOV 23	... ...	37.7 N.	107.7 W.	...	H	273	...	...	...	IV	273
1886 JUL 31	... ...	38.2 N.	107.3 W.	...	H	273	...	...	...	F	273
1888 OCT 23	18 40 ...	38.1 N.	105.2 W.	...	H	273	...	...	...	IV	273
1889 JAN 15	... ...	39.5 N.	107.3 W.	...	H	273	...	...	...	V	273
1891 DEC 21	... ...	40.5 N.	108.0 W.	...	H	273	...	...	...	V	273
	Moffat County, Colorado. People ran outdoors; a cow was knocked to the ground, and many boulders rolled down a cliff.										
1894 JAN 01	10 00 ...	37.9 N.	107.8 W.	...	H	296	...	...	...	IV	296
1894 AUG 12	00 00 ...	39.7 N.	105.7 W.	...	G	273	...	...	...	V	273
1895 MAR 22	... ...	40.5 N.	107.1 W.	...	G	273	...	...	...	V	38
1901 NOV 15	10 00 ...	38.8 N.	106.2 W.	...	H	273	...	...	...	VI	273
	Buena Vista, Colorado. A plate glass window was broken; people were awakened and rushed outside. Boulders rolled down the sides of Mt. Harvard and Mt. Princeton.										
1903 SEP 09	... ...	40.3 N.	105.3 W.	*	G	84	...	...	...	IV	84
1906 DEC 21	16 10 ...	39.6 N.	107.6 W.	*	G	58	...	...	...	III	84
1913 NOV 11	21 55 ...	38.2 N.	107.7 W.	...	G	38	...	...	...	V	38
1913 NOV 11	22 18 ...	38.2 N.	107.7 W.	...	G	38	...	...	...	F	58
1913 NOV 11	23 45 ...	38.2 N.	107.7 W.	...	G	38	...	...	...	F	58
1915 FEB 28	07 51 ...	39.1 N.	108.6 W.	...	G	64	...	...	...	III+	272
1916 OCT 12	05 41 ...	40.1 N.	105.6 W.	*	G	272	...	...	...	IV	272
1920 DEC 29	02 50 ...	39.5 N.	107.5 W.	*	G	272	...	...	...	IV	272
1920 DEC 29	03 00 ...	37.5 N.	107.5 W.	*	G	272	...	...	...	IV	272
1920 DEC 30	09 50 ...	39.5 N.	107.5 W.	...	G	272	...	...	...	V	272
1920 DEC 30	17 50 ...	39.5 N.	107.5 W.	...	G	272	...	...	...	V	272
1921 FEB 05	06 15 ...	38.6 N.	106.3 W.	...	G	272	...	...	...	IV+	272
1921 FEB 06	06 25 ...	38.6 N.	106.3 W.	...	G	272	...	...	...	IV+	272
1921 FEB 06	06 30 ...	38.6 N.	106.3 W.	...	G	272	...	...	...	IV+	272
1921 FEB 17	01 45 ...	38.6 N.	106.3 W.	...	G	272	...	...	...	III	272
1921 FEB 17	13 05 ...	38.6 N.	106.3 W.	...	G	272	...	...	...	III	272
1921 FEB 26	15 55 ...	38.6 N.	106.3 W.	...	G	272	...	...	...	III	272
1921 FEB 27	17 05 ...	38.6 N.	106.3 W.	...	G	272	...	...	...	III	272
1921 MAR 04	06 00 ...	38.6 N.	106.3 W.	...	G	272	...	...	...	II	272
1921 MAR 08	19 15 ...	38.6 N.	106.3 W.	...	G	272	...	...	...	IV	272
1921 MAR 09	01 25 ...	38.6 N.	106.3 W.	...	G	272	...	...	...	III	272
1921 MAR 12	07 00 ...	38.6 N.	106.3 W.	...	G	272	...	...	...	II	272
1921 MAR 22	21 45 ...	38.6 N.	106.3 W.	...	G	272	...	...	...	III	272
1921 JUL 27	21 30 ...	38.6 N.	106.3 W.	...	G	272	...	...	...	III+	272
1921 JUL 29	02 55 ...	38.6 N.	106.3 W.	...	G	272	...	...	...	III+	272
1921 OCT 15	02 05 ...	38.5 N.	107.8 W.	...	G	272	...	...	...	III+	165
1923 JAN 27	08 04 00	39.7 N.	105.0 W.	...	H	265	...	...	...	F	265
1924 JAN 04	21 56 30	39.7 N.	105.0 W.	...	H	265	...	...	...	F	265
1925 FEB 18	20	38.2 N.	105.1 W.	*	G	218	...	...	...	IV+	218
1928 APR 20	09 40 ...	37.8 N.	107.0 W.	...	G	1	...	...	...	IV+	1
1928 APR 24	10	37.8 N.	107.0 W.	...	G	1	...	...	...	IV+	1
1928 APR 29	10	37.8 N.	107.0 W.	...	G	1	...	...	...	IV+	1
