

9 February, 06:00:41.6. Intensity VII--Continued.

14964 Leadwell Street. (VI) Felt by and awakened all in community; frightened many (observer in 15-year-old, one-story wood frame building). Heavy shaking for about 1 minute. Moderate earth noises. Slight ground cracks. Electricity off. Water became brownish. Hanging objects swung violently. Small objects fell. Furniture shifted. Plaster cracked. Water sloshed from pool; pool water lowered by about 0.3 m. Much debris in pool. Ground: Adobe and sand, level.

No address given. (VI) Felt by and awakened all in community; frightened all in old, well-built, two-story wood frame building. House shook and groaned. "Too frightened to notice earth noises." Hanging objects swung moderately. Pictures fell. Plaster cracked. Damage slight. "We have a street light outside our window, and it went out. I tried to get up but couldn't walk. Our backyard and patio was flooded by water from neighbor's swimming pool. The water splashed over the retaining wall with such force that it dug a hole 0.3-m. deep. Pipes were torn from water heater in basement. Electricity was out for 55 minutes. Water was like ink on the 9th and brown for a week afterward. We had no dishes broken, but glass in picture frames was broken. Our plaster is cracked in many places. Water splashed from upstairs toilet bowls, but not from the one downstairs."

Ground: Adobe, very slightly sloping.

6500 Fulton Avenue. (VI) Felt by and awakened all (observer in 18-year-old, fairly well-built, one-story wood frame building). Building shook violently. Electricity out (transformers on poles shorted). Small objects shifted and overturned. Hair-line cracks in exterior stucco. Ground: River alluvium, level.

5652-1/2 Hazeltine Avenue. (VI) Felt by, awakened, and frightened all in community (observer in well-built, two-story wood frame building). Everything rattled. Hanging objects swung. Small objects and furnishings shifted; small objects and furniture overturned. Knickknacks, books, and pictures fell. Dishes, windows, and furniture broke. Ground: Soil, level.

Verdugo City (just west of La Crescenta and Montrose). Felt by, awakened, and frightened all in community. "Many windows and dishes broke. Major damage to buildings in area. Without lights until 10:20 and limited telephone service for most of the day." At the post office (one-story concrete block building), small amount of plaster cracking in lobby. Some small objects fell from shelves. Furniture shifted. Water sloshed from toilet. Ground: Rocky, sloping.

Vernon. The following, from Steinbrugge and others<sup>8</sup>, does not include publicly owned structures: "Buildings damaged, 30; posted unsafe, 5; estimated total dollar loss, \$100,000." At the post office (VI), felt by all and frightened many working in new, fairly well-built, one-story concrete block building. Everything rattled. Floor had rolling motion. Too many other noises to hear earth noises. Light fixtures swung violently. Cases shifted. Ground: Level.

#### Woodland Hills:

22233 Buenaventura Street. Felt by and frightened all in community; general panic (observer in old, well-built, one-story cement block building). Ceiling made groaning sound. Trees shook; one tree leaned. Swimming pool half emptied. Cement work, especially pool decking, severely cracked. Hanging objects swung violently. Small objects fell. Furniture shifted and overturned. Plaster cracked. Damage moderate. Ground: On hillside.

9 February, 06:00:41.6. Intensity VII--Continued.

20513 Rhoda Street. Felt by, awakened, and frightened all in community. Loud earth noises from west about 10 seconds before shock. "I was just getting out of bed; felt a little shock; jumped in bed and stayed there; then in a few seconds I heard a very loud noise which sounded like train noise; then the shock!!! Things came crashing down. Books and trophys fell and nearly killed my father." Trees shook strongly; few branches broke off. Big TV and stereo moved few cm. Ceiling, floor, and walls cracked; more cracks in outside floor but not serious. Damage slight. Ground: Sloping and steep.

4674 Morro Drive. (VI) Felt by and awakened all in 18-year-old, well-built, two-level wood frame building; all were apprehensive. Moderate earth noises. Pool water sloshed out. Hanging objects swung moderately north-south. Small objects shifted, overturned, and fell. Patio furniture shifted. Plaster cracked. Cement block fences loosened; wooden fence weakened. Ground: Rocky, compact, on hillside.

22151 Tiara Street. (VI) Felt by, awakened, and frightened all in community (observer in well-built, one-story wood frame building with brick veneer). Faint rumbling earth noises. Trees and bushes shook; vehicles rocked. Hanging objects swung violently east. Closet contents fell to floor. Dishes broke. Chimney banged against plaster ceiling. Plaster cracked around chimney, over doors, and at some windows. Damage slight. "Ground motion appeared to be fairly uniform for about 1 minute. My house seemed to move mostly in an east-west direction. The frequency of vibration of my house was between 1/5 and 1/10 second. The aftershocks were very short and appeared small in magnitude. The ground noise was very difficult to distinguish from the general noise of falling objects and creaking wood." Ground: Compact, sloping.

22451 Hatteras Street. (VI) Felt by all in community; awakened and frightened all in new, one-story wood frame building (stucco and stone outside; plaster and brick inside). Vehicle in garage rocked. Water from next door pool in yard. Hanging objects swung violently. Small objects shifted, overturned, and fell. Furniture shifted. Damage slight. Ground: Clay, level.

6040 Nevada Avenue. (VI) Felt by, awakened, and frightened all in community (observer in new, well-built, two-story wood frame apartment building; parking area underneath). Violent shaking and tossing feeling. Water sloshed from swimming pool. Hanging objects swung moderately, mostly northward and eastward. Small objects shifted, overturned, and fell. Chest drawers opened. Plaster cracked around many windows and doors. Window in bathroom loosened from inside tile. Damage slight. "No electricity for 1 hour and 15 minutes. Electric power went out within seconds after start of shock. Gas and water supply remained OK. No telephone communication for 7 hours." Ground: Gravelly, some compact, some filled in, level.

19830 Gilmore Street. (VI) Felt by and awakened all in community; frightened all in one-story wood frame building. Light fixtures swung. Small objects shifted, overturned, and fell. Noticeable wallboard cracks. Many old hairline cracks enlarged. New hairline cracks developed. "Aftershocks seemed to be, in general, a rolling, wavy motion, causing a good shake. However, about one of four aftershocks seemed like a roll at first, then a big thud and dropping sensation."

9 February, 06:00:41.6--Continued.

Intensity VI:

Agoura. Felt by, awakened, and frightened all in community. Small objects shifted, overturned, and fell. Plaster cracked. Damage slight.

Agua Dulce (about 22 km. northeast of Saugus). Felt by and awakened all; frightened many or all. Ground cracked. Some jacks under trailer fell over and skirting buckled. Small objects overturned and fell. Furniture shifted; some overturned. Hanging objects swung violently. Damage slight to moderate. USGS-NOAA<sup>9</sup> reported that at the Agua Dulce Elementary School, several plastic light diffusers fell from fluorescent light tube fixtures and there was some light "cosmetic" damage.

Anaheim. Felt by, awakened, and frightened all in community. Cement and wall cracked; plaster cracked. Leak in hot water tank inlet. Damage slight. Water disturbed. Small objects shifted, overturned, and fell. Hanging objects swung violently north-south.

