

## ARIZONA AND CALIFORNIA.

### TRIANGULATION STATIONS.

Oatman special quadrangle, Kingman and Mohave City 30' quadrangles.

MOHAVE COUNTY, ARIZONA; SAN BERNARDINO COUNTY, CALIFORNIA.

Points located by L. F. Biggs in 1916, based on Cone and Peak triangulation stations, on approximate North American datum.

#### CONE No. 2, MOHAVE COUNTY, ARIZ.

A sharp rocky peak, well known as "The Boundary Cone," about 17 miles north-east of Needles, Calif. The road to Kingham via the Snowball mine passes by the base of the peak. To go to Cone from Needles, take road to Snow Ball mine, pass the Cone. Stop at the first big wash that the road crosses after passing the peak and go up the wash a short distance; the best and perhaps the only way up. Horses can not be taken much farther than the wash. There are several springs within 2 or 3 miles of the station. Plenty of water at Leland mine about 3 miles a little west of north of station.

Station mark: A bronze triangulation tablet wedged in solid rock, about 2 inches under ground, under center of a cairn 7 feet high.

[Latitude 34° 59' 01.39". Longitude 114° 24' 54.54".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Sphinx.....	333 32 18.97	153 36 43.44	4.4215004	.....
Knoll.....	49 51 22.25	229 44 04.98	4.4047806	.....
Hill.....	69 08 44.90	248 59 57.08	4.3985648	.....
Peak.....	95 48 47.00	275 39 14.25	4.4057480	.....
Powell.....	356 11 33.97	176 12 24.71	4.5321828	.....
Whale.....	19 26 32.62	199 22 08.57	4.5484345	.....

#### FORT MOHAVE, MOHAVE COUNTY, ARIZ.

Center of large water tank at Fort Mohave.

[Latitude 35° 02' 39.450". Longitude 114° 37' 19.712".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Nutt Mount.....	258 53 52.89	79 03 10.35	4.3987610	15.564
Hardy.....	264 31 39.96	84 38 06.02	4.2333038	10.633
Monument 1679.....	277 09 39.32	97 16 21.01	4.2523358	11.109
Cone No. 2.....	289 31 09.76	109 38 17.32	4.3021699	12.460
Peak (Calif.).....	56 59 53.71	236 57 28.21	3.8844803	4.762

**HARDY, MOHAVE COUNTY, ARIZ.**

On the highest point of Hardy Range, about 4 miles northwest of Oatman and about 0.5 mile west of the Jerome-Oatman mine. To reach station take road to Jerome-Oatman property, thence trail to mine, thence uphill.

Station mark: Tablet cemented in rock under center of cairn 7 feet high.

[Latitude 35° 03' 31.888". Longitude 114° 26' 07.495".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Peak.....	76 12 24.55	256 03 33.15	4.3832724	15.018
Fort Mohave.....	84 38 06.02	264 31 39.96	4.2333038	10.633
Nutt Mount.....	247 10 50.94	67 13 42.23	3.9133976	5.090
Cone No. 2.....	347 29 01.64	167 29 43.51	3.9313729	5.305
Monument 1679.....	349 45 23.76	169 45 39.56	3.5937759	2.439

**MONUMENT 1679, MOHAVE COUNTY, ARIZ.**

A U. S. Mineral Location Monument No. 1679, on top of hill, just west of the old Leland mine.

Station mark: Not described.

NOTE.—The General Land Office tied to this station.

[Latitude 35° 01' 26.568". Longitude 114° 25' 39.966".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Fort Mohave.....	97 16 21.02	277 09 39.32	4.2523358	11.109
Hardy.....	169 45 39.56	349 45 23.76	3.5937759	2.439
Nutt Mount.....	224 14 15.95	44 16 51.36	3.9922916	6.104
Cone No. 2.....	345 33 27.15	165 33 53.21	3.6646055	2.870

**NUTT MOUNT, MOHAVE COUNTY, ARIZ.**

On the most western of four prominent points of Mount Nutt. From Oatman take road to Gold Roads Summit, thence follow old trail around ridge to station. This is not a very good trail, but horses can be ridden over it. Another route is to take trail up canyon, follow pipe lines to end, thence keep main canyon following all left-hand canyons till the uppermost spring is reached, where there is a small concrete head gate and an old camp site, thence turn to left uphill and follow an old burro trail to top of ridge, thence go north to station. It is not advisable to take horses beyond spring. There is a higher point about 0.75 mile east of station, but not visible from Hardy.

Station mark: A bronze tablet.

Signal and reference mark: A cairn 7 feet high with drill hole under center, 2.5 feet toward Hardy from tablet.

[Latitude 35° 05' 14.885". Longitude 114° 21' 09.407".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Cone No. 2.....	26 23 25.82	206 21 16.57	4.1087879	7.982
Monument 1679.....	44 16 51.36	224 14 15.95	3.9922916	6.104
Hardy.....	67 13 42.23	247 10 50.94	3.9133976	5.090
Peak.....	73 58 22.97	253 46 40.19	4.5090153	20.062
Fort Mohave.....	79 03 10.35	258 53 52.89	4.3987610	15.564

**PEAK, SAN BERNARDINO COUNTY, CALIF.**

A U. S. Coast and Geodetic Survey triangulation station on the highest peak of the foothills, 2 miles due west of Von Schmidt.

Station mark: A shallow hole drilled in top of a large irregular mass of hard rock set in ground.

[Latitude 35° 00' 23.910". Longitude 114° 41' 33.211".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Fort Mohave (1916).....	236 57 28.21	56 59 53.71	3.8844803	4.762
Nutt Mount (1916).....	253 46 40.19	73 58 22.97	4.5090153	20.062
Hardy (1916).....	256 03 33.15	76 12 24.55	4.3832724	15.018
Cone No. 2 (Ariz., 1902).....	275 39 14.25	95 48 47.00	4.4057480	15.816
Sphinx (1902).....	305 05 22.51	125 19 18.28	4.6571412	.....
Knoll (1902).....	342 31 30.78	162 33 45.08	4.2977878	.....
Hill (1902).....	350 19 19.40	170 20 03.60	4.0663630	.....

**CALIFORNIA.****TRIANGULATION STATIONS.**

Burney, Dixie, Paynes Creek, Prattville, and Susanville quadrangles.

LASSEN, PLUMAS, SHASTA, AND TEHAMA COUNTIES.

During the season of 1916 triangulation was extended over the above-named quadrangles by Charles F. Urquhart.

Positions are on North American datum as derived from U. S. Coast and Geodetic Survey stations Bally, Round, and Lyons. Seventeen stations were occupied, 2 being primary stations, Lyons and Round, of the U. S. Coast and Geodetic Survey, and 13 points were located by intersections. Bally, a Coast and Geodetic Survey station, was resected on as a check. The final computations were made at the Sacramento, Calif., office.

**ANTELOPE, LASSEN COUNTY, CALIF. (Not occupied.)**

Highest point of prominent mountain, locally known as Antelope Peak or Campbell Peak. It is between the south end of Eagle Lake and Pine Creek Valley.

[Latitude 40° 35' 33.848". Longitude 120° 54' 34.549".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Pegleg.....	9 50 58.80	189 49 20.42	4.3197279	12.974
Red Cinder.....	69 32 09.01	249 19 01.21	4.4837507	18.928
Harvey.....	147 21 15.83	327 16 22.49	4.2917915	12.166

**BALD MOUNTAIN, SHASTA COUNTY, CALIF.**

On the highest point of Bald Mountain, a well-known peak, about 8 miles a little east of south of Fall River Mills, and immediately above and south of the Peterson and St. Johns ranches. The mountain is not bald as the name would suggest but was originally covered with pine timber from 1 to 3 feet on the stump. The timber was cut on highest point of mountain except a pine tree 40 or 50 feet high, which was trimmed and left for a signal. Timber was not cut on the east and west ends of mountain, but the signal tree is high enough to be seen over it. Animals can be ridden to

summit; the easiest approach is from the south, though it was ascended from the northwest in 1916.

Station mark: A triangulation tablet set in large rock on highest part of mountain and instrument set over tablet for observation.

Signal is 10.49 meters in direction of Fall River Mills from triangulation station. Position of tablet computed.

[Latitude 40° 54' 03.984". Longitude 121° 22' 39.319".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
West Prospect.....	0	09	59.10	180	09	50.36	4.5324311	21.173
Lassen.....	13	11	45.34	193	06	48.02	4.6724888	29.231
Crater.....	42	08	21.94	221	58	55.80	4.4817026	18.839
Burney.....	63	40	24.74	243	30	36.47	4.3714053	14.613
Saddle.....	143	06	13.40	323	01	35.05	4.2181368	10.268
Fall River.....	156	54	55.89	336	52	36.06	4.1043250	7.901
McArthur.....	173	52	10.26	353	51	27.65	4.2099421	10.076
Pittville.....	192	03	23.36	12	05	02.39	4.2274765	10.491
Snell.....	205	57	02.26	25	59	21.91	4.0562255	7.073
Dixie.....	265	32	58.80	85	44	10.89	4.3818106	14.968
Harvey.....	301	26	18.29	121	39	45.37	4.5308599	21.096
Red Cinder.....	346	05	02.54	166	10	10.87	4.6655698	28.769
Prospect.....	355	40	43.18	175	41	59.44	4.5620381	22.667

#### BALLY, SHASTA COUNTY, CALIF.

A station of the U. S. Coast and Geodetic Survey, on the more northern of the two main peaks on the summit of Bally Mountain, a prominent and well-known mountain about 15 miles by road west of Redding, Calif. The station mark, described below, is in the top of a rock on the north side of the most prominent group of rocks on the peak and 5 or 6 feet below the top of the group. Station mark: A  $\frac{3}{4}$ -inch copper bolt, 3 inches long, cemented into a drill hole in the rock, and directly above the bolt in the same drill hole is cemented an old-type station mark. A cross in the top of the copper bolt and another in the polished center of the disk mark the station.

Reference marks: A drill or punch hole in the top of a  $\frac{3}{4}$ -inch copper bolt, 3 inches long, which is leaded or cemented into a drill hole in a large rock with the top of the bolt flush with the surface. There are two such marks at the following distances and azimuths from the station: 29.69 meters, 126° 59'; and 20.22 meters, 332° 22'.

[Latitude 40° 36' 11.939". Longitude 122° 39' 00.370".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Round.....	248	47	16.01	69	14	22.18	4.7972333	38.957
Snow.....	257	43	24.74	78	17	06.06	4.8719614	46.271
Crater.....	262	45	54.49	83	26	14.42	4.9440334	54.624
Lassen.....	277	06	14.50	97	50	56.09	4.9907799	60.832
Turner.....	290	42	40.44	111	22	55.57	4.9730552	58.399
Lyons.....	291	00	16.70	111	39	38.03	4.9640937	57.206
Inskip.....	295	34	26.22	116	01	59.83	4.8238630	41.420
Kent (C. & G. S.).....	6	01	26.68	185	58	03.60	4.8514233	.....

#### BROKEOFF, SHASTA-TEHAMA COUNTY LINE, CALIF. (Not occupied.)

A small rock cairn on highest point of Brokeoff Peak, a prominent mountain about 4 miles southwest of Lassen.

[Latitude 40° 26' 45.716". Longitude 121° 33' 31.669".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Turner.....	16 39 25.66	196 37 12.01	4.2304507	10.563
Lassen.....	224 22 13.87	44 24 21.32	3.8204344	4.110
Red Cinder.....	257 59 54.67	78 12 04.99	4.4327868	16.832
Butt.....	329 44 20.35	149 51 04.40	4.4667596	18.202

**BURNEY, SHASTA COUNTY, CALIF.**

Station is on the highest point of Burney Butte, a well-known mountain about 6 miles south-southeast of Burney post office. No way was found to summit of this peak. The shortest and best route is probably from Burney spring on south side of mountain. Road from Hat Creek to Tamarack Flat passes this spring.

Signal: A rock cairn 6 feet at base and 6 feet high.

Station mark: A bronze triangulation tablet set in rock under center of cairn.

[Latitude 40° 48' 24.889". Longitude 121° 37' 38.610".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Snow.....	62 24 00.38	242 17 41.34	4.1865539	9.548
Round.....	89 47 24.34	269 34 27.81	4.4448735	17.307
Saddle.....	205 05 55.34	25 11 06.23	4.4174010	16.246
Bald Mountain.....	243 30 36.47	63 40 24.74	4.3714053	14.613
Dixie.....	254 34 51.28	74 55 51.10	4.6697079	29.044
Harvey.....	278 06 41.95	98 29 55.58	4.7039186	31.424
Red Cinder.....	316 48 28.73	137 03 22.63	4.6740212	29.334
Prospect.....	317 16 21.80	137 27 24.31	4.5468666	21.889
West Prospect.....	318 15 13.99	138 24 57.70	4.4998303	19.642
Lassen.....	343 32 28.70	163 37 17.48	4.5664436	22.898
Crater.....	356 20 06.60	176 20 28.06	4.0819458	7.502

**BUTT, TEHAMA COUNTY, CALIF.**

Signal is on highest point of Butt Mountain, a well-known mountain at source of East Fork of Deer Creek and just north of Butt Creek at a point 6 miles below the source. There is a very good road from Chester, on the Red Bluff and Susanville road, to Deer Creek Meadows, where there is good pasture. Distance from Chester to Deer Creek Meadows about 10 miles. There is another road (not much used) from Morgan Springs to Deer Creek Meadows. A trail crosses the ridge from Deer Creek Meadows to Butt Creek, which can be used to meadow on summit of ridge; cross lower end of this meadow and go up most northern ridge leading west from peak. Animals were taken to summit in 1916.

This point was occupied by the Wheeler Survey in 1878, and a very good cairn was found standing. The new cairn was built in the same position.

Signal: A cairn about 8 feet high and 6 feet at base.

Station mark: A bronze triangulation tablet set under center of cairn.

[Latitude 40° 13' 04.955". Longitude 121° 23' 07.376".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Colby.....	57 13 01.87	237 07 38.99	4.1488544	8.754
Lyons.....	113 21 37.23	293 11 46.79	4.3711283	14.604
Turner.....	114 46 21.34	294 37 24.56	4.3345578	13.425
Brokeoff.....	149 51 04.40	329 44 20.35	4.4667596	18.202
Lassen.....	161 27 32.21	341 22 55.13	4.5009723	19.693
Prospect.....	184 56 06.51	4 57 40.42	4.5979369	24.620
Red Cinder.....	200 53 11.92	20 58 36.28	4.5196298	20.558
Pegleg.....	240 09 17.40	60 26 07.53	4.6278285	26.374
Dyer.....	265 21 44.10	85 35 25.83	4.4796368	18.749
Keddie.....	270 07 51.00	90 24 01.20	4.5505945	22.077
Kettle.....	277 42 06.41	98 07 52.92	4.7577731	35.573

**COLBY, TEHAMA COUNTY, CALIF. (Not occupied.)**

Station is center of floor of tent used by U. S. Forest Service for lookout station.

Reference mark: A triangulation tablet set in rock 5.3 feet from southeast corner of tent, and 9.7 feet from northeast corner of tent.

[Latitude 40° 08' 57.337". Longitude 121° 31' 27.782".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Turner.....	154 55 35.78	334 52 02.53	4.2648901	11.435
Lassen.....	182 35 38.89	2 36 25.79	4.5765499	23.437
Butt.....	237 07 38.99	57 13 01.87	4.1488544	8.754

**CONE, SHASTA COUNTY, CALIF. (Not occupied.)**

The highest point of prominent peak on north side of Battle Creek and north of Mr. Long's ranch on Red Bluff and Manton road. About 7 miles west-southwest of Shingleton.

[Latitude 40° 27' 24.361". Longitude 121° 59' 56.731".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Round.....	185 10 57.36	5 12 34.94	4.5898083	24.163
Snow.....	209 13 45.66	29 21 58.77	4.5611916	22.623
Crater.....	230 06 40.77	50 21 32.57	4.6227303	26.066
Lyons.....	299 16 42.51	119 30 41.94	4.5450833	21.799
Inskip.....	339 18 11.37	159 20 23.56	4.1342037	8.463

**COYOTE, LASSEN COUNTY, CALIF. (Not occupied.)**

Station is a rock cairn on prominent mountain on east side of Mountain Meadows and 12 or 15 miles east of Westwood.

[Latitude 40° 17' 25.131". Longitude 120° 49' 53.496".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Dyer.....	71 44 43.97	251 36 57.62	4.2542995	11.160
Red Cinder.....	123 08 45.80	302 52 38.30	4.6231468	26.091
Pegleg.....	141 55 02.34	321 50 22.30	4.2184094	10.274

**CRATER, SHASTA COUNTY, CALIF.**

Station is on the highest point of high mountain locally known as Magee Peak. The old Geological Survey map gives this point as Crater Peak, and the Coast Survey used the same name in 1904, consequently it has been retained. Animals can be ridden to within about 400 feet (elevation) of the summit on north side of mountain starting from Tamarack Flat. The U. S. Forest Service has a lookout on this mountain but no cabin has been built.

Signal: A rock cairn 6 feet at base and 7 feet high with small tree in center.

Station mark: A bronze triangulation tablet set in solid rock under center of cairn.

[Latitude 40° 41' 54.271". Longitude 121° 37' 05.738".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Lyons.....	2 18 38.79	182 17 49.91	4.6443176	27.395
Inskip.....	34 52 20.05	214 39 41.81	4.6828360	29.935
Cone.....	50 21 32.57	230 06 40.77	4.6227303	26.066
Bally.....	83 26 14.42	262 45 54.49	4.9440334	54.624
Snow.....	108 55 10.59	288 48 30.52	4.1821344	9.451
Burney.....	176 20 28.06	356 20 06.60	4.0818458	7.502
Saddle.....	196 06 58.37	16 11 47.41	4.5703553	23.107
Bald Mountain.....	221 58 55.80	42 08 21.94	4.4817026	18.839
Dixie.....	241 04 40.38	61 25 17.34	4.7041650	31.442
Harvey.....	264 18 52.05	84 41 42.70	4.6949513	30.782
West Prospect.....	299 38 35.70	119 47 57.35	4.3678633	14.495
Prospect.....	300 52 43.35	121 03 23.72	4.4305236	16.745
Red Cinder.....	305 21 04.94	125 35 36.45	4.5873406	24.027
Lassen.....	337 27 40.91	157 32 07.98	4.4017203	15.670
Turner.....	359 45 49.27	179 45 54.30	4.6465358	27.535

**DE WITT, TEHAMA COUNTY, CALIF.**

Station is on a point well known as De Witt Peak, on a ridge between Antelope and Mill creeks. It is about 7 miles east of Mr. D. B. Lyon's ranch in the Sacramento Valley, 7 or 8 miles east of Los Molinos on the Southern Pacific R. R. There is a road from Lyon's ranch to foot of hill.

Signal: A cairn 6 feet at base and 6 feet high with tree in center.

Station mark: A drill hole in solid rock under center of cairn.

[Latitude 40° 09' 27.630". Longitude 121° 56' 46.127."]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Inskip.....	180 52 56.22	0 53 4.85	4.3111148	12.719
Lyons.....	238 25 51.97	58 37 45.72	4.4861773	19.034

**DIXIE, LASSEN COUNTY, CALIF.**

Station is on a prominent hill about 2 or 3 miles north of the Clarke & Cox ranch in Dixie Valley; a well-known valley about 25 miles east-southeast of Fall River Mills. There is a good road from the latter place to the valley. The hill was covered with mahogany trees, which were cut down except one.

Signal: A mahogany tree standing alone, can be seen from the Clarke & Cox ranch.

Station mark: A bronze triangulation tablet set in rock under center of signal tree.

Position of tablet computed.

[Latitude 40° 55' 03.309". Longitude 121° 05' 33.022".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Crater.....	61 25 17.34	241 04 40.38	4.7041650	31.442
Burney.....	74 55 51.10	254 34 51.28	4.6697079	29.044
Bald Mountain.....	85 44 10.89	205 32 58.80	4.3818106	14.968
Saddle.....	108 40 23.36	288 24 32.07	4.5536808	22.235
Harvey.....	345 59 34.01	106 01 50.22	4.3052244	12.548

**DYER, LASSEN AND PLUMAS COUNTY LINE, CALIF.**

Station is on bald point at northwest end of ridge that has Dyer Peak at one end and Keddie Peak at the other. It is about 5 miles a little west of south from Westwood and about 5 miles east of Lake Almanor and is owned by the Great Western Power Co. It can be easily reached on horseback from almost any direction, but the top

of ridge between it and Keddie Peak is rather rough. This point was probably used by the Wheeler Survey in 1878, but no description appears in the report. A very good rock cairn was found standing, and station was rebuilt on exactly the same spot.

Signal: A rock cairn about 6 feet at base and 6 feet high having a fir tree in center.

Station mark: A bronze triangulation tablet set in solid rock under center of cairn.

[Latitude 40° 14' 22.114". Longitude 121° 01' 55.040".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Butt.....	85 35 25.83	265 21 44.10	4. 4796368	18. 749
Turner.....	97 48 31.95	277 25 52.63	4. 7001031	31. 150
Lassen.....	124 44 25.11	304 26 03.94	4. 6877907	30. 279
Red Cinder.....	147 31 32.92	327 23 13.26	4. 5293560	21. 024
Pegleg.....	200 03 58.81	20 07 05.83	4. 2980235	12. 342
Coyote.....	251 36 57.62	71 44 43.97	4. 2542995	11. 160
Kettle.....	291 00 05.14	111 12 10.86	4. 4550164	17. 716
Keddie.....	295 02 00.65	115 04 29.35	3. 7787835	3. 734

#### FALL RIVER, SHASTA COUNTY, CALIF. (Not occupied. No check.)

Station mark: Steeple on church in town of Fall River Mills.

[Latitude 41° 00' 23.120". Longitude 121° 26' 12.655".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Saddle.....	107 03 33.63	287 01 14.98	3. 7129613	3. 209
Bald Mountain.....	336 52 36.06	156 54 55.89	4. 1043250	7. 901

#### HARVEY, LASSEN COUNTY, CALIF.

On the highest point of Harvey Mountain, which is on the northeast side of Harvey Valley. The greater part of the valley is owned by Mr. D. B. Lyon, but the Forest Service has a small pasture at the Harvey Valley Station, which is in the southeast end of the valley and is 5 miles south of triangulation station. There is a good trail from the Forest Service station to summit of mountain, which is a lookout station, but there is no house on summit. The Forest Service station is about 32 miles from Westwood by road. The valley can be reached by road from Fall River Mills, also from Dixie Valley, but the latter road is not much better than a pack trail. The mountain is covered with timber except the rocky peak on summit, and there are a few tall trees on its side reaching about as high as summit of mountain.

Signal: A cairn 6 feet at base and 6 feet high.

Station mark: A nail set in solid rock under center of cairn.

There is a small fir tree over center of mark; position of mark computed.

[Latitude 40° 44' 28.067". Longitude 121° 02' 04.698".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Red Cinder.....	33 26 34.22	213 18 18.28	4. 5125597	20. 226
Prospect.....	54 46 30.22	234 34 21.96	4. 5076492	19. 999
Lassen.....	54 56 41.21	234 38 20.66	4. 6869818	30. 223
West Prospect.....	60 50 31.38	240 37 04.07	4. 5231857	20. 727
Crater.....	84 41 42.70	264 18 52.05	4. 6949513	30. 782
Burney.....	98 29 55.58	278 06 41.95	4. 7039186	31. 424
Bald Mountain.....	121 39 45.37	301 26 18.29	4. 5308599	21. 096
Saddle.....	128 42 56.44	308 24 50.49	4. 6962252	30. 873
Dixie.....	166 01 50.22	345 59 34.01	4. 3052244	12. 548
Antelope.....	327 16 22.49	147 21 15.83	4. 2917915	12. 166
Kettle.....	337 50 29.75	158 02 45.49	4. 8523500	44. 228
Pegleg.....	349 14 12.85	169 17 27.11	4. 5764747	23. 433



**INSKIP, TEHAMA COUNTY, CALIF.**

Station is on highest point of Inskip Hill, a well-known point about 1 mile west of Paynes Creek post office on the Red Bluff and Susanville road. It can be easily reached with saddle animals.

Signal: A rock cairn 6 feet at base and 6 feet high with tree in center.

Station mark: A bronze triangulation tablet under center of cairn.

[Latitude 40° 20' 31.214". Longitude 121° 56' 32.772".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
De Witt.....	0 53 04.85	180 52 56.22	4.3111148	12.719
Bally.....	116 01 59.83	295 34 26.22	4.8238630	41.420
Cone.....	159 20 23.56	339 18 11.37	4.1342037	8.463
Round.....	178 35 19.06	358 34 43.87	4.7116944	31.992
Snow.....	196 16 28.31	16 22 28.27	4.6661722	28.809
Crater.....	214 39 41.81	34 52 20.05	4.6828950	29.935
Lassen.....	246 13 15.08	66 30 17.79	4.6085032	25.226
Lyons.....	279 45 10.37	99 56 56.83	4.4176646	16.256

**KEDDIE, LASSEN-PLUMAS COUNTY LINE, CALIF. (Not occupied.)**

The highest point of Keddie Peak, which is about 5 miles north-northeast of Greenville post office and on south side of Mountain Meadows.

[Latitude 40° 12' 59.616". Longitude 120° 58' 04.799".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Butt.....	90 24 01.20	270 07 51.00	4.5505945	22.077
Dyer.....	115 04 29.35	295 02 00.65	3.7787835	3.734
Red Cinder.....	142 49 26.65	322 38 38.02	4.5914659	24.256
Pegleg.....	183 44 25.62	3 45 03.64	4.3272192	13.200

**KETTLE, PLUMAS COUNTY, CALIF. (Not occupied.)**

A Forest Service cabin on Kettle Rock, about 10 miles northeast of Taylorsville.

[Latitude 40° 08' 49.304". Longitude 120° 43' 10.531".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Butt.....	98 07 52.92	277 42 06.41	4.7577731	35.573
Dyer.....	111 12 10.86	291 00 05.14	4.4550164	17.716
Red Cinder.....	131 04 45.22	310 44 18.39	4.7725326	36.803
Pegleg.....	145 45 32.28	325 36 32.14	4.5442227	21.756
Harvey.....	158 02 45.49	337 50 29.75	4.8523500	44.228

**LASSEN, SHASTA COUNTY, CALIF.**

Station is the highest point of Lassen Peak. It can be reached from Mineral, Morgan, or Drakesbad by road and trail to timber line on the south side, thence by trail to summit. About 2,000 feet above timber line is rather steep to ride an animal, but a pack animal with about 90 pounds of instruments was taken to the summit. A constant issue of steam from the mountain interferes with view to the northwest, but it can be seen through from time to time. The part of the mountain from which steam, ashes, and sometimes lava issue is about 200 yards northwest of station. The position of the tablet was computed.

Signal: A cairn 6 feet at base and 5 feet high.

Station mark: A triangulation tablet set in solid rock under center of cairn.

[Latitude 40° 29' 18.939". Longitude 121° 30' 15.296".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Colby.....	2 36 25.79	182 35 38.89	4.5765499	23.437
Turner.....	24 21 24.63	204 17 03.66	4.3628774	14.329
Lyons.....	28 56 25.67	208 51 10.91	4.3748371	14.729
Brokeoff.....	44 24 21.32	224 22 13.87	3.8204344	4.110
Inskip.....	66 30 17.79	246 13 15.08	4.6085032	25.226
Bally.....	97 50 56.09	277 06 14.50	4.9907799	60.832
Snow.....	139 38 01.75	319 26 55.34	4.5691893	23.043
Crater.....	157 32 07.98	337 27 40.91	4.4017203	15.670
Burney.....	163 37 17.48	343 32 28.70	4.5664436	22.898
Bald Mountain.....	193 06 48.02	13 11 45.34	4.6724888	29.231
West Prospect.....	222 08 17.02	42 13 10.68	4.1995763	8.838
Harvey.....	234 38 20.66	54 56 41.21	4.6869818	30.223
Prospect.....	234 58 15.90	55 04 28.17	4.2162828	10.224
Red Cinder.....	267 39 55.94	87 49 59.07	4.3402539	13.602
Pegleg.....	280 41 55.97	101 03 26.53	4.6788424	29.661
Dyer.....	304 26 03.94	124 44 25.11	4.6877907	30.279
Butt.....	341 22 55.13	161 27 32.21	4.5009723	19.693

## LYONS, TEHAMA COUNTY, CALIF.

A station of the U. S. Coast and Geodetic Survey about 5 miles east of Lyonsville post office, on a ridge known locally as Bald Hill, about 300 yards from the summit of the ridge, on the shoulder extending toward Lyonsville, and in the middle of a large group of boulders. A lone fir tree stands about 50 meters south by east from the station. The best route to the station is from Mineral post office.

Station mark: A  $\frac{3}{8}$ -inch copper bolt 3 inches long, cemented into a drill hole in the rock, and directly above the bolt in the same drill hole is cemented an old-type station mark. A cross in the top of the copper bolt and another in the polished center of the disk mark the station.

Reference marks: A drill or punch hole in the top of a  $\frac{3}{8}$ -inch copper bolt 3 inches long, which is leaded or cemented into a drill hole in large rock with the top of the bolt flush with the surface; marks are at the following distances and azimuths from the station: 29.69 meters, 126° 59'; and 20.22 meters, 332° 22'.

[Latitude 40° 18' 06.100". Longitude 121° 38' 21.008".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
De Witt.....	58 37 45.72	238 25 51.97	4.4861773	19.034
Inskip.....	99 56 56.83	279 45 10.37	4.4176646	16.256
Bally.....	111 39 38.03	291 00 16.70	4.9640937	57.206
Cone.....	119 30 41.94	299 16 42.51	4.5450833	21.799
Round.....	154 22 27.03	334 10 02.03	4.7931190	38.590
Snow.....	165 32 56.28	345 27 06.72	4.7039865	31.429
Crater.....	182 17 49.91	2 18 38.79	4.6443176	27.395
Lassen.....	208 51 10.91	28 56 25.67	4.3748371	14.729
Red Cinder.....	236 55 59.39	57 11 16.16	4.5993128	24.698
Butt.....	293 11 46.79	113 21 37.23	4.3711283	14.604
Marysville Butte (C. & G. S.).....	7 18 50.85	187 11 54.82	5.0885296	.....
Snow Mountain east (C. & G. S.).....	43 24 27.26	222 41 41.92	5.1444074	.....
Kent (C. & G. S.).....	68 42 27.63	247 59 59.25	5.0030155	.....

## M'ARTHUR, SHASTA COUNTY, CALIF. (No check. Not occupied.)

Station mark: Cupola on school building on south side of town of McArthur.

[Latitude 41° 02' 46.651". Longitude 121° 23' 53.448".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Saddle.....	70 26 16.09	250 22 26.00	3.9390518	5.400
Bald Mountain.....	353 51 27.65	173 52 16.26	4.2099421	10.076

**PEGLEG, LASSEN COUNTY, CALIF.**

Station is on the highest point of Pegleg Mountain, a well-known peak about 2.5 miles south of Westwood Junction on the Southern Pacific R. R., 11 miles north of Westwood. The U. S. Forest Service has a lookout station on the highest point of mountain, and the cabin, 10 feet square and about 15 feet high, was used for a signal.

Reference mark: A bronze triangulation tablet set in solid rock, 4.02 meters a little east of south of cabin, and instrument placed over tablet. True azimuth cabin to tablet  $342^{\circ} 52'$ .

Position of cabin computed.