1928 APR 29	10 20 ...	37.8 N.	107.0 W.	...	G	1	...	...	...	IV+	1
1928 APR 29	10 45 ...	37.8 N.	107.0 W.	...	G	1	...	...	...	IV+	1
1928 APR 29	16	37.8 N.	107.0 W.	...	G	1	...	...	...	IV+	1
1928 APR 30	15 50 ...	37.8 N.	107.0 W.	...	G	1	...	...	...	IV+	1
1928 MAY 01	09 22 ...	37.8 N.	107.0 W.	...	G	1	...	...	...	IV+	1
1928 MAY 01	09 25 ...	37.8 N.	107.0 W.	...	G	1	...	...	...	IV+	1
1928 MAY 01	09 35 ...	37.8 N.	107.0 W.	...	G	1	...	...	...	IV+	1
1928 MAY 01	12 20 ...	37.8 N.	107.0 W.	...	G	1	...	...	...	IV+	1
1928 MAY 03	19 40 ...	37.8 N.	107.0 W.	...	G	1	...	...	...	IV+	1
1928 MAY 04	10 00 ...	37.8 N.	107.0 W.	...	G	1	...	...	...	IV+	1
1928 MAY 08	10 10 ...	37.8 N.	107.0 W.	...	G	1	...	...	...	IV+	1
1928 SEP 29	07 17 ...	38.1 N.	102.1 W.	...	G	1	...	...	...	IV+	1
1940 APR 08	17 00 ...	39.3 N.	106.8 W.	*	G	13	...	...	...	III+	13
1941 FEB 13	11 32 30	39.3 N.	106.8 W.	...	G	273	...	...	...	IV+	14
1941 FEB 21	21 22 ...	39.3 N.	106.8 W.	...	G	273	...	...	...	IV+	14
1941 FEB 28	06 19 ...	39.3 N.	106.8 W.	...	G	273	...	...	...	III+	14
1941 AUG 29	11 34 ...	37.3 N.	107.7 W.	...	G	273	...	...	...	V	273
1942 AUG ...	... ...	40.5 N.	108.5 W.	*	G	331	...	...	...	III+	331
1944 SEP 09	04 12 20	39.0 N.	107.5 W.	...	G	266	...	...	...	VI	38
	Near Basalt, Colorado. Slight cracks in walls and chimneys. Plaster cracked. Felt area was estimated at 3,000 sq mi.										
1944 OCT 05	14 05 ...	39.2 N.	106.8 W.	*	G	17	...	...	...	IV	259
1945 APR 29	17 08 ...	37.7 N.	107.7 W.	*	G	18	...	...	...	IV	259
1945 APR 29	17 32 ...	37.7 N.	107.7 W.	*	G	18	...	...	...	III+	259
1946 JAN 31	22 45 ...	39.6 N.	107.3 W.	*	G	19	...	...	...	IV	259
1946 AUG 01	02 05 ...	39.8 N.	107.1 W.	*	G	19	...	...	...	IV	259
1948 OCT 03	04 30 ...	40.9 N.	106.1 W.	*	G	21	...	...	...	IV	259
1952 OCT 07	09 20 ...	37.0 N.	106.0 W.	*	G	38	...	...	...	V	25
1954 FEB 21	20 20 51	40.0 N.	108.75 W.	...	D	27	...	...	...	V	27
1955 FEB 10	17 30 ...	40.4 N.	106.9 W.	...	G	273	...	...	...	V	38
1955 AUG 03	06 35 ...	37.9 N.	107.3 N.	*	F	28	...	...	...	IV+	28
1955 AUG 03	06 37 ...	37.9 N.	107.3 W.	*	F	28	...	...	...	IV+	28
1955 AUG 03	06 39 42	38.0 N.	107.3 W.	*	F	273	...	...	...	VI	28
	Lake City, Colorado. Ground cracks; a chimney was cracked, one chimney fell. Felt area was estimated at 2,000 sq mi.										
1955 NOV 28	05 25 12	38.2 N.	103.7 W.	...	F	273	...	...	...	IV	28
1956 JAN 14	18 40 ...	37.9 N.	102.6 W.	*	F	29	...	...	...	III+	29
1956 JAN 14	18 49 ...	37.9 N.	102.6 W.	*	G	273	...	...	...	IV	29
1957 MAY 03	08 30 ...	37.8 N.	108.9 W.	*	G	30	...	...	...	III+	30
1960 OCT 11	00 05 30.5	38.3 N.	107.6 W.	.049	C	33	...	5.5mb BRK	...	VI	33
	Near Montrose, Colorado. Cracked plaster in many nearby towns; a foundation cracked in Montrose; a chimney cracked in Ophir, Colorado; windows were broken in Powderhorn, Colorado. Felt over an estimated area of 10,000 sq mi.										
1960 OCT 12	00 30 ...	38.3 N.	107.6 W.	*	F	33	...	...	...	IV+	33
1960 OCT 17	16 00 ...	39.2 N.	106.9 W.	...	F	38	...	...	...	V	38
1961 NOV 27	00 55 45.7	39.0 N.	108.1 W.	.033	C	266