Arcadia. Felt by, awakened, and frightened all in community. Chimneys cracked. Plaster cracked; acoustic plaster fell; minor exterior plaster cracking. Power-lines down. Damage reported as slight by all observers. Furniture shifted and overturned. Small objects shifted, overturned, and fell. Trees and bushes shook; vehicles rocked. Hanging objects swung violently both east-west and north-south. Water splashed out of swimming pools. Lights flashed outside; lights went out. "Held on to door frame to stand up."

Baldwin Park. Felt by all and frightened many in community; awakened all in home. Plaster cracked. Small cracks in patio. Swimming pool water sloshed over. Trees and bushes shook; vehicles rocked. Hanging objects swung violently north-south. Small objects shifted and overturned. "Earthquake seemed to build up in intensity--from violent up-and-down motion to heavy roll. Felt strong aftershock at 8:00 a.m. on 9th while at work in City Of Industry. All felt it. Have felt several aftershocks with rolling motion."

Camarillo. Felt by, awakened, and frightened all. "St. Mary Magdalene Church suffered structural damage." Powerlines arced, causing blue flashes. Water disturbed. Hanging lamps swung about 0.9 m. northeast-southwest. Small objects shifted and fell. Pendulum fell off clock.

Carson. Felt by all in community; awakened and frightened all in home. "One chimney dislocated. Slight separation between exposed beam and plaster." Swimming pool lost about 15 cm. of water. Hanging objects swung violently east-west. Small objects fell.

Castaic and vicinity. Felt by and awakened all in community; frightened many. Waterline broke. Plaster cracked. Minor cement cracks in stairs. All observers reported damage as slight. Small objects fell; furniture shifted. Trees and bushes shook; vehicles rocked. Horse panicked and jumped fence. Field investigator from Seismological Field Survey reported observed damage at Castaic Junction (about 6 km. south of Castaic) was slight--plate glass window broke; some objects fell from shelves.

Cerritos. Felt by, awakened, and frightened all in home. "Other wood frame, one-

9 February, 06:00:41.6. Intensity VI--Continued.

story houses in community sustained some plaster and stucco cracking. There were also incidents of objects falling off shelves, etc."

Chatsworth. Felt by, awakened, and frightened all in community. Plaster cracked. Block wall, 0.9 m. high, overturned. Damage slight. Swimming pool lost about 8 cm. of water. Trees and bushes shook. Small objects shifted, overturned, and fell. Hanging objects swung violently--seemed east-west.

Compton. Felt by and awakened all in community; frightened many. Plaster cracked, broke, and fell. One window cracked. Powerline down. Steinbrugge and others<sup>8</sup> estimated total dollar loss at Compton, excluding publicly owned structures, at \$10,000. Hanging objects swung violently north-south.

Costa Mesa. Felt by most in community; awakened and frightened many. Plaster fell and some old plasterboard cracks reopened. Water sloshed from swimming pools. Hanging objects swung violently east-west. Vault door closed. Heavy shaking. "Aftershocks were not strong enough to slosh water from pool, but hanging objects swayed."

Covina. Felt by and frightened all in community; awakened many. Plaster cracked and old cracks widened. Hanging objects swung violently east-west and northwest-southeast. Small objects shifted, overturned, and fell. Trees and bushes shook; vehicles rocked. Cupboard doors popped open. "Appeared to be high-frequency vibration--not the slow rolling motion as felt with previous earthquakes in this area." "The aftershocks have been more frightening than the initial shock. Several times we have felt dizzy. On the evening of February 20 at about 10:00 and 11:00 there were two shocks that caused lamps to swing and windows to rattle." "Of the many aftershocks, we felt only a very few and they seemed light."

Crestline. Felt by and awakened all in community; frightened many. Chimneys cracked. Masonry cracked; some broke loose. Damage slight. "To date (Feb. 23), one delayed earthquake effect (happened on Feb. 16), first time fireplace was used after earthquake occurred: Due to cracked flue liner a residence was damaged to the extent of \$8,000 by fire in brick fireplace." Small objects shifted, overturned, and fell; bottles, etc., broke.

Cucamonga. Felt by, awakened, and frightened many in community. Some plaster cracking in community. Hanging objects swung moderately to violently north-south.

Culver City. Felt by and awakened all in community; frightened many. Plaster and windows cracked. Damage slight. Ground cracked (one report). Water disturbed. Small objects fell; furniture shifted. Hanging objects swung violently in all directions. Basketball pole swayed. Trees and bushes shook; vehicles rocked. Lights flashed. Phone out of order.

Downey. Felt by, awakened, and frightened all in community. Plaster cracked, broke, and fell. Slight cracks in chimney. Driveway crack widened. Damage slight. About 0.3 m. of water sloshed from swimming pool. Small objects shifted, overturned, and fell; furniture shifted. Hanging objects swung violently northeast-southwest. Street lights went off and on. Telephone pole crooked. Trees and bushes shook; vehicles rocked.

9 February, 06:00:41.6. Intensity VI--Continued.

Elizabeth Lake area (about 5 km. southeast of Lake Hughes; about 0.4 km. north of east shore). Felt by all in home and community. Plaster cracked. Lamps fell and broke. Small objects shifted southwest. Trees shook. Hanging objects swung violently northeast-southwest. Chickens were knocked from roosts. "Twelve heavy aftershocks felt within the next 2 hours."

El Monte. Felt by all in home; awakened all and frightened many. Power failure--wires broke. Small objects shifted, overturned, and fell; slight breakage of dishes. Furniture shifted some. "Continued tremors on successive days."

Fairmont Reservoir (about 3.2 km. north by east of Lake Hughes). Felt by and frightened all in community. Hanging objects swung violently in every direction. Small objects fell. Furniture shifted. "Our power went off at the first shock but came on again in about 10 minutes. Telephone communications were knocked out; restored 5 days later. Aftershocks were felt during the following 24 hours but they were very moderate."

Florence. Felt by all in community; awakened and frightened many. Plaster cracked; few windows cracked. Damage slight. Trees and bushes shook; vehicles rocked. Hanging objects swung violently. Small objects overturned; furniture shifted.

Fullerton. Felt by and awakened all in community; frightened many. Acoustical tile fell in bank building. Plaster cracked. New cracks in patio. Damage slight. Water sloshed from swimming pools. Small objects shifted, overturned, and fell. Hanging objects swung violently north-south. Trees and bushes shook; vehicles rocked.

Gardena. Felt by all in community; awakened and frightened many. Plaster cracked. Swimming pool water splashed "like ocean waves." Trees shook; vehicles rocked. Hanging objects swung violently east-west. Small objects shifted. "Initial strong jolt; then gentle rolling motion for about 1 minute."

Glendora. Felt by and awakened all in community; frightened many. Plaster cracked. Some small cracks enlarged (very few). Damage slight. Water sloshed from swimming pools. Small objects shifted and overturned. Hanging objects swung violently. Cabinet doors opened. "Many aftershocks."