[Latitude  $40^{\circ} 24' 26.872''$ . Longitude  $120^{\circ} 57' 06.027''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
	° ' "	° ' "		
Keddie.....	3 45 03.64	183 44 25.62	4.3272192	13.200
Dyer.....	20 07 05.83	200 03 58.81	4.2980235	12.342
Butt.....	60 26 07.53	240 09 17.40	4.6278285	26.374
Turner.....	78 12 28.55	257 46 39.74	4.7612451	35.850
Lassen.....	101 03 26.53	280 41 55.97	4.6788424	29.661
Red Cinder.....	111 38 43.97	291 27 15.94	4.4292118	16.694
Harvey.....	169 17 27.11	349 14 12.85	4.5764747	23.433
Antelope.....	189 49 20.42	9 50 58.80	4.3197279	12.974
Coyote.....	321 50 22.30	141 55 02.34	4.2184094	10.274
Kettle.....	325 36 32.14	145 45 32.28	4.5442227	21.756

**PITTVILLE, SHASTA COUNTY, CALIF. (Not occupied. No check.)**

Station mark: Steeple on church at Pittville post office.

[Latitude  $41^{\circ} 02' 59.220''$ . Longitude  $121^{\circ} 20' 08.309''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
	° ' "	° ' "		
Bald Mountain.....	12 05 02.39	192 03 23.36	4.2274765	10.491
Saddle.....	76 15 16.71	256 08 58.80	4.1413164	8.603

**PROSPECT, SHASTA COUNTY, CALIF. (Not occupied.)**

Station mark: A prominent tree, probably trimmed, on summit of Prospect Peak, a well-known point northeast of Lassen.

[Latitude  $40^{\circ} 34' 24.741''$ . Longitude  $121^{\circ} 20' 42.462''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
	° ' "	° ' "		
Butt.....	4 57 40.42	184 56 06.51	4.5979369	24.620
Lassen.....	55 04 28.17	234 58 15.90	4.2162828	10.224
Crater.....	121 03 23.72	300 52 43.35	4.4305236	16.745
Burney.....	137 27 24.31	317 16 21.80	4.5468666	21.889
Bald Mountain.....	175 41 59.44	355 40 43.18	4.5620381	22.667
Harvey.....	234 34 21.96	54 46 30.22	4.5070492	19.999
Red Cinder.....	315 37 33.99	135 41 25.35	4.0787072	7.448

**RED CINDER, LASSEN COUNTY, CALIF.**

Station is on highest point of Red Cinder Butte, a well-known bald mountain, about 7 miles west-southwest of Stevens' summer cattle range on Pine Creek, and about 5 miles west of Silver Lake. The closest point of importance is Westwood, which is about 35 miles southeast. There is a fair road from Clover Valley and one from Bogards to the Stevens place. Wagons can not be taken beyond the Stevens place

very well, though there is a very rough road from there to Silver Lake and another rough road from Clover Valley to Silver Lake. Animals are easily ridden to the point from almost any direction.

Signal: A cairn 7 feet high with 12-foot fir tree in center.

Station mark: A triangulation tablet set in solid rock under center of cairn.

[Latitude 40° 29' 46.810". Longitude 121° 14' 46.478".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Butt.....	20	58	36.28	200	53	11.92	4.5196298	20.558
Turner.....	55	15	31.71	235	01	08.76	4.5828454	23.779
Lyons.....	57	11	16.16	236	55	59.39	4.5993128	24.608
Brokeoff.....	78	12	04.99	257	59	54.67	4.4327868	16.832
Lassen.....	87	49	59.07	267	39	55.94	4.3402539	13.602
Crater.....	125	35	36.45	305	21	04.94	4.5873406	24.027
Prospect.....	135	31	25.35	315	37	33.99	4.0787072	7.448
Burney.....	137	03	22.62	316	48	28.73	4.6740212	29.334
Bald Mountain.....	166	10	10.87	346	05	02.54	4.6655698	28.769
Harvey.....	213	18	18.28	33	26	34.22	4.5125597	20.226
Antelope.....	249	19	01.21	69	32	09.01	4.4837507	18.928
Pegleg.....	291	27	15.94	111	38	43.97	4.4292118	16.694
Coyote.....	302	52	38.30	123	08	45.80	4.6231468	26.091
Kettle.....	310	44	18.39	131	04	45.22	4.7725326	35.803
Keddie.....	322	38	38.02	142	49	26.65	4.5914659	24.255
Dyer.....	327	23	13.26	147	31	32.92	4.5293560	21.021

#### ROUND, SHASTA COUNTY, CALIF.

A station of the U. S. Coast and Geodetic Survey, on the highest part of what is known as Round Mountain, just north of the post office of the same name.

Station mark: A  $\frac{3}{8}$ -inch copper bolt 3 inches long cemented into a drill hole in a large boulder which projects about 6 inches out of the ground, and directly above the bolt in the same drill hole is cemented an old-type station mark. A cross in the top of the copper bolt and another in the polished center of the disk mark the station.

Reference marks: A drill or punch hole in the top of a  $\frac{3}{8}$ -inch copper bolt, 3 inches long, which is leaded or cemented into a drill hole in a rock with the top of the bolt flush with the surface. Two such marks are at the following distances and azimuths from the station; 28.72 meters, 345° 30'; and 6.43 meters 57° 13'. The south reference mark is in the most eastern rock of a prominent group of rocks near the south end of the summit.

[Latitude 40° 48' 19.882". Longitude 121° 57' 26.873".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Cone.....	5	12	34.94	185	10	57.36	4.5898083	24.163
Bally.....	69	14	22.18	248	47	16.01	4.7972333	38.957
Burney.....	269	34	27.81	89	47	24.34	4.4448735	17.807
Snow.....	296	01	23.38	116	08	00.37	4.2006062	9.862
Turner.....	332	40	01.23	152	53	20.18	4.8007758	39.276
Lyons.....	334	10	02.03	154	22	27.03	4.7931190	38.590
Inskip.....	358	34	43.87	178	35	19.06	4.7116944	31.992
Kent (C. & G. S.).....	35	40	46.89	215	10	27.70	5.0578276	.....

#### SADDLE, SHASTA COUNTY, CALIF.

Station is on highest point of a bald mountain, locally known as Saddle Mountain, about 4 miles northwest of Fall River Mills. There is a good road from Fall River Mills to foot of mountain, thence north up ridge about a mile to summit. Animals can be ridden to summit.

Signal: A lone juniper tree 7 feet high on highest point.

Station mark: A bronze triangulation tablet set in rock 1.90 meters east of tree. Position of tablet computed.

[Latitude 41° 01' 12.173". Longitude 121° 29' 43.938".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Crater.....	16 11 47.41	196 06 58.37	4.5703853	23.107
Burney.....	25 11 06.23	205 05 55.34	4.4174010	16.246
Snow.....	38 49 35.96	218 38 05.41	4.5964030	24.533
McArthur.....	250 22 26.00	70 26 16.09	3.9390518	5.400
Pittville.....	256 08 58.80	76 15 16.71	4.1413164	8.603
Snell.....	281 14 02.60	101 21 01.03	4.1817569	9.443
Fall River.....	287 01 14.98	107 03 33.63	3.7129613	3.209
Dixie.....	288 24 32.07	108 40 23.36	4.5536808	22.235
Harvey.....	308 24 50.49	128 42 56.44	4.6962252	30.873
Bald Mountain.....	323 01 35.05	143 06 13.40	4.2181368	10.268

**SNELL, LASSEN COUNTY, CALIF. (Not occupied. No check.)**

Station mark: Center of high water tank at Mr. Snell's ranch about 10 miles east of Fall River Mills.

[Latitude 40° 59' 35.708". Longitude 121° 19' 06.227".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Bald Mountain.....	25 59 21.91	205 57 02.26	4.0562255	7.073
Saddle.....	101 21 01.03	281 14 02.60	4.1817569	9.443

**SNOW, SHASTA COUNTY, CALIF.**

Station is on the more southern of two very prominent mountains about 7 or 8 miles west of Tamarack Flat, a well-known place about 14 miles south of Burney post office. The peak is locally known as Snow Mountain. The north point is a little higher than the point used but is covered with timber.

Animals can be ridden from Tamarack Flat, the summer home of Mr. Dan Covey, to summit of peak, but there is no well-defined trail.

Signal: A cairn 6 feet at base and 6 feet high with tree in center.

Station mark: A bronze triangulation tablet set in solid rock at center of cairn.

[Latitude 40° 44' 33.701". Longitude 121° 47' 19.900".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Inskip.....	16 22 28.27	196 16 28.31	4.6661722	28.809
Cone.....	29 21 58.77	209 13 45.66	4.5611916	22.623
Bally.....	78 17 06.06	257 43 24.74	4.8719614	46.271
Round.....	116 08 00.37	296 01 23.38	4.2006062	9.862
Saddle.....	218 38 05.41	38 49 35.96	4.5964030	24.533
Burney.....	242 17 41.34	62 24 00.38	4.1865539	9.548
Crater.....	288 48 30.52	108 55 10.59	4.1821344	9.451
Lassen.....	319 26 55.34	139 38 01.75	4.5691893	23.043
Turner.....	343 24 21.68	163 31 05.16	4.7105858	31.911
Lyons.....	345 27 06.72	165 32 56.28	4.7039865	31.429

**TURNER, TEHAMA COUNTY, CALIF.**

Station is on the highest point of Turner Mountain, a prominent ridge about 5 miles south of Mineral post office. The U. S. Forest Service has a 9 by 9 foot cabin for lookout on the mountain, and there is a good trail from Mineral to the station.

Station mark: Center of U. S. Forest Service cabin.

Reference mark: A bronze triangulation tablet set in solid rock 1.7 feet east of northeast corner of cabin. • Distance from station to reference mark, 2.60 meters; true azimuth from station to reference mark 232° 55'. Position of center of cabin computed.

[Latitude 40° 17' 57.638". Longitude 121° 36' 58.000".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Bally.....	111 22 55.57	290 42 40.44	4.9730552	58.399
Round.....	152 53 20.18	332 40 01.23	4.8007758	39.276
Snow.....	163 31 05.16	343 24 21.68	4.7105858	31.911
Crater.....	179 45 54.30	359 45 49.27	4.6465358	27.535
Brokeoff.....	196 37 12.01	16 39 25.66	4.2304507	10.563
Lassen.....	204 17 03.66	24 21 24.63	4.3628774	14.329
Red Cinder.....	235 01 08.76	55 15 31.71	4.5828454	23.779
Pegleg.....	257 46 39.74	78 12 28.55	4.7612451	35.859
Dyer.....	277 25 52.63	97 48 31.95	4.7001031	31.150
Butt.....	294 37 24.56	114 46 21.34	4.3345578	13.425
Colby.....	334 52 02.53	154 55 35.78	4.2648901	11.435

**WEST PROSPECT, SHASTA COUNTY, CALIF. (Not occupied.)**

Highest point of West Prospect Peak, about 3 miles northwest of Prospect Peak.

[Latitude 40° 35' 39.336". Longitude 121° 22' 43.528".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Lassen.....	42 13 10.68	222 08 17.02	4.1995763	9.838
Crater.....	119 47 57.35	299 38 35.70	4.3678633	14.495
Burney.....	138 24 57.70	318 15 13.99	4.4998303	19.642
Bald Mountain.....	180 09 56.36	0 09 59.10	4.5324311	21.173
Harvey.....	240 37 04.07	60 50 31.38	4.5231887	20.727

Adelaida, Bonanza, Bradley, Bryson, Cayucos, Gonzales, Hollister, Jamesburg, Junipero Serra, King City, Paso Robles, Point Sur, San Benito, San Miguel, and San Simeon 15' quadrangles.

Academy, Berendo, Biola Bliss Ranch, Bonita Ranch, Chaney Ranch, Chowchilla, Clovis, Dos Palos, Daulton, Elgin, Firebaugh, Fresno, Friant, Gregg, Gustine, Herndon, Indian Gulch, Ingomar, Jamesan, Jesbel, Kearney Park, Kentucky Well, Kerman, Kismet, Lanes Bridge, Le Grand, Lingard, Little Panoche, Little Table Mountain, Los Banos, Madera, Malaga, Mendota, Merced, No. 19, No. 21, No. 25, Orangedale, Oxalis, Plainsberg, Planada, Pozo Farm, Reedley, Round Mountain, Salt Slough, Sandy Mush, Sanger, San Joaquin, Santa Rita Ranch, Selma, Sheep Ranch, Squaw Valley, Sultana, Tranquillity, Trimmer, Tufts Ranch, Turner Ranch, and Wahtoke 7½' quadrangles.

**FRESNO, MADERA, MERCED, MONTEREY, SAN BENITO, AND SAN LUIS OBISPO COUNTIES.**

During the seasons of 1915, 1916, and 1917, C. F. Urquhart and L. F. Biggs extended triangulation over the above-named quadrangles.

Positions are on North American datum, derived from stations of the U. S. Geological Survey and the U. S. Coast and Geodetic Survey previously located in this area.

**ADOBE, MADERA COUNTY, CALIF., FROM SOUTH.**

On a small bald hill owned by the Krohn estate, situated on the south side of the Adobe ranch. The hill is about 1 mile north of Mr. Wootten's ranch, which is 12 miles from Madera on the Madera and O'Neals road.

Signal: A cairn 5 feet high.

Station mark: A triangulation tablet set in rock under center of cairn.

[Latitude 37° 02' 03.094" (from south), 37° 02' 03.146" (from north). Longitude 119° 51' 41.132" (from south), 119° 51' 40.843" (from north).]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Greenleaf.....	21 23 22.93	201 20 41.41	4.2610799	11.335
Service.....	35 32 41.76	215 30 32.59	3.9606108	5.675
Madera (from north).....	65 13 35.53	245 06 23.10	4.2917831	12.166
Madera.....	65 13 35.55	245 06 21.16	4.2917561	12.165
Copper.....	300 18 15.16	120 26 02.75	4.3479198	13.844
Hall.....	310 43 46.88	130 47 43.96	4.1093124	7.992
Fresno.....	348 45 23.68	168 48 02.27	4.5266352	20.892
Deepwell.....	356 24 16.08	176 24 35.75	4.1106596	8.017

#### ADOBE, MADERA COUNTY, CALIF., FROM NORTH.

On a small bald hill belonging to the Krohn estate, situated on the south side of the Adobe ranch. The hill is about 1 mile north of Mr. Wootten's ranch, which is 12 miles from Madera and on the Madera and O'Neals road.

Signal and station mark: Cairn 5 feet high and triangulation tablet set in rock under its center.

[Latitude 37° 02' 03.146" (from north), 37° 02' 03.094" (from south). Longitude 119° 51' 40.843" (from north), 119° 51' 41.132" (from south).]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Madera (from south).....	65 13 33.55	245 06 21.16	4.2917561	12.165
Madera.....	65 13 35.53	245 06 23.10	4.2917831	12.166
Talbot.....	90 15 09.30	270 09 07.42	4.1717116	9.227
Sharon.....	107 06 30.82	286 56 46.08	4.3990592	15.574
Daulton.....	135 13 48.96	315 09 25.36	4.1853123	9.521
Rabbit.....	151 35 52.69	231 33 22.24	4.1121673	8.045

#### ALFARATA, MERCED COUNTY, CALIF. (Not occupied.)

Station mark: Center of large silo at Alfarata, a siding on the Southern Pacific, R. R. about 3 miles southeast of Merced.

[Latitude 37° 16' 37.494". Longitude 120° 26' 16.745".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Lord.....	3 59 47.44	183 59 40.10	4.0057353	6.296
Eyraud.....	61 49 15.55	241 45 12.13	4.0650404	7.218
Merced.....	129 25 41.83	309 24 02.88	3.7165755	3.235
Hurricane.....	226 59 15.20	47 03 04.64	4.1051387	7.916
Monument.....	248 45 33.64	68 47 44.74	3.7573088	3.554

#### ALISO MILL, MADERA COUNTY, CALIF., FROM SOUTH.

A lone windmill on the Miller & Lux Aliso ranch about 12 miles east of Firebaugh. A wooden tank stands east of the mill, which is about 5 miles east of the Columbia ranch buildings.

Signal: The windmill pump rod.

Station mark: Center of well under mill.

[Latitude  $36^{\circ} 51' 42.035''$  (from south),  $36^{\circ} 51' 42.074''$  (from west). Longitude  $120^{\circ} 15' 21.156''$  (from south),  $120^{\circ} 15' 21.189''$  (from west).]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Southeast Cottonwood (west).....	182 04 39.08	2 04 46.63	3.9336920	5.334
Southeast Cottonwood.....	182 04 57.06	2 05 04.62	3.9335728	5.332
Miller & Lux Signal.....	223 33 53.69	43 36 59.63	4.0461435	6.910
Madera.....	237 46 21.25	57 53 22.54	4.3120667	12.747
Last Chance.....	269 48 35.19	89 52 13.64	3.9552171	5.605
Gallagher.....	295 10 59.87	115 16 03.59	4.1422972	8.623
Mill Tank.....	317 52 05.65	137 54 34.75	3.9633800	5.711

#### ALISO, MADERA COUNTY, CALIF.

On a sand dune, 50 feet south of Madera-Firebaugh road, 8 miles east of Firebaugh, 3 miles east of Miller & Lux ranch house, 0.1 mile east of jog in road at canal crossing.

Signal: Lumber.

Station mark: Iron post.

[Latitude  $36^{\circ} 52' 26.01''$ . Longitude  $120^{\circ} 18' 54.90''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Helm.....	33 12 47.70	213 10 34.66	4.0018767	6.241
Firebaugh.....	83 08 23.29	263 03 16.23	4.1061723	7.935
West Power.....	114 34 34.41	294 29 16.98	4.1579846	8.040
Syphon.....	159 24 45.87	339 22 42.22	4.1604948	8.992
Southeast Cottonwood.....	217 46 26.93	37 48 42.82	3.9610265	5.680
Aliso Mill.....	284 20 01.44	104 22 09.68	3.7375098	3.395

#### ALISO MILL, MADERA COUNTY, CALIF., FROM WEST.

A lone windmill on the Miller & Lux Aliso ranch, about 12 miles east of Firebaugh. A wooden tank stands east of the mill, which is about 5 miles east of the Columbia ranch buildings.

Signal: The windmill pump rod.

Station mark: Center of well under mill.

[Latitude  $36^{\circ} 51' 42.074''$  (from west),  $36^{\circ} 51' 42.035''$  (from south). Longitude  $120^{\circ} 15' 21.189''$  (from west),  $120^{\circ} 15' 21.156''$  (from south).]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Helm.....	56 53 19.31	236 48 58.18	4.1103638	8.012
Columbia.....	80 05 51.98	260 02 06.82	3.9671745	5.761
Firebaugh.....	89 29 07.79	269 21 52.57	4.2546146	11.168
Aliso.....	104 22 09.66	284 20 01.44	3.7375098	3.395
Southeast Cottonwood.....	182 04 39.08	2 04 46.63	3.9336920	5.334
Southeast Cottonwood (south).....	182 04 57.06	2 05 04.62	3.9335728	5.332

#### ARMSTRONG, SAN BENITO COUNTY, CALIF.

The highest and most eastern of three hills on the summit of ridge forming the divide between Salinas and San Benito rivers. It is probably in San Benito County but very near the Monterey County line. There is an old road (traveled very little) between Mulberry post office and Gonzales, which passes just under hill on the north and west sides. By this road station is 7 or 8 miles from Mulberry. It is a good horseback route but very poor for buggy or wagon. The land on which station is situated is owned by the Armstrong brothers, of Salinas.

Signal: An oak tree in center of cairn 4 or 5 feet high.

Station mark: A triangulation tablet set in rock 1.03 meters from signal, azimuth from tablet to signal being  $184^{\circ}$ .



[Latitude 36° 36' 40.597". Longitude 121° 18' 50.350'.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Mount Toro (1908).....	70 26 20.87	250 15 48.18	4.4477396	.....
Salinas (1908).....	102 50 34.18	282 38 15.35	4.4987001	.....
Bardin (1908).....	109 06 51.06	288 59 29.20	4.2891121	.....
Gavilan (1908).....	131 08 43.66	311 01 20.99	4.3875319	.....
Hollister (1908).....	163 23 38.15	343 20 25.50	4.4459584	.....
Santa Ana (1908).....	192 30 48.53	12 33 43.64	4.5241889	.....
Bonanza (1908).....	233 57 14.52	54 09 12.15	4.5659355	.....
Call (1908).....	270 19 47.40	90 28 45.29	4.3505389	.....
San Benito (1908).....	293 50 35.86	114 14 30.21	4.8177979	.....
Hepsedam (1908).....	306 40 45.35	126 58 13.71	4.7393296	.....
Fremont (1917).....	133 50 39.40	313 43 52.00	4.3702053	14.573
Palcines (1917).....	182 28 40.26	2 28 56.92	4.2040293	9.940
Quien Sabe (1917).....	199 31 34.03	19 34 59.63	4.4064630	15.842
Meco (1917).....	235 32 41.24	55 41 53.53	4.4442413	17.282
Elkhorn (1917).....	239 22 13.21	59 28 21.12	4.2499493	11.048
Harris (1917).....	308 03 41.89	128 07 01.67	4.0248336	6.579
Chalone (1917).....	329 28 57.24	149 33 12.32	4.3225499	13.059

## ASH, MADERA COUNTY, CALIF., FROM WEST.

On the south bank of Ash Slough 7 miles southwest of Chowchilla. Follow the Robertson Boulevard for 2 miles to a signboard that reads "Alfalfa Colony," thence go westerly for 4 miles to Ash Slough, thence down south bank of slough to station.

Signal: A lumber quadripod with cross targets.

Station mark: Bench-mark post set under center of signal.

[Latitude 37° 04' 40.892" (from west), 37° 04' 40.685" (from north). Longitude 120° 22' 44.000" (from west), 120° 22' 43.820" (from north).]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Golden Hoof.....	38 28 15.43	218 23 50.80	4.2425475	10.862
Bridge.....	80 41 12.25	260 35 04.09	4.1844950	9.503
Johnson.....	82 48 09.25	262 43 16.03	4.0832402	7.526
Rodgers.....	113 37 15.08	293 32 03.76	4.1431363	8.639
El Nido.....	122 11 44.83	302 07 41.59	4.0704060	7.307
Bliss.....	153 11 10.60	333 10 12.31	3.7233285	3.286
Bliss (north).....	153 10 57.57	333 09 59.28	3.7233285	3.286
Berenda Slough.....	324 42 16.33	144 44 10.12	3.9074271	5.021
Berenda Slough (north).....	324 42 03.31	144 43 57.11	3.9074271	5.021
Syphon.....	356 22 42.59	170 22 56.63	3.9603124	5.671

## ASH, MADERA COUNTY, CALIF., FROM NORTH.

On the south bank of Ash Slough 7 miles southwest of Chowchilla. Follow the Robertson Boulevard for 2 miles to a signboard that reads "Alfalfa Colony," thence go westerly for 4 miles to Ash Slough, thence down south bank of slough to station.

Signal: A lumber quadripod with cross targets.

Station mark: Bench-mark post set under center of signal.

[Latitude 37° 04' 40.685" (from north), 37° 04' 40.892" (from west). Longitude 120° 22' 43.820" (from north), 120° 22' 44.000" (from west).]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Bliss (west).....	153 11 10.60	.....	.....	3.286
Bliss.....	153 10 57.57	333 09 59.28	3.7233285	3.286
La Branza.....	205 04 07.55	25 06 12.32	4.0804456	7.478
Chowchilla.....	242 55 47.35	63 00 03.56	4.0709244	7.316
Fair Mead.....	270 09 33.15	90 16 18.75	4.2205790	10.326
Berenda Slough.....	324 42 03.31	144 43 57.11	3.9074271	5.021
Berenda Slough (west).....	324 42 16.33	144 44 10.12	3.9074271	5.021

## BAREILLAS, MERCED COUNTY, CALIF.

On a bald peak, the lowest and most eastern of three peaks on land owned by J. C. Bareillas. About 3 miles a little east of south from the San Luis ranch, which is on the road between Los Banos and Hollister, about 15 miles from the former. The signal can be seen from this ranch.

Signal and station mark: A cairn 7 feet high.

Reference mark: A tablet set in rock, 1.72 meters south of the signal.

[Latitude  $37^{\circ} 01' 33.559''$  (1908-15),  $37^{\circ} 01' 33.570''$  (1912-13). Longitude  $121^{\circ} 02' 19.450''$  (1908-15),  $121^{\circ} 02' 19.456''$  (1912-13).]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Santa Ana (1908).....	52 17 17.12	232 10 17.21	4.3394971	.....
Pacheco (1908).....	84 56 48.03	264 47 49.87	4.3460746	.....
Volts (1908).....	231 57 39.22	52 01 38.54	4.0952256	.....
Los Banos (1908).....	257 28 07.49	77 34 57.41	4.2360987	.....
Oil Stack (1908).....	277 19 30.87	97 31 32.73	4.4756665	.....
South Dos Palos (1908).....	281 14 30.42	101 28 22.03	4.5422771	.....
Miller No. 2 (1908).....	300 07 41.49	120 21 51.29	4.6076025	.....
White (1908).....	305 16 29.54	125 23 37.82	4.3343198	.....
Bonanza (1908).....	347 58 53.17	168 00 59.10	4.3972398	.....
Santa Ana (1912-13).....	52 17 14.01	232 10 14.11	4.3394995	13.578
Pacheco (1912-13).....	84 55 47.40	264 46 49.16	4.3461620	13.788
Howard (1912-13).....	133 51 38.01	313 45 06.23	4.3468888	13.811
Christian (1912-13).....	165 13 30.43	345 11 30.55	4.2836434	11.940
Gustine (1915).....	187 28 57.84	7 30 19.34	4.4073108	15.873
Romero (1915).....	190 15 02.77	10 15 53.96	4.0710566	7.318
Ingomar (1915).....	200 11 57.82	20 14 31.54	4.2601790	11.312
Fairmont (1915).....	212 24 02.62	32 29 59.59	4.4346644	16.905
Underwood (1915).....	223 51 58.51	43 59 12.88	4.4086518	15.922
Milepost 162 (1915).....	233 32 13.65	53 38 41.10	4.2949810	12.255
Los Banos Tank (1915).....	257 15 17.99	77 22 17.66	4.2466538	10.965
Pipeline (1915).....	268 29 50.13	88 33 11.41	3.9172138	5.135

## BEAR HILL, FRESNO COUNTY, CALIF.

On the west end of Bear Hill about 18 miles east of Sanger.

Signal: A 20-foot trimmed live-oak tree.

Reference mark: A tablet set in rock, azimuth from tablet to signal,  $61^{\circ} 30'$ ; distance, 19 feet.

Position of signal tree computed.

[Latitude  $36^{\circ} 44' 45.570''$ . Longitude  $119^{\circ} 16' 57.336''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Smith.....	17 09 44.36	197 07 29.62	4.2790135	11.813
Campbell.....	65 48 48.26	245 43 50.25	4.1323649	8.428
Tivey.....	88 19 03.89	268 15 01.33	4.0027310	6.253
Red Mountain.....	141 24 49.96	321 20 38.75	4.2215142	10.348
Sampson.....	260 48 49.85	80 55 19.29	4.2134869	10.159
Stokes.....	343 14 54.32	163 17 56.84	4.4217145	16.408
Orosi.....	354 38 55.52	174 39 44.62	4.3411858	13.631

## BELMONT, MERCED COUNTY, CALIF.

The center of west one of two large concrete silos at the Miller & Lux Belmont ranch, about 4 miles north of the town of Dos Palos.

Signal and station mark: Center of silo.

[Latitude  $37^{\circ} 02' 14.498''$ . Longitude  $120^{\circ} 37' 23.560''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Dos Palos.....	1 54 00.79	181 53 56.30	3.7452289	3.456
White.....	54 42 58.16	234 35 06.76	4.3759685	14.768
Power.....	103 13 15.90	283 09 48.67	3.9410284	5.425
San Juan.....	148 19 47.67	328 18 35.13	3.7529990	3.518
Lucerne.....	205 20 22.17	25 21 26.25	3.7878512	3.812
Bridge.....	253 02 13.05	73 04 54.97	3.8415535	4.314
Golden Hoof.....	310 07 04.05	130 11 28.83	4.1533735	8.845

**BERENDA SCHOOL, MADERA COUNTY, CALIF. (Not occupied.)**

Cupola on schoolhouse at Berenda, a small town on the Southern Pacific R. R., between Merced and Madera.

[Latitude 37° 02' 16.200". Longitude 120° 09' 09.998".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Crumley.....	28 56 32.28	208 56 01.75	3.4133365	1.609
Sharon.....	195 42 53.00	15 43 40.65	3.8577427	4.478
Talbot.....	271 46 17.76	91 50 47.80	4.0447607	6.888
Madera.....	316 30 38.35	136 33 57.29	4.0749278	7.384

**BERENDA SLOUGH, MADERA COUNTY, CALIF., FROM WEST.**

On the northwest end of bridge over Berenda Slough 9 miles southwest of Chowchilla. Follow Robertson Boulevard to Fillmore Avenue, thence go east to Elm Avenue, thence south to station.

Signal: Lumber structure with cross targets and flag.

Reference mark: Second wall post 8 feet from northwest corner of bridge.

[Latitude 37° 01' 06.9.2" (from west), 37° 01' 06.714" (from north). Longitude 120° 19' 35.134" (from west), 120° 19' 34.939" (from north).]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Syphon.....	58 28 24.56	238 26 44.91	3.6814664	2.984
Ash.....	144 44 10.12	324 42 16.33	3.9074271	5.021
Ash (north).....	144 43 57.11	324 42 03.31	3.9074271	5.021
Southeast Cottonwood.....	323 14 44.48	143 17 24.80	4.0422536	6.849
Southeast Cottonwood (north).....	323 14 31.48	143 17 30.32	4.0422536	6.849

**BERENDA SLOUGH, MADERA COUNTY, CALIF., FROM NORTH.**

On the northwest end of bridge over Berenda Slough 9 miles southwest of Chowchilla. Follow Robertson Boulevard to Fillmore Avenue, thence go east to Elm Avenue, thence south to station.

Signal: Lumber structure with cross targets and flag.

Reference mark: Second wall post 8 feet from northwest corner of bridge.

[Latitude 37° 01' 06.714" (from north), 37° 01' 06.912" (from west). Longitude 120° 19' 34.939" (from north), 120° 19' 35.134" (from west).]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Ash (west).....	144 44 10.12	324 42 16.33	3.9074271	5.021
Ash.....	144 43 57.11	324 42 03.31	3.9074271	5.021
Chowchilla.....	205 58 27.83	26 00 49.99	4.1235994	8.259
Fairmead.....	241 18 24.28	61 23 15.80	4.1343554	8.467
Fuller.....	284 10 05.20	104 13 09.51	3.8925604	4.852
Southeast Cottonwood.....	323 14 31.48	143 17 30.32	4.0422536	6.849
Southeast Cottonwood (west).....	323 14 44.48	143 17 24.80	4.0422536	6.849

**BIOLA, FRESNO COUNTY, CALIF.**

Station and signal: Large water tank at Biola station, which is on a branch railroad, 7 miles northeast of Kerman.

Signal and station mark: Center of tank.

[Latitude 36° 48' 02.139". Longitude 120° 00' 53.596".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Kerman.....	25 24 43.26	205 23 05.25	3.9763586	5.884
Gallagher.....	95 32 50.98	275 29 14.74	3.9537156	5.586
Madera.....	166 56 02.01	346 54 22.35	4.2594110	11.292
Eastin.....	183 57 22.10	3 57 34.34	3.8643524	4.547
Green Leaf.....	218 10 49.56	38 13 39.73	4.0557672	7.065
Deep Well.....	227 57 47.61	48 03 30.59	4.2900607	12.117
Fresno.....	289 08 39.24	109 16 39.85	4.3313870	13.327
Kearney.....	315 08 42.51	135 12 10.77	4.0878869	7.607

**BISHOFF, MONTEREY COUNTY, CALIF.**

On sharp peak 3 or 4 miles west-southwest of King City. It is the highest point in the foothills overlooking valley from west. Station can be reached from King City by going west and crossing the long bridge over Salinas River, thence through gate to Mr. Allan Dillon's residence, thence up canyon passing Fred Hansen's residence and on to head of canyon which is at foot of peak. From this point on foot or horse-back to summit.

Signal: A greasewood bush about 11 feet high.

Station mark: A triangulation tablet set in top of rock at foot of signal.

[Latitude 36° 11' 25.380" (1909), 36° 11' 25.170" (1917). Longitude 121° 12' 00.610" (1909), 121° 12' 00.538" (1917).]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Wiley (1909).....	141 44 49.87	321 42 12.45	4.0309625	.....
Hanley (1909).....	176 05 44.53	356 05 10.34	4.3242187	.....
Pinalito (1909).....	218 15 59.06	38 20 19.54	4.2490167	.....
King City (1909).....	245 21 57.81	65 24 35.54	3.8655621	.....
Eade (1909).....	259 17 50.12	79 26 01.25	4.3249351	.....
Eade (1917).....	259 17 57.41	79 26 08.61	4.3250001	13.133
Pine Creek (1917).....	14 28 01.55	194 27 02.84	3.9985104	6.192
Santa Lucia (1917).....	75 58 30.31	255 50 46.80	4.3061705	12.575
Chew (1917).....	112 13 02.44	292 00 00.14	4.5520767	22.153
Williams (1917).....	325 47 57.01	145 54 59.25	4.5047955	19.868

**BLACKSMITH, MERCED COUNTY, CALIF.**

About 12 miles by road northeast of Merced, 2 miles northeast of Merced reservoir, 1 mile south of Lower Merced Falls road, on summit of hill in pasture.

Signal: Lumber structure with cross targets.

Station mark: Iron bench-mark post centered under signal.

Latitude 37° 24' 26.708". Longitude 120° 23' 05.779".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Merced (N).....	38 01 52.87	217 58 17.90	4.1511041	8.800
Lakeside School (N).....	38 26 17.53	218 24 34.38	3.8277024	4.179
Nairn (N).....	69 48 02.42	249 43 11.34	4.0992809	7.810
Lighthouse (N).....	96 18 00.51	276 12 48.26	4.1042753	7.900
Amsterdam (N).....	98 35 36.48	278 29 30.80	4.1750801	9.299
Wassom (N).....	118 09 29.67	293 06 03.03	3.9767853	5.890
Super (N).....	122 37 10.43	302 35 38.27	3.6461410	2.751
Hurricane (N).....	321 23 46.90	141 25 40.76	3.8690886	4.597
South Point (N).....	337 23 40.96	157 25 55.17	4.1515650	8.809
Monument (N).....	357 06 20.74	177 06 36.17	4.0937836	7.711
Merced (U).....	38 01 52.87	217 58 17.90	4.1511041	8.799
West Butte (U).....	263 40 02.21	83 45 34.87	4.1317959	8.417
Flat Top (U).....	301 39 45.25	121 49 44.89	4.4566259	17.752
LeGrand (U).....	320 23 49.51	140 29 02.11	4.2993034	12.378
Hurricane (U).....	321 23 18.44	141 25 12.29	3.8689719	4.595
Monument (U).....	357 06 17.29	177 06 32.73	4.0937954	7.712

N=Work done by C. L. Nelson in 1914; U= work done by C. F. Urquhart in 1914.

**BLISS, MERCED COUNTY, CALIF., FROM WEST.**

In Mr. Bliss's pasture field, 0.75 mile northeast of the ranch house. To reach it go westerly from Minturn, a station on the Southern Pacific R. R., past the Sieca Vista ranch. The signal is about 7 miles from Minturn.

Signal: Quadripod with cross targets.

Station mark: Iron bench-mark post centered under signal.

[Latitude 37° 07' 13.776" (from north), 37° 07' 13.989" (from west). Longitude 120° 24' 20.465 (from north), 120° 24' 20.632" (from west).]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Johnson.....	57 03 25.13	236 59 30.05	4.0597503	7.130
Rodgers.....	94 41 02.16	274 36 49.01	4.0165461	6.455
Honn.....	117 56 01.82	.....	3.6941369	3.072
Honn (north).....	117 55 48.79	297 54 01.94	3.6941369	3.072

**BLISS, MERCED COUNTY, CALIF., FROM NORTH.**

In Mr. Bliss's pasture field, 0.75 mile northeast of the ranch house. To reach it go westerly from Minturn, a station on the Southern Pacific R. R., past the Sieca Vista ranch. The signal is about 7 miles from Minturn.

Signal: Quadripod with cross targets.

Station mark: Iron bench-mark post centered under signal.

[Latitude 37° 07' 13.776" (from north), 37° 07' 13.989" (from west). Longitude 120° 24' 20.465" (from north) 120° 24' 20.632" (from west).]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Honn.....	117 55 48.79	297 54 01.94	3.6941369	3.072
Lord.....	153 49 00.49	333 47 32.95	3.9085808	5.034
La Branza.....	230 25 56.00	50 28 59.19	3.9871177	6.032
Chowchilla.....	267 08 37.56	87 13 52.22	4.1101135	8.007
Ash.....	333 09 59.28	153 10 57.57	3.7233285	3.286
Ash (west).....	333 10 12.31	153 11 10.60	3.7233285	3.286

**BONANZA, MERCED COUNTY, CALIF.**

On a high, bald peak, which has oak trees growing just below the summit on the north side. It is about 3 miles northeast of Bonanza post office. From Tres Pinos on the Southern Pacific R. R. there is a road to Bonanza post office, distance 24 miles, thence the way is up canyon 1 mile to Mr. Sepulveda's ranch. From this place there is a trail or wood road about a mile farther up canyon and trail from there to summit. Animals can be ridden all the way up. Station can also be reached from the San Joaquin side by going up a wood road to summit, thence south along ridge to highest point.

Signal: A cairn 8 feet high.

Station mark: A tablet in rock placed under center of signal.

[Latitude 36° 48' 21.558". Longitude 120° 58' 49.786".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Call (1908).....	18 49 51.53	198 46 53.03	4.3615909	14.287
Armstrong (1908).....	51 09 12.15	233 57 14.52	4.5659355	22.871
Santa Ana (1908).....	116 11 52.03	296 02 47.41	4.3988290	15.566
Barillas (1908).....	168 00 59.10	347 58 53.17	4.3972398	15.509
White (1908).....	226 11 02.36	46 16 03.78	4.2361938	10.711
Miller No. 1 (1908).....	218 32 29.67	68 40 49.17	4.3456991	13.774
Miller No. 2 (1908).....	262 15 19.98	82 27 21.95	4.4788602	18.716
Miller Head (1908).....	269 01 03.61	89 16 18.47	4.5781093	23.521
Miller No. 3 (1908).....	278 06 28.35	98 21 35.12	4.5791323	23.577
San Benito (1908).....	328 00 19.79	148 12 21.82	4.7558232	35.414
Indian (1908).....	308 48 18.31	128 57 25.73	4.4651214	18.133
Meco (1917).....	49 15 11.38	229 12 26.10	3.9561009	5.616
Los Banos tank (1917).....	203 02 01.39	23 06 54.01	4.4878415	19.107

**BORLAND, FRESNO COUNTY, CALIF.**

On the Miller & Lux Borland ranch about 7 miles south and a little east of Mendota.

Signal and station mark: Center of No. 5 smokestack.

[Latitude 36° 40' 43.086". Longitude 120° 19' 41.698".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Cantua.....	12 48 38.32	192 46 57.81	4.2769295	11.757
Telephone.....	95 07 34.13	275 00 53.67	4.2229194	10.382
Helm.....	161 52 40.46	341 50 55.70	4.1447886	8.672
Hermanhouse.....	188 30 04.18	8 30 31.01	3.8768482	4.679
Jamesan.....	240 44 25.56	60 48 51.34	4.1019662	7.858
Kings.....	266 18 52.71	86 22 30.47	3.9575854	5.636
Derriek.....	293 36 32.91	113 43 21.33	4.2685567	11.532
Tanks.....	344 36 06.12	164 36 40.68	3.7336756	3.365

**BOULDER, MONTEREY COUNTY, CALIF. (Not occupied.)**

This is probably the old U. S. Coast and Geodetic Survey station Mount Boulder.

[Latitude 36° 23' 10.206". Longitude 121° 47' 15.408".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Chalk.....	189 19 22.31	9 20 32.99	4.2614170	11.344
Mount Toro.....	225 47 20.74	45 53 42.90	4.3487418	13.871
Cheew.....	292 45 56.55	112 53 45.91	4.3309168	13.313
Santa Lucia.....	308 39 54.41	128 53 00.84	4.6290707	26.450

**BRIDGE, MERCED COUNTY, CALIF. (Not occupied.)**

A target on bridge over San Joaquin River, on road from Dos Palos to Merced.

[Latitude 37° 03' 20.171". Longitude 120° 32' 54.791".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Belmont.....	73 04 54.97	253 02 13.05	3.8415535	4.314
San Juan.....	106 14 51.03	286 11 31.84	4.0005040	6.221
Rodgers.....	196 11 43.79	16 12 40.91	3.9233892	5.209
Johnson.....	252 36 03.07	72 37 18.02	3.5078316	2.001
Ash.....	260 35 04.09	80 41 12.25	4.1844950	9.503
Golden Hoof.....	339 17 04.66	159 18 47.73	4.0783409	7.442

**BULLARD FLAGPOLE, FRESNO COUNTY, CALIF. (Not occupied.)**

Station is the flagpole on tank house at the Bullard Club, about 8 miles north of Fresno.

[Latitude 36° 50' 55.335". Longitude 119° 49' 57.942".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Greenleaf.....	111 21 27.91	291 17 44.83	3.9950910	6.144
Deep Well.....	167 14 35.42	347 13 53.11	3.8977887	4.911
Fresno.....	342 07 59.68	162 09 36.12	4.1147057	8.092

**CALL, SAN BENITO COUNTY, CALIF.**

On a brushy peak on ridge south of Tres Pinos Creek and east of San Benito River. Can be reached by leaving the Hollister and Idria road on grade between twenty-fifth and twenty-sixth mileposts (from former place) and going south up ridge about 5 or 6 miles. Shortly after leaving main road the Bradford quicksilver mine is passed, and farther up the ridge there are two deserted houses. Station is at the end of open live-oak country on summit of ridge; signal can be seen about 0.25 mile south on a brushy peak. Mr. Call once lived near the summit, and the ridge is sometimes known by his name.

Signal: A cairn 7 feet high on highest point of peak.

Station mark: A triangulation tablet set in large rock 1 meter from signal; azimuth, 318°.

[Latitude 36° 36' 35.463". Longitude 121° 03' 48.417".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Armstrong (1908).....	90 28 45.29	270 19 47.40	4.3505389	13.928
Santa Ana (1908).....	155 18 27.69	335 12 23.05	4.5576284	.....
Bonanza (1908).....	198 46 53.03	18 49 51.53	4.3615909	14.287
Indian (1908).....	263 22 48.63	83 34 52.92	4.4823341	.....
Buck (1908).....	292 45 03.85	112 51 53.38	4.2680060	.....
San Benito (1908).....	305 11 17.80	125 26 15.75	4.6633038	.....
Hepsedam (1908).....	326 40 15.64	146 48 47.96	4.5926168	.....
Martin (1917).....	13 21 19.43	193 20 01.54	4.1490672	8.758
Chalone (1917).....	33 18 14.47	213 13 32.69	4.3318580	13.342
Lone Pine (1917).....	43 45 33.95	223 41 49.00	4.1330026	8.440
Harris (1917).....	65 42 21.44	245 36 43.70	4.1893173	9.609
Meco.....	182 01 20.75	2 01 34.25	4.2006530	9.863

**CAMPBELL MOUNTAIN, FRESNO COUNTY, CALIF.**

On the west end of Campbell Mountain about 8 miles east of Sanger.

Signal and station mark: Cairn 7 feet high with chiseled circle under center.

Reference mark: Bronze tablet 4 feet west of center of signal. Position of signal computed.

[Latitude 36° 41' 45.003". Longitude 119° 25' 15.748".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Reedley.....	14 06 46.96	194 05 40.67	4.0539363	7.035
Kingsbury.....	30 06 26.65	210 01 47.80	4.3654139	14.413
Parlier.....	45 19 52.90	225 16 02.53	4.1298555	8.379
Sanger.....	96 49 12.00	276 44 21.13	4.0851381	7.559
Granville.....	107 03 13.71	286 57 25.32	4.1796546	9.397
Round.....	150 01 11.96	329 58 04.92	4.1987067	9.819
Mill.....	152 30 06.56	332 26 27.92	4.2922609	12.179
Red Mountain.....	186 01 09.75	6 01 57.10	4.2713925	11.608
Tivey.....	203 39 20.67	23 40 16.25	3.7595006	3.572
Bear Hill.....	245 43 50.25	65 48 48.26	4.1329649	8.428
Sampson.....	253 55 59.90	74 07 27.20	4.4721482	18.429
Orange Cove.....	309 15 59.79	129 19 56.83	4.1052375	7.917
Stokes.....	314 33 00.41	134 41 00.03	4.4484236	17.449
Orosi.....	318 23 44.52	138 29 30.91	4.3374712	13.515
Yettam.....	326 33 54.39	146 40 01.73	4.4446605	17.299
Smith.....	331 42 30.42	151 45 13.20	4.1555507	8.890
Dinuba.....	349 31 40.94	169 32 55.96	4.2357838	10.694

**CANTUA, FRESNO COUNTY, CALIF.**

On a slight raise about 4 miles southwest of the D. G. Longtin ranch house, where good water may be had. There is a cabin 0.25 mile northeast of signal.

Signal: A timber structure with one target 8 by 10 feet, facing northeast.

Station mark: Tablet in rock.

[Latitude 36° 30' 44.517". Longitude 120° 22' 30.295'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Joaquin (1908).....	19 21 35.75	199 18 37.72	4.3534305	14.021
San Benito (1908).....	56 50 05.50	236 40 30.42	4.4598650	17.915
Indian (1908).....	114 31 04.13	294 18 30.89	4.5379847	21.445
Shell No. 2 (1916).....	124 04 05.82	303 58 57.54	4.1912724	9.652
Telephone (1908).....	148 00 14.53	327 55 15.38	4.3712011	14.607
East Stack (1916).....	164 49 39.00	344 48 34.08	4.0149715	6.432
Hermanhouse (1916).....	191 33 22.06	11 35 29.43	4.4221967	16.427
Borland (1916).....	192 46 57.81	12 48 38.32	4.2769295	11.757
Tanks (1916).....	203 02 22.53	23 04 37.47	4.1576810	8.934
Jamesan (1916).....	211 41 56.43	31 48 02.27	4.4617664	17.994
Derrick (1916).....	242 30 52.34	62 39 20.40	4.3782577	14.846

## CASTLE MOUNT, MONTEREY AND FRESNO COUNTIES, CALIF.

A station of the U. S. Coast and Geodetic Survey on a high hogback locally known as Black Mountain. It can be reached from Coalinga by rough road and trail past Parkfield, Turkey Flat, and Taylor's ranch, where accommodations can be had.

Station mark: A copper bolt in center of top of theodolite pier.

Reference marks: Copper nails (four) leaded in holes in rocks, approximately north, south, east, and west, as follows: North 4.525 feet; south 6.540 feet; east 3.520 feet; and west 10.390 feet. Concrete pier for meridian instrument was 1.6 meters due east of station, and wooden pier for vertical circle 10.642 meters south-west.

NOTE (by C. F. U. 1917).—The best way to reach the station is from Edward Taylor's ranch 6 miles east of Parkfield post office. Animals can be ridden to summit.

[Latitude 35° 56' 21.338''. Longitude 120° 20' 22.908'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Hepsedam (1902).....	133 51 16.62	313 34 08.71	4.7804191	.....
Center Peak (1902).....	.....	.....	4.5887373	.....
Oak Flat (1902).....	147 07 51.82	327 01 07.45	4.5001282	.....
Alcalde (1902).....	164 49 51.29	344 47 38.90	4.3325900	.....
Oil City (1902).....	178 11 52.42	358 11 24.69	4.5722254	.....
Black Tank (1902).....	181 45 18.82	1 45 35.92	4.3727723	.....
Kinney (1902).....	191 42 50.45	11 45 05.29	4.4500045	.....
Rocky Butte (1902).....	65 10 20.33	244 45 05.68	4.8558353	44.585
Santa Lucia (1902).....	103 35 26.85	282 57 22.08	4.9994343	62.056
Dresser (1917).....	28 02 45.92	207 54 36.29	4.6519052	27.878
Estrella (1917).....	35 34 11.34	215 27 50.43	4.4488243	17.465
Fair Oaks (1917).....	51 31 30.06	231 15 34.56	4.7201779	32.623
Vineyard (1917).....	60 34 17.50	240 22 33.77	4.5395326	21.522
Semas (1917).....	82 40 09.16	262 23 07.28	4.6439980	27.375
Williams (1917).....	91 31 58.16	271 08 40.76	4.7758227	37.083
Powell (1917).....	101 43 14.13	281 29 56.41	4.5408143	21.586
Stockdale (1917).....	103 55 06.76	283 46 36.87	4.3503908	13.923
Stone Canyon (1917).....	116 23 51.90	296 16 20.56	4.3318977	13.343

## CHALK, MONTEREY COUNTY, CALIF.

On a low ridge about 11 miles from Salinas. It can be reached from Salinas by taking the Monterey road to a point about 0.8 mile beyond summit, where there is a water trough and a signboard reading "To Del Monte ranch." Here take left hand road and continue on it to forks of three roads. Take the middle one and continue on it until just before Salinas Gun Club is reached. The signal can be seen from here, not more than half a mile distant.

Signal: A tree supported by three poles.

Station mark: A tablet set in rock. Azimuth from tablet to signal is 153°, distance, 15.67 meters.



[Latitude 36° 32' 54.655" (1917), 36° 32' 54.674" (1908). Longitude 121° 45' 16.497" (1917), 121° 45' 16.506" (1908).]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Blanco (1908).....	173 03 08.46	353 02 35.22	4.0587699	.....
Castroville (1908).....	179 35 53.78	359 35 49.69	4.3847198	.....
Salinas (1908).....	211 50 41.93	31 54 09.60	4.2145242	.....
Bardin (1908).....	237 34 31.84	57 42 56.21	4.3958912	.....
Mount Toro (1908).....	280 39 22.41	100 44 34.51	4.1228971	.....
Mount Toro (1917).....	280 39 27.34	100 44 39.43	4.1228971	8.246
Ventana (1917).....	346 42 44.72	166 45 29.80	4.4782974	18.692
Boulder (1917).....	9 20 32.90	189 19 22.31	4.2614170	11.344

#### CHALONE, MONTEREY AND SAN BENITO COUNTIES, CALIF.

On the northwestern of the well-known Chalone Peaks, the highest peaks on east side of valley. There is a wagon road from Soledad to foot of peak, which is about 10 miles from Soledad. The peak is very near the line between Monterey and San Benito counties.

Signal: A cairn 7 feet high.

Station mark: A triangulation tablet in rock under center of cairn.

[Latitude 36° 26' 53.023" (1917), 36° 26' 53.04" (1909). Longitude 121° 11' 41.821" (1917), 121° 11' 41.93" (1909).]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Hanley (1909).....	14 15 40.93	194 14 55.55	3.8884515	.....
Wiley (1909).....	19 26 21.76	199 23 35.79	4.3299724	.....
Spadoni (1909).....	74 09 52.49	254 02 13.78	4.3012792	.....
Soledad (1909).....	78 29 53.67	258 25 07.13	4.0886495	.....
Mount Toro (1909).....	103 17 48.75	283 03 02.53	4.5809152	.....
Henry (1909).....	114 38 45.60	294 34 38.03	4.0571365	.....
Jacks (1909).....	125 21 35.71	305 13 12.83	4.4110000	.....
Armstrong (1917).....	149 33 12.32	329 28 57.24	4.3225499	13.059
Harris (1917).....	168 40 01.22	348 39 05.71	4.0722502	7.338
Elkhorn (1917).....	189 44 23.36	9 46 15.24	4.4402035	17.122
Lone Pine (1917).....	196 19 38.67	16 20 35.64	3.9283823	5.269
Call (1917).....	213 13 32.69	33 18 14.47	4.3318580	13.342
Martin (1917).....	243 32 55.08	63 36 18.71	3.9788655	5.919

#### CHEW, MONTEREY COUNTY, CALIF.

The highest point of Chews Ridge, 7 miles by road south of Jamesburg. It can be reached by following the Tassajara Spring road from Jamesburg 7 miles to the summit, then continue  $\frac{1}{2}$  mile beyond summit to a trail with signboard marked "Lookout Station  $\frac{1}{2}$  mile." Follow this trail to station, which is a U. S. Forest Service lookout station.

Signal and station mark: A pole with cross targets.

Reference mark: A tablet set on the line Chew-Boulder 10 feet from center of signal. Azimuth from tablet to signal, 112° 54'.

[Latitude 36° 18' 40.501". Longitude 121° 34' 03.510".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Ventana.....	73 24 08.77	253 20 14.38	4.0132896	6.407
Boulder.....	112 53 45.91	292 45 56.55	4.3309168	13.313
Mount Toro.....	171 11 03.72	351 09 35.40	4.3829144	15.006
Pole.....	213 11 10.08	33 13 52.96	4.0971643	7.772
Bischoff.....	292 00 00.14	112 13 02.44	4.5520767	22.153
Santa Lucia.....	323 45 29.24	143 50 46.95	4.3566443	14.125

**CHOWCHILLA, MADERA COUNTY, CALIF.**

Station is the center of large steel water tank at the town of Chowchilla on the Southern Pacific R. R. The tank supplies the town with water.

[Latitude 37° 07' 34.27". Longitude 120° 15' 39.104'']

To station—	Azimuth.	Back azimuth.	Distance.	
			Log. meters.	Miles.
Berenda Slough.....	26 00 49.995	205 58 27.83	4.1235994	8.259
Ash.....	63 00 03.56	242 55 47.35	4.0709244	7.316
Bliss.....	87 13 52.22	267 08 37.56	4.1101135	8.007
La Branza.....	135 54 03.62	315 51 51.96	3.8880722	4.802
Le Grand.....	186 05 47.42	6 06 28.96	4.2025688	9.906
Flat Top.....	219 32 30.19	39 38 57.84	4.3215165	13.028
Marguerite.....	243 05 19.97	63 08 28.61	3.9367548	5.372
Sharon.....	283 53 53.22	103 58 35.69	4.0758752	7.400
Fairmead.....	311 27 12.715	131 29 42.34	3.9124851	5.080
Crumley.....	325 16 17.00	145 19 40.99	4.1668480	9.124
Fuller.....	352 50 48.32	172 51 30.72	4.1452213	8.681

**CHRISTIAN, MERCED COUNTY, CALIF.**

On highest summit of bald, round hill, locally known as Christian Hill, on land owned by the Simon Newman Co., about 7 miles southwest of town of Gustine, a station on the Southern Pacific R. R., and 0.5 mile west of ranch owned by J. F. Schnyder. Can be reached from Schnyder's ranch on horseback.

Station mark: A 4 by 4 inch redwood pole, 14 feet high, having three cross targets, and sunk 3 feet in the ground.

Reference mark: A bronze triangulation tablet, set in rock 4.6 feet northwest of signal and station mark. True azimuth, station to reference mark, 163° 56'.

[Latitude 37° 11' 36.236" (1912), 37° 11' 36.225" (1915). Longitude 121° 05' 38.142" (1912), 121° 05' 38.137" (1915)].

To station—	Azimuth.	Back azimuth.	Distance.	
			Log. meters.	Miles.
Howard (1912).....	74 01 28.25	253 56 55.78	4.0633837	7.190
Orestimba (1912).....	141 16 09.99	321 11 24.08	4.2691191	11.547
Cleveland (1912).....	158 49 17.23	338 47 56.90	3.9568293	5.626
Crow (1912).....	165 29 11.90	345 27 16.10	4.2736010	11.667
Newman (1912).....	204 41 18.77	244 43 50.78	4.1704023	9.199
Gustine (1912).....	230 36 21.94	50 39 43.78	4.0269475	6.611
Stack (1912).....	260 34 00.83	80 38 10.83	4.0143355	6.422
Barroillas (1912).....	345 11 30.55	165 13 30.43	4.2836434	11.940
Crow (1915).....	165 29 11.90	345 27 16.10	4.2736020	11.667
South End Barn (1915).....	229 06 36.52	49 14 42.83	4.4174049	16.246
Gustine (1915).....	230 36 25.84	50 39 47.69	4.0269572	6.612
Fairmont (1915).....	257 15 47.61	77 23 45.43	4.3003126	12.407
Underwood (1915).....	270 14 01.90	90 23 17.20	4.3552129	14.079
Ingomar (1915).....	277 34 42.96	97 39 17.07	4.0525214	7.012
Milepost 162 (1915).....	288 14 44.19	108 23 12.31	4.3397688	13.587
Los Banos Tank (1915).....	303 33 32.17	123 42 32.58	4.4239815	16.494
Romero (1915).....	314 56 31.66	134 59 22.97	3.9951898	6.145

**CLOVIS, FRESNO COUNTY, CALIF. (Not occupied.)**

Station is a large steel water tank in the town of Clovis, which is on the Southern Pacific R. R., about 9 miles northeast of Fresno.

[Latitude 36° 49' 26.265". Longitude 119° 41' 55.561'']

To station—	Azimuth.	Back azimuth.	Distance.	
			Log. meters.	Miles.
Fresno.....	39 34 27.92	219 31 15.51	4.0974228	7.776
Deep Well.....	127 24 11.11	307 18 39.37	4.2362237	10.705
Hall.....	162 23 25.57	342 21 30.56	4.1950005	9.735
Copper.....	201 27 44.31	21 29 39.34	4.1128144	8.057
Las Palmas.....	359 30 32.87	179 30 38.21	3.8698088	4.604

**COLUMBIA, MADERA COUNTY, CALIF. (Not occupied.)**

Station mark: Center of windmill at Miller & Lux Columbia ranch house, east of Firebaugh.

[Latitude 36° 50' 50.197". Longitude 120° 21' 29.842".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Firebaugh.....	99 08 49.02	279 05 14.98	3.9520097	5.564
Southeast Cottonwood.....	222 48 46.00	42 52 38.91	4.1424330	8.625
Aliso.....	232 24 27.10	52 26 00.04	3.6851039	3.009
Aliso Mill.....	260 02 06.82	80 05 51.98	3.9671745	5.761

**COPPER, FRESNO COUNTY, CALIF.**

On a high foothill, 8 miles in an air line north-northeast of Clovis. Follow road from Clovis to Copper Mine power station on the San Joaquin Light & Power Co.'s line, thence go east through gate into pasture to first ranch house, thence to spring watering trough near foot of mountain. Buckboards can not be driven to summit.

Signal: Cairn on most northern point of hill.

Station mark: Tablet under cairn.

[Latitude 36° 55' 57.685" (1915), 36° 55' 58.57" (1908). Longitude 119° 38' 43.860" (1915), 119° 38' 42.97" (1908).]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Adobe (1908).....	120 25 30.71	300 17 43.21	4.3477863	.....
Crook (1908).....	189 15 02.57	9 16 04.24	4.1971765	.....
Las Palmas (1915).....	13 32 42.05	193 30 48.63	4.3017111	12.447
Clovis (1915).....	21 29 39.34	201 27 44.31	4.1128144	8.057
Fresno (1915).....	30 23 18.70	210 18 11.12	4.4007709	15.636
Chimney (1915).....	46 36 03.82	226 30 01.10	4.3144082	12.816
Greenleaf (1915).....	77 37 17.12	257 26 49.03	4.4235469	16.478
Deep Well (1915).....	85 03 41.45	264 56 14.12	4.2671488	11.495
Hall (1915).....	106 50 50.73	286 47 00.34	3.9959738	6.156
Adobe (1915).....	120 26 02.75	300 18 15.16	4.3479198	13.844
Oak (1915).....	255 09 18.82	75 13 15.78	4.0039318	6.270
Red Mountain (1915).....	289 15 33.91	109 24 26.58	4.3669627	14.465
Round (1915).....	316 03 47.42	136 08 41.18	4.2426860	10.865
Red Bank (1915).....	341 31 42.04	161 33 20.54	4.1085492	7.978
Sanger (1915).....	342 11 51.66	162 15 04.29	4.4165379	16.214
Lone Gum (1915).....	355 10 26.76	175 10 43.91	3.9249400	5.227

**CROW, STANISLAUS COUNTY, CALIF.**

On highest point of round foothill 5 miles southwest of Crows Landing, just south of Crow Creek, on land owned by George Crow, and 1.5 miles north of his ranch house. Can drive to foot of hill from almost any direction.

Station mark and signal: A 4 by 4 inch redwood pole, 10 feet long, having 3-foot cross targets, and set 3 feet in the ground.

Reference mark: A bronze triangulation tablet set in rock 3.9 feet south of signal. True azimuth from station to reference mark, 355° 11'.

[Latitude 37° 21' 25.814". Longitude 121° 08' 49.339".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Orestimba (1908).....	61 58 05.31	241 55 14.85	3.8942543	4.871
Black Gulch (1908).....	146 31 47.61	326 28 58.19	4.0944841	7.724
Kern (1908).....	154 46 22.64	334 43 24.32	4.2281635	10.508
Patterson (1908).....	185 50 14.80	5 50 46.97	4.1070391	7.950
Crows Landing (1908).....	239 24 05.94	59 26 47.20	3.8803463	4.717
Newman (1908).....	293 25 33.12	113 30 01.38	4.0744590	7.376
Christian (1908).....	345 27 16.10	165 29 11.90	4.2736010	11.667
Cleveland (1908).....	351 35 06.66	171 35 42.08	3.9929778	6.114
South End Barn (1915).....	272 27 04.59	92 37 07.81	4.3890577	15.220
School (1915).....	279 33 20.85	99 42 01.03	4.3306488	13.305
Gustine (1915).....	311 25 58.53	131 31 16.64	4.2368543	10.720
Christian (1915).....	345 27 16.10	165 29 11.90	4.2736020	11.667

**CRUMLEY, MADERA COUNTY, CALIF.**

On the southwest bank of a reservoir 400 feet southwest of Mr. Crumley's house, which is about 2 miles southwest of Berenda, a station on the Southern Pacific R. R. between Merced and Madera.

Signal: Lumber structure with cross targets.

Station mark: Iron bench mark centered under signal.

[Latitude 37° 01' 02.666". Longitude 120° 10' 00.704".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Miller & Lux Signal.....	1 37 21.78	181 37 15.43	3.9652420	5.736
Southeast Cottonwood.....	41 11 02.99	221 07 57.90	4.0630925	7.185
Fuller.....	74 54 29.19	254 51 47.84	3.8365911	4.265
Chowchilla.....	145 19 40.99	325 16 17.00	4.1668480	9.124
Fairmead.....	161 28 13.69	341 27 19.25	3.8465001	4.364
Sharon.....	199 11 33.52	19 12 51.71	3.9888415	6.056
Berenda School.....	208 56 01.75	28 56 32.28	3.4133365	1.609
Talbot.....	261 07 30.62	81 12 31.13	4.0963184	7.757
Madera.....	303 57 40.42	124 01 29.82	4.0558576	7.067
Italian Service Colony.....	330 26 08.42	150 28 18.92	4.0367511	6.762

**DAULTON, MADERA COUNTY, CALIF.**

On a hill on which are scattered scrubby oaks, about 1 mile north of Daulton station.