Hacienda Heights. Felt by all in community; awakened and frightened many. Plaster cracked. Damage slight. Flashes from shorted powerlines. Water sloshed from swimming pool. Small objects shifted; all pictures shifted. Hanging objects swung violently. Trees and bushes shook; vehicles rocked. "Motion started as violent high-frequency shaking, then after about 15 seconds it changed to long period."

Hawthorne. Felt by all and awakened many in community; frightened few. Exterior cracks in plaster where apartment is cantilevered over driveway. Hanging objects swung violently east-west. "Lack of balance when standing. Short-period shaking for about 20 seconds, followed by long-period shaking."

Highland. Felt by, awakened, and frightened all in community. Plaster cracked. Damage slight. Small objects fell; furniture shifted. Trees and bushes shook; vehicles rocked. Hanging objects swung violently with a twisting motion.

Huntington Beach. Felt by and awakened all in community; frightened many. Plaster cracked. Drywall cracked and some ceiling panels fell. Some cracks in cement. Damage slight. "Very strong, sharp jolts, but very little damage." Small

9 February, 06:00:41.6. Intensity VI--Continued.

objects fell; furniture shifted slightly. Trees and bushes shook. Hanging objects swung moderately north-south.

Huntington Park. Felt by, awakened, and frightened all in home. Driveway cracked (transverse and diagonal cracks). Hanging objects swung violently east-west.

La Habra. Felt by, awakened, and frightened many in community. Plaster cracked. Plastic water connection cracked. Ground cracked. Damage slight. Pool water sloshed. Small objects shifted, overturned, and fell; furniture shifted. Hanging objects swung violently east-west. Trees and bushes shook; vehicles rocked.

Lake Hughes. Felt by, awakened, and frightened all in community. "Whipping action of pump shaft snapped pump pipe where it threads into submersible pump, causing a break in pipe which made pump burn up. Damage slight, except to pump." High wires swayed. Hanging objects swung violently east-west. Trees and bushes shook; vehicles rocked. Water disturbed. Small objects shifted, overturned, and fell; beds moved about 15 to 30 cm.

Lakewood. Felt by all in community; awakened and frightened many. Plaster cracked. Pool lost about 20 cm. of water. Electrical wires swayed. Hanging objects swung violently north-south. Small objects and furniture shifted. "Rolling motion; no extreme acceleration changes."

La Mirada. Felt by and awakened all in community; frightened many. Small cracks in plaster and foundation. Damage slight. Small objects shifted, overturned, and fell; furniture shifted. Pendulum clock stopped. Trees and bushes shook; vehicles rocked. "Initial shock lasted over 2 minutes. The vertical and horizontal motion was easily felt and seen. Two moderately severe aftershocks were felt at about 6:20 and 8:20 a.m., but the remainder (about four) were scarcely noticeable."

Lancaster. Felt by and awakened all in community; frightened many. Chimneys and plaster cracked. Damage slight. Many small objects shifted, overturned, and fell; furniture shifted. "Many aftershocks felt, but none that would cause heavy damage. The largest one was felt at about 9:00 p.m. on the 9th."

La Puente. Felt by and awakened all in community; frightened many. Plaster cracked in some homes. Damage slight. Hanging objects swung violently. Small objects shifted, overturned, and fell. Vehicle rocked. "Shock frightened all in our home. Noticed up-and-down and horizontal motion. House continued to sway back and forth considerably after shock had stopped."

Lenwood (small community about 11 km. southwest of Barstow). Felt by, awakened, and frightened all in community. Plaster cracked. Trees and bushes shook; vehicles rocked. Small objects and furniture shifted.

Littlerock. Felt by and awakened all in community; frightened many. Few reports of plaster cracking. One plate glass window broke. Bottles and cans fell off shelves at two stores. Damage very slight.

Lomita. Felt by and awakened all in community; frightened many. Plaster cracked in some buildings. Windows cracked in several stores in town. Damage slight. Small objects shifted. North-south swaying motion.

Long Beach. Felt by, awakened, and frightened all in community. Plaster cracked. "Minor damage at Long Beach." Elevator knocked off track. Water in swimming pool sloshed violently. Small objects shifted, overturned, and fell; furniture

9 February, 06:00:41.6. Intensity VI--Continued.

shifted. Hanging objects swung violently north-south, east-west, and northeast-southwest. Trees and bushes shook; vehicles rocked. "Shock lasted for 35 seconds. Started slowly, reaching a peak in about 10 seconds which lasted about 15 seconds; then tapered off."

Lytle Creek. Felt by and awakened all in community; frightened many. Cracks in walls and foundation. Small objects fell. Trees and bushes shook; vehicles rocked. Hanging objects swung moderately west-east. "We have not felt many of the aftershocks."

Malibu. Felt by, awakened, and frightened all. Plaster cracked. Landslides. Damage slight. Trees and bushes shook; vehicles rocked. Hanging objects swung violently, seemed east-west. Small objects shifted, overturned, and fell. Bubbles caused by gas seepage were observed emanating from the ocean floor off Malibu Point. The occurrence was investigated by scuba divers. USGS-NOAA<sup>9</sup> reported that the gas emanated from small holes and craters in the ocean floor. No ruptures or dislocations of the sea floor were observed during the dive.

Manhattan Beach. Felt by and awakened all in community; frightened many. Hairline cracks in plaster; old cracks slightly enlarged; old hairline cracks in patio slightly widened. Windows cracked. "Cement walls without adequate foundation were slightly tilted." Pool water sloshed. Elevated water tank made loud noises. Hanging objects swung violently. Two people ran outside and had to hang on to windowsill to keep balance. Tree, about 3.6 m. high, whipped violently. Press reported: "Facade and parapets on the old City Hall (built in 1916) have cracked to the point of collapse. Those cracks were brought out by the earthquake, but it is an old building and there will be more cracks." Aftershocks felt at 09:00 and 21:00.

Marina Del Rey. Felt by all in community; awakened many; frightened few. Grund cracked. Trees shook; vehicles rocked on roadways. Hanging objects swung violently. Small objects overturned and fell; furniture shifted. "Floor shook up and down fairly violently for over 1 minute, but no damage."

Maywood. Felt by, awakened, and frightened all in community. Transformers and high-tension lines arced and "sputtered." Damage slight. Small objects shifted, overturned, and fell. Trees and bushes shook; vehicles rocked. Hanging objects swung violently north-south. "Very difficult to walk--had to hold on to walls and doorways. Seemed as if one were riding on waves during the major aftershocks felt within the house. Felt many aftershocks as slight vibrations."

Mission Viejo (about 3 km. southeast of El Toro). Felt by and awakened all in community; frightened many. Plaster cracked and fell; exterior stucco cracked at corners of openings; concrete slab separated at cold joint. Swimming pool water washed about north-south, and did not calm down for 2 hours. Trees and bushes shaken strongly. "Rolling motion felt by husband in bed--almost enough to roll him out of bed. Aftershocks very slight--hardly noticeable--but continuous during evening of the 9th."