Signal: Flag in southern one of two trees on highest point. There is a cross on rock just south of tree.

Station mark: Tablet 37 feet west from signal.

Position of signal computed. Azimuth from tablet to signal, 242° 54'; distance, 37.2 feet.

[Latitude 37° 07' 55.785". Longitude 119° 58' 58.006".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Talbot.....	20 30 08.46	200 28 29.77	4.0625406	7.176
Sharon.....	75 01 18.90	254 55 57.30	4.1342778	8.465
Marguerite.....	100 52 19.07	280 45 23.21	4.2381142	10.751
Flat Top.....	143 52 27.87	323 47 50.27	4.2830273	11.923
Green.....	177 24 01.20	357 23 44.70	4.1713441	9.219
Rabbit.....	263 37 59.82	83 39 53.11	3.6684214	2.896
Adobe.....	315 09 25.36	135 13 48.96	4.1853125	9.521

**DEEP WELL, MADERA COUNTY, CALIF.**

On north and south fence, 0.5 mile south of Madera and Friant road, at a point 1 mile more or less west of the Deep Well School.

Signal: Lumber structure with cross targets.

Station mark: Iron bench mark centered under signal.

[Latitude 36° 55' 05.375". Longitude 119° 51' 08.444".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Kearney.....	15 09 21.55	195 07 07.43	4.3523742	13.987
Biola.....	48 03 30.59	227 57 47.61	4.2900607	12.117
Greenleaf.....	61 09 57.00	241 06 56.07	3.9303794	5.293
Madera.....	104 07 08.92	283 59 37.46	4.2824698	11.907
Service.....	131 40 30.58	311 38 01.94	3.9133288	5.090
Adobe.....	176 24 35.75	356 24 16.08	4.1106596	8.017
Hall.....	243 21 41.64	63 25 18.76	3.9999819	6.213
Copper.....	264 56 14.12	85 03 41.45	4.2671488	11.495
Clovis.....	307 18 39.37	127 24 11.11	4.2362237	10.705
Fresno.....	344 03 03.43	164 05 22.21	4.3202756	12.990
Bullard flagpole.....	347 13 53.11	167 14 35.42	3.8977887	4.911

**DELTA, MERCED COUNTY, CALIF.**

Station is the center of water tank at the Miller & Lux Delta ranch, about 7 miles northeast of Los Banos, a town on the Southern Pacific R. R.

[Latitude 37° 07' 02.919". Longitude 120° 44' 21.145".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Los Banos Tank.....	56 22 06.81	236 18 16.64	4.0540401	7.037
Milepost 162.....	98 15 23.27	278 11 00.31	4.0360915	6.752
Highland.....	154 57 41.65	334 56 43.03	3.7527901	3.517
San Juan.....	298 59 57.09	119 02 56.36	3.9239558	5.216
Power.....	345 13 46.24	165 14 30.62	3.8533472	4.433

**DERRICK, FRESNO COUNTY, CALIF.**

Oil-well derrick 200 feet southwest of a levee connecting Fish and Fresno sloughs and about 3 miles east of San Joaquin, a town on the Hanford & Summit Lake branch of the Southern Pacific R. R.

Signal: 100-foot oil derrick.

Reference mark: Center of 8-inch casing of deep well, 1 foot south of center of signal.

[Latitude 36° 36' 41.406". Longitude 120° 08' 17.405".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Cantua.....	62 39 20.40	242 30 52.34	4.3782577	14.846
San Joaquin Tank.....	83 07 06.39	263 05 18.87	3.6544898	2.804
Borland.....	113 43 21.33	293 36 32.91	4.2685567	11.532
Hermanhouse.....	133 13 52.11	313 07 30.17	4.3378948	13.528
Kings.....	135 19 55.19	315 16 44.34	4.0528116	7.017
Jamesan.....	156 25 30.78	336 23 07.66	4.1722098	9.238
Sandy.....	198 36 05.64	18 36 34.98	3.5830921	2.379
Kerman.....	209 12 20.41	29 15 07.64	4.1535698	8.850
Kearney.....	237 54 21.32	58 02 14.14	4.3653550	14.411
McMullin.....	250 56 35.93	71 02 55.60	4.1996952	9.841

**DINUBA, FRESNO COUNTY, CALIF. (Not occupied.)**

Station mark: Center of high red wooden tank in Dinuba.

[Latitude 36° 32' 35.956". Longitude 119° 23' 09.989".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Round.....	160 12 53.79	340 08 32.00	4.5123564	20.217
Campbell.....	169 32 55.96	349 31 40.94	4.2357838	10.694
Smith.....	220 12 10.64	40 13 38.20	3.7529353	3.518

**DOS PALOS, FRESNO COUNTY, CALIF.**

Center of tank house supplying water to Dos Palos.

Signal: Flagpole on top of tank house.

Station mark: Artesian well in center of tank house.

[Latitude 36° 59' 14.169". Longitude 120° 37' 31.018".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Hollingsworth.....	4 02 48.36	184 02 28.04	4.0744041	7.375
Ora Loma.....	32 07 27.71	212 04 27.23	4.1457490	8.692
White.....	66 58 01.41	246 50 14.77	4.3197460	12.975
San Juan.....	104 57 33.16	344 56 25.16	4.0312537	6.677
Belmont.....	181 53 56.30	1 54 00.79	3.7452289	3.456
Johnson.....	229 10 14.95	49 13 16.17	4.1165906	8.127
Golden Hoof.....	238 04 39.19	108 09 08.30	4.0661607	7.236

**DRESSER, SAN LUIS OBISPO COUNTY, CALIF.**

On a small hill about 8 miles east-southeast of Paso Robles and on land owned by Mr. Dresser. From Paso Robles take the Creston road until first schoolhouse is passed (about 7 miles), continue on same road to first ranch on left ( $\frac{1}{4}$  mile), then turn north up lane to summit of ridge, thence go through a fence and east along ridge until highest point is reached. All oak trees were cut on the summit. The next hill east of this point is bald but lower than the point used.

Signal: An oak tree planted in the ground on the highest point.

Station mark: A triangulation tablet set in rock. Position of tablet computed. Azimuth from tablet to signal,  $209^{\circ} 35'$ ; distance, 0.45 meter.

[Latitude  $35^{\circ} 34' 55.762''$ . Longitude  $120^{\circ} 34' 20.737''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Juhl.....	70 34 26.80	250 25 12.97	4.4058368	15.819
Rocky Butte.....	102 00 00.26	281 43 00.18	4.6535228	27.982
Fair Oaks.....	108 58 09.39	288 50 25.90	4.3258156	13.157
Semas.....	146 13 51.66	326 05 03.50	4.6107150	25.355
Vineyard.....	157 58 18.82	337 54 46.84	4.3861901	15.120
Estrella.....	195 41 38.63	15 43 27.76	4.2403727	10.807
Castle Mount.....	207 54 36.29	28 02 45.92	4.6519052	27.878

**DUNKARD, FRESNO COUNTY, CALIF. (Not occupied.)**

Station mark: Center of cupola of Dunkard School.

[Latitude  $36^{\circ} 42' 49.875''$ . Longitude  $119^{\circ} 59' 46.616''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Kerman.....	100 36 36.21	280 34 18.25	3.7653452	3.620
Kearney.....	262 16 53.12	82 19 41.12	3.8473695	4.372
McMullin.....	339 46 33.74	159 47 28.68	3.8201001	4.106

**EADE, MONTEREY COUNTY, CALIF.**

On flat ridge 8 or 9 miles east of King City. It can be reached by taking Lonoak road from King City for about 5 miles, thence turn to right and go up canyon passing Herman Eade's ranch to forks of road; thence take right-hand road and continue up canyon until oak trees on right-hand side of slope of ridge are reached. Signal is on top of ridge to south. Can continue up canyon to top of ridge and drive back on ridge to station, but 2 miles will be saved by walking up.

Signal: An oak tree trimmed.

Station mark: A triangulation tablet in rock 1.7 meters from the signal tree; azimuth from signal to tablet,  $149^{\circ}$ .

[Latitude  $36^{\circ} 13' 31.688''$  (1917),  $36^{\circ} 13' 31.91''$  (1909). Longitude  $120^{\circ} 58' 03.997''$  (1917),  $120^{\circ} 58' 09.20$  (1909).]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Bishoff (1909).....	79 26 01.25	259 17 50.12	4.3249351	.....
King City (1909).....	86 37 14.23	266 31 40.74	4.1498586	.....
Pinalito (1909).....	135 48 10.90	315 44 19.63	4.1457788	.....
Williams (1917).....	5 23 40.36	185 22 32.97	4.4842617	18.950
Pine Creek (1917).....	59 51 58.55	239 42 49.12	4.4302126	16.733
Santa Lucia (1917).....	77 48 34.75	257 32 40.11	4.6165346	25.697
Bishoff (1917).....	79 26 08.61	259 17 57.41	4.3250001	13.133

**EASTIN SCHOOL, MADERA COUNTY, CALIF.**

Signal and station mark: Cupola of Eastin School, about 6 miles south and 1 mile east of Madera.

[Latitude 36° 51' 53.952". Longitude 120° 00' 33.214".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Biola.....	3 57 34.34	183 57 22.10	3.8643524	4.547
Gallagher.....	55 46 21.12	235 42 32.50	4.0581272	7.104
Last Chance.....	87 51 11.42	267 45 57.19	4.1134044	8.068
Madera.....	156 05 12.00	336 03 20.02	4.0561051	7.071
Greenleaf.....	255 54 34.49	75 57 12.56	3.8277556	4.179
Herndon.....	290 13 26.25	110 16 50.16	3.9531716	5.579

**EAST STACK, FRESNO COUNTY, CALIF. (Not occupied.)**

Station mark: Eastern one of two stacks at pump station, west of Standard Oil (Mendota) tanks pump station.<sup>1</sup>

[Latitude 36° 36' 08.599". Longitude 120° 24' 19.293".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Telephone.....	135 33 47.10	315 29 52.69	4.1438113	8.653
Herman House.....	206 41 15.81	26 44 28.41	4.2506831	11.067
Cantua.....	344 48 34.08	164 49 39.00	4.0149715	6.432

**ELKHORN, SAN BENITO COUNTY, CALIF.**

On the south end of a high hill, which has oak trees on north end and is bald on south end, about 3 miles northeast of Elkhorn. Station is owned by T. S. Ingels, who lives 14 miles from Tres Pinos, on the New Idria road. It can be reached from Elkhorn by going on steep road to Mr. Joseph Thomas's ranch, thence on horseback to summit of hill. Land on which station is situated is owned by Mr. Thomas.

Signal: An oak tree set 3 feet in the ground.

Station mark: A U. S. G. S. triangulation tablet under center of station. Position of tablet computed.

[Latitude 36° 41' 34.045". Longitude 121° 08' 34.043".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Chalone.....	9 46 15.24	189 44 23.36	4.4402035	17.122
Harris.....	24 10 25.50	204 07 37.81	4.2322725	10.608
Armstrong.....	59 28 21.12	239 22 13.21	4.2499493	11.048
Paicines.....	115 27 28.12	295 12 36.26	4.2085915	10.045
Quilensabe.....	155 44 29.70	335 41 46.65	4.2157235	10.211
Peak.....	182 27 07.02	2 27 21.83	4.1565683	8.911
Meco.....	228 55 45.05	48 58 49.34	4.0060857	6.301

**EL NIDO, MERCED COUNTY, CALIF. (Not occupied.)**

Station is center of windmill tower at the El Nido School, about 10 miles west of Chowchilla, a town on the Southern Pacific R. R.

[Latitude 37° 08' 03.961". Longitude 120° 29' 27.187".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Johnson.....	14 47 42.07	194 46 51.86	3.9059507	5.004
Rodgers.....	75 56 05.06	255 54 56.92	3.4582780	1.785
Ash.....	302 07 41.59	122 11 44.83	4.0704060	7.307

<sup>1</sup> These stacks have since been destroyed.

**ESTRELLA, SAN LUIS OBISPO COUNTY, CALIF.**

On a bald hill on the Estrella ranch, about 15 miles from San Miguel. Go from San Miguel by Estrella post office to Bern post office, thence east and north over small ridge to Freeman Canyon, and up this canyon until a gate is reached. Follow the road through this gate until it crosses the canyon, then turn west. An orchard and water trough can be seen on the west side of the fence. Go through a gate at this place thence northwest up ridge to signal. A buckboard or Ford car can be driven to signal.

Signal: An oak tree set in the ground.

Station mark: A rock with chiseled cross on it. No tablet was set in this rock, as it was very hard and broke both drills. There is no other rock on the hill, and this one had to be hauled there. Position of mark was computed. Azimuth from mark to signal,  $56^{\circ} 14'$ ; distance, 0.60 meter.

[Latitude  $35^{\circ} 43' 59.033''$ . Longitude  $120^{\circ} 31' 13.520''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Dresser.....	15 43 27.76	195 41 38.63	4.2403727	10.807
Fair Oaks.....	68 17 22.55	248 07 48.99	4.4252600	16.543
Vineyard.....	112 49 22.33	292 44 00.56	4.1761640	9.322
Stone Canyon.....	174 45 31.19	354 47 22.27	4.5123908	20.218
Castle Mount.....	215 27 50.43	35 34 11.34	4.4488243	17.455

**EYRAND, MERCED COUNTY, CALIF.**

High cement silo on the Eyrand ranch, about 7 miles southeast of Atwater, and about 10 miles southwest of Merced. To reach it go south from Merced 2 miles, thence west 4 miles, thence south 4 miles.

Signal and station mark: Center of cement silo about 50 feet high. It can be occupied.

[Latitude  $37^{\circ} 13' 39.373''$ . Longitude  $120^{\circ} 33' 12.086''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Merced.....	215 11 47.93	35 14 20.54	4.0321314	6.691
Alfarata.....	241 45 12.13	61 49 13.55	4.0650404	7.218
Lord.....	295 48 17.73	115 52 11.55	4.0250777	6.583
Honn.....	317 32 57.40	137 36 31.72	4.1128238	8.057
Rodgers.....	345 55 31.82	165 56 52.64	4.0564102	7.076

**FAIRMEAD, MADERA COUNTY, CALIF. (Not occupied.)**

Station is center of steel water tank at town of Fairmead, on the Southern Pacific R. R. between Chowchilla and Madera.

[Latitude  $37^{\circ} 04' 38.657''$ . Longitude  $120^{\circ} 11' 31.055''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Fuller.....	27 28 48.62	207 27 01.59	3.9786933	5.916
Berenda Slough.....	61 23 15.80	241 18 24.28	4.1343554	8.467
Ash.....	90 16 18.75	270 09 33.15	4.2205790	10.326
Chowchilla.....	131 29 42.34	311 27 12.715	3.9124851	5.080
Sharon.....	244 53 14.16	64 55 26.89	3.7783343	3.730
Crumley.....	341 27 19.25	161 28 13.69	3.8465001	4.364



**FAIRMONT, MERCED COUNTY, CALIF.**

Tank house at the Miller & Lux Fremont ranch. To reach ranch from Gustin go south 2 miles and east 6 miles.

Signal and station mark: Center of tank.

[Latitude 37° 13' 58.293''. Longitude 120° 52' 28.063'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Bareillas.....	32 29 59.59	212 24 02.62	4.4346644	16.905
Ingomar.....	54 43 56.54	234 40 33.03	4.0072640	6.318
Christian.....	77 23 45.43	257 15 47.61	4.3002126	12.407
Gustine.....	101 55 54.01	281 51 17.80	4.0605287	7.143
Underwood.....	324 50 18.74	144 51 36.50	3.7408993	3.422
Milepost 162.....	353 35 07.72	173 35 38.69	4.0539241	7.035

**FAIR OAKS, SAN LUIS OBISPO COUNTY, CALIF.**

On highest point of a ridge about 8 miles a little north of west of Paso Robles, on the next place west of the San Ignacio ranch owned by Paderewski. Take the Paso Robles and Adelaida road for about 7 miles or until the summit is reached (elevation U. S. G. S., 1,940); at this point leave road and go south in pasture to highest point of ridge (about 0.5 mile in distance and 400 feet in elevation). All timber was cut from the point, and an oak tree was set in the ground for a signal.

Station mark: Tablet set in a rock placed 0.92 meter west of signal. Position of tablet was computed. Azimuth from tablet to signal, 274° 50'; distance, 0.92 meter.

[Latitude 35° 38' 38.369''. Longitude 120° 47' 36.689'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Juhl.....	14 25 24.86	194 23 53.67	4.2002766	9.854
Rocky Butte.....	95 45 52.62	275 36 35.73	4.3829363	15.007
Lynch.....	129 12 24.90	309 05 42.01	4.3497869	13.904
Williams.....	151 17 43.97	331 10 27.19	4.5906538	24.210
Semas.....	174 15 32.89	354 14 29.55	4.4340556	16.881
Vineyard.....	214 41 01.53	34 45 14.03	4.2808062	11.862
Castle Mount.....	231 15 34.56	51 31 30.00	4.7201779	32.623
Estrella.....	248 07 48.99	68 17 22.55	4.4252800	16.543
Dresser.....	288 50 25.90	108 58 09.39	4.3258150	13.157

**FAUCHER MONUMENT, MERCED COUNTY, CALIF.**

A granite tombstone about 50 feet high, erected in memory of George Hicks Faucher, and inscribed "Born in New York State Feb. 9, 1828. Died in California, March 30, 1900," at a station on the Atchison, Topeka & Santa Fe Ry. called Tuttle, about 5 miles east of Merced.

Signal and station mark: Center of monument.

[Latitude 37° 17' 44.646''. Longitude 120° 22' 40.328'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Alfarata.....	68 47 44.74	248 45 33.64	3.7573088	3.554
Merced.....	97 33 34.19	277 29 44.07	3.9746697	5.862
Blacksmith.....	177 06 32.73	357 06 17.29	4.0937954	7.712
Hurricane.....	211 05 12.59	31 06 50.86	3.8879045	4.800
Planada.....	278 10 42.96	98 12 41.59	3.6877652	3.028
Le Grand.....	283 45 10.56	103 50 07.34	4.0943978	7.722

## FIREBAUGH, FRESNO COUNTY, CALIF.

Windmill without wheel at a hotel in Firebaugh owned by L. Pucciwelli.

Signal: Mill frame on tank platform.

Station mark: Pipe in well under mill.

[Latitude 36° 51' 36.223". Longitude 120° 27' 26.707".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Miller No. 3.....	38 39 47.79	218 36 06.91	4.1654803	9.096
Miller Headquarters.....	58 23 55.72	238 20 22.21	4.0155529	6.440
Silaxo.....	107 15 42.11	287 13 06.31	3.8282818	4.184
Silaxo stack.....	126 57 48.06	306 55 23.90	3.8717451	4.625
Golden Hoof.....	159 42 42.40	339 41 08.11	4.0488641	6.954
West Power.....	176 49 09.48	356 48 59.36	3.8762201	4.673
Syphon.....	206 38 32.69	26 41 36.55	4.2272448	10.486
Southeast Cottonwood.....	244 19 48.74	64 27 11.90	4.3067411	12.592
Aliso.....	263 03 16.23	83 08 23.29	4.1061723	7.935
Aliso Mill.....	269 21 52.57	89 29 07.79	4.2546146	11.168
Columbia.....	279 05 14.98	99 08 49.02	3.9520097	5.504
Helm.....	313 41 39.36	133 44 33.14	3.9973857	6.176

## FLAT TOP, MARIPOSA COUNTY, CALIF.

On a flat, rocky hill, 10 miles east of Le Grand, a station on the Atchison, Topeka & Santa Fe Ry. Take road east from Le Grand 7 miles to ranch house on creek, turn in gate west of ranch house, thence follow left-hand road inside of gate to station.

Signal: Cairn 7 feet high.

Station mark: Tablet under center of cairn.

[Latitude 37° 16' 18.291". Longitude 120° 06' 37.152".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Sharon.....	5 28 20.74	185 27 36.12	4.2812386	11.874
Marguerite.....	24 49 29.32	204 47 10.49	4.1299824	8.382
Red Tank.....	21 51 49.23	201 50 37.68	3.8937089	4.865
Chowchilla.....	39 38 57.84	219 32 30.19	4.3215165	13.028
La Branza.....	60 33 03.79	240 25 24.07	4.3330243	13.377
Le Grand School.....	69 28 59.53	249 23 50.78	4.1279427	8.342
Le Grand.....	88 33 37.80	268 28 51.22	4.0668279	7.247
Hurricane.....	115 15 13.87	295 07 08.26	4.3384349	13.545
Blacksmith.....	121 49 44.89	301 39 45.25	4.4566259	17.782
West Butte.....	146 45 19.51	326 40 51.91	4.2963446	12.294
Green.....	273 33 47.77	93 38 09.27	4.0277939	6.624
Rabbit.....	313 08 26.65	113 14 57.74	4.3400157	13.595
Daulton.....	323 47 50.27	143 52 27.87	4.2830273	11.923

## FOWLER, FRESNO COUNTY, CALIF. (Not occupied. No check.)

The high black steel tank in the town of Fowler.

Station mark: Center of tank.

[Latitude 36° 37' 48.607". Longitude 119° 40' 29.976".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Fresno.....	139 35 42.34	319 31 39.24	4.1924664	9.679
Round.....	215 07 40.97	35 13 37.15	4.4091957	15.942

**FREMONT, SAN BENITO AND MONTEREY COUNTIES, CALIF. (Not occupied.)**

Highest point of Fremont Peak, a well-known mountain about 10 miles southwest of Hollister.

[Latitude 36° 45' 27.105". Longitude 121° 30' 12.293".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Quien Sabe.....	252 52 25.44	73 02 39.82	4.4248932	16.529
Paicines.....	270 44 50.36	90 51 55.13	4.2457276	10.942
Armstrong.....	313 43 52.00	133 50 39.40	4.3702053	14.573

**FRESNO COURTHOUSE, FRESNO COUNTY, CALIF.**

Signal: Cupola on courthouse.

Station mark: Center of cupola on courthouse.

[Latitude 36° 44' 13.207". Longitude 119° 47' 16.907".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Kearney.....	82 04 54.17	262 00 21.89	4.0697740	7.297
Biola.....	109 16 39.85	289 08 39.24	4.3313870	13.327
Greenleaf.....	140 29 17.04	320 23 57.78	4.3168404	12.888
Bullard Flagpole.....	162 09 36.12	342 07 59.68	4.1147057	8.092
Chimney.....	163 14 19.68	343 13 24.90	3.8957436	4.888
Deep Well.....	164 05 22.21	344 03 03.43	4.3202756	12.990
Adobe.....	168 48 02.27	348 45 23.68	4.5266352	20.892
Hall.....	187 26 22.98	7 27 40.80	4.3943012	15.405
Copper.....	210 18 11.12	30 23 18.70	4.4007709	15.636
Clovie.....	219 31 15.51	39 34 27.92	4.0974228	7.776
Oak.....	222 42 02.32	42 51 06.41	4.5198238	20.567
Round.....	249 46 51.75	69 56 52.01	4.4229203	16.454
Las Palmas.....	254 23 38.37	74 26 52.16	3.9212635	5.183
Sanger.....	278 31 54.90	98 40 13.87	4.3210465	13.014
Fowler.....	319 31 39.24	139 35 42.34	4.1924664	9.679

**FULLER, MADERA COUNTY, CALIF.**

On the bank of Mr. Fuller's reservoir. It can be reached by following road due south from Chowchilla 9 miles to the Fuller ranch.

Signal: Lumber structure with cross targets.

Station mark: Iron bench-mark post centered under signal.

[Latitude 37° 00' 04.605". Longitude 120° 14' 28.744".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Southeast Cottonwood.....	8 04 38.18	188 04 14.33	3.8442016	4.341
Syphon.....	87 06 19.91	267 01 49.03	4.0674339	7.257
Berenda Slough.....	104 13 09.51	284 10 05.20	3.8925604	4.852
Chowchilla.....	172 51 30.72	352 50 48.32	4.1452213	8.681
Fairmead.....	207 27 01.59	27 28 48.62	3.9780933	5.916
Crumley.....	254 51 47.84	74 54 29.19	3.8365911	4.265
Madera.....	285 49 32.04	105 56 02.64	4.2226242	10.375

**GALLAGHER, FRESNO COUNTY, CALIF.**

Station is a windmill on the north side of James Gallagher's tank house, 0.5 mile south of San Joaquin River and about 8 miles north-northwest of Kerman.

Signal: Windmill.

Station mark: Iron pipe in well under mill.

[Latitude 36° 48' 30.178". Longitude 120° 06' 54.537".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Jamesan.....	44 13 42.21	224 10 29.16	4. 0596341	7.128
Mill Tank.....	81 58 09.38	261 55 34.88	3. 8100167	4. 012
Aliso Mill.....	115 16 03.59	295 10 59.87	4. 1422972	8. 623
Last Chance.....	149 17 03.68	329 15 38.28	3. 8394367	4. 293
Madera.....	195 58 38.45	16 00 35.41	4. 2433982	10. 883
Eastin.....	235 42 32.50	55 46 21.12	4. 0581272	7. 104
Biola.....	275 29 14.74	95 32 50.98	3. 9537156	5. 586
Kerman.....	332 32 45.72	152 34 43.74	4. 0258373	6. 595

**GOLDEN HOOF, FRESNO COUNTY, CALIF.**

Station is windmill on west side of tank house at the Miller & Lux Golden Hoof ranch, 7 miles southeast of Dos Palos.

Signal: Windmill.

Station mark: Center of well under mill.

[Latitude 36° 57' 16.708". Longitude 120° 30' 03.550".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Silaxo.....	16 40 44.61	196 39 42.84	3. 9480607	5. 513
Miller Head.....	17 13 45.61	197 11 45.99	4. 2221530	10. 303
Silaxo Stack.....	18 55 04.61	198 54 14.51	3. 8038730	3. 956
Miller No. 2.....	46 00 16.75	225 55 03.54	4. 2544780	11. 104
Hollingsworth.....	55 26 25.97	235 21 36.88	4. 1605565	8. 993
Ora Loma.....	66 05 44.56	245 58 15.37	4. 3065781	12. 587
White.....	81 31 10.80	261 18 55.45	4. 4861133	19. 031
Dos Palos.....	108 09 08.30	288 04 39.19	4. 0661607	7. 236
Belmont.....	130 11 28.83	310 07 04.05	4. 1533735	8. 845
San Juan.....	135 20 48.85	315 15 11.46	4. 2943323	12. 237
Bridge.....	159 18 47.73	339 17 04.66	4. 0783409	7. 442
Johnson.....	174 33 45.71	354 32 17.49	4. 0871288	7. 594
Ash.....	218 23 50.80	38 28 15.43	4. 2425475	10. 862
Syphon.....	248 08 20.86	68 12 59.26	4. 0910395	7. 663
Southeast Cottonwood.....	274 24 37.50	94 33 35.42	4. 3465805	13. 802
West Power.....	310 45 46.99	130 47 11.12	3. 6603027	2. 842
Firebaugh.....	339 41 08.11	159 42 42.30	4. 0488641	6. 954

**GRANVILLE, FRESNO COUNTY, CALIF. (Not occupied.)**

Granville School, 4 miles northwest of Sanger.

Signal and station mark: Center of cupola.

[Latitude 36° 44' 08.493". Longitude 119° 34' 58.488".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Las Palmas.....	103 05 45.01	283 01 37.02	4. 0235123	6. 559
Round.....	215 15 04.46	35 17 42.61	4. 0547474	7. 049
Campbell.....	286 57 25.32	107 03 13.71	4. 1796546	9. 397
Sanger.....	321 24 06.59	141 25 04.02	3. 5822222	2. 375

**GRAVES, MONTEREY COUNTY, CALIF. (Not occupied.)**

Large pine tree near the summit of Bald Hill, owned by Mr. Graves. About 5 miles south of Lockwood.

Station mark: Center of tree.

[Latitude 35° 51' 50.857". Longitude 121° 07' 25.449".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Williams.....	228 41 05.58	48 45 24.83	4. 1687794	9. 165
Lynch.....	309 24 31.63	129 29 23.34	4. 2096584	10. 069
Rocky Butte.....	345 04 45.77	165 07 02.18	4. 3578927	14. 166

**GREEN, MARIPOSA COUNTY, CALIF.**

On a bald hill, locally known as Green Mountain. The Green Mountain copper mine is just under the hill on the south side. The road from Raymond to Mariposa passes within a mile of the hill at Seaton's saloon, 8 miles from Raymond. Animals can be ridden to the point.

Signal: Cairn 8 feet high.

Station mark: Triangulation tablet; azimuth to signal, 146°; distance, 1.10 meters.

Latitude 37° 15' 56.92" (1908), 37° 15' 56.579" (1915). Longitude 119° 59' 24.51" (1908), 119° 59' 25.318" (1915).

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Bullion (1908).....	173 21 50.63	353 20 24.66	4.4782044	.....
Moore Hill (1908).....	181 21 24.88	1 21 33.01	4.1437321	.....
Devil (1908).....	217 03 19.18	37 12 26.66	4.5650238	.....
Raymond (1908).....	233 57 48.00	54 13 23.09	4.6699597	.....
Deadwood (1908).....	258 46 08.37	78 57 13.77	4.4404747	.....
Adobe (1908).....	335 54 45.56	155 59 26.04	4.4490909	.....
Rabbit (1908).....	339 38 28.41	159 40 38.41	4.1833582	.....
Sharon (1915).....	34 14 30.93	214 09 25.33	4.3461516	13.788
Marguerite (1915).....	54 41 14.52	234 34 34.53	4.3009786	12.426
Red Tank (1915).....	64 06 03.16	244 00 30.31	4.1783613	9.369
Le Grand (1915).....	91 01 19.60	270 52 11.55	4.3483662	13.858
Flat Top (1915).....	93 38 09.27	273 33 47.77	4.0277939	6.624
West Butte (1915).....	128 45 55.93	308 37 06.40	4.4397964	17.106
Rabbit (1915).....	339 38 57.68	159 41 07.65	4.1834615	9.480
Daulton (1915).....	357 23 44.70	177 24 01.20	4.1713441	9.210

**GREENLEAF, MADERA COUNTY, CALIF.**

A red tank, belonging to the railroad company, at Greenleaf, a station on the Atchison, Topeka & Santa Fe Ry., 8 miles southeast of Madera.

Signal and station mark: Center of tank.

[Latitude 36° 52' 51.990". Longitude 119° 56' 09.788".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Biola.....	38 13 39.73	218 10 49.56	4.0557672	7.065
Eastin.....	75 57 12.56	255 54 34.49	3.8277556	4.179
Madera.....	128 14 55.34	308 10 25.10	4.1514200	8.806
Service.....	187 57 38.84	7 58 11.29	3.9844702	5.995
Adobe.....	201 20 41.41	21 23 22.94	4.2610799	11.335
Deep Well.....	241 06 56.07	61 09 57.00	3.9303794	5.293
Half.....	242 18 04.46	62 24 42.50	4.2675243	11.505
Copper.....	257 26 49.03	77 37 17.12	4.4235469	16.478
Bullard Flagpole.....	291 17 44.83	111 21 27.91	3.9950910	6.144
Fresno.....	320 23 57.78	140 29 17.04	4.3168404	12.888

**GRUBER, FRESNO COUNTY, CALIF. (Not occupied.)**

Station is windmill at Mr. Gruber's ranch, about 8 miles west of Mendota, a small town on the Southern Pacific R. R.