Monrovia. Felt by, awakened, and frightened all in community. Plaster cracked. Inside partitions cracked at joints. Damage slight. Pool water sloshed over pool. Hanging objects swung violently east-west; objects also swung north-south. Small

9 February, 06:00:41.6. Intensity VI--Continued.

objects shifted, overturned, and fell. "Felt as a rocking motion rather than sharp jolts, also some aftershocks; later aftershocks were jolts."

Monterey Park. Felt by, awakened, and frightened all in community. Chimneys and plaster cracked. About a 1.8-m.-long section of about 0.9-m.-high retaining wall pushed out and cracked but did not collapse. Old cracks reopened in cement block walls. Damage slight. Swimming pools lost about 15 to 20 cm. of water; very heavy wave action. Small objects shifted, overturned, and fell; some broke. Hanging objects swung violently north-south and northwest-southeast. Furniture shifted few centimeters. Trees and bushes shook; vehicles rocked. "Watched brilliant flare of electrical transformers (at about five locations) being shorted and burn out as quake shook." "Noticeable and disorienting ground motion, mostly lateral and fairly rapid, felt while jogging. Very noisy rattling of houses around me. No one came outside."

Moorpark. Felt by and awakened all in community; frightened many. Plaster cracked. Damage slight. Trees and bushes shook; vehicles rocked. Hanging objects swung violently. Small objects fell; furniture shifted, overturned, and broke.

Mt. Baldy area. The Mt. Baldy Ranger Station reported rocks fell on Mt. Baldy Road, but the road was not closed (press).

Newbury Park (about 6.4 km. southwest of Rancho Sierra Vista). Felt by and awakened all in home; frightened few. Chimneys and plaster cracked. Aluminum patio roof buckled. Damage slight. Trees and bushes shook; vehicles rocked. Small objects and furniture shifted.

Ontario. Felt by, awakened, and frightened many in community. Reports of cracked plaster. Press reported some ceiling tile was shaken loose at the Ontario International Airport, but that there was little other damage. Alarms were set off at two banks. Small objects shifted, overturned, and fell (in moderate amount). Trees and bushes shook; vehicles rocked.

Oxnard. Felt by and awakened all in community; frightened many. Plaster cracked. "Five or six chimneys in town were cracked." Some shaking of trees and bushes. Small objects shifted, overturned, and fell; furniture shifted. Hanging objects swung moderately north-south and east-west. "Lasted longer than any shock I've ever felt. Long, slow rolls, changing from north-south to east-west direction."

Palmdale. Felt by all in community; awakened and frightened all in home. Some cracks. Hanging objects swung violently east-west. Small objects shifted, overturned, and fell.

Palos Verdes Peninsula. Felt by all in community; awakened and frightened many. Plaster cracked. Two cracks in block retaining wall on east side of house; crack in porch now about 1.27 cm. difference between levels; two large windows cracked. Ground cracked; landslides; water disturbed. Trees and bushes shook; vehicles rocked. All pictures askew. Hanging objects swung north-south; moderately southeast-northwest.

Piru and vicinity. Felt by all and frightened many in community. Chimneys overturned. "Plaster cracked in several buildings in town." Damage slight. Trees and bushes shook; vehicles rocked. Hanging objects swung violently north-south. Small objects fell. California Institute of Technology<sup>2</sup> reported that the Santa

9 February, 06:00:41.6. Intensity VI--Continued.

Felicia Dam (about 4.8 km. northeast of Piru) was undamaged except for a narrow meandering crack across the crest at the east abutment, apparently shallow. Placentia. Felt by, awakened, and frightened all in community. Plaster cracked.

Damage slight. Hanging objects swung violently in every direction. Swimming pool water rose about 0.4 m. and sloshed for about 20 minutes after initial shock. Trees and bushes shook; vehicles rocked. Small objects fell. "The worst aftershock was about 8:05 a.m., when things swayed again."

Pt. Mugu. Felt by and awakened most in community; frightened many. Vehicles rocked; water disturbed. "Only minor damage was reported here. The Station Bowling Alley had all pins shaken from the automatic pinsetters and scattered about the lanes, while at the Commissary Store, cake mix and cereals fell and a few jars of baby food fell and broke. A few bottles and cans fell from shelves in the Navy Exchange Mini-Mart, but nothing was broken. Several residents reported losing water from fish tanks."

Port Hueneme. Felt by all in building; frightened few. Several new cracks in building.

Damage slight. Water tower swayed. Hanging objects swung violently east-west.

Quartz Hill. Felt by all in community; awakened and frightened many. Observer at Fire Station reported: "There are some new cracks, small and not long, in exterior stucco, mostly around doors and windows. There was no fall of chimneys in the area, and the only damage I have observed locally is one plate glass window broken in store. The original motion varied in intensity during the initial time, then there was a short pause of a few seconds and a second, shorter motion was felt. Motion was rapid, lasting about 40 to 50 seconds." Second shock (believed to be the first strong aftershock) also was felt. Other observers reported: Hairline stucco cracks. Knickknacks fell. House trailer swayed west-east. Damage negligible. Trees and bushes shook; vehicles rocked. Hanging objects swung moderately west-east.

Redondo Beach. Felt by, awakened, and frightened all in community. Plaster cracked, broke, and fell. Block fence cracked. Water heater damaged. Merchandise fell and broke in store. "Bathroom cabinets appear to have pulled slightly away from walls in both bathrooms. Many new fine cracks in exterior of building and around upper end of supporting parts; cracking of plaster exterior noticeable. Overall damage was surprisingly slight." "I work at the South Bay Center (May Company). We had a lot of breakage and items spilled in the aisles." Water disturbed in swimming pool. "Motion of building was an easy rolling, not sharp, lasting about 1 to 2 minutes." Mild aftershocks were reported felt at about 06:15, 07:37, 09:05, 21:00, and 21:19.

Riverside. Felt by and awakened all in community; frightened many. Plaster cracked. Slight damage to facing slumstone. Observer at Colton reported plaster was cracked at the University of California in the Geology Building. Small objects shifted, overturned, and fell. Trees and bushes shook; vehicles rocked. Hanging objects swung moderately northeast-southwest. Mild aftershocks were reported felt at about 06:20, 07:30, 08:00, 21:00, and 21:13.

Rosemead. Felt by, awakened, and frightened all in community. Plaster cracked.

9 February, 06:00:41.6. Intensity VI--Continued.

Damage slight. "Moderate breakage in area." Power failure for 1-1/2 hours. Small objects shifted, overturned, fell, and broke; furniture shifted. Hanging objects swung violently east-west and in all directions. Trees and bushes shook; vehicles rocked. "I noticed lots of light flashes after the worst was over, about 20 seconds."

Riboudoux (about 3 km. northwest of Riverside). Felt by all; frightened few. Plaster cracked. Hairline cracks inside and outside of building. Damage slight. Hanging objects swung violently east-west.

San Gabriel. Felt by, awakened, and frightened all in community. Chimneys and plaster cracked. Store windows cracked. Hairline cracks in exterior concrete walls. Block wall cracked. Damage reported as slight. The following, from Steinbrugge and others<sup>8</sup>, does not include publicly owned structures: "30 chimneys damaged; estimated total dollar loss, \$9,500." Small objects shifted, overturned, and fell. Hanging objects swung violently east-west, northwest-southeast. Electric wires twisted together. "Saw many transformers explode; thought it was lightning." At a restaurant, a heavy oven (on pedestal) moved west about 2.5 cm. Bed appeared to move in all directions but mainly north-south. "Rolling north-south sway, then, after a few seconds, the floor started to pitch up and down with an east-west movement; as the shock slowed down, it became a north-south sway again." "Motion of house was up and down with sudden drop." "Two distinct jolts; violent shaking, lasting about 40 seconds." "Aftershocks were mostly of a rolling motion."

San Jacinto. Felt by and awakened all in community; frightened many. Chimneys cracked. Plaster cracked in some buildings. Damage slight. Hanging objects swung violently north-south, then circular. Small objects shifted. Trees and bushes shook; vehicles rocked. Pendulum clock stopped.

San Marino. Felt by, awakened, and frightened all in community. Plaster cracked; small pieces fell. Chimney cracked. Plate glass broke. Damage slight. File cabinets moved north-south. Hanging objects swung violently east-west. Small objects shifted, overturned, and fell; furniture overturned. Water sloshed from swimming pools. "Chandelier, about 1.2 m. long, swung about 10 cm. from plumb in north-south direction. Shower doors bounced in floor tracks about three times per second. Vertical movement was a prominent component." "Duration of initial shock was about 45 seconds. Several rather strong aftershocks were felt within a few minutes of initial shock."

Santa Ana. Felt by and awakened all in community; frightened many. Plaster cracked. "Inspected two-story precast beams, block exterior walls, precast floor sections, interior nonbearing steel and plaster walls. Plaster on most interior nonbearing walls showed rather severe deflection of structure at first floor only. No structural damage of any consequence noticeable. The shock in our area seemed well damped, not sharp." Shook 6.7-m. trailer off jacks. Hanging objects swung moderately north-south and east-west.

Santa Fe Springs (Post Office). Felt by all; frightened many. Exterior building cracks slightly enlarged. Trees and bushes shook; vehicles rocked. Small objects and furniture shifted. Hanging objects swung moderately north-south.

9 February, 06:00:41.6. Intensity VI--Continued.

Santa Monica. Felt by and awakened all in community; frightened many. Chimneys and plaster cracked. The following, from Steinbrugge and others<sup>8</sup>, does not include publicly owned structures: "20 buildings damaged; posted unsafe, 1; 30 chimneys damaged; estimated total dollar loss, \$50,000." Nonstructural partitions cracked in 13-story building. Small objects shifted and fell; lamps overturned; furniture shifted. Hanging objects swung violently east-west. Trees and bushes shook; vehicles rocked. "It was a hard and comparatively long shake, lasting about 1 minute. Little, if any, structural damage to wood frame stucco houses." Vertical movement followed by horizontal shaking. Many tremors.

Santa Susana. Felt by, awakened, and frightened all in community. "Some damage in area, especially in retail stores where merchandise was strewn on floors and broken." Mortar line on block wall cracked. Crack appeared at interface of foundation and wood structure in the stucco covering external walls. Hanging objects swung violently; also moderately northeast-southwest.

Sierra Madre. Felt by, awakened, and frightened all in community. "Most of the damage was in grocery and liquor stores due to merchandise falling off shelves. One plate glass window in store broken. No structural damage in the city." Trees and bushes shook; vehicles rocked. Hanging objects swung moderately east-west, north-south, and northwest-southeast. Furniture shifted. Water sloshed over swimming pool. Electricity interrupted for a few minutes. "Continuous rolling motion; seemed maximum at beginning."

South Gate. Felt by all in community; awakened all; frightened many. One light fixture loosened but did not fall. Damage slight. Lights failed for about 1 minute. "Saw flash from transformers blowing about 0.4 km. away." Bookcase shifted about 2.5 cm. Small objects shifted, overturned, and fell. Water disturbed. Hanging objects swung violently east-west. Trees and bushes shook. "Tremors more than moderate, but only minor damage occurred in this locality. The duration seemed to be quite long. It was difficult to stand up. This was the strongest shock I have felt since 1933."

Studio City. Felt by, awakened, and frightened all in community. Ground cracked. Plaster cracked. Damage slight. Water in swimming pool sloshed out. Small objects and furniture shifted. Trees and bushes shook; vehicles rocked. Hanging objects swung violently.

Thousand Oaks. Felt by and awakened all in community; frightened many. Slight plaster cracking above several doors in one house. "Only damage to my house was that the house apparently wracked just enough so that one door would not latch." Cracks in sidewalk. Water disturbed. Trees and bushes shook; vehicles rocked. Small objects shifted; furniture shifted some. Hanging objects swung moderately east-west.

Topanga. Felt by and awakened all in community; frightened many. Rockslides. Plaster cracked. One chimney reported broken. Dryrock walls dislodged (minor). Damage slight. Some settlement of foundation, perhaps 1.2 cm. Planter box on casters (weight about 113 kg.) moved about 10 cm. north. Small objects overturned and fell; furniture shifted. Trees and bushes shook; vehicles

9 February, 06:00:41.6. Intensity VI--Continued.

rocked. Hanging objects swung violently; moderately north-south and east-west. Torrance. Felt by and awakened all in community; frightened many. Minor plaster cracking. Crack in patio slab. Window cracked. Damage slight. Water sloshed from swimming pools. Vehicles rocked. Hanging objects swung violently north-south. "Doors on east-west axis swung open and closed many times; north-south doors only vibrated. Shock at 8:00 a.m. was strong jolt, seemed almost as strong as the first one. Did not feel any of the earlier or later aftershocks." Tustin. Felt by many in community; awakened and frightened all in home. Plaster cracked. Swimming pool water sloshed out in large waves. Furniture shifted. Hanging objects swung moderately north-south. Twin Peaks. Felt by many and awakened all in community; frightened all. Some chimneys cracked. Upland. Felt by, awakened, and frightened all in community. Press reported a false ceiling, with a 2.4-m. neon light, fell to the floor; some cans fell from shelves at a market. Trees and bushes shook. Hanging objects swung violently in all directions. Furniture shifted. Pendulum clocks stopped. Pool water disturbed but did not slosh over sides of pool. Valinda. Felt by all in community; awakened and frightened all in home. Movement of exterior timber patio. Separation of mortar joints in block wall. Valyermo and vicinity. Felt by and awakened all in community; frightened many. At Ranger Station (about 2.4 km. northwest of Valyermo): One block building cracked. Damage slight. Trees and bushes shook; vehicles rocked. Hanging objects swung violently southwest-northeast. Small objects shifted, overturned, and fell. About 6.4 km. southeast of Valyermo (sec. 24 and 25, T. 4 N., R. 9 W.): Ground cracked. Trees and bushes shook. Hanging objects swung violently southeast and southwest. Small objects fell. Damage slight. In Juniper Hills area: Water disturbed. Hanging objects swung violently east-west. Small objects shifted, overturned, and fell. Trees and bushes shook; vehicles rocked. Venice. Felt by and awakened all in community; frightened many. Plaster and windows cracked. Damage slight. Pool emptied. "Transmission" moved about 0.46 m. Small objects fell. Furniture shifted. Hanging objects swung violently east-west. Bushes shook. Water dirty. Vincent (about 8 km. south of Palmdale). USGS-NOAA<sup>9</sup> reported that the Vincent Inter-tie Station had some electrical equipment similar to that at the Sylmar Converter Station, but only minor damage occurred. Walnut. Felt by and awakened all in community; frightened many. Plaster cracked (observer heard of this). Ground cracked; water disturbed (observer heard of this on radio). Vehicle moved about 15 cm. Small objects shifted, overturned, and fell. Trees shook. Hanging objects swung violently east-west; also moderately north-south. Aftershocks felt at about 06:32 and 07:59. West Covina. Felt by, awakened, and frightened all in community. Plaster cracked. "All plaster and paint cracked over door and window frames; cabinets slightly separated from ceiling. A heavy brass hanging lamp swung violently and continued swinging for 10 minutes." Driveway paving cracked. Damage slight. Small objects shifted, overturned, and fell, including canned goods. Furniture shifted.