[Latitude 36° 45' 47.136". Longitude 120° 37' 50.062".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Tierra Loma.....	31 44 36.66	211 43 38.63	3.6604027	2.843
Panoche.....	70 54 13.27	250 49 26.18	4.1004317	7.830
Shell No. 1.....	103 43 06.23	283 41 06.99	3.7062818	3.160
Miller No. 2.....	171 08 23.60	351 07 50.56	3.9480559	5.513
Miller No. 3.....	276 04 07.38	96 06 39.79	3.8029572	3.947

## GUSTINE, MERCED COUNTY, CALIF.

The cupola of Catholic Church in Gustine.

Signal: Center of cupola.

Station mark: Center of cupola.

[Latitude 37° 15' 15.143". Longitude 121° 00' 04.458".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Bareillas.....	7 30 19.34	187 28 57.84	4.4073108	15.873
Christian.....	50 39 47.69	230 36 25.84	4.0269572	6.612
Cleveland.....	98 25 05.77	278 20 23.36	4.0651103	7.219
Crow.....	131 31 16.64	311 25 58.53	4.2368543	10.720
South End Barn.....	228 08 37.94	48 13 19.20	4.1906513	9.639
Fairmont.....	281 51 17.80	101 55 54.01	4.0605287	7.143

## HALL, MADERA COUNTY, CALIF.

On top of a hill on the west bank of San Joaquin River, about 2 miles south-west of Friant. The Madera-Friant road passes the north end of the hill about 0.5 mile from signal.

Position of signal computed.

Station mark and signal: Timber with black and white cross targets.

Reference mark: Aluminum tablet. Azimuth from tablet to signal, 114° 08'; distance, 4.8 feet.

[Latitude 36° 57' 0.666". Longitude 119° 45' 07.153".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Fresno.....	7 27 40.80	187 26 22.98	4.3943012	15.405
Greenleaf.....	62 24 42.50	242 18 04.46	4.2675243	11.505
Deep Well.....	63 25 18.76	243 21 41.64	3.9999819	6.213
Adobe.....	130 47 43.97	310 43 46.88	4.1063124	7.992
Copper.....	288 47 00.35	106 50 50.73	3.9689738	6.156
Round.....	305 30 54.68	125 39 38.61	4.4245084	16.514
Clovis.....	342 21 30.56	162 23 25.57	4.1950005	9.735

## HARRIS, SAN BENITO COUNTY, CALIF.

On a brushy mountain about 12 miles from San Benito and about 1 mile south of Mr. Harris's ranch. From San Benito take the Hollister road through Bear Valley to Mr. Henry Melendy's ranch, thence go through a gate on the Salinas Valley road to Mr. Harris's ranch. This is as far as a wagon can be taken. From Mr. Harris's ranch go south up ridge to the highest point. Animals can be ridden all the way up.

Signal: A pine tree set 3 feet in the ground.

Station mark: A tablet set in rock placed in ground. Azimuth from tablet to signal, 87° 03'; distance, 1.10 meters.

[Latitude 36° 33' 08.688". Longitude 121° 13' 15.137".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Armstrong.....	128 07 01.67	308 03 41.89	4.0248336	6.579
Quien Sabe.....	180 24 06.89	0 24 12.06	4.4851199	18.988
Elkhorn.....	204 07 37.81	24 10 25.50	4.2322725	10.608
Meco.....	213 18 21.43	33 24 13.23	4.4252340	16.542
Call.....	245 36 43.70	65 42 21.44	4.1893173	9.609
Martin.....	304 03 17.92	124 07 37.33	4.1171623	8.138
Lone Pine.....	306 10 21.70	126 12 14.29	3.7656121	3.622
Chalone.....	348 39 05.71	168 40 01.22	4.0722502	7.338

## HELLMAN, SAN LUIS OBISPO COUNTY, CALIF

On a low hill about 4.5 miles northwest of San Miguel. The road to the Hellman ranch passes under the foot of the hill, and a buckboard was driven to the summit, which is the flat top of a ridge. There are oak trees on the ridge but none within 100 yards of the signal.

Signal: A redwood post 4 by 4 inches and 16 feet long, set about 4 feet in the ground, with two white targets 3 feet square at right angles to each other on it.

Station mark: A triangulation tablet set in a rock placed in the ground 1.34 meters. a little east of north of signal. The position of the tablet was determined. Azimuth from tablet to signal,  $18^{\circ} 22'$ ; distance, 1.34 meters.

[Latitude  $35^{\circ} 46' 41.123''$ . Longitude  $120^{\circ} 46' 06.249''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Lynch.....	87 52 15.54	267 44 39.13	4.2927839	12.194
Williams.....	132 36 50.54	312 28 40.07	4.4549712	17.714
Powell.....	190 33 50.48	10 35 39.07	4.4031826	15.723
Vineyard.....	264 34 04.51	84 37 24.55	3.9360395	5.363

## HELM, FRESNO COUNTY, CALIF.

Tank house at the Miller & Lux Helm ranch, 4 miles north of Mendota.

Signal: Center of tank house.

Station mark: Center of concrete floor of tank house.

[Latitude  $36^{\circ} 47' 53.367''$ . Longitude  $120^{\circ} 22' 36.808''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Telephone.....	46 13 39.50	226 08 43.25	4.2310930	10.579
Miller No. 3.....	74 26 16.42	254 19 42.12	4.2293593	10.537
Miller Headquarters.....	95 10 13.86	275 03 46.83	4.2062559	9.991
Firebaugh.....	133 44 33.14	313 41 39.36	3.9973857	6.176
Aliso.....	213 10 34.66	33 12 47.70	4.0018767	6.241
Aliso Mill.....	236 48 58.18	56 53 19.31	4.1103638	8.012
Hermanhouse.....	316 48 36.08	136 50 47.79	3.9016663	4.955
Borland.....	341 50 55.70	161 52 40.46	4.1447886	8.672

## HERMANHOUSE, FRESNO COUNTY, CALIF.

Tank house on the Hermanhouse ranch, 6 miles more or less east of Mendota and 0.5 mile north of the Whites Bridge-Fresno road.

Signal and station mark: Center of tank house.

[Latitude  $36^{\circ} 44' 44.711''$ . Longitude  $120^{\circ} 18' 56.822''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Borland.....	8 30 31.01	188 30 04.18	3.8768482	4.679
Cantua.....	11 35 29.43	191 33 22.06	4.4221967	16.427
East Stack.....	26 44 28.41	206 41 15.81	4.2506831	11.067
Shell No. 2.....	46 35 53.96	226 28 37.35	4.3981829	15.543
Telephone.....	71 27 51.79	251 20 44.18	4.2724558	11.636
Helm.....	136 50 47.79	316 48 36.08	3.9016663	4.955
Jamesan.....	277 17 11.43	97 21 10.56	4.0000079	6.214
Kings.....	310 51 51.34	130 55 02.44	4.0209628	6.521
Derrick.....	313 07 30.17	133 13 52.11	4.3378948	13.528

**HERNDON, FRESNO COUNTY, CALIF.**

Station mark: Center of cupola on schoolhouse at Herndon, a small town on the Southern Pacific R. R. between Madera and Fresno. Later destroyed.

[Latitude 36° 50' 18.135''. Longitude 120° 54' 53.225''].]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Eastin.....	110 16 50.16	290 13 26.25	3.9531716	5.579
Madera.....	136 04 07.65	315 58 51.57	4.2734974	11.664

**HIGHLAND, MERCED COUNTY, CALIF.**

On a small knoll 0.5 mile north of the Miller & Lux Highland ranch and 2.5 miles northeast of the Miller & Lux San Luis ranch; it is 0.25 mile southeast of willow tree, 1 mile west of San Joaquin River, and 0.5 mile north of slough. It can be reached by north and south road from Los Banos to Standard Oil pumping station 3 miles north of Los Banos, thence to San Luis ranch.

Signal: Quadripod with cross targets and flag.

Station mark: Iron bench-mark post centered under signal.

[Latitude 37° 09' 49.248''. Longitude 120° 45' 58.227''].]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Los Banos Tank.....	31 39 32.93	211 36 41.22	4.1269623	8.324
Milepost 162.....	66 52 18.43	246 48 53.96	3.9584686	5.647
Underwood.....	116 14 52.28	296 12 14.62	3.8563848	4.464
San Juan.....	313 21 03.91	133 25 01.88	4.1268982	8.322
Delta.....	334 56 43.03	154 57 41.65	3.7527904	3.517

**HOLLINGSWORTH, FRESNO COUNTY, CALIF.**

Center of tank over a well 1,000 feet deep on the Hollingsworth tract, 9 miles south of South Dos Palos. It is about 1 mile east of road leading south from South Dos Palos.

Signal: Center of tank.

Station mark: Center of cement foundation and floor under tank.

[Latitude 36° 52' 50.104''. Longitude 120° 38' 04.839''].]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Miller No. 2.....	13 10 56.85	193 10 32.62	3.6421701	2.726
Panoche.....	33 55 19.66	213 50 41.02	4.3155823	12.851
Ora Loma.....	89 55 55.72	269 53 18.76	3.8195797	4.101
White.....	101 17 06.20	281 09 40.43	4.2727986	11.645
Dos Palos.....	184 02 28.04	4 02 48.36	4.0744041	7.375
Golden Hoof.....	235 21 36.88	55 26 25.97	4.1605565	8.993
Silaxo Stack.....	257 24 12.73	77 28 11.58	4.0041040	6.273
Silaxo.....	271 41 21.47	91 45 08.58	3.9720590	5.827
Miller Headquarters.....	317 48 21.59	137 51 10.68	4.0173219	6.467
Miller No. 3.....	334 00 35.85	154 03 17.32	4.1833237	9.477



**HOLLISTER, SAN BENITO COUNTY, CALIF.**

Cupola on courthouse at Hollister, the county seat of San Benito County, Calif.  
 Station mark: Center of cupola.

[Latitude 36° 51' 03.54". Longitude 121° 24' 12.466".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
	° ' "	° ' "		
Santa Ana (1908).....	248 49 22.53	68 55 31.44	4.2127407	10.141
Armstrong (1908).....	343 20 25.50	163 23 38.15	4.4459584	17.350
Quien Sabe (1917).....	279 20 12.24	99 26 51.55	4.2233829	10.303
Paicines (1917).....	321 07 24.50	141 10 54.17	4.1408906	8.595

**HONN, MERCED COUNTY, CALIF.**

Tank house on Mr. Honn's ranch, about 12 miles south of Merced. Take Santa Rita road for 10 miles, thence go east 2 miles. It can be occupied.

Signal and station mark: Center of 40-foot tank house.

[Latitude 37° 08' 28.870". Longitude 120° 27' 17.477".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
	° ' "	° ' "		
Rodgers.....	76 11 06.57	256 08 53.25	3.7897568	3.829
Eyraud.....	137 36 31.72	317 32 57.40	4.1128238	8.057
Merced.....	172 10 09.96	352 09 07.90	4.2681636	11.522
Lord.....	189 04 24.74	9 04 44.11	3.7004943	3.118
La Branza.....	251 53 50.54	71 58 40.69	4.0957696	7.747
Bliss.....	297 54 01.94	117 55 48.79	3.6941369	3.072

**HURRICANE, MERCED COUNTY, CALIF.**

About 12 miles by wagon road northeast of Merced. To reach it take road east from Merced to Tuttle, a station on the Atchison, Topeka & Santa Fe Ry. about 5 miles from Merced, thence go north to Mr. Applegate's ranch house, continue north 0.25 mile to fence corner, and thence northeast 2 miles to signal. Signal is on a very prominent hill that can be seen from Mr. Applegate's house. The old signal erected by C. L. Nelson was blown down, but the new signal is close to where the old one stood.

Signal: Tripod with cross targets.

Station mark: Iron bench-mark post centered under signal.

[Latitude 37° 21' 19.214". Longitude 120° 19' 58.253".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
	° ' "	° ' "		
Monument.....	31 06 50.86	211 05 12.59	3.8879045	4.800
Alfarata.....	47 03 04.64	226 59 15.20	4.1051387	7.916
Merced.....	68 04 59.67	247 59 31.11	4.1578254	8.937
Blacksmith.....	141 25 12.29	321 23 18.44	3.8689719	4.595
West Butte.....	230 36 39.87	50 40 18.46	4.0589318	7.117
Flat Top.....	295 07 08.26	115 15 13.87	4.3384349	13.545
Le Grand.....	319 50 36.40	139 53 55.14	4.0978411	7.784
Planada.....	353 30 53.67	173 31 14.12	3.8666605	4.571
La Branza.....	357 04 39.95	177 05 04.87	4.2990338	12.370

## INDIAN, FRESNO COUNTY, CALIF.

On a bald mountain at the head of Indian Valley and on the north side of Panoche Creek. It is about 7 miles northeast by east of Panoche post office. The Panoche-Mendota road intersects the road from Idria 4 miles south of the Kern oil well, from which the signal can be seen, probably 5 miles distant. Animals can be ridden up almost any of the ridges leading to highest point.

Signal: Cairn 7 feet high.

Station mark: Cairn 7 feet high.

Reference mark: Triangulation tablet set in rock; distance 1.60 meters from signal, azimuth 41° to signal.

[Latitude 36° 38' 27.298''. Longitude 120° 43' 34.341'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Buck (1908).....	50 58 13.48	230 52 59.42	4.2270767	.....
Panoche (1908).....	64 03 24.40	243 59 32.66	4.0309438	.....
Call (1908).....	83 34 52.92	263 22 43.63	4.4823341	.....
Bonanza (1908).....	128 57 25.73	308 48 18.34	4.4651214	.....
Miller No. 1 (1908).....	175 34 45.82	355 33 56.50	4.4223378	.....
Miller No. 2 (1908).....	197 47 18.15	17 50 11.11	4.3701193	.....
Miller Headquarters (1908).....	218 44 00.83	38 50 06.50	4.3842510	.....
Miller No. 3 (1908).....	229 02 20.90	49 08 18.54	4.2938858	.....
Mendota Oil (1908).....	242 45 45.88	62 57 32.37	4.5180460	.....
Mendota (1908).....	248 41 18.18	68 54 00.24	4.5309150	.....
Telephone (1908).....	253 17 06.26	73 24 41.49	4.2957845	.....
Chaney (1908).....	263 42 39.39	83 48 00.67	4.1287127	.....
Tanks (1908).....	271 28 51.98	91 43 41.41	4.5687108	.....
Cantua (1908).....	294 18 30.89	114 31 04.13	4.5379847	21.445
San Benito (1908).....	346 12 58.83	166 15 54.86	4.4907897	.....
Panoche 2 (1916).....	160 21 21.01	340 20 00.00	4.0004416	6.220
Tierra Loma (1916).....	212 23 54.00	32 26 21.73	4.0588652	7.116

## INGOMAR, MERCED COUNTY, CALIF.

A red water tank about 50 feet high in yard of section house at Ingomar, a station on the Southern Pacific R. R. on west side of San Joaquin Valley.

Signal and station mark: Center of tank.

[Latitude 37° 10' 47.702''. Longitude 120° 58' 04.631'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Bareillas.....	20 14 31.54	200 11 57.82	4.2601790	11.312
Christian.....	97 39 17.07	277 34 42.96	4.0525214	7.012
Fairmont.....	234 40 33.03	54 43 56.54	4.0072640	6.318
Underwood.....	263 08 15.13	83 12 56.29	4.0627718	7.180

## ITALIAN SERVICE COLONY, MADERA COUNTY, CALIF. (Not occupied.)

Station mark: Center of large water tank at the Italian Service Colony, about 4 miles southwest of Madera.

[Latitude 36° 55' 55.31''. Longitude 120° 06' 23.729'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Miller & Lux Signal.....	92 27 58.10	272 25 41.38	3.7509843	3.502
Crumley.....	150 28 18.92	330 26 08.42	4.0367511	6.762
Madera.....	232 34 34.25	52 36 13.01	3.7091331	3.180

## JAMESAN, FRESNO COUNTY, CALIF.

Station is 0.5 mile north of Jamesan station on the Southern Pacific R. R., and is about 8 miles west of Kerman. The signal is 200 feet south of the Kerman-Mendota road and 100 feet west of road to Jamesan.

Signal: A tripod 18 feet high with cross targets.

Station mark: Iron bench-mark post centered under signal.

[Latitude 36° 44' 03.380". Longitude 120° 12' 17.039".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Kings.....	19 34 15.20	199 33 27.31	3.7736912	3.690
Cantua.....	31 48 02.27	211 41 56.43	4.4617664	17.994
Tanks.....	40 09 07.99	220 05 19.05	4.1732567	9.260
Borland.....	60 48 51.34	240 44 25.56	4.1019662	7.858
Hermanhouse.....	97 21 10.56	277 17 11.43	4.0000079	6.214
Gallagher.....	224 10 29.16	44 13 42.21	4.0596341	7.128
Kerman.....	275 15 06.22	95 20 17.00	4.1122798	8.047
Sandy.....	324 19 16.87	144 22 09.42	4.0899247	7.643
Derrick.....	336 23 07.66	156 25 30.78	4.1722098	9.238

#### JOHNSON, MADERA COUNTY, CALIF.

On a levee about 2 miles east of the bridge across San Joaquin River and 8 miles northeast of Dos Palos. It is about 0.4 mile south of an east and west road leading to Chowchilla.

Signal: Timber structure with cross targets and flag.

Station mark: Iron bench-mark post centered under signal.

[Latitude 37° 03' 51.386". Longitude 120° 30' 50.424".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Dos Palos.....	49 13 16.17	229 10 14.95	4.1165906	8.127
Bridge.....	72 37 18.02	252 36 03.07	3.5078316	2.001
Rodgers.....	174 06 17.46	354 05 59.58	3.8528015	4.427
El Nido.....	194 46 51.86	14 47 42.07	3.9059507	5.004
Bliss.....	236 59 30.05	57 03 25.13	4.0597503	7.130
Ash.....	262 43 16.03	82 48 09.25	4.0832402	7.526
Syphon.....	300 59 52.97	121 04 59.95	4.1674508	9.137
Golden Hoof.....	354 32 17.49	174 33 45.71	4.0871288	7.594

#### JOLON, MONTEREY COUNTY, CALIF.

A three-point station on steep hill 1 mile east of Jolon, in San Antonio Valley. Leave San Antonio Mission road at a point opposite Earle Brothers' ranch, about 3 miles southeast of Mission and 4 miles northwest of Jolon.

Station mark: A mission roof tile set in ground under small rock cairn. Instrument over mark.

[Latitude 35° 59' 14.431". Longitude 121° 11' 55.417".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Santa Lucia.....	131 42 58.53	311 35 13.13	4.4228507	16.451
Pine Creek.....	168 30 18.46	348 29 16.88	4.1184733	8.162
Williams.....	282 23 51.69	102 30 49.89	4.2617385	11.352
Rocky Butte.....	340 28 15.18	160 33 09.81	4.5783184	23.533

#### JUHL, SAN LUIS OBISPO COUNTY, CALIF.

On a timbered peak at the source of Old Creek, about 7 or 8 miles from Cayucos. The York Hill road from Paso Robles to Cayucos crosses summit near the source of Old Creek. At this summit there is a gate on either side of road and a grove of Monterey cypress trees on west side. Enter gate on east side of road, go east to summit of first hill, thence south along ridge, but do not go through fence until summit of hill is reached, about 0.75 mile from the road. All timber was cut from summit.

Signal: A tree or stump with branches on it left standing.

Station mark: A triangulation tablet set in rock, placed in the ground. Position of tablet was computed. Azimuth from tablet to signal,  $49^{\circ} 04'$ ; distance, 1.12 meters.

[Latitude  $35^{\circ} 30' 19.973''$ . Longitude  $120^{\circ} 50' 13.438''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Stone.....	78 56 15.06	258 52 18.86	4.0190373	6.492
Rocky Butte.....	131 30 28.44	311 22 43.70	4.4285017	16.667
Fair Oaks.....	194 23 53.67	14 25 24.86	4.2002766	9.854
Dresser.....	250 25 12.97	70 34 26.80	4.4058368	15.819

#### KEARNEY, FRESNO COUNTY, CALIF.

A very high tower in Kearney Park about 6 miles west of Fresno.

Signal and station mark: Center of tower.

[Latitude  $36^{\circ} 43' 20.442''$ . Longitude  $119^{\circ} 55' 05.626''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
McMullin.....	33 18 59.53	213 17 06.59	3.9318111	5.311
Derrick.....	58 02 14.14	237 54 21.32	4.3653550	14.411
Dunkard.....	82 19 41.12	262 16 53.12	3.8473695	4.372
Kerman.....	90 37 19.87	270 32 13.88	4.1037913	7.891
Rugg.....	97 36 51.46	277 33 46.27	3.8894343	4.817
Biola.....	135 12 10.77	315 08 42.51	4.0878869	7.607
Deep Well.....	195 07 07.43	15 09 21.55	4.3523742	13.987
Fhimney.....	225 35 02.97	45 38 40.73	4.1169640	8.134
Cresno.....	262 00 21.89	82 04 54.17	4.0697740	7.297

#### KERMAN, FRESNO COUNTY, CALIF.

Station is center of water tank in town of Kerman on Southern Pacific R. R., on west side of San Joaquin Valley.

[Latitude  $36^{\circ} 43' 24.610''$ . Longitude,  $120^{\circ} 03' 37.364''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Derrick.....	29 15 07.64	209 12 20.41	4.1535698	8.850
Sandy.....	33 05 57.42	213 03 39.50	4.0212703	6.526
Kings.....	73 34 57.52	253 28 59.05	4.1910270	9.647
Jamesan.....	95 20 17.00	275 15 06.22	4.1122798	8.047
Gallagher.....	152 34 43.74	332 32 45.72	4.0258373	6.595
Biola.....	205 23 05.25	25 24 43.26	3.9763586	5.884
Rugg.....	259 51 07.07	79 53 07.90	3.7069745	3.165
Kearney.....	270 32 13.88	90 37 19.87	4.1037913	7.891
Dunkard.....	280 34 18.25	100 36 36.21	3.7653452	3.620
McMullin.....	312 12 08.25	132.15 21.07	4.0342234	6.723

#### KINGS, FRESNO COUNTY, CALIF.

On west end of south pier of a wooden bridge across Kings Slough, about 3 miles southwest of Jamesan.

Signal and station mark: A 2 by 6 inch timber with cross targets and flag.

Reference mark: Iron bench-mark post on the levee at southwest corner of bridge. Position of signal computed: Azimuth from bench mark to signal,  $258^{\circ} 27'$ ; distance, 19.8 feet.

[Latitude 36° 41' 01.843". Longitude 120° 13' 37.160".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Tanks.....	52 43 59.33	232 40 58.36	3.9810611	5.949
Borland.....	86 22 30.47	266 18 52.71	3.9575854	5.036
Herrmanhouse.....	130 55 02.44	310 51 51.34	4.0209628	6.521
Jamesan.....	199 33 27.31	19 34 15.20	3.7736912	3.690
Kerman.....	253 28 59.05	73 34 57.52	4.1910270	9.647
Sandy.....	295 36 57.51	115 40 37.79	4.0070398	6.315
Derrick.....	315 16 44.34	135 19 55.19	4.0528116	7.017
San Joaquin Tank.....	337 53 45.06	158 00 08.29	3.9658451	5.744

**KINGSBURY, FRESNO COUNTY, CALIF. (Not occupied.)**

Station mark: High black tank in the town of Kingsbury.

[Latitude 36° 30' 53.750". Longitude 119° 33' 03.378".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Round.....	186 14 39.08	6 16 11.74	4.5309734	21.102
Campbell.....	210 01 47.80	30 06 26.65	4.3654139	14.413
Smith.....	247 50 54.45	67 58 15.35	4.2982711	12.349

**LA BRANZA, MERCED COUNTY, CALIF.**

A tank at La Branza, a station on the Southern Pacific R. R. 12 miles southeast of Merced. There are two large silos about 300 feet southeast of tank.

Station mark and signal: Center of tank with a green roof and a green railing around it.

[Latitude 37° 10' 34.262". Longitude 120° 19' 17.111".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Ash.....	25 06 12.32	205 04 07.55	4.0804456	7.478
Bliss.....	50 28 59.19	230 25 56.00	3.9871177	6.032
Honn.....	71 58 40.69	251 53 50.54	4.0957696	7.747
Lord.....	95 39 48.31	275 35 17.39	4.0457740	6.904
Merced.....	135 19 02.02	315 13 09.23	4.3099650	12.686
Hurricane.....	177 05 04.87	357 04 39.95	4.2990338	12.370
Le Grand.....	214 25 34.31	34 28 27.75	4.0967741	7.765
Le Grand School.....	226 16 09.34	46 18 40.42	3.9306819	5.297
Flat Top.....	240 25 24.07	60 33 03.79	4.3330243	13.577
Marguerite.....	277 05 38.60	97 10 59.06	4.1201998	8.195
Chowchilla.....	315 51 51.96	135 54 03.62	3.8890722	4.802

**LAS PALMAS, FRESNO COUNTY, CALIF.**

A tank on top of large tank house in Las Palmas, a town on Friant Branch of Southern Pacific R. R., 7 miles east of Fresno. The tank house stands back of Las Palmas Winery.

Signal: Center of tank.

Station mark: Center of concrete foundation for building.

[Latitude 36° 45' 25.888". Longitude 119° 41' 53.001".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Fresno.....	74 26 52.16	254 23 38.37	3.9212635	5.183
Clovis.....	179 30 38.21	359 30 32.87	3.8698088	4.604
Copper.....	193 30 48.63	13 32 42.05	4.3017111	12.447
Oak.....	213 11 14.28	33 17 04.21	4.4210865	16.384
Red Bank.....	230 10 34.34	50 14 05.92	4.0569118	7.084
Round.....	247 43 11.22	67 49 57.64	4.2595383	11.295
Granville.....	283 01 37.02	103 05 45.01	4.0235123	6.559
Sanger.....	292 56 21.46	113 01 26.82	4.1386317	8.550

## LAST CHANCE, MADERA COUNTY, CALIF.

A windmill on the Last Chance ranch, about 2 miles southwest of Levine School and 10 miles southwest of Madera.

Signal: Windmill.

Station mark: Center of 8-inch well under mill.

[Latitude  $36^{\circ} 51' 42.852''$ . Longitude  $120^{\circ} 09' 17.009''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Mill Tank.....	22 41 31.73	202 40 22.54	3.8702547	4.609
Aliso Mill.....	89 52 13.64	269 48 35.19	3.9552171	5.605
Southeast Cottonwood.....	134 31 19.05	314 27 47.962	4.0864039	7.581
Miller & Lux Signal.....	170 28 29.22	350 27 56.53	3.9107280	5.059
Madera.....	217 26 10.08	37 29 32.66	4.1376429	8.531
Eastin.....	267 45 57.19	87 51 11.42	4.1134044	8.068
Gallagher.....	329 15 38.28	149 17 03.68	3.8394367	4.293

## LE GRAND, MERCED COUNTY, CALIF.

On a hill 200 feet east of a north and south road and 3 miles north of Le Grand, a station on the Atchison, Topeka & Santa Fe Ry. The property is owned by W. C. Dallas.

Signal: A quadripod.

Station mark: Iron bench-mark post centered under signal.

[Latitude  $37^{\circ} 16' 08.524''$ . Longitude  $120^{\circ} 14' 30.383''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Chowchilla.....	6 06 28.96	186 05 47.42	4.2025688	9.906
Le Grand School.....	11 37 44.24	191 37 21.94	3.6538189	2.800
La Branza.....	34 28 27.75	214 25 34.31	4.0967741	7.765
Merced.....	101 09 47.63	281 01 00.76	4.2390540	13.565
Monument.....	103 50 07.34	283 45 10.56	4.0943978	7.722
Planada.....	107 24 33.27	287 21 35.11	3.8804168	4.718
Hurricane.....	139 53 55.14	319 50 36.40	4.0978411	7.784
Blacksmith.....	140 29 02.11	320 23 49.51	4.2993034	12.378
West Butte.....	182 41 05.26	2 41 24.74	4.2268546	10.476
Flat Top.....	268 28 51.22	88 33 37.80	4.0568279	7.247
Green.....	270 52 11.55	91 01 19.60	4.3483662	13.858
Red Tank.....	308 29 24.97	128 32 59.79	4.0486003	6.950
Marguerite.....	333 16 20.65	153 18 48.04	4.1261244	8.308

## LE GRAND SCHOOL, MERCED COUNTY, CALIF.

Station mark and signal: Cupola on schoolhouse in the town of Le Grand on the Atchison, Topeka & Santa Fe Ry.

[Latitude  $37^{\circ} 13' 45.346''$ . Longitude  $120^{\circ} 15' 07.230''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
La Branza.....	46 18 40.42	226 16 09.34	3.9306819	5.297
Le Grand.....	191 37 21.94	11 37 44.24	3.6538189	2.800
Flat Top.....	249 23 50.78	69 28 59.53	4.1279427	8.342
Marguerite.....	317 23 45.09	137 26 34.69	4.0097013	6.354

**LONE GUM, FRESNO COUNTY, CALIF. (Not occupied.)**

Station mark: Center of large eucalyptus tree on flume line northeast of Clovis.

[Latitude 36° 51' 25.736". Longitude 119° 38' 15.289".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Copper.....	175 10 43.91	355 10 26.76	3.9249409	5.227
Oak.....	219 31 07.71	39 34 47.31	4.1528344	8.835
Round.....	290 13 37.66	110 18 14.03	4.0854889	7.566
Red Bank.....	318 28 59.91	138 30 21.20	3.7049268	3.150

**LONE PINE, SAN BENITO COUNTY, CALIF. (Not occupied.)**

A prominent pine tree on brushy hill almost on line between Harris and Martin and about midway between them.

Station mark: Pine tree.

[Latitude 36° 31' 17.024". Longitude 121° 10' 06.010".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Chalone.....	16 20 35.64	196 19 38.67	3.9283823	5.269
Harris.....	126 12 14.29	306 10 21.70	3.7656121	3.622
Call.....	223 41 49.00	43 45 33.95	4.1330026	8.440
Martin.....	302 23 17.73	122 25 44.54	3.8618133	4.520

**LORD, MERCED COUNTY, CALIF.**

To reach station follow road due south from Merced for 8 miles to a T road thence east for 2 miles. The signal is on the fence line along county road and is 0.5 mile south of a small cabin and barn in Mr. Lord's pasture field.

Signal: Tripod with cross targets.

Station mark: Iron bench-mark post centered under signal.

[Latitude 37° 11' 09.596". Longitude 120° 26' 45.397".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Honn.....	9 04 44.11	189 04 24.74	3.7004943	3.118
Eyraud.....	115 52 11.55	295 48 17.73	4.0250777	6.583
Merced.....	166 06 51.56	346 05 30.06	4.1404688	8.587
Alfarata.....	183 59 40.10	3 59 47.44	4.0057353	6.296
La Branza.....	275 35 17.39	95 39 48.31	4.0457740	6.904
Bliss.....	333 37 32.95	153 49 00.49	3.9085808	5.034

**LOS BANOS TANK, MERCED COUNTY, CALIF.**

The city water tank on the southeast side of the town of Los Banos.

Signal: Center of tank.

Station mark: Center of tank.

[Latitude 37° 03' 39.278". Longitude 120° 50' 42.805".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Bonanza.....	23 06 54.01	203 02 01.39	4.4878415	19.107
Pipeline.....	67 47 08.65	247 43 30.34	3.9856751	6.012
Bareillas.....	77 22 17.66	257 15 17.99	4.2466538	10.965
Christian.....	123 42 32.58	303 33 32.17	4.4239815	16.494
Milepost 162.....	170 20 18.55	350 19 45.97	3.9000410	4.936
Highland.....	211 36 41.22	31 39 32.93	4.1269623	8.324
Delta.....	236 18 16.64	56 22 06.81	4.0540401	7.037
San Juan.....	262 27 08.23	82 33 57.46	4.2282697	10.510
Power.....	273 07 19.41	93 11 53.77	4.0517582	7.000
White.....	358 39 22.92	178 39 32.25	4.2140071	10.171

**LUCERNE, MERCED COUNTY, CALIF. (Not occupied.)**

Station mark: Center of windmill at Miller & Lux Lucerne ranch, north of Dos Palos.