9 February, 06:00:41.6. Intensity VI--Continued.

Water splashed from swimming pools. Hanging objects swung violently east-west, north-south, and northwest-southeast. Trees and bushes shook; vehicles rocked. Shock lasted about 1 minute. Aftershocks at 08:00 and 21:30.

Whittier. Felt by and awakened all in community; frightened many. Plaster cracked and old cracks reopened. "Slight cracking at 45 percent of door openings; metal vents projecting above roof slightly out of plumb; lost about 20 cm. of pool water--waves in east-west direction. Stucco house and garage has lots of hairline cracks 'all over,' and fireplace chimney has two large cracks near base. Concrete at roadways cracked." Damage slight. Telephone poles swayed. Small objects shifted, overturned, and fell; furniture shifted. Hanging objects swung violently east-west and north-south. Trees and bushes shook; vehicles rocked.

Intensity V: Acton and about 6.4 km. northwest of, Adelanto (plaster cracked), Alta Loma, Apple Valley (plaster cracked), Arroyo Grande, Artesia, Arvin, Avalon, Avila Beach, Azusa, Bakersfield and vicinity, Banning (small plaster cracks), Barstow, Beaumont (plaster cracked), Bell (some cracks), Bellflower (some old cracks reopened), Bell Gardens, Big Bear City (aftershocks at 06:08, 08:10; very slight aftershocks during rest of day), Big Bear Lake, Bloomington, Bonsall, Boron, Brea (plaster cracked in one room), Bryn Mawr, Buellton, Buena Park, Buttonwillow, Cachuma Village and Cachuma Dam, Cadiz (plaster cracked), Calabasas (windows cracked), Caliente, California City (plaster cracked), California Hot Springs, California Valley (formerly Simmler; cracks widened in cement floor), Calimesa, Camp Pendleton, Cantil, Capistrano Beach, Carlsbad, Carpinteria, Cartago, Casmalia, Cathedral City, Cedar Glen, Cedarpines Park, Charter Oak, Cherry Valley, China Lake, Chino, City Of Industry, City Terrace, Claremont (three aftershocks), Coachella, Colton (rapid succession of aftershocks and large cluster of minor aftershocks around 21:30 and 22:30), Corona, Corona Del Mar (plaster cracked; several brief aftershocks for 1 hour after main shock), Coronado, Crest Park, Cuyama, Daggett, Dana Point, Death Valley Junction, Delano, Delkern (plaster cracked), Del Mar, Desert Center, Desert Hot Springs, Diamond Bar (one small plaster crack), Di Giorgio (moderately strong aftershock within 15 minutes of the first shock), Duarte, Ducor, Dunn Siding (about 48 km. northeast of Yermo), East Los Angeles, Edison, Edwards Air Force Base (windows cracked), El Cajon, El Mirage area (west of Adelanto), El Segundo (old plaster cracks reopened), El Toro and Marine Corps Air Station (aftershock at 07:58), Encinitas, Escondido, Essex (plasterboard cracked), Etiwanda, Fallbrook and vicinity, Farmersville, Fawnskin, Fellows, Fontana and 8 km. north of, Forest Falls, Fort Irwin, Fort Tejon State Historical Park (near Lebec), Fountain Valley, Frazier Park and Chuchupate Ranger Station (near Frazier Park), Garden Grove, Gaviota, George Air Force Base, Gilman Hot Springs (windows cracked), Glennville, Goleta (small aftershock about 1 hour later), Gorman, Grover City, Halcyon, Harbor City (plaster cracked slightly), Havilah (about 8 km. south by west of Bodfish; hairline plaster cracks), Helendale, Hemet (some cracks) and 8 km. east of, Hermosa Beach, Hesperia, Highgrove (window cracked), Hinkley, Homeland, Homestead (about 6.4 km. northwest of Inyokern on Highway 6), Huron (some plaster cracked), Idyllwild, Imperial, Indio, Inglewood (windows cracked), Irvine, Irwindale (three cracks), Johannesburg, Johnsondale, Keene, Kelso, Kettleman City, Kern River Powerhouse No. 1 (Southern California Edison Co., about 16 km.