[Latitude 37° 05' 14.366". Longitude 120° 35' 37.239".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Belmont.....	25 21 26.25	205 20 22.17	3.7878512	3.812
San Juan.....	82 37 44.66	262 35 27.97	3.7517153	3.508

**LYNCH, SAN LUIS OBISPO COUNTY, CALIF.**

On a brushy mountain, locally known as Lynch Mountain or Tierra Redondo. It is about 7 miles south of Pleyto post office, and there is a good road from that place to the Lynch ranch, at foot of mountain. Animals might be taken to summit, but it is probably better to walk up on the west side, keeping near the summit, but not on top until very near the signal. The top of the mountain is rather flat and covered with thick brush, but signal is on the highest point and near the cliff on the southwest end.

Signal: An oak tree set in the ground.

Station mark: A triangulation tablet set in solid rock 1.05 meters a little east of north of signal. Position of tablet was computed. This point is not the same as point called Lynch by L. F. Biggs. Azimuth from tablet to signal, 24° 00'; distance, 1.05 meters.

[Latitude 35° 46' 16.765". Longitude 120° 59' 06.972".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Rocky Butte.....	29 36 37.88	209 34 03.13	4.1301415	8.385
Red Rock.....	84 09 17.14	264 03 10.23	4.2001510	9.851
Graves.....	129 29 23.34	309 24 31.63	4.2096584	10.069
Williams.....	175 57 38.95	355 57 05.89	4.3027095	12.476
Vineyard.....	266 44 07.46	86 55 03.93	4.4509332	17.550
Hellman.....	267 44 39.13	87 52 15.54	4.2927839	12.194
Fair Oaks.....	309 05 42.01	129 12 24.90	4.3497869	13.904

**M'MULLIN, FRESNO COUNTY, CALIF.**

A white tank house at McMullin station 7 miles southeast of Kerman.

Signal: Center of tank.

Station mark: Center of concrete foundation.

[Latitude 36° 39' 28.696". Longitude 119° 58' 14.644".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Derrick.....	71 02 55.60	250 56 55.93	4.1996952	9.841
Sandy.....	83 42 22.96	263 36 52.50	4.1409783	8.597
Kerman.....	132 15 21.07	312 12 08.25	4.0342234	6.723
Dunkard.....	159 47 28.68	339 46 33.74	3.8201001	4.106
Rugg.....	159 52 09.67	339 50 57.57	3.9394826	5.405
Kearney.....	213 17 06.59	33 18 59.53	3.9318111	5.311

**MADERA, MADERA COUNTY, CALIF., FROM SOUTH.**

Madera County courthouse at Madera, Calif.

Signal and station mark: Center of clock tower and dome. Center of cupola computed.



[Latitude 36° 57' 36.362" (from south), 36° 57' 36.402" (from north). Longitude 120° 03' 39.663" (from south), 120° 03' 39.421" (from north).]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Gallagher.....	16 00 35.41	195 58 38.45	4.2433982	10.883
Last Chance.....	37 29 32.66	217 26 10.08	4.1376429	8.531
Aliso Mill.....	57 53 22.54	237 46 21.25	4.3120667	12.747
Miller & Lux Signal.....	73 33 13.19	253 29 17.69	4.0047251	6.282
Miller & Lux Signal (north).....	73 32 58.29	253 29 02.77	4.0047962	6.283
Adobe, north.....	245 06 23.10	65 13 35.53	4.2917831	12.166
Adobe.....	245 06 21.16	65 13 33.55	4.2917561	12.165
Service.....	266 20 00.20	86 25 03.20	4.0965713	7.761
Deep Well.....	283 59 37.46	104 07 08.92	4.2824698	11.907
Greenleaf.....	308 10 25.10	128 14 55.34	4.1514200	8.806
Herndon.....	315 58 51.57	136 04 07.65	4.2734974	11.664
Eastin.....	336 03 20.02	156 05 12.00	4.0561051	7.071
Biola.....	346 54 22.35	166 56 02.01	4.2594110	11.292

#### MADERA, MADERA COUNTY, CALIF., FROM NORTH.

[Latitude 36° 57' 36.402" (from north), 36° 57' 36.362" (from south). Longitude 120° 03' 39.421" (from north), 120° 03' 39.663" (from south).]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Italian Service Colony.....	52 36 13.01	232 34 34.25	3.7091331	3.180
Miller & Lux Signal (south).....	73 33 13.19	253 29 17.69	4.0047251	6.282
Miller & Lux Signal.....	73 32 58.29	253 29 02.77	4.0047962	6.283
Southeast Cottonwood.....	82 12 56.92	262 06 02.76	4.2357339	10.693
Fuller.....	105 56 02.64	285 49 32.04	4.2226242	10.375
Crumley.....	124 01 29.82	303 57 40.42	4.0558576	7.067
Berenda School.....	136 33 57.29	316 30 38.35	4.0749278	7.384
Sharon.....	153 14 42.44	338 12 10.96	4.2242262	10.413
Talbot.....	199 22 28.17	19 23 39.03	3.9431201	5.451
Adobe.....	245 06 23.10	65 13 35.53	4.2917831	12.166
Adobe (south).....	245 06 21.16	65 13 33.55	4.2917561	12.165

#### MARGUERITE, MADERA COUNTY, CALIF.

Station is on south bank of Chowchilla River, half a mile south of Marguerite, a station on the Atchison, Topeka & Santa Fe Ry., 300 feet west of the railroad and just south of the railroad bridge over Chowchilla River.

Signal: Quadripod with cross targets.

Station mark: Iron bench-mark post centered under signal.

[Latitude 37° 09' 41.096". Longitude 120° 10' 26.680".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Chowchilla.....	63 08 28.61	243 05 19.97	3.9367548	5.372
La Branza.....	97 10 59.06	277 05 38.60	4.1201998	8.195
Le Grand School.....	137 26 34.69	317 23 45.09	4.0097013	6.354
Le Grand.....	153 18 48.04	333 16 20.65	4.1261244	8.308
Flat Top.....	204 47 10.49	24 49 29.32	4.1299824	8.382
Red Tank.....	208 51 57.08	28 53 04.35	3.7547222	3.532
Green.....	234 34 34.53	54 41 14.52	4.3009786	12.426
Rabbit.....	277 07 25.24	97 16 14.45	4.3384076	13.544
Daulton.....	280 45 23.21	100 52 19.07	4.2381142	10.751
Sharon.....	330 25 36.57	150 27 10.57	3.8916362	4.842

#### MARTIN, SAN BENITO COUNTY, CALIF.

On a low mountain, on which are scattered oaks, about 2 miles southwest of San Benito, probably on Mr. Martin's land but very near the Cornwall ranch. From San Benito take the King City road for about 1 mile, then turn to right up grade on road going to the Cornwall ranch. Just before reaching the Cornwall residence take left-hand road, passing an old barn, thence go west through gate and up rather steep hill.

On summit of hill leave road and go north up ridge. It is possible to drive within 0.25 mile of signal.

Signal: A large oak on summit was trimmed and stump about 15 feet high was left for signal. Other high trees were cut.

Station mark: A tablet with a cross on it, set in rock placed in ground. This rock had been marked by E. P. Davis and was moved about 15 feet nearer the oak tree and reset. Position of mark computed. Azimuth from tablet to signal,  $181^{\circ} 47'$ ; distance, 1.87 meters.

[Latitude  $36^{\circ} 29' 10.534''$ . Longitude  $121^{\circ} 05' 59.218''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Chalone.....	63 36 18.71	243 32 55.08	3.9788655	5.919
Lone Pine.....	122 25 44.54	302 23 17.73	3.8618133	4.520
Harris.....	124 07 37.33	304 03 17.92	4.1171623	8.138
Call.....	193 20 01.54	13 21 19.43	4.1490672	8.758

#### MECO, SAN BENITO COUNTY, CALIF.

On a rather high peak, locally known as Mecó Peak, 18 or 19 miles a little south of east from Tres Pinos. From Tres Pinos take the road going east to the Ingart ranch, thence by the Buena Vista ranch, thence to the Los Martin ranch. The peak is about 2 miles east of Los Martin ranch, and there is a trail from the ranch to the summit, which is on a school section just east of the ranch line. Top of peak is bald and has two or three large rocks on southeast side. There are several large oak trees on north side of peak.

Signal: An oak tree set 3 feet in the ground.

Station mark: A tablet cemented in rock. Position of tablet computed. Azimuth from tablet to signal,  $74^{\circ} 10'$ ; distance, 1.80 meters.

[Latitude  $36^{\circ} 45' 10.078''$ . Longitude  $121^{\circ} 03' 25.835''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Call.....	2 01 34.25	182 01 20.75	4.2006530	9.863
Harris.....	33 24 13.23	213 18 21.43	4.4252340	16.542
Elkhorn.....	48 58 49.34	228 55 45.05	4.0060857	6.301
Armstrong.....	55 41 53.53	235 32 41.24	4.4442413	17.282
Quien Sabe.....	120 04 24.92	299 58 37.17	4.2208393	10.332
Peak.....	137 31 03.27	317 28 13.52	4.0171081	6.463
Bonanza.....	229 12 26.10	49 15 11.38	3.9561009	5.616

#### MERCED, MERCED COUNTY, CALIF.

Station is Merced County courthouse at Merced.

Signal and station mark: Center of cupola.

[Latitude  $37^{\circ} 18' 24.733''$ . Longitude  $120^{\circ} 29' 00.061''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Eyraud.....	35 14 20.54	215 11 47.93	4.0321314	6.691
Blacksmith.....	217 58 17.90	38 01 52.87	4.1511041	8.799
Hurricane.....	247 59 31.11	68 04 59.67	4.1578254	8.937
Monument.....	277 29 44.07	97 33 34.19	3.9746697	5.862
Le Grand.....	281 01 00.76	101 09 47.63	4.3390540	13.565
Alfarata.....	309 24 02.88	129 25 41.83	3.7165755	3.235
La Branza.....	315 13 09.23	135 19 02.02	4.3099650	12.686
Lord.....	346 05 30.06	166 06 51.56	4.1404688	8.587
Honn.....	352 09 07.90	172 10 09.96	4.2681636	11.522

**MILL, FRESNO COUNTY, CALIF. (Not occupied.)**

Station mark: Center of windmill at farmhouse 2 miles northwest of Round triangulation station.

[Latitude 36° 51' 08.858". Longitude 119° 31' 21.038".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Red Mountain.....	263 45 37.99	83 50 04.54	4.0442681	6.880
Campbell.....	332 26 27.92	152 30 06.56	4.2922609	12.179
Round.....	342 36 39.53	162 37 07.54	3.5881341	2.407

**MILLER NO. 2, FRESNO COUNTY, CALIF.**

Center of windmill derrick at the Miller & Lux Co.'s sheep ranch, about 0.75 mile southeast of the Sullivan ranch (which is also owned by the Miller & Lux Co.). It is about 8 or 9 miles south of South Dos Palos, a station on the Southern Pacific R. R., on the west side of San Joaquin River. There is a barn and a very small cabin near windmill.

Station mark: The pipe extending into ground.

[Latitude 36° 50' 31.536". Longitude 120° 38' 45.218".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Tierra Loma.....	4 41 24.67	184 40 59.61	4.1038132	7.802
Indian (1908).....	17 50 11.11	197 47 18.15	4.3701193	14.570
Shell No. 1.....	25 17 16.80	205 15 50.50	3.9223302	5.196
Panoche.....	39 16 07.52	219 11 53.19	4.2214507	10.347
Bonanza (1908).....	82 27 21.95	262 15 19.98	4.4788602	18.716
White (1908).....	114 32 43.23	294 25 41.90	4.2811679	11.872
Bareillas (1908).....	120 21 51.29	300 07 41.49	4.6076025	.....
Ora Loma.....	127 16 39.63	307 14 23.97	3.8474774	4.373
Oil Stack (1908).....	162 11 06.98	342 08 57.84	4.2400084	.....
South Dos Palos (1908).....	176 37 48.17	356 37 28.81	4.1324830	.....
Hollingsworth.....	193 10 32.62	13 10 56.85	3.6421701	2.728
Golden Hoof.....	225 55 03.54	46 00 16.75	4.2544780	11.164
Silaxo.....	248 55 49.57	69 00 00.82	4.0459480	6.907
Miller Headquarters (1908).....	293 16 45.16	113 19 58.39	3.9394580	5.405
Barney (1908).....	305 32 29.89	125 36 48.94	4.1198395	.....
Miller No. 3 (1908).....	320 50 31.92	140 53 37.51	4.0853095	7.562
Gruber.....	351 07 50.56	171 08 23.60	3.9480559	5.513
San Benito (1908).....	359 48 55.54	179 48 59.58	4.7192690	32.555

**MILLER NO. 3, FRESNO COUNTY, CALIF.**

The windmill derrick at the Miller & Lux Co.'s sheep camp, known as the Whistler ranch, 3.5 or 4 miles south of the Headquarters sheep ranch, which is about 8 or 9 miles southwest of Firebaugh and about 10 or 11 miles west of Mendota, towns on the Southern Pacific R. R. A barn and two small white cabins are near the windmill, but there are no trees.

Station mark: The pipe extending into ground.

[Latitude 36° 45' 25.275". Longitude 120° 33' 35.388".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
San Benito (1908).....	9 58 33.22	189 55 32.69	4.6395952	.....
Indian (1908).....	49 08 18.84	229 02 20.90	4.2938853	12.225
Tierra Loma.....	69 47 18.14	249 43 47.76	3.9684437	5.778
Panoche.....	79 19 10.54	259 11 51.12	4.2683266	11.526
Gruber.....	96 06 39.79	276 04 07.38	3.8029572	3.947
Bonanza (1908).....	98 21 35.12	278 06 28.35	4.5791323	.....
Miller No. 2 (1908).....	140 53 37.51	320 50 31.92	4.0853095	7.562
Hollingsworth.....	154 03 17.32	334 00 35.85	4.1833237	9.477
Miller Headquarters (1908).....	182 57 57.42	2 58 04.93	3.7786616	3.733
Silaxo.....	191 21 55.80	11 23 01.13	4.1367072	8.513
Firebaugh.....	218 36 06.91	38 39 47.79	4.1654803	9.096
Barney (1908).....	239 43 19.21	59 44 32.56	3.5464257	.....
Helm.....	254 19 42.12	74 26 16.42	4.2203593	10.537
Mendota Oil (1908).....	261 28 56.92	81 34 45.86	4.1648756	.....
Telephone (1908).....	330 40 42.19	150 42 19.89	3.9181290	5.146

**MILLER HEADQUARTERS, FRESNO COUNTY, CALIF.**

The windmill derrick at the Miller & Lux Co.'s Headquarters sheep ranch. It is about 7 miles south of the superintendent's ranch, which is about halfway between South Dos Palos and Firebaugh, stations west of San Joaquin River on the Southern Pacific R. R.

Station mark: The iron pipe extending into ground.

[Latitude 36° 48' 39.888". Longitude 120° 33' 22.848".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Miller No. 3 (1908).....	2 58 04.93	182 57 57.42	3.7786616	3.733
Indian (1908).....	38 50 06.50	218 44 00.83	4.3842510	15.052
Bonanza (1908).....	89 16 18.47	269 01 03.61	4.5781693	23.521
Miller No. 2 (1908).....	113 19 58.39	293 16 45.16	3.9394580	5.405
Barney (1908).....	327 08 56.09	147 10 01.97	3.7014854	.....
Panoche (1916).....	63 01 29.01	242 54 01.81	4.3181120	12.926
Ora Loma.....	119 35 24.12	299 29 55.19	4.1937161	9.707
Hollingsworth.....	137 51 10.68	317 48 21.59	4.0173219	6.467
Golden Hoof.....	197 11 45.99	17 13 45.61	4.2221530	10.363
Silaxo.....	197 49 17.60	17 50 15.45	3.8924525	4.851
Firebaugh.....	238 20 22.21	58 23 55.72	4.0155529	6.440
Helm.....	275 03 46.83	95 10 13.86	4.2062559	9.991

**MILEPOST 162, MERCED COUNTY, CALIF.**

On bank of a canal, 5½ miles northwest of Los Banos, 2½ miles northwest of a Standard Oil Co.'s pumping station, and 20 feet north of milepost 162. It can be reached by taking the north and south road from Los Banos to the Standard Oil Co.'s pumping station, thence going northwesterly along canal to station.

Signal and station mark: A 6 by 6 inch pole bearing cross targets.

Reference mark: Iron bench-mark post set on northwest side of pole.

Position of signal computed.

Azimuth from bench mark to signal, 139° 15'; distance, 4.1 feet.

[Latitude 37° 07' 53.317". Longitude 121° 51' 36.818".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Bareillas.....	53 38 41.10	233 32 13.65	4.2949810	12.255
Romero.....	89 33 29.43	269 27 52.77	4.1388420	8.554
Christian.....	108 23 12.41	288 14 43.19	4.3397688	13.587
Fairmont.....	173 35 38.69	353 35 07.72	4.0539241	7.035
Underwood.....	195 46 53.21	15 47 30.92	3.8459179	4.358
Highland.....	246 48 53.96	66 52 18.43	3.9584636	5.647
Delta.....	278 11 00.31	98 15 23.27	4.0360915	6.752
Los Banos Tank.....	350 19 45.97	170 20 18.55	3.9000410	4.936

**MILLER & LUX SIGNAL FROM SOUTH, MADERA COUNTY, CALIF.**

In a Miller & Lux pasture field, 7 miles a little south of west of Madera, on the Firebaugh road. The signal is 0.5 mile north of road and 0.5 mile south of a red tank and can easily be seen from road.

Signal: Quadripod with cross targets.

Station mark: Iron bench-mark post centered under signal.

[Latitude 36° 56' 03.334" (south), 36° 56' 03.338" (north). Longitude 120° 10' 11.453" (south), 120° 10' 11.267" (north).]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Aliso Mill.....	43 36 50.63	223 33 53.69	4.0461435	6.910
Southeast Cottonwood (north).....	94 04 40.04	274 01 41.43	3.8675606	4.581
Southeast Cottonwood.....	94 04 48.78	274 01 50.24	3.8675076	4.580
Madera (north).....	253 29 02.77	72 32 58.29	4.0047962	6.283
Madera.....	253 29 17.69	73 33 13.19	4.0047251	6.282
Last Chance.....	350 27 56.53	170 28 29.22	3.9107280	5.059

**MILLER & LUX SIGNAL FROM NORTH, MADERA COUNTY, CALIF.**

[Latitude 36° 56' 03.338" (north), 36° 56' 03.334" (south). Longitude 120° 10' 11.267" (north), 120° 10' 11.453" (south).]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Southeast Cottonwood (south).....	94 04 48.78	274 01 50.24	3.8675076	4.580
Southeast Cottonwood.....	94 04 40.04	274 01 41.48	3.8675666	4.581
Crumley.....	181 37 15.43	1 37 21.78	3.9652420	5.736
Madera.....	253 29 02.77	73 32 58.20	4.0047962	6.283
Madera (south).....	253 29 17.69	73 33 13.19	4.0047251	6.282
Italian Service Colony.....	272 25 41.38	92 27 58.10	3.7509843	3.502

**MILL TANK, MADERA COUNTY, CALIF. (Not occupied.)**

Station mark: Windmill on tank house 6 or 8 miles northwest of Kermon.

[Latitude 36° 48' 00.837". Longitude 120° 11' 12.436".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Aliso Mill.....	137 54 34.75	317 52 05.66	3.9633800	5.711
Last Chance.....	202 40 22.54	22 41 31.73	3.8702547	4.609
Gallagher.....	261 55 34.88	81 58 09.38	3.8100167	4.012

**NORTH FRESNO CHIMNEY, FRESNO COUNTY, CALIF. (Not occupied.)**

Water standpipe for North Fresno, about 5 miles north of Fresno courthouse.

[Latitude 36° 48' 17.531". Longitude 119° 48' 48.414".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Kearney.....	45 38 40.73	225 35 02.97	4.1169640	8.134
Copper.....	226 30 01.10	46 36 03.82	4.3144082	12.816
Fresno.....	343 13 24.99	163 14 19.68	3.8957436	4.888

**OAK, FRESNO COUNTY, CALIF.**

Station is a 14-inch oak tree on a high hill 6 miles north of academy. To reach it take the road running north and east from academy, keeping all left-hand roads for 6 miles to where the road passes under a lumber flume. Continue 200 feet to a stream crossing thence to left up second-class road around south base of hill. Follow this road 1 mile, more or less, to foot of hill. Animals can be ridden to top.

Signal and station mark: 14-inch oak tree.

Reference mark: A bronze tablet set in rock 35 feet north and 0.5 foot east of signal.

Position of signal computed.

[Latitude 36° 57' 21.371". Longitude 119° 32' 09.601".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Red Bank.....	21 07 48.07	201 05 29.94	4.1992206	9.830
Las Palmas.....	33 17 04.21	213 11 14.28	4.4210865	16.385
Lone Gum.....	39 34 47.31	219 31 07.71	4.1528344	8.835
Fresno.....	42 51 06.41	222 42 02.32	4.5198238	20.567
Copper.....	75 13 15.78	255 09 18.82	4.0039318	6.270

## ORA LOMA, FRESNO COUNTY, CALIF.

Station is a steel tank 110 feet high 9 miles southwest of Dos Palos.

Signal and station mark: Center of tank.

[Latitude 36° 52' 49.771". Longitude 120° 42' 31.368".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Panoche.....	16 01 28.47	195 59 29.49	4.2516671	11.092
White.....	107 17 06.15	287 12 20.40	4.0912602	7.667
Dos Palos.....	212 04 27.23	32 07 27.71	4.1457490	8.692
Golden Hoof.....	245 58 15.37	66 05 44.56	4.3065781	12.587
Hollingsworth.....	269 53 18.76	89 55 58.72	3.8195797	4.101
Miller Headquarters.....	299 29 55.19	119 35 24.12	4.1937161	9.707
Miller No. 2.....	307 14 23.97	127 16 39.63	3.8474774	4.373

## ORANGE COVE, FRESNO COUNTY, CALIF. (Not occupied.)

Station mark: Center of tank.

[Latitude 36° 37' 23.138". Longitude 119° 18' 38.728".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Smith.....	34 17 35.31	214 16 21.22	3.7389986	3.407
Campbell.....	129 19 56.83	309 15 59.79	4.1052375	7.917
Sampson.....	228 56 13.40	49 03 42.86	4.3934012	15.373
Stokes.....	318 58 27.37	139 02 30.03	4.1886054	9.593

## OROSI, FRESNO COUNTY, CALIF. (Not occupied.)

Station mark: Center of black steel tank.

[Latitude 36° 32' 56.977". Longitude 119° 15' 35.077".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Smith.....	115 40 01.30	295 36 57.87	3.9290562	5.277
Campbell.....	138 29 30.91	318 23 44.52	4.3374712	13.515
Bear Hill.....	174 39 44.62	354 38 55.52	4.3411858	13.631
Stokes.....	301 45 58.30	121 48 11.42	3.8158841	4.067

## PAICINES, SAN BENITO COUNTY, CALIF.

On a bald ridge about 3 miles south of Tres Pinos. The ridge is between San Benito River and Tres Pinos Creek on land owned by a Mr. Balboa or Brown. He is a Portuguese and is known by both names. From Tres Pinos take the Paicines road until opposite Mr. Balboa's residence, then go to right up hill on farm road for 0.25 mile, thence on horseback to summit of hill.

Signal: An oak tree set 3.5 feet in the ground.

Station mark: A triangulation tablet set in a rock placed in ground. Position of tablet was computed. Azimuth from tablet to signal, 58° 33'; distance, 1.38 meters.

[Latitude 36° 45' 19.066". Longitude 121° 18' 22.469".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Armstrong.....	2 28 56.92	182 28 40.26	4.2040293	9.940
Fremont.....	90 51 55.13	270 44 50.36	4.2457265	10.942
Hollister.....	141 10 54.17	321 07 24.50	4.1408906	8.595
Quien Sabe.....	224 13 10.06	44 15 19.31	4.0503057	6.977
Peak.....	244 01 19.58	64 07 26.79	4.2280110	10.504
Elkhorn.....	295 21 36.26	115 27 28.12	4.2085915	10.045

**PANOCHÉ MOUNTAIN, FRESNO COUNTY, CALIF.**

A lumber tripod on bald hill, about 20 miles west of Mendota. It is about the highest point between the stations Indian and White and on line between them.

Station mark: Iron bench-mark post under center of station.

[Latitude 36° 43' 33.120". Longitude 120° 45' 49.954".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
White.....	161 44 58.70	341 42 12.49	4.3408881	13.622
Ora Loma.....	195 59 29.49	16 01 28.47	4.2516671	11.092
Hollingsworth.....	213 50 41.02	33 55 19.66	4.3158223	12.851
Miller No. 2.....	219 11 53.19	39 16 07.52	4.2214507	10.347
Silaxo.....	231 00 26.69	51 08 52.04	4.4294245	16.702
Shell No. 1.....	232 30 56.09	52 33 44.04	3.9431269	5.451
Miller Headquarters.....	242 54 01.81	63 01 29.01	4.3181120	12.026
Gruber.....	250 49 26.18	70 54 13.27	4.1004317	7.830
Miller No. 3.....	259 11 51.12	79 19 10.54	4.2683266	11.526
Tierra Loma.....	268 31 17.18	88 35 06.15	3.9779082	5.906
Telephone.....	279 30 47.63	99 39 44.38	4.3541563	14.045
Indian.....	340 20 00.00	160 21 21.01	4.0004416	6.220

**PARLIER, FRESNO COUNTY, CALIF. (Not occupied.)**

Station mark: Center of high, white wooden tank in Parlier.

[Latitude 36° 36' 37.278". Longitude 119° 31' 41.655".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Campbell.....	225 16 02.53	45 19 52.90	4.1298555	8.379
Smith.....	280 43 08.05	100 49 40.73	4.2218216	10.356
Reedley.....	282 19 37.28	102 22 21.16	3.8446330	4.345

**PEAK, SAN BENITO COUNTY, CALIF. (Not occupied.)**

Highest point of sharp peak about 5 miles east of Quien Sabe Peak.

[Latitude 36° 49' 18.844". Longitude 121° 08' 09.288".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Elkhorn.....	2 27 21.83	182 27 07.02	4.1565683	8.911
Paicines.....	64 07 26.79	244 01 19.53	4.2280110	10.504
Quien Sabe.....	95 05 02.68	275 02 04.55	3.8688911	4.595
Meco.....	317 28 13.52	137 31 03.27	4.0171081	6.463

**PINE CREEK, MONTEREY COUNTY, CALIF. (Not occupied.)**

On a brushy hill about 8 miles southwest of King City, a town on Southern Pacific R. R. Coast Line. Old road and trail to San Antonio Valley passes near signal.

[Latitude 36° 06' 12.077". Longitude 121° 13' 40.072".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Santa Lucia.....	105 27 13.69	285 20 29.35	4.2501683	11.054
Bischoff.....	194 27 02.84	14 28 01.55	3.9985104	6.192
Eade.....	239 42 49.12	59 51 58.55	4.4302126	10.733
Williams.....	309 21 44.89	129 29 45.23	4.4227866	10.449
Jolon.....	348 29 16.88	168 30 18.46	4.1184733	8.162

**PIPE LINE, MERCED COUNTY, CALIF.**

On the oil pipe line, 6 miles southwest of Los Banos and 5 miles east of Bareillas triangulation station. The station is on the highest point of the pipe line and is about 400 feet due west of a fence corner.

Signal: Lumber tripod.

Station mark: A rock about 1 foot in diameter buried at foot of signal.

[Latitude 37° 01' 40.460". Longitude 120° 56' 45.203".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Bareillas.....	88 33 11.41	268 29 50.13	3.9172138	5.135
Los Banos Tank.....	247 43 30.34	67 47 08.65	3.9856751	6.012
Power.....	261 22 16.02	81 30 28.56	4.3103626	12.697
White.....	323 36 59.72	143 40 46.98	4.1978358	9.799

**PLANADA, MERCED COUNTY, CALIF. (Not occupied.)**

Station mark: Center of a high water tank at Planada, a small town on the Atchison, Topeka & Santa Fe R. R. about 10 miles east of Merced.

[Latitude 37° 17' 22.116". Longitude 120° 19' 24.522".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Monument.....	98 12 41.59	278 10 42.96	3.6877652	3.028
Hurricane.....	173 31 14.12	353 30 53.67	3.8666605	4.571
West Butte.....	208 49 36.32	28 52 54.28	4.2211092	10.339
Le Grand.....	287 21 35.11	107 24 33.27	3.8804168	4.718

**POWELL, MONTEREY COUNTY, CALIF.**

On the highest part of a round brushy peak on north side of Powell Canyon and not very far from its head. The peak is about 2 miles from Mr. Powell's residence, which can be reached by road from Bradley or San Ardo, the best route being from Bradley. Animals can be ridden to summit of peak. Distance from Bradley to signal is about 14 miles. All brush was cut from the summit except one cluster.

Signal: A cluster of brush 8 or 9 feet high.

Station mark: A bench-mark tablet set in rock. Position of tablet was computed. Azimuth from tablet to signal, 89° 47'; distance, 1.60 meters.

[Latitude 36° 00' 08.165". Longitude 120° 43' 01.025".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Hellman.....	10 35 39.07	190 33 50.48	4.4031826	15.723
Semas.....	37 08 35.71	217 04 50.29	4.2028012	9.912
Williams.....	77 45 28.32	257 35 27.71	4.4186037	16.291
Stone Canyon.....	260 12 53.80	80 18 40.66	4.1757593	9.313
Stockdale.....	277 31 04.14	97 35 52.05	4.0926416	7.691
Castle Mountain.....	281 29 56.41	101 43 14.13	4.5408143	21.586
Vineyard.....	350 41 58.26	170 43 30.24	4.3870387	15.149

**POWER, MERCED COUNTY, CALIF.**

A power pole on the north edge of the highway, 8 miles east of Los Banos. The pole has wire braces and stands on the south bank of the slough; it is the first pole west of four willow trees in the road.

Signal and station mark: A power pole 1 foot in diameter with cross targets.

Reference mark: Iron bench-mark post 3.2 feet north of center of pole.

Position of signal computed. Azimuth from tablet to signal, 6° 49'; distance, 3.2 feet.



[Latitude 37° 03' 19.132". Longitude 120° 43' 07.531".]

To station—	Azimuth.	Backazimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
White.....	34 40 31.53	214 36 06.97	4.2818150	11.890
Pipe Line.....	81 30 28.56	261 22 16.02	4.3103626	12.697
Los Banos Tank.....	93 11 53.77	273 07 19.41	4.0517582	7.000
Delta.....	165 14 30.62	345 13 46.24	3.8533472	4.433
San Juan.....	242 53 10.08	62 55 24.86	3.7927464	3.856
Belmont.....	283 09 48.67	103 13 15.90	3.9410284	5.425

**QUIEN SABE, SAN BENITO COUNTY, CALIF.**

On a sharp peak, locally known as the Quien Sabe Peak, about 7 miles by road east-northeast of Tres Pinos. From Tres Pinos take the road going east to Buena Vista, but turn to left just before crossing bridge at schoolhouse. This road goes up a long grade and crosses ridge and thence to Quien Sabe Valley. On summit of this ridge leave road and go through gate, thence northeast on horseback to summit of peak.