9 February, 06:00:41.6. Intensity V--Continued.

east-northeast of Bakersfield), Kern Canyon Powerplant (Pacific Gas and Electric Co., mouth of Kern Canyon), Kernville, Laguna Beach, Laguna Hills (plaster cracked), La Jolla (small plaster cracks), Lake Arrowhead, Lake Isabella, Lakeview, La Mesa, Lamont, La Quinta, Laton, La Verne, Lawndale, Lebec and vicinity, Lemoore, Leucadia, Lincoln Acres, Little Lake, Llano, Loma Linda, Lompoc, Lone Pine, Loraine (about 16 km. east of Caliente), Los Alamitos, Los Olivos, Los Prietos Ranger Station (about 16 km. northwest of Santa Barbara), Los Serranos (Chino area), Lost Hills (hairline plaster cracks), Lucerne Valley, Ludlow, Lynwood, McFarland, McKittrick, March Air Force Base, Maricopa, Mecca (plaster cracked and slight cracks in brick seams), Meiners Oaks, Midway City, Mira Loma, Mojave (very slight plaster cracks), Monolith, Montclair, Montebello (small plaster cracks), Moreno, Morongo Valley, Mt. Baldy, Mt. Wilson, Murrieta, National City, Newberry Springs, Newbury Park, New Cuyama, Newport Beach, Norco, North Palm Springs, Norton Air Force Base, Norwalk (plaster cracked; damage very slight), Nuevo, Oak Grove Ranger Station (about 16 km. southeast of Aguanga), Oak View, Oceano, Oceanside, Ocotillo, Ocotillo Wells (Desert Ironwoods Motel, about 4.8 km. west of Ocotillo Wells), Ojai, Olancha, Orange (one crack in chimney), Oro Grande, Ozena Guard Station (near junction of Highway 33 and Lockwood-Ozena Road), Pacific Palisades, Pala, Palm Desert, Palm Springs, Palos Verdes Estates, Paramount, Pattiway (Hudson Ranch), Pearblossom and about 8 km. south of; most aftershocks felt), Pedley, Perris, Phelan, Pico Rivera (aftershock at 08:00), Pinon Hills, Pioneertown (small plaster cracks), Pixley, Pomona, Porterville, Poway, Pumpkin Center (about 25.7 km. south of Bakersfield), Ramona, Rancho Mirage (minor plaster cracks), Rancho Santa Fe, Randsburg, Redlands, Red Mountain, Rialto, Ridgecrest, Rimforest, Ripley, Rolling Hills Estates, Rosamond, Running Springs, Sage Fire Control Station (about 19.3 km. southeast of Hemet), Salton City (west shore of Salton Sea), San Bernardino (heavy aftershock at about 08:00), San Clemente, Sandberg (Sandberg Ranch), San Diego, San Dimas, San Juan Capistrano, San Luis Rey, San Pedro, Santa Barbara (aftershock at about 06:30), Santa Maria, Santa Paula, Santa Ynez and about 6.4 km. southeast of, Santa Ysabel, Santee, San Ysidro (slight cracks in brick wall), Seal Beach (plaster cracked; negligible damage), Seeley, Shandon, Shafter, Shoshone, Signal Hill, Silverado, Simi, Solana Beach (two aftershocks felt), Solvang, South Laguna, South San Gabriel, Springville, Stanton, Sugarloaf, Sultana, Summerland, Sun City, Sunnymead, Sunnyside, Sunset Beach (plaster cracked), Surfside, Taft, Tecate, Tecopa, Tehachapi and Cummings Ranch (near Tehachapi), Temecula, Temple City, Terra Bella, Thermal, Thousand Palms, Tipton, Trabuco Canyon (about 9.7 km. northeast of El Toro), Traver, Trona, Ventucopa area (Reyes-Wegis Cattle Ranch, about 9.7 km. west of Ventucopa in Santa Barbara Canyon), Ventura (aftershock at about 06:30 barely felt), Victorville (slight tremor at about 06:00 on Feb. 10), Vista, Warm Springs (about 14.5 km. north by east of Castaic), West-end, Westlake Village (west of Malibu Junction), Westminster (plaster cracked), Wheeler Ridge, White Water, Wild (about 8 km. northeast of Helendale), Wildomar, Wilmington (plaster cracked), Winchester, Wrightwood, Yermo, Yorba Linda (dry-wall cracked some), and Yucaipa.

9 February, 06:00:41.6--Continued.

Intensity IV: Alpaugh, Amboy, Armona, Atascadero, Avenal and about 9.7 km. northeast of, Baker, Big Pine, Bishop, Blythe, Bodfish, Borel Powerhouse (21.6 km. south by southwest of Kernville Powerhouse No. 3 ( $35^{\circ}47' N.$ ,  $118^{\circ}26' W.$ ), Borrego Springs, Boulevard, Brawley (Wieman Ranch, about 11.3 km. west of Brawley), Burrel, Cabazon and about 16.1 km. east of (San Gorgonio Pass), Calexico, Cambria, Camp Nelson, Cardiff By The Sea, Cholame and Bitterwater Pumping Station about 29 km. southeast of Cholame, Chula Vista, Cima, Corcoran, Creston, Darwin, Death Valley (Furnace Creek Inn and Furnace Creek Ranch), Delano, Del Rey, Dinuba, Dulzura area (Barrett Dam), Eagle Mountain, Earlimart, East Highlands, Exeter, Firebaugh, Five Points, Fowler, Guadalupe, Guatay, Helm, Herndon, Imperial Beach, Independence, Inyokern (about 7 km. west of at Beckman Ranch), Ivanhoe, Jacumba, Jamul, Joshua Tree, Keeler, Kern River Powerhouse No. 3 (near Kernville,  $35^{\circ}47' N.$ ,  $118^{\circ}26' W.$ ), Kingsburg, Kings Canyon National Park, Lakeside, La Panza (about 40.2 km. east of Santa Margarita, on Highway 58), Lemongrove, Lindsay, Long Valley Dam (about 40.2 km. northwest of Bishop at Lake Crowley), Los Alamos, Miracle Hot Springs, Miramar Naval Air Station (Miramar), Miramonte, Mountain Center, Mount Laguna, Needles, Nestor, Nipomo, Nipton, Oildale, Orosi, Parkfield, Paso Robles, Pauma Valley, Piedra and about 11.3 km. south of, Pine Valley, Pismo Beach, Poplar, Posey, Potrero, San Marcos, San Onofre Nuclear Generating Plant (near San Clemente), Selma, Spring Valley, Stratford, Strathmore, Surf, Templeton, Three Rivers and Ash Mountain (near Three Rivers), Tulare, Twentynine Palms, Valley Center, Vandenberg Air Force Base (about 16.1 km. northwest of Lompoc), Warner Springs, Wasco, Weldon, Woodville, Woody, Yettem, and Yucca Valley.

Intensity IV in Arizona: Bullhead City, Ehrenberg, and Poston.

Intensity IV in Nevada: Dyer, East Las Vegas, Goodsprings, Las Vegas, Lathrop Wells, and Overton.

Intensity I-III: Biola, Bridgeport, Bryson area (Weferling Ranch), Caruthers, Clovis, Control Gorge Powerplant (about 20.9 km. northwest of Bishop), Earp, El Nido, Fresno, Hanford, Heber, Holtville, Hornitos (near), June Lake, Kaweah, Le Grand, Lockwood, London (Dinuba area), Los Banos, Los Osos, Merced, Milo (about 8 km. northeast of, near Springville), Moss Landing (Pacific Gas and Electric Company Steamplant; no motion actually felt, but considerable float movement in water tank), Palomar Mountain, Palo Verde, Parker Dam, Pinedale, Piute Mountain area (about 21 km. southeast of Bodfish), Plaster City, Point Arguello, Red Top, Riverdale, San Ardo, San Miguel, Snelling, Stockton, Strawberry, Wofford Heights, and Yosemite National Park.

Intensity I-III in Arizona: Kingman and Topock.

Intensity I-III in Nevada: Beatty, Boulder City, Logandale, Moapa, Pahrump, and Tonopah.

9 February, 06:00:41.6--Continued.

Intensity I-III in Utah: Beryl.