Signal: An oak tree set in the ground with a small pile of rock around its base.

Station mark: A triangulation tablet set in solid rock under center of signal.

[Latitude 36° 49' 39.997". Longitude 121° 13' 06.487".]

To station—	Azimuth.	Backazimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Harris.....	0 24 12.06	180 24 06.89	4.4851199	18.988
Armstrong.....	19 34 59.63	199 31 34.03	4.4064630	15.842
Paicines.....	44 16 19.31	224 13 10.06	4.0503057	6.977
Fremont.....	73 02 39.82	252 52 25.44	4.4248932	16.529
Hollister.....	99 26 51.55	279 20 12.24	4.2233829	10.393
Peak.....	275 02 04.55	95 05 02.68	3.8688911	4.595
Meco.....	299 58 37.17	120 04 24.02	4.2208393	10.332
Elkhorn.....	335 41 46.65	155 44 29.70	4.2157235	10.211

**RABBIT, MADERA COUNTY, CALIF.**

On a bald hill about 5 miles from Raymond. The road from Raymond to Berenda passes within 0.5 mile of station at point where there is a water trough near gate. Go through gate and up the hill.

Signal and station mark: Cairn 7 feet high; triangulation tablet under center.

[Latitude 37° 08' 12.98" (1908), 37° 08' 12.509" (1915). Longitude 119° 55' 49.51" (1908), 119° 55' 50.351" (1915).]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Monument (1908).....	18 21 24.36	198 20 39.44	3.7662806	.....
Talbot.....	37 27 59.14	217 24 27.28	4.1545450	8.869
Sharon.....	77 14 43.27	257 07 28.40	4.2611284	11.336
Daulton.....	83 39 53.11	263 37 59.82	3.6684214	2.896
Marguerite.....	97 16 14.45	277 07 25.24	4.3384076	13.544
Flat Top.....	133 14 57.74	313 08 26.65	4.3400157	13.595
Green (1908).....	159 41 07.65	339 38 57.68	4.1834615	9.480
Deadwood (1908).....	227 53 40.55	48 02 34.90	4.4671127	.....
Quartz (1908).....	254 25 42.01	74 34 34.80	4.3537500	.....
Adobe (1908).....	331 33 22.24	151 35 52.69	4.1121673	8.045

**RED BANK, FRESNO COUNTY, CALIF.**

Station is windmill at the Red Bank School, 7 miles east of Clovis.

Signal: Center of steel windmill tower.

Station mark: Pipe in well under center of tower.

[Latitude 36° 49' 22.593". Longitude 119° 35' 59.716".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Las Palmas.....	50 14 05.92	230 10 34.34	4.0569118	7.084
Lone Gum.....	138 30 21.20	318 28 59.91	3.7049268	3.150
Copper.....	161 33 20.54	341 31 42.04	4.1085492	7.978
Oak.....	201 05 29.94	21 07 48.07	4.1992206	9.830
Round.....	272 57 47.37	93 01 02.37	3.9071625	5.018
Sanger.....	342 52 24.06	162 53 58.19	4.1224134	8.237

**RED MOUNTAIN, FRESNO COUNTY, CALIF.**

On the north end of a long base ridge 15 miles northeast of Sanger. Follow Trimmer road from Sanger 15 miles to the mouth of Hugh's creek, thence go up Hugh's creek 2½ miles to a mine, thence west up a ridge just north of the mine to the summit, and thence north to signal, which is about 2 miles from the mine. Animals can be ridden to the top.

Signal: Cairn surrounding tree with white cloth. There is a large oak tree 100 feet north and a little east of cairn.

Station mark: Chisel mark under cairn.

Reference mark: Bronze tablet 6.2 feet north of center of cairn. Position of tree computed.

[Latitude 36° 51' 47.673". Longitude 119° 23' 56.663".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Campbell.....	6 01 57.10	186 01 09.75	4.2713925	11.608
Sanger.....	39 20 38.57	219 14 59.77	4.3453730	13.763
Round.....	63 37 20.49	243 33 22.06	4.0414461	6.836
Mill.....	83 50 04.54	263 45 37.99	4.0442681	6.880
Copper.....	109 24 26.58	289 15 33.91	4.3669627	14.465
Sampson.....	211 21 12.27	111 31 53.52	4.4547651	17.706
Bear Hill.....	321 20 38.75	141 24 49.96	4.2215142	10.348
Tivey.....	358 31 06.83	178 31 15.14	4.1244156	8.275

**RED ROCK, SAN LUIS OBISPO COUNTY, CALIF. (Not occupied.)**

Summit of very sharp, rocky peak.

[Latitude 35° 45' 23.920". Longitude 121° 09' 34.769".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Santa Lucia.....	151 41 38.66	331 32 31.97	4.6910257	30.505
Williams.....	213 27 31.69	33 33 06.35	4.4145015	16.138
Lynch.....	264 03 10.23	84 09 17.14	4.2001510	9.851
Rocky Butte.....	317 54 48.42	137 58 20.14	4.1338783	8.457

**RED TANK, MERCED COUNTY, CALIF. (Not occupied.)**

A water tank painted red at ranch about 6 miles east-southeast of Le Grand, a small town on the Atchison, Topeka & Santa Fe Ry.

Station mark: Center of tank.

[Latitude 37° 12' 22.580". Longitude 120° 08' 35.385".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Marguerite.....	28 53 04.35	208 51 57.08	3.7547222	3.532
Le Grand.....	128 32 59.79	308 29 24.97	4.0486003	6.950
Flat Top.....	201 50 37.68	21 51 49.23	3.8937089	4.865
Green.....	244 00 30.31	64 06 03.16	4.1783613	9.369

**REEDLEY, FRESNO COUNTY, CALIF.**

Municipal steel water tank at Reedley.

Signal and station mark: Center of tank.

[Latitude 36° 35' 48.759". Longitude 119° 27' 06.820".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Parlier.....	102 22 21.16	282 19 37.28	3.8446330	4.345
Sanger.....	143 06 43.08	323 02 58.85	4.1912142	9.651
Campbell.....	194 05 40.67	14 06 46.96	4.0539363	7.035
Smith.....	279 36 09.33	99 39 58.12	3.9857795	6.014

**ROCKY BUTTE, SAN LUIS OBISPO COUNTY, CALIF.**

A station of the U. S. Coast and Geodetic Survey.

On top of Rocky Butte in Santa Lucia Mountains, 14 miles from Cambria, 1.5 miles west of Newton Mather's house, 6 miles from house of J. P. Coffee. It may be reached by road along North Fork of San Simeon Creek. On east side of peak and 400 feet from summit is a good spring.

Station mark: A copper tack leaded in top of a stone 1 foot long and 8 inches square on top, 2 feet below surface, over which was built a concrete pier.

Reference marks: Four stones of same size as above with leaded bolts and copper tacks were placed, north, 47.12 inches; south, 44.38 inches; east, 31.25 inches; and west, 41.81 inches. The pier for observing latitude is 5.13 feet due west of station. Vertical circle wooden pier is N. 56.28 ft.

[Latitude 35° 39' 56.026". Longitude 121° 03' 32.063".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Santa Lucia (CGS).....	148 46 28.32	328 33 49.52	4.7951624	.....
Hepesdam (CGS).....	196 18 58.11	16 27 15.09	4.8756197	.....
Red Rock (U).....	137 58 20.14	317 54 48.42	4.1338783	8.457
Jolon (U).....	160 33 09.81	340 28 15.18	4.5783184	23.533
Graves (U).....	165 07 02.18	345 04 45.77	4.3578927	14.166
Williams (U).....	189 20 56.31	9 22 58.39	4.5077331	20.002
Lynch (U).....	209 34 03.13	29 36 37.58	4.1301415	8.385
Semas (U).....	220 44 28.41	40 52 43.59	4.5125744	20.227
Castle Mount (U).....	244 45 05.68	65 10 20.33	4.8558353	44.585
Vineyard (U).....	249 01 10.69	69 14 41.10	4.5720691	23.196
Fair Oaks (U).....	275 36 35.73	95 45 52.62	4.3829363	15.007
Dresser (U).....	281 43 00.18	102 00 00.26	4.6535228	27.982
Juhl (U).....	311 22 43.70	131 30 28.44	4.4285017	16.667
Stone (U).....	333 26 24.10	153 30 12.07	4.3441912	13.726

CGS=U. S. Coast &amp; Geodetic Survey in 1884-85. U=C. F. Urguhart in 1917.

**RODGERS, MERCED COUNTY, CALIF.**

About 15 miles south of Merced and 1½ miles west and 0.5 mile south of El Nido School. It is on an east and west fence line and is 0.5 mile east of the house of Mr. A. A. Rodgers.

Signal: Timber structure with cross targets and a flag.

Station mark: Iron bench mark centered under signal.

[Latitude 37° 07' 41.301". Longitude 120° 31' 20.071".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Bridge.....	16 12 40.91	196 11 43.79	3.9233892	5.209
Eyrand.....	165 56 52.64	345 55 31.82	4.0564102	7.076
El Nido.....	255 54 56.92	75 56 05.06	3.4582780	1.785
Honn.....	256 08 53.25	76 11 06.57	3.7897568	3.829
Bliss.....	274 36 49.01	94 41 02.16	4.0165461	6.455
Ash.....	293 32 03.76	113 37 15.08	4.1431363	8.639
Johnson.....	354 05 59.58	174 06 17.46	3.8528015	4.427

**ROMERO, MERCED COUNTY, CALIF. (Not occupied.)**

Cupola on the Romero School, about 5 miles northwest of town of Volta, on the Southern Pacific R. R.; road from Los Banos to Gustine passes school.

[Latitude 37° 07' 49.509". Longitude 121° 00' 54.540".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Bareillas.....	10 15 53.96	190 15 02.77	4.0710566	7.318
Christian.....	134 59 22.97	314 56 31.66	3.9951898	6.145
Milepost 162.....	269 27 52.77	89 33 29.43	4.1388420	8.554

**ROUND, FRESNO COUNTY, CALIF.**

On round hill north of Sanger.

Signal: A tree in cairn.

Station mark: Tablet in boulder.

[Latitude 36° 49' 08.926". Longitude 119° 30' 34.328".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Kingsbury.....	6 16 11.74	186 14 39.08	4.5309734	21.102
Sanger.....	18 48 49.59	198 47 08.97	4.1118698	8.039
Granville.....	35 17 42.61	215 15 04.46	4.0547474	7.049
Fowler.....	35 13 37.15	215 07 40.97	4.4091957	15.942
Las Palmas.....	67 49 57.64	247 43 11.22	4.2595383	11.295
Fresno.....	69 56 52.01	249 46 51.75	4.4229203	16.454
Red Bank.....	93 01 02.37	272 57 47.37	3.9071625	5.018
Lone Gum.....	110 18 14.03	290 13 37.66	4.0854889	7.566
Hall.....	125 39 38.61	305 30 54.68	4.4245034	16.514
Copper.....	136 08 41.18	316 03 47.42	4.2426860	10.865
Mill.....	162 37 07.54	342 36 39.58	3.5881341	2.407
Red Mountain.....	243 33 22.06	63 37 20.49	4.0414461	6.836
Tivey.....	309 29 22.15	129 33 28.55	4.1215523	8.221
Campbell.....	329 58 04.92	150 01 11.96	4.1987067	9.819
Dinuba.....	340 08 32.00	160 12 53.79	4.5123564	20.217

**RUGG, FRESNO COUNTY, CALIF. (Not occupied.)**

Station mark: Center of smokestack at pump station, at Rugg, on Southern Pacific R. R.

[Latitude 36° 43' 53.655". Longitude 120° 00' 15.307".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Kerman.....	79 53 07.90	259 51 07.07	3.7069745	3.165
Kearney.....	277 33 46.27	97 36 51.46	3.8894343	4.817
McMullin.....	339 50 57.57	159 52 09.67	3.9394826	5.405

**SAMPSON, FRESNO COUNTY, CALIF.**

On the point of a ridge, about 300 feet from the top, 4 miles northeast of Dunlap and one-eighth of a mile south of Gartners ranch house. It can be reached by taking the Millwood road from Dunlap  $8\frac{1}{2}$  miles to Sontag Point, thence going along the Sampson Flat road  $3\frac{1}{2}$  miles to the Gartner ranch house. A buckboard can be driven close to station. The station can also be reached by a trail from Dunlap.

Signal: Pine tree with white cloth, trimmed 40 feet from the ground. Position of signal computed.

Reference mark: Bronze tablet 40 feet east and 4 feet south of signal.

[Latitude 36° 46' 09.745". Longitude 119° 06' 06.578".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Stokes.....	17 06 25.17	197 02 59.34	4.4649441	18.126
Smith.....	46 25 13.77	226 16 30.30	4.4782314	18.689
Orange Cove.....	49 03 42.86	228 56 13.40	4.3934012	15.373
Campbell.....	74 07 27.20	253 55 59.90	4.4721482	18.429
Bear Hill.....	80 55 19.29	260 48 49.85	4.2134869	10.159
Red Mountain.....	111 31 53.52	291 21 12.27	4.4547651	17.706

**SANDY, FRESNO COUNTY, CALIF.**

Station is on a sand dune 8 miles south and a little west of Kerman.

Signal: Quadripod with cross targets and flag.

Station mark: Iron bench mark centered under signal.

[Latitude 36° 38' 39.136". Longitude 120° 07' 28.232".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Derrick.....	18 36 34.98	198 36 05.64	3.5830924	2.379
San Joaquin Tank.....	53 49 53.00	233 47 36.11	3.8490580	4.389
Jamesan.....	144 22 09.42	324 19 16.87	4.0899247	7.643
Kings.....	115 40 37.79	295 36 57.51	4.0070398	6.315
Kerman.....	213 03 39.50	33 05 57.42	4.0212703	6.526
McMullin.....	263 36 52.50	83 42 22.96	4.1409783	8.507

**SANGER, FRESNO COUNTY, CALIF.**

A large steel municipal water tank at Sanger.

Signal and station mark: Center of tank.

[Latitude 36° 42' 31.594". Longitude 119° 33' 22.436".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Fresno.....	98 40 13.87	278 31 54.90	4.3210465	13.014
Las Palmas.....	113 01 26.82	292 56 21.46	4.1386317	8.550
Granville.....	141 25 04.02	321 24 06.59	3.5822222	2.375
Copper.....	162 15 04.29	342 11 51.66	4.4165379	16.214
Red Bank.....	162 53 58.19	342 52 24.06	4.1224134	8.237
Round.....	198 47 08.97	18 48 49.59	4.1118698	8.039
Red Mountain.....	219 14 59.77	39 20 38.57	4.3453730	13.763
Campbell.....	276 44 21.13	96 49 12.00	4.0851381	7.559
Smith.....	306 35 20.16	126 42 53.45	4.3713314	14.611
Reedley.....	323 02 58.85	143 06 43.08	4.1912142	9.651

**SAN JOAQUIN TANK, FRESNO COUNTY, CALIF. (Not occupied.)**

Station mark: Center of white tank house (municipal) in town of San Joaquin.

[Latitude 36° 36' 23.826". Longitude 120° 11' 17.696".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Kings.....	158 00 08.29	337 58 45.06	3.9658451	5.744
Sandy.....	233 47 36.11	53 49 53.00	3.8490580	4.389
Derrick.....	263 05 18.87	83 07 06.39	3.6544898	2.804

## SAN JUAN, MERCED COUNTY, CALIF.

The center of a water tank on the Miller & Lux San Juan ranch, 8 miles north of Dos Palos.

Signal: Center of tank.

Station mark: Center of concrete foundation of tank.

[Latitude  $37^{\circ} 04' 50.812''$ . Longitude  $120^{\circ} 39' 23.921''$ .]

Tostation—	Azimuth.			Backazimuth.		Distance.	
	°	'	''	°	'	''	
White.....	41	30	42.69	221	24	03.49	<i>Log. meters.</i> 4.3940425
Power.....	62	55	24.86	242	53	10.08	15.396 3.7927464
Los Banos Tank.....	82	33	57.46	262	27	08.23	3.856 4.2282697
Delta.....	119	02	56.36	298	59	57.09	10.510 3.9239558
Highland.....	133	25	01.88	313	21	03.91	5.216 4.1268982
Lucerne.....	262	35	27.97	82	37	44.66	8.322 3.7517153
Bridge.....	286	10	56.47	106	14	51.03	3.508 4.0005040
Golden Hoof.....	315	15	11.46	135	20	48.85	6.221 4.2943323
Belmont.....	328	18	35.13	148	19	47.67	12.237 3.7529990
Dos Palos.....	344	56	25.16	164	57	33.16	3.518 4.0312537
							6.677

## SANTA LUCIA, MONTEREY COUNTY, CALIF.

A station of the United States Coast and Geodetic Survey on eastern summit of highest peak of Santa Lucia Range. Best reached by wagon road up San Antonio Valley from Jolon to a point 13 miles past old mission; here leave road, turn to right up flat ridge for 1 mile, cross canyon to east and keep up ridge for 1 mile to just past an old log cabin; recross canyon to left side and follow trail to summit, rising 3,500 feet in about 4 miles.

Station mark: Cross in end of copper bolt in solid rock, over which is a concrete foundation 3 feet square and 10 inches deep, on which is a concrete pier 26 inches in diameter with a copper bolt with cross marking station center.

Reference marks: Holes drilled in outcropping rocks filled with lead, into which copper tacks were driven, and distant as follows: N. 6.88 feet, S. 7.18 feet, E. 5.91 feet, W. 10.08 feet. Concrete pier occupied for latitude in 1885 was 44 feet 1 inch from station in azimuth  $227^{\circ} 28'$ . The azimuth from center of station to frame pier used for the vertical circle in 1885 was  $56^{\circ} 14'$  and distance was 5.486 meters. Stations occupied by the eclipse expedition of 1880 were a little north of west from the station and distant from it 546 feet and over.

[Latitude  $36^{\circ} 08' 45.328''$ . Longitude  $121^{\circ} 25' 05.937''$ .]

Tostation—	Azimuth.			Backazimuth.		Distance.	
	°	'	''	°	'	''	
Mount Toro (C. G. S.).....	157	58	56.29	337	52	09.62	<i>Log. meters.</i> 4.6584603
Santa Ana (C. G. S.).....	191	06	13.77	11	12	51.48	28.302 4.9339816
Hepsedam (C. G. S.).....	250	29	21.13	70	50	25.69	..... 4.7530109
Castle Mountain (C. G. S.).....	282	57	22.08	103	35	26.85	62.056 4.9994343
Rocky Butte (C. G. S.).....	328	33	49.52	148	46	28.32	38.771 4.7951624
Boulder (U).....	128	53	00.84	308	39	54.41	26.450 4.6290707
Chew (U).....	143	50	46.95	323	45	29.24	14.125 4.3566443
Bishop (U).....	255	50	46.80	75	58	30.31	12.575 4.3061705
Eade (U).....	257	32	40.11	77	48	34.75	25.697 4.6165346
Pine Creek (U).....	285	20	29.35	105	27	13.69	11.054 4.2501683
Williams (U).....	299	40	26.76	119	55	10.96	26.930 4.6368799
Jolon (U).....	311	35	13.13	131	42	58.53	16.451 4.4228507
Red Rock (U).....	331	32	31.97	151	41	38.66	30.505 4.6910267

C. G. S.=U. S. Coast and Geodetic Survey in 1885. U=C. F. Urquhart in 1917.

**SHELL NO. 1, FRESNO COUNTY, CALIF. (Not occupied.)**

Station is large smokestack at the Shell oil station about 10 miles north-northwest of Mendota, a small town on the Southern Pacific R. R.

[Latitude 36° 46' 26.216". Longitude 120° 41' 09.250'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Panoche.....	52 33 44.04	232 30 56.09	3.9431269	5.451
White.....	138 16 40.08	318 11 05.45	4.3171585	12.898
Miller No. 2.....	205 15 50.50	25 17 16.80	3.9223302	5.196
Gruber.....	283 41 06.99	103 43 06.23	3.9062818	3.160
Tierra Loma.....	333 32 32.07	153 33 33.21	3.7552258	3.537

**SHELL NO. 2, FRESNO COUNTY, CALIF. (Not occupied.)**

Center of stack at the Shell oil station, about 15 miles west of Tranquility, on the Southern Pacific R. R.

[Latitude 36° 35' 25.506". Longitude 120° 31' 07.939'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Telephone.....	182 00 53.54	2 01 03.04	4.0508452	6.985
Hermanhouse.....	226 28 37.35	46 35 53.96	4.3981829	15.543
Cantua.....	303 58 57.54	124 04 05.82	4.1912724	9.652

**SCHOOL, MERCED COUNTY, CALIF. (Not occupied.)**

Cupola on schoolhouse about 3 miles southwest of South End of Barn, at Joe Silva's ranch, 9 miles east of the town of Newman, on Southern Pacific R. R.

[Latitude 37° 19' 29.650". Longitude 120° 54' 31.740'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
South End of Barn.....	233 23 35.98	53 24 58.85	3.6221862	2.603
Crow.....	99 42 01.03	279 33 20.85	4.3306488	13.305

**SEMAS, MONTEREY COUNTY, CALIF.**

On a very prominent hill 2.5 or 3 miles north from Bradley and on the east side of Salinas River and the Southern Pacific R. R. The land has been owned by a man named Semas, but the name is probably not well known. Animals can be ridden to summit by entering pasture at Bradley and going north down Salinas River to the first canyon, thence up canyon 0.5 mile to a small level place; cross canyon; thence go north up gulch through a gate and uphill to station.

Signal: An oak tree set in ground on most northern peak.

Station mark: A triangulation tablet set in rock placed in ground 1 meter north of signal. Position of tablet was computed. Azimuth from tablet to signal, 355° 45'; distance, 1.00 meter.

[Latitude 35° 53' 15.437". Longitude 120° 49' 25.039'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Rocky Butte.....	40 52 43.59	220 44 28.41	4.5125744	20.227
Williams.....	114 02 47.65	293 56 33.17	4.2434984	10.886
Powell.....	217 04 50.29	37 08 35.71	4.2028012	9.912
Stone Canyon.....	237 54 46.28	58 04 18.15	4.4591241	17.884
Castle Mountain.....	262 23 07.28	82 40 09.16	4.6439880	27.375
Works.....	294 39 10.40	114 47 13.46	4.3577320	14.161
Vineyard.....	309 49 44.67	129 55 01.36	4.2476951	10.995
Dresser.....	326 05 03.50	146 13 51.66	4.6107150	25.355
Fair Oaks.....	354 14 29.55	174 15 32.89	4.4340556	16.881

**SERVICE, MADERA COUNTY, CALIF.**

Station is windmill at the Service School, about 8 miles east of Madera.

Signal: Center of mill.

Station mark: Eight-inch well under mill.

[Latitude 36° 58' 01.977". Longitude 119° 55' 15.767".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Greenleaf.....	7 58 11.29	187 57 38.84	3.9844702	5.995
Madera.....	86 25 03.20	266 20 00.20	4.0965713	7.761
Adobe.....	215 30 32.59	35 32 41.76	3.9606108	5.675
Deep Well.....	311 38 01.94	131 40 30.58	3.9133288	5.090

**SHARON, MADERA COUNTY, CALIF.**

A windmill at Sharon, a station on the Atchison, Topeka & Santa Fe Ry. between Merced and Fresno. The mill is at the north end of a warehouse on the east side of the track, and is opposite the station.

Signal: Center of mill.

Station mark: Pipe in the ground.

[Latitude 37° 06' 01.238". Longitude 120° 07' 50.951".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Berenda School.....	15 43 40.65	195 42 53.00	3.8577427	4.478
Crumley.....	19 12 51.71	199 11 33.52	3.9888415	6.056
Fairmead.....	64 55 26.89	244 53 14.16	3.7783343	3.730
Chowchilla.....	103 58 35.69	283 53 53.22	4.0758752	7.400
Marguerite.....	150 27 10.57	330 25 36.57	3.8916362	4.842
Flat Top.....	185 27 36.12	5 28 20.74	4.2812386	11.874
Green.....	214 09 25.33	34 14 30.93	4.3461516	13.788
Daulton.....	254 55 57.30	75 01 18.90	4.1342778	8.465
Rabbit.....	257 07 28.40	77 14 43.27	4.2611284	11.336
Adobe.....	286 56 46.08	107 06 30.82	4.3990592	15.574
Talbot.....	308 35 11.51	128 38 54.10	4.0672925	7.255
Madera.....	338 12 10.96	158 14 42.44	4.2242262	10.413

**SILAXO, FRESNO COUNTY, CALIF.**

In a pasture field owned by Miller & Lux, Inc., 0.5 mile west of milepost 136 on the Pipe Line road, 4 miles northwest of Firebaugh and about 0.6 mile south of where same road crosses canal. It is 1 mile south and a little west of Silaxo oil pumping station.

Signal: Timber quadripod with cross targets and flag.

Station mark: Iron bench-mark post centered under signal.

[Latitude 36° 52' 40.970". Longitude 120° 31' 46.377".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Miller No. 3.....	11 23 01.13	191 21 55.80	4.1367072	8.513
Miller Headquarters.....	17 50 15.45	197 49 17.60	3.8924525	4.851
Panoche.....	51 08 52.04	231 00 26.69	4.4294245	16.702
Miller No. 2.....	69 00 00.82	248 55 49.57	4.0459480	6.907
Hollingsworth.....	91 45 08.58	271 41 21.47	3.9720590	5.827
White.....	98 09 05.30	277 57 52.34	4.4476319	17.417
Silaxo Stack.....	191 00 21.55	11 00 36.23	3.4020890	1.568
Golden Hoof.....	196 39 42.84	16 40 44.61	3.9480602	5.513
West Power.....	227 27 28.48	47 29 54.29	3.9114933	5.068
Firebaugh.....	287 13 06.31	107 15 42.11	3.8282818	4.184



**SILAXO STACK, FRESNO COUNTY, CALIF. (Not occupied.)**

Station is the smokestack at oil station at Silaxo, on Southern Pacific Railroad between Firebaugh and South Dos Palos.

[Latitude 36° 54' 01.342". Longitude 120° 31' 26.912".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Silaxo.....	11 00 36.23	191 00 24.55	3.4020890	1.568
Hollingsworth.....	77 28 11.58	257 24 12.73	4.0041040	6.273
Golden Hoof.....	198 54 14.51	18 55 04.61	3.8038730	3.956
Firebaugh.....	306 55 23.90	126 57 48.06	3.8717451	4.625

**SMITH, FRESNO COUNTY, CALIF.**

The highest point of Smith Mountain, about 6 miles southeast of Reedley.

Signal: Cairn 8 feet high.

Station mark: Chiseled circle under center of cairn.

Reference mark: Tablet 3.2 feet south of center of cairn. Position of signal computed.

[Latitude 36° 34' 56.212". Longitude 119° 20' 42.990".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Dinuba.....	40 13 38.20	220 12 10.84	3.7529353	3.518
Kingsbury.....	67 58 15.35	247 50 54.45	4.2982711	12.349
Reedley.....	99 39 58.12	279 36 09.33	3.9857795	6.014
Parlier.....	100 49 40.73	280 43 08.05	4.2218216	10.356
Sanger.....	126 42 53.45	306 35 20.16	4.3713314	14.611
Campbell.....	151 45 13.20	331 42 30.42	4.1555507	8.890
Bear Hill.....	197 07 29.62	17 09 44.36	4.2790135	11.813
Orange Cove.....	214 16 21.22	34 17 35.31	3.7389986	3.407
Sampson.....	226 16 30.30	46 25 13.77	4.4782314	18.689
Orosi.....	295 36 57.87	115 40 01.30	3.9290562	5.277
Stokes.....	298 16 16.63	118 21 33.18	4.1765766	9.331
Yettam.....	321 13 06.53	141 16 31.00	4.1351443	8.482

**SOUTHEAST COTTONWOOD, MADERA COUNTY, CALIF., FROM NORTH.**

Station is the more southeastern of two cottonwood trees in pasture about 10 miles west of Madera and north of the Madera and Firebaugh road. It can be reached by auto.

Signal and station mark: Cottonwood tree. Position of signal computed.

Reference mark: A U. S. Geological Survey bench-mark post. Azimuth from tablet to signal, 92° 20'; distance, 16.5 feet.

[Latitude 36° 56' 20.240" (from north), 36° 56' 20.244" (from south), 36° 56' 20.360" (from west). Longitude 120° 15' 08.409" (from north), 120° 15' 08.554" (from south), 120° 15' 08.613" (from west).]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Berenda Slough (west).....	143 17 24.80	323 14 44.48	4.0422536	6.849
Berenda Slough.....	143 17 30.32	323 14 31.48	4.0422536	6.849
Fuller.....	188 04 14.33	8 04 38.18	3.8442016	4.341
Crumley.....	221 07 57.90	41 11 02.99	4.0630925	7.185
Madera.....	262 06 02.76	82 12 56.92	4.2367339	10.693
Miller & Lux Signal.....	274 01 41.48	94 04 40.04	3.8675666	4.581
Miller & Lux Signal (south).....	274 01 50.24	94 04 48.78	3.8675076	4.580

**SOUTHEAST COTTONWOOD, MADERA COUNTY, CALIF., FROM SOUTH.**

[Latitude 36° 56' 20.244" (from south), 36° 56' 20.240" (from north), 36° 56' 20.360" (from west.). Longitude 120° 15' 08.554" (from south), 120° 15' 08.409" (from north), 120° 15' 08.613" (from west).]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Miller & Lux Signal (north).....	274 01 41.04	94 04 40.04	3.8675666	4.581
Miller & Lux Signal.....	274 01 50.24	94 04 48.78	3.8675076	4.580
Last Chance.....	314 27 47.96	134 31 19.05	4.0864039	7.581
Aliso Mill.....	2 05 04.62	182 04 57.06	3.9335728	5.332
Aliso Mill (west).....	2 04 46.63	182 04 39.08	3.9336920	5.334

**SOUTHEAST COTTONWOOD, MADERA COUNTY, CALIF., FROM WEST.**

[Latitude 36° 56' 20.360" (from west), 36° 56' 20.240" (from north), 36° 56' 20.244" (from south). Longitude 120° 15' 08.613" (from west), 120° 15' 08.409" (from north), 120° 15' 08.554" (from south).]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Aliso Mill (south).....	2 05 04.62	182 04 57.06	3.9335728	5.332
Aliso Mill.....	2 04 46.63	182 04 39.08	3.9336920	5.334
Aliso.....	37 48 42.82	217 46 26.93	3.9610265	5.680
Columbia.....	42 52 38.91	222 48 46.00	4.1424330	8.625
Firebaugh.....	64 27 11.90	244 19 48.74	4.3067411	12.592
Golden Hoof.....	94 33 35.42	274 24 37.50	4.3465805	13.802
Syphon.....	120 38 14.28	300 33 54.45	4.0940288	7.716
Berenda slough.....	143 17 24.80	323 14 44.48	4.0422536	6.849
Berenda slough (north).....	143 17 30.32	323 14 31.48	4.0422536	6.849

**SOUTH END BARN, MERCED COUNTY, CALIF.**

A large white barn on the Joseph Silva ranch, 9 miles east of Newman, on the Newman-Livingston road.

Signal and station mark: South end of barn.

[Latitude 37° 20' 50.672". Longitude 120° 52' 15.093".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Gustine.....	48 13 19.20	228 08 37.94	4.1906813	9.639
Christian.....	49 14 42.83	229 06 36.52	4.4174049	16.246
School.....	53 24 58.85	233 23 35.98	3.6221862	2.603
Crow.....	92 37 07.81	272 27 04.59	4.3890577	15.220

**STOCKDALE, MONTEREY COUNTY, CALIF.**

On highest point of a low brushy mountain, about 12 miles from Parkfield and 5 miles from Stone Canyon, on west side of road between those two places. It is west of and about 0.75 mile from Mr. Stockdale's camp and new ranch. Mr. Stockdale's place is less than 1 mile from the county road. Animals can be ridden to the summit of hill.