Reported not felt: Acampo, Adelaida (19 km. west of Paso Robles), Ahwahnee, Alpine, Altaville, Amador City, Angels Camp, Antelope, Arnold, Aromas, Arroyo Seco Guard Station (about 19 km. southwest of Greenfield), Atwater, Auberry, Avery, Badger, Balch Camp ( $36^{\circ}55' N.$ ,  $119^{\circ}05' W.$ , Pacific Gas and Electric Co.), Ballico, Banta, Bar B Ranch (about 13 km. southwest of Idria), Bard, Bass Lake, Bear Valley, Benton, Big Creek, Big Oak Flat, Bonita, Burson, Camp Connell, Campo, Campo Seco, Camp Roberts, Cantua Creek, Capitola, Castle Air Force Base (Merced), Cayucos, Ceres, Choice Valley area (south of Cholame, near Choice Valley School), Cholame (Alley Ranch, about 5 km. southeast of Cholame), Chowchilla, Clements, Coalinga, Coarsegold, Columbia, Contival Ranch (about 21 km. south of Hollister, on Cienega Road), Copperopolis, Corralitos, Coulterville, Cressey, Crows Landing, Cutler, Deep Springs, Delhi, Denair, Descanso, Desert Center area (Julian Hinds Pumping Plant, about 16 km. west of Desert Center), Dos Palos, Douglasflat, Drytown, Dulzura, Dunlap, Easton, El Cajon, El Centro, El Dorado, Elk Grove, El Portal, Empire, Escalon, Exeter area (Exeter Fauver Ranch), Farmington, Fiddletown, Fish Camp, Friant, Galt, Glencoe, Gold Rock Ranch ( $32^{\circ}53' N.$ ,  $114^{\circ}52' W.$ ), Gonzales, Goshen, Greenacres, Greenfield, Groveland, Gustine, Harmony, Harris Ranch (11 km. south of Hollister, on Cienega Road), Hathaway Pines, Havasu Lake, Herald, Hickman, Hilmar, Hollister, Holt, Hughson, Huntington Lake, Idria, Ione, Jackson, Jamesburg area (Search Ranch, south of Carmel Valley), Jamestown, Jolon, Julian, Kerckhoff Powerhouse (NW 1/4, sec. 2 and NE 1/4 sec. 3, T. 10 S., R. 22 E., vicinity of Auberry), Kerman, Keyes, King City, Knights Ferry, La Grange, Lakeshore, Lathrop, Lee Vining, Linden, Livingston, Lockeford, Lodi, Lone Pine (19 km. south of), Long Barn, Lonoak area (Mee Ranch, intersection of Highways 25 and 198), Los Banos (San Luis Dam), Lucia and Circle M Ranch (on coast, about 32 km. south of Big Sur), Madera, Mammoth Lakes, Manteca, Mariposa, Martell, Mendota, Midpines, Moccasin, Modesto and South Modesto, Mokelumne Hill, Monterey, Morro Bay, Mountain Ranch, Murphys, Newman, Niland, North Fork, Oakdale, Oakhurst, O'Neals, Orange Cove, Pacheco (Martinez area), Panoche ( $36^{\circ}36' N.$ ,  $120^{\circ}50' W.$ ), Paicines and vicinity (Bear Valley Fire Control Station at 25820 Airline Highway, and Mulberry), Parlier, Patterson, Pine Canyon (about 13 km. southwest of King City), Pinecrest, Pine Grove, Pinnacles National Monument (Pinnacles), Pioneer, Planada, Pozo (about 24 km. southeast of Santa Margarita), Plymouth, Prather, Priest Valley ( $36^{\circ}11' N.$ ,  $120^{\circ}42' W.$ ), Rail Road Flat, Raisin, Ranchita, Raymond, Reedley, Richgrove, Ripon, Riverbank, Sacramento area (Florin and Parkway), Salida, Salinas, San Andreas, San Francisco International Airport (San Bruno), Sanger, San Joaquin, San Jose, San Juan Bautista, San Lucas, San Luis Obispo, San Simeon and Hearst Ranch, Santa Margarita and about 3 km. southwest of, Santa Nella, Santa Rita Park, Saticoy, Sequoia National Park, Shaver Lake, Sheep ranch, Slack Canyon ( $36^{\circ}05' N.$ ,  $120^{\circ}40' W.$ ), Soledad, Sonora, Soulsbyville, South Dos Palos, Squaw Valley (near Orange Cove), Standard, Stevinson, Stovepipe Wells Village (Death Valley National Monument), Sutter, Three Rivers Powerplant No. 1 ( $36^{\circ}28' N.$ ,  $118^{\circ}52' W.$ ), Thornton, Tinemaha Reservoir (about

9 February, 06:00:41.6. Reported not felt--Continued.

29 km. north of Independence), Tollhouse, Toms Place (about 32 km. northwest of Bishop, just below Crowley Lake), Tracy, Tranquillity, Tres Pinos, Tuolumne, Turlock, Twain Harte, Vallecito (Calaveras County), Valley Home, Valley Springs, Victor, Vidal, Visalia, Volcano, Volta, Wallace, Walnut Grove, Waterford, Westley, Westmorland, Westpoint, White Pines, Wilseyville, Wilton, Winterhaven, Winters, Winton, Wishon, Woodbridge, and Woodlake.

Reported not felt in Arizona: Bagdad, Bouse, Dateland, Gadsden, Hackberry, Lake Havasu City, Oatman, Quartzsite, Roll, Salome, San Luis, Somerton, Tacna, Temple Bar Marina, Valentine, Wellton, Yucca, and Yuma.

Reported not felt in Nevada: Arden, Bunkerville, Caliente, Carp, Goldfield, Henderson, Hiko, Indian Springs, Luning, Mercury, Mesquite, Mina, Panaca, Pioche, and Searchlight.

Reported not felt in Utah: Cedar City, Central, Enterprise, Gunlock, Hurricane, Ivins, Kanarraville, La Verkin, Leeds, Milford, Modena, Newcastle, New Harmony, Pintura, Rockville, Saint George, Santa Clara, Springdale, Toquerville, Virgin, and Washington.

9 February, 06:10:28.0. Mag. 5.3.

Epicenter  $34^{\circ}24.7' N.$ ,  $118^{\circ}24.0' W.$ , southern California, at a depth of about 8 km., P. Aftershock of San Fernando earthquake.

Int. V at La Canada. Pool water splashed violently. At 07:00, pool water was still swaying about 4 cm. from end to end.

Also felt at Big Bear City (shocks felt for balance of the day), Burbank (strong shock; about 12 shocks during the next hour, and approximately 42 aftershocks reported felt throughout the day of Feb. 9), Di Giorgio (moderately strong aftershock within 15 minutes of the first shock), and in the Windsor Hills area north of Inglewood.

9 February, 06:16:12.9. Mag. 4.1.

Epicenter  $34^{\circ}20.3' N.$ ,  $118^{\circ}19.9' W.$ , southern California, at a depth of about 11 km., P. Aftershock of San Fernando earthquake.

Felt at Redondo Beach.

9 February, 06:19:50.2. Mag. 4.0.

Epicenter  $34^{\circ}21.4' N.$ ,  $118^{\circ}24.0' W.$ , southern California, at a depth of about 12 km., P. Aftershock of San Fernando earthquake.

Felt at La Canada (moderately severe) and Riverside (mild shock).

9 February, 06:43:46.7. Mag. 5.2.

Epicenter  $34^{\circ}18.5' N.$ ,  $118^{\circ}27.2' W.$ , southern California, at a depth of about 6 km., P. Aftershock of San Fernando earthquake.

Felt at Goleta (probably the shock reported felt about an hour after the main shock), North Hollywood, and in the Windsor Hills area north of Inglewood.