Signal: A pine tree set in the ground on highest part of the hill.

Station mark: A triangulation tablet. Position of table computed. Azimuth from tablet to signal, 134° 46'; distance, 2.00 meters.

[Latitude 35° 59' 15.344". Longitude 120° 34' 51.150".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Vineyard.....	20 26 52.04	200 23 36.85	4.3790687	14.874
Powell.....	97 35 52.05	277 31 04.14	4.0926416	7.691
Stone Canyon.....	211 02 03.78	31 03 02.59	3.6865267	3.019
Castle Mount.....	283 46 36.87	103 55 06.76	4.3503908	13.923

## STOKES, TULARE COUNTY, CALIF.

On a sharp butte in the middle of Stokes Mountain, 5 miles southeast of Orosi. There is a higher butte about 0.5 mile east of station. Animals can be ridden to the top, the easiest approach being from the south.

Signal: Cairn on butte.

Station mark: Chiseled circle under center of cairn.

Reference mark: Bronze tablet 3.7 feet east of center of signal. Position of signal computed.

[Latitude 36° 31' 05.133". Longitude 119° 11' 51.445".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Yettam.....	53	02	53.84	233	01	01.97	3.7677174	3.640
Smith.....	118	21	33.18	298	16	16.63	4.1765766	9.331
Orosi.....	121	48	11.42	301	45	58.30	3.8158841	4.067
Campbell.....	134	41	00.03	314	33	00.41	4.4484236	17.449
Orange Cove.....	139	02	30.03	318	58	27.37	4.1886054	9.593
Bear Hill.....	163	17	56.84	343	14	54.32	4.4217145	16.408
Sampson.....	197	02	59.34	17	06	25.17	4.4649441	18.128

## STONE, SAN LUIS OBISPO COUNTY, CALIF.

A station of the U. S. Coast and Geodetic Survey.

On the higher or eastern one of two conical peaks about 3 miles in a northerly direction from the town of Cayucos. About 15 meters from the station, on the west side of the hill, was a stone fence running across the top of the hill from the northwest to the southeast side. The station was marked by a copper tack in a lead bolt driven into a hole 1 inch in diameter drilled into the solid rock. The reference marks were copper tacks in lead bolts driven into three holes in the solid rock, 10 inches below surface of ground; to the north, 2 feet 5 inches; to the south, 2 feet 1 inch; to the east, 2 feet 6 inches. Over each was placed a redwood stub 4 by 4 inches, with a copper tack in the top.

[Latitude 35° 29' 14.760" (C. G. S.), 35° 29' 14.732" (U). Longitude 120° 57' 00.244" (C. G. S.), 120° 57' 00.226" (U).]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Piedras Blancas Lighthouse (C. G. S.).....	123	19	09.1	303	07	30.4	4.558071	.....
Rocky Butte (C. G. S.).....	153	30	12.1	333	26	24.1	4.344172	.....
San Luis (C. G. S.).....	303	12	04.6	123	25	35.4	4.626224	.....
Saddle Peak (C. G. S.).....	333	57	13.5	154	02	41.8	4.514292	.....
Juhl (U).....	258	52	18.86	78	56	15.06	4.0190373	6.492
Rocky Butte (U).....	153	30	12.07	333	26	24.10	4.3441912	13.726

C. G. S.=U. S. Coast and Geodetic Survey in 1883. U=C. F. Urquhart in 1917.

## STONE CANYON, MONTEREY COUNTY, CALIF.

On a prominent brush-covered mountain about 1.5 miles northwest of Stone Canyon coal mine. There is a road under south end of mountain, and animals can be ridden from there to summit. There are higher mountains north and east of this point, any one of which would make as good or a better triangulation station, but none could be plotted on quadrangle to be surveyed.

Signal: A pine tree set in the ground.

Station mark: A triangulation tablet. Position of tablet was computed.

[Latitude 36° 01' 30.411". Longitude 120° 33' 11.105'".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Vineyard.....	22 14 41.33	202 10 27.38	4.4582886	17.850
Stockdale.....	31 03 02.59	211 02 03.78	3.6865267	3.019
Semas.....	58 04 18.15	237 54 46.28	4.4591241	17.884
Powell.....	80 18 40.66	260 12 53.80	4.1757593	9.313
Castle Mountain.....	296 16 20.56	116 23 51.90	4.3318977	13.343
Estrella.....	354 47 22.27	174 48 31.19	4.5123908	20.218

**SYPHON, MADERA COUNTY, CALIF.**

Station is center of windmill tower, on side of ditch, near small lake about 10 miles east of Dos Palos.

[Latitude 36° 59' 45.419". Longitude 120° 22' 20.686'".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Firebaugh.....	26 41 36.55	206 38 32.69	4.2272448	10.486
West Power.....	46 33 31.75	226 30 17.61	4.0416227	6.839
Golden Hoof.....	68 12 59.26	248 08 20.86	4.0910395	7.663
Johnson.....	121 04 59.95	300 59 52.97	4.1674508	9.137
Ash.....	176 22 56.63	356 22 42.59	3.9603124	5.671
Berenda Slough.....	238 26 44.91	58 28 11.55	3.6814664	2.984
Fuller.....	267 01 49.03	87 06 19.91	4.0674339	7.257
Southeast Cottonwood.....	300 33 54.45	120 38 14.28	4.0940288	7.716
Aliso.....	339 22 42.22	159 24 45.88	4.1604948	8.992

**TALBOT, MADERA COUNTY, CALIF.**

On the east side of the Madera-Raymond road about 5 miles north-northeast of Madera.

Signal: Quadripod with cross targets.

Station mark: Iron bench mark centered under signal.

[Latitude 37° 02' 04.877". Longitude 120° 01' 41.670'".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Madera.....	19 23 39.03	199 22 28.17	3.9431201	5.451
Crumley.....	81 12 31.13	261 07 30.62	4.0963184	7.757
Berenda School.....	91 50 47.80	271 46 17.76	4.0447607	6.888
Sharon.....	128 38 54.10	308 35 11.51	4.0672925	7.255
Daulton.....	200 28 29.77	20 30 08.46	4.0625406	7.176
Rabbit.....	217 24 27.28	37 27 59.14	4.1545450	8.869
Adobe.....	270 09 07.42	90 15 09.30	4.1717116	9.227

**TANKS, FRESNO COUNTY, CALIF. (Not occupied.)**

Standard Oil Co.'s Mendota pump station.

Station mark: Center of tank house.

[Latitude 36° 37' 53.686". Longitude 120° 18' 43.816'".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Cantua.....	23 04 37.47	203 02 22.53	4.1576810	8.934
Borland.....	164 36 40.68	344 36 06.12	3.7336757	3.365
Jamesan.....	220 05 19.05	40 09 07.99	4.1732567	9.260
Kings.....	232 40 58.36	52 43 59.33	3.9810611	5.949

**TELEPHONE, FRESNO COUNTY, CALIF.**

The windmill derrick at the Miller & Lux Co.'s sheep camp, known as the Telephone ranch, 10 miles from Mendota, a town on the Southern Pacific R. R., and 0.5 mile north of the Idria-Mendota road. The Chaney ranch is 4 miles west on same road and is the only ranch of importance between Mendota and Idria. Hay and stock water can be had at the Telephone ranch, but no water fit for drinking.

Station mark: The pipe extending into ground.

[Latitude 36° 41' 30.991". Longitude 120° 30' 52.018".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Shell No. 2.....	2 01 03.04	182 00 53.54	4.0508452	6.985
San Benito (1908).....	18 01 42.54	197 57 04.89	4.5748380	23.345
Chaney (1908).....	52 58 34.39	232 56 20.56	3.8432915	4.332
Buck (1908).....	63 08 46.06	212 55 57.09	4.5555836	22.332
Indian (1908).....	73 24 41.49	253 17 06.26	4.2957845	12.278
Panoche.....	99 39 44.38	279 30 47.63	4.3541563	14.045
Miller No. 3 (1908).....	150 42 19.89	330 40 42.19	3.9181290	5.146
Helm.....	226 08 43.25	46 13 39.50	4.2310930	10.579
Mendota Oil (1908).....	227 57 46.84	48 01 57.80	4.1464244	.....
Mendota (1908).....	242 28 40.44	62 33 47.13	4.1567673	.....
Hermanhouse.....	251 20 44.18	71 27 51.79	4.2724558	11.636
Borland.....	275 00 53.67	95 07 34.13	4.2229194	10.382
Tanks (1908).....	290 16 02.85	110 23 17.63	4.2852279	.....
East Stack.....	315 29 52.69	135 33 47.10	4.1438113	8.653
Cantua (1908).....	327 55 15.38	148 00 14.53	4.3712011	14.607
Joaquin (1908).....	353 02 07.91	173 04 07.98	4.6182998	25.802

**TIERRA LOMA, FRESNO COUNTY, CALIF.**

Station is windmill at the Tierra Loma School, 20 miles south of Dos Palos.

Signal: Center of mill.

Station mark: Center of well.

[Latitude 36° 43' 40.905". Longitude 120° 39' 27.069".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Indian.....	32 26 21.73	212 23 54.00	4.0588652	7.116
Panoche.....	88 35 06.15	268 31 17.18	3.9779082	5.906
Shell No. 1.....	153 33 33.21	333 32 32.07	3.7552258	3.537
Miller No. 2.....	184 50 59.61	4 41 24.67	4.1038132	7.852
Gruber.....	211 43 38.63	31 44 56.66	3.6604077	2.843
Miller No. 3.....	249 43 47.76	69 47 18.14	3.9684437	5.778

**TIVEY, FRESNO COUNTY, CALIF. (Not occupied.)**

[Latitude 36° 44' 35.794". Longitude 119° 23' 42.786".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Campbell.....	23 40 16.25	203 39 20.67	3.7595096	3.572
Round.....	129 33 28.55	309 29 22.15	4.1215523	8.221
Red Mountain.....	178 31 15.14	358 31 06.83	4.1244156	8.275
Bear Hill.....	268 15 01.33	88 19 03.89	4.0027310	6.253

**TORO MOUNT, MONTEREY COUNTY, CALIF.**

A station of the U. S. Coast and Geodetic Survey.

On the untimbered range of mountains bordering the Salinas Valley on the west; on the smooth, grassy hill about 500 yards south of A. B. Parson's house and on his land. It is easily reached from Salinas City and is in full view of the town.

Station mark: A copper bolt set in a flat-topped rock 2 feet beneath the surface of the ground, and a cross in copper bolt in top of pier built of concrete and topped with brick and cement. Two other piers are standing northwest of the station.

[Latitude 36° 31' 34.712" (B., C. G. S.), 36° 31' 34.742" (C. G. S. \*) Longitude 121° 36' 32.276" (B., C. G. S.), 121° 36' 32.284" (C. G. S. \*)]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Loma Prieta (C. G. S.).....	162 12 31.32	342 04 05.43	4.8338624	.....
Mcho (C. G. S.).....	182 34 42.13	2 36 38.58	5.0240270	.....
Santa Ana (C. G. S.).....	218 31 04.10	38 44 33.91	4.7311660	.....
Loma Prieta (C. G. S. *).....	162 12 32.85	342 04 06.98	4.8338515	.....
Mcho (C. G. S. *).....	182 34 42.61	2 36 39.07	5.0240231	.....
Santa Ana (C. G. S. *).....	218 31 06.92	38 44 36.72	4.7311612	.....
Ventana (B.).....	12 57 22.61	192 54 55.91	4.4395357	17.096
Boulder (B.).....	45 53 42.90	225 47 20.74	4.3487418	13.871
Chalk (B.).....	100 44 39.43	280 39 27.34	4.1228971	8.246
Pole (B.).....	321 45 48.39	141 50 00.10	4.2317425	10.595
Santa Lucia (B.).....	337 52 09.62	157 58 56.29	4.6584603	28.302
Chew (B.).....	351 09 35.40	171 11 03.72	4.3829144	15.006

(C. G. S.)=U. S. Coast and Geodetic Survey in 1885, (C. G. S. \*)=U. S. Coast and Geodetic Survey in 1906, (B.)=L. F. Biggs in 1917.

#### UNDERWOOD, MERCED COUNTY, CALIF. (Not occupied.)

Windmill derrick at the Miller & Lux Underwood ranch, about 7 miles east of Ingomar on the Southern Pacific R. R.

[Latitude 37° 11' 32.236". Longitude 120° 50' 19.483".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Milepost 162.....	15 47 39.92	195 46 53.21	3.8459179	4.358
Bareillas.....	43 59 12.88	223 51 58.51	4.4086518	15.922
Ingomar.....	83 12 56.26	263 08 15.13	4.0627718	7.180
Christian.....	90 23 17.20	270 14 01.90	4.3552129	14.079
Fairmont.....	144 51 36.50	324 50 18.74	3.7408993	3.422
Highland.....	296 12 14.62	116 14 52.28	3.8563848	4.464

#### VENTANA, MONTEREY COUNTY, CALIF. (Not occupied.)

Summit of sharp peak near the Ventanos.

[Latitude 36° 17' 04.765". Longitude 121° 40' 39.456".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Chalk.....	166 45 29.88	346 42 44.72	4.4782974	18.692
Toro Mount.....	192 54 55.91	12 57 22.61	4.4395357	17.096
Chew.....	253 20 14.38	73 24 08.77	4.0132896	6.407

#### VINEYARD, SAN LUIS OBISPO COUNTY, CALIF.

On the highest point of a bald ridge 3 miles northeast of San Miguel, a town on the Southern Pacific R. R. (Coast Line). It can be reached on horseback from almost any direction, but the best route from San Miguel is by way of Mahony Canyon. Cross the Salinas River on bridge at San Miguel; on east side of river there are three roads, take the middle one and go uphill and along this road to first road turning to left. This road goes around corner of fence and downhill to Mahony Canyon and up the canyon passing through a gate. After passing through this gate go 0.25 mile along road to first gate in fence to the west or left hand; go through this gate and up ridge to summit.

Signal: An oak tree set in the ground.

Station mark: A triangulation tablet set in rock 0.94 meter northeast of signal. Position of tablet was computed. Azimuth from tablet to signal, 50° 16'; distance, 0.94 meter.

[Latitude 35° 47' 07.497". Longitude 120° 40' 24.133".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Fair Oaks.....	34 45 14.03	214 41 01.53	4.2808062	11.862
Rocky Butte.....	69 14 41.10	249 01 10.69	4.5720691	23.196
Hellman.....	84 37 24.55	264 34 04.51	3.9360395	5.363
Lynch.....	86 55 03.93	266 44 07.46	4.4509332	17.550
Williams.....	122 03 50.88	301 52 19.91	4.5424997	21.670
Semas.....	129 55 01.36	309 49 44.67	4.2476951	10.991
Powell.....	170 43 30.24	350 41 58.26	4.3870387	15.149
Stockdale.....	200 23 36.85	20 26 52.04	4.3790687	14.874
Stone Canyon.....	202 10 27.38	22 14 41.33	4.4582886	17.850
Castle Mount.....	240 22 33.77	60 34 17.50	4.5395326	21.522
Works.....	255 44 12.49	75 46 58.59	3.8667339	4.572
Estrella.....	292 44 00.56	112 49 22.33	4.1761640	9.322
Dresser.....	337 54 46.84	157 58 18.82	4.3861901	15.120

**WEST BUTTE, MARIPOSA COUNTY, CALIF.**

On the west one of three buttes on the east edge of the San Joaquin Valley, 3 miles north of the Grade ranch, and about 20 miles northeast of Merced. It can be reached by following the road east from Merced to Tuttle, a station on the Atchison, Topeka & Santa Fe Ry., thence 1 mile north to Bear Creek bridge, thence along the main road on the south side of Bear Creek to a point where the road turns to the Grade ranch; thence by the ranch through pastures to the point.

Signal: A tree braced by poles and rock on highest point of butte.

Station mark: A triangulation tablet set in rock under center of tree.

[Latitude 37° 25' 14.820". Longitude 120° 13' 58.266".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Le Grand.....	2 41 24.74	182 41 05.26	4.2268546	10.476
Planada.....	28 52 54.28	208 49 36.32	4.2211092	10.339
Hurricane.....	50 40 18.46	230 36 39.87	4.0589318	7.117
Blacksmith.....	83 45 34.87	263 40 02.21	4.1317959	8.417
Green.....	308 37 06.40	128 45 55.93	4.4397964	17.106
Flat Top.....	326 40 51.91	146 45 19.51	4.2963446	12.294

**WEST POWER, FRESNO COUNTY, CALIF.**

The west one of two high poles that convey the power line across San Joaquin River at a point 5 miles north of Firebaugh. The pole leans slightly, and the cross arm about 15 feet from top was used.

Signal and station mark: The power pole.

Reference mark: Iron bench mark set at northeast corner of a warehouse, 14.6 feet from pole. Position of pole computed. Azimuth from bench mark to signal, 178° 23'; distance, 14.6 feet.

[Latitude 36° 55' 39.800". Longitude 120° 27' 43.566".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Silaxo.....	47 29 54.29	227 27 28.48	3.9114933	5.068
Golden Hoof.....	130 47 11.12	310 45 46.99	3.6603027	2.842
Syphon.....	228 30 17.61	46 33 31.75	4.0416227	6.839
Aliso.....	294 29 16.98	114 34 34.41	4.1579846	8.940
Firebaugh.....	356 48 59.36	176 49 09.48	3.8762201	4.673

**WHITE, MERCED COUNTY, CALIF.**

On a bald plateau about 4 miles southwest of Miller & Lux Co.'s Jamison ranch, which is on the westernmost canal and 9 miles south of Los Banos. Station is about 11 miles by road west of South Dos Palos. The signal is on a smooth, grass-covered hill with no rocks on it. There is a point a little higher about 0.25 mile south. Animals

can be ridden to point, and a light wagon may be driven to it, though the hill is rather steep.

Signal: A 4 by 4-inch pole reaching 12 feet above ground and bearing two targets at right angles to each other.

Station mark: Triangulation tablet in rock placed in ground 0.65 meter northwest of signal. The rock is 6 inches above ground on the northwest side of tablet.

[Latitude 36° 54' 48.435". Longitude 120° 50' 27.300".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Bonanza (1908).....	46 16 03.78	226 11 02.36	4.2364938	10.711
Bareillas (1908).....	125 23 37.82	305 16 29.54	4.3343198	13.417
Pipe Line.....	143 40 46.98	323 36 59.72	4.1978358	9.799
Volta (1908).....	158 53 48.87	338 50 39.26	4.3346184	13.427
Los Banos (1908).....	177 14 08.56	357 13 49.50	4.2102514	10.083
Los Banos Tank.....	178 39 32.25	358 39 22.92	4.2140071	10.171
Power.....	214 36 06.97	34 40 31.53	4.2818150	11.890
San Juan.....	221 24 03.49	41 30 42.69	4.3940425	15.396
Oil Stack (1908).....	234 22 12.82	54 27 05.63	4.1708242	9.208
Belmont.....	234 35 06.76	54 42 58.16	4.3759685	14.768
Dos Palos.....	246 50 14.77	66 58 01.42	4.3197460	12.975
South Dos Palos (1908).....	251 12 05.25	71 18 47.80	4.2431390	10.876
Golden Hoof.....	261 18 55.45	81 31 10.80	4.4861133	19.031
Silaxo.....	277 57 52.34	98 09 05.30	4.4476319	17.417
Hollingsworth.....	281 09 40.43	101 17 06.20	4.2727986	11.645
Ora Loma.....	287 12 20.40	107 17 06.15	4.0912602	7.667
Miller No. 2 (1908).....	294 25 41.90	114 32 54.23	4.2811679	11.872
Miller No. 1 (1908).....	295 07 03.74	115 10 22.20	3.9562094	5.618
Shell No. 1.....	318 11 05.45	138 16 40.08	4.3171585	12.898
Panoche Mountain.....	341 42 12.49	161 44 58.70	4.3408881	13.622

#### WILLIAMS, MONTEREY COUNTY, CALIF.

Station built by L. F. Biggs in October, 1916. Signal is on highest point of a mountain, locally known as Williams Mountain. It can be reached from Lockwood, a post office, hotel, and store in the San Antonio Valley. Go due east from Lockwood about 1.5 miles or 2 miles, passing through two gates, thence northeast on west side of a plowed field about 0.75 mile and through another gate. This is as far as a wagon can be taken. From this gate there is a good trail, known as the horse trail, going east and southeast to canyon at foot of mountain. Before reaching canyon a gate is passed through a one-wire fence; when canyon at foot of mountain is reached go down it about 100 yards and through another gate, thence up ridge on south side of summit.

Signal: A pine tree set in ground about 2 feet and guyed with wire.

Station mark: A triangulation tablet in rock. The original mark was too near the tree to set the instrument over it, so it was moved 0.86 meter about east of tree. Signal was not changed though it was dropped 2 feet in the ground to make it more secure. Position of tablet was computed. Azimuth from tablet to signal, 99° 19'; distance, 0.86 meter.

[Latitude 35° 57' 06.577". Longitude 121° 00' 03.402".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Rocky Butte.....	9 22 58.39	189 20 56.31	4.5077331	20.002
Red Rock.....	33 33 06.35	213 27 31.69	4.4145015	16.138
Graves.....	48 45 24.83	228 41 05.58	4.1687794	9.165
Jolon.....	102 30 49.89	282 23 51.69	4.2617385	11.352
Santa Lucia.....	119 55 10.96	299 40 26.76	4.6368799	26.930
Pine Creek.....	129 29 45.23	309 21 44.89	4.4227866	16.449
Bischoff.....	145 54 59.25	325 47 57.01	4.5047955	19.868
Eade.....	185 22 32.97	5 23 40.36	4.4842617	18.950
Powell.....	257 35 27.71	77 45 28.32	4.4186037	16.291
Castle Mount.....	271 08 40.76	91 31 58.16	4.7758227	37.083
Semas.....	293 56 33.17	114 02 47.66	4.2434984	10.886
Vineyard.....	301 52 18.91	122 03 50.88	4.5424997	21.670
Hellman.....	312 28 40.07	132 36 50.54	4.4549712	17.714
Fair Oaks.....	331 10 27.19	151 17 43.97	4.5906538	24.210
Lynch.....	355 57 05.89	175 57 38.95	4.3027095	12.476



**WORKS. MONTEREY COUNTY, CALIF.**

On ridge 9 miles east of San Miguel, on land owned by Mr. Works; F. E. Lowe's Estate ranch house is 0.75 mile northward from signal. From San Miguel cross river and take middle one of three roads (signboard "Parkfield via Hog Canyon"); follow this road eastward and turn up the canyon at a schoolhouse at forks in road, at a sharp bend in road where there is a signboard reading "San Miguel 9 miles, Parkfield 17 miles." Go through a gate and follow road northward 0.5 mile from where a deserted cabin can be seen 0.5 mile westward. The signal is on a ridge 0.25 mile west of this cabin and 1 mile northwest of point where main road was left.

Signal: Timber structure with white target.

Station mark: Bronze tablet set in rock flush with ground under signal. Position of tablet computed.

[Latitude 35° 48' 06.221". Longitude 120° 35' 40.136".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Vineyard.....	75 46 58.59	255 44 12.49	3.8667339	4.572
Semas.....	114 47 13.46	294 39 10.40	4.3577320	14.161

**YETTEM, FRESNO COUNTY, CALIF. (Not occupied.)**

Station mark: Cupola on schoolhouse at Yettem crossroads.

[Latitude 36° 29' 10.856". Longitude 119° 14' 59.502".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Smith.....	141 16 31.00	321 13 06.53	4.1351443	8.482
Campbell.....	146 40 01.73	326 33 54.39	4.4446605	17.299
Stokes.....	233 01 01.97	53 02 53.84	3.7677174	3.640

**Bonanza, Carrisalito Springs, Center School, Ortignlita, Panoche, and Tumey Hills quadrangles.**

**FRESNO AND MERCED COUNTIES.**

In the summer of 1919 L. F. Biggs extended triangulation over the above-named quadrangles. Twelve points were located, based on stations Bonanza and White, North American datum.

**BONANZA, MERCED COUNTY, CALIF.**

On a high bald peak, on which oak trees are growing just below the summit on the north side, about 3 miles northeast of Bonanza post office. A road leads to Bonanza from Tres Pinos on the Southern Pacific R. R. (distance 24 miles); thence up canyon 1 mile to Mr. Sepulveda's ranch. From this place follow trail to summit. Animals can be ridden all the way up. Station can also be reached from San Joaquin side by going up a wood road to summit, thence along ridge to highest point.

Signal and station mark: A cairn 8 feet high and triangulation tablet in rock placed under its center.

[Latitude 36° 48' 21.558". Longitude 120° 58' 49.786".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Wright.....	178 45 46.10	358 45 37.10	4.2551166	10.677
Valley Pipe Line 5.....	205 30 04	25 33 36	4.30818	12.634
White.....	226 11 02.36	46 16 03.78	4.2364938	10.711
Laguna Seca Flag.....	240 31 13.02	60 36 04.37	4.1407282	8.592
Langan.....	244 54 19.36	64 57 44.68	3.9718627	5.824

**CARRISALITO, MERCED COUNTY, CALIF.**

On high, dome-shaped hill just west of the Carrisalito ranch, owned by Arbura Bros. There is a growth of cedar trees on north slope of hill.

Station and signal: A rock monument with tree in center.

Reference mark: A tablet 1 foot east of signal.

[Latitude 36° 52' 02.22". Longitude 121° 01' 51.36".]

Tostation—	Azimuth.	Back azimuth.	Distance.	
			Log. meters.	Miles.
Wright.....	201 39 22.46	21 41 02.51	4.0479295	6.939
Valley Pipe Line 5.....	228 53 55	48 59 13	4.24494	10.922
White.....	253 06 47.04	73 13 37.67	4.2478847	10.996
Langan.....	282 15 24.00	102 20 38.38	4.1235201	8.258

**CHANNEY, FRESNO COUNTY, CALIF.**

The windmill derrick at the Chaney ranch, 14 miles from Mendota, on the Mendota-Idria road. This is the only ranch of importance on this road between Mendota and Idria. There is sufficient hay and water here, though drinking water has to be hauled from Mendota. The ranch is owned by the Hollister Co. and is sometimes called the Hollister ranch.

Station mark: The pipe extending into ground.

[Latitude 36° 39' 14.758". Longitude 120° 34' 36.094".]

Tostation—	Azimuth.	Back azimuth.	Distance.	
			Log. meters.	Miles.
Tumey.....	29 03 53	209 00 54	4.17760	9.352
Indian.....	83 46 01	263 42 39	4.12871	8.357
Tierra Loma.....	138 35 46	318 36 48	4.03864	6.792
Dux.....	189 48 28	9 46 28	4.19534	9.743
Telephone.....	232 56 21	52 58 34	3.84329	4.332
Levis.....	282 34 57	102 41 05	4.19361	9.704

**DUX, FRESNO COUNTY, CALIF. (Not occupied.)**

Station is a high derrick of a well, 3.0 miles south of Miller & Lux sheep ranch, which is about 5 miles southwest from Firebaugh.

Signal: The derrick.

Station mark: Pipe in well.

[Latitude 36° 47' 36.06". Longitude 120° 32' 48.94".]

Tostation—	Azimuth.	Back azimuth.	Distance.	
			Log. meters.	Miles.
Chaney.....	9 46 28	189 45 28	4.19534	9.743
Tumey.....	19 13 44	199 09 45	4.48140	18.827
Tierra Loma.....	53 45 07	233 41 09	4.08812	7.611

**INDIAN, FRESNO COUNTY, CALIF.**

On a bald mountain at the head of Indian Valley and on the north side of Panoche Creek. It is about 7 miles northeast by east of Panoche post office. The Panoche-Mendota road intersects the road from Idria 4 miles south of the Kern oil well. From the Kern oil well the signal can be seen, probably 5 miles distant. Animals can be ridden up almost any of the ridges leading to the highest point.

Signal: Cairn 7 feet high.

Station mark: Triangulation tablet set in rock; distant 1.60 meters from signal, azimuth 41° to signal.

See Bulletin 440 N, pp. 69 and 90.

[Latitude 36° 38' 27.298''. Longitude 120° 43' 34.341''].]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Tierra Loma.....	212 23 54	32 26 22	4.05886	7.116
Chaney.....	263 42 39	33 48 01	4.12871	8.357
Tumey.....	332 32 36	152 35 02	4.11889	8.189

**LAGUNA SECA FLAG, MERCED COUNTY, CALIF. (Not occupied.)**

On highest point of hill, 1 mile east of Laguna Seca ranch house.

Station mark: Small cairn with 2 by 2 redwood flagpole.

[Latitude 36° 52' 02.025''. Longitude 120° 50' 43.82''].]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Bonanza.....	60 36 04.37	240 31 13.02	4.14073	8.592
Wright.....	129 58 57.90	309 53 57.02	4.20882	10.050
White.....	184 33 30.64	4 33 40.56	3.71147	3.198

**LANGAN, MERCED COUNTY, CALIF.**

On the highest point of hill, 2 miles southeast of F. E. Langan's ranch house and about 16 miles south of Los Banos.

Signal: A lumber structure with cross targets.

Station mark: A bronze triangulation tablet in rock flush with ground under signal.

[Latitude 36° 50' 30.38''. Longitude 120° 53' 07.21''].]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Bonanza.....	64 57 44.68	244 54 19.36	3.9718627	5.824
Carrisalito.....	102 20 38.38	282 15 24.00	4.1235201	8.258
Wright.....	146 11 57.92	326 08 23.23	4.2014256	9.880
White.....	206 27 11.98	26 28 47.95	3.9487170	5.522

**LEVIS, FRESNO COUNTY, CALIF. (Not occupied.)**

Station is a smokestack at Levis pump station, 8 miles south of Mendota.

Station mark: Center of stack.

[Latitude 36° 37' 23.95''. Longitude 120° 24' 22.67''].]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Tumey.....	66 42 22	246 34 16	4.39042	15.268
Chaney.....	102 41 03	282 34 57	4.19361	9.704
Telephone.....	128 15 04	308 11 11	4.09021	7.648

**TELEPHONE, FRESNO COUNTY, CALIF.**

The windmill derrick at the Miller & Lux Co.'s sheep camp, known as the Telephone ranch, 10 miles from Mendota, a town on the Southern Pacific R. R., and 0.5 mile north of the Idria-Mendota road. The Chaney ranch is 4 miles west on the same

road and is the only ranch of importance between Mendota and Idria. Hay and stock water can be had at the Telephone ranch but no water fit to drink.

Station mark: The pipe extending into ground.

[Latitude  $36^{\circ} 41' 30.991''$ . Longitude  $120^{\circ} 30' 52.018''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Chaney.....	52 58 34	232 56 21	3.04329	4.532
Levis.....	308 11 11	128 15 04	4.09021	7.048

#### TIERRA LOMA, FRESNO COUNTY, CALIF.

Station is windmill at the Tierra Loma Schoolhouse 20 miles south of Dos Palos.

Signal: Center of mill.

Station mark: Center of well.

[Latitude  $36^{\circ} 43' 40.905''$ . Longitude  $120^{\circ} 39' 27.069''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Indian.....	32 26 21.73	212 23 54.00	4.0588652	7.116
Panoche.....	88 35 06.15	269 31 17.18	3.9779082	5.906
Shell No. 1.....	153 33 33.21	333 32 32.07	3.7552258	3.537
Miller No. 2.....	184 50 59.61	4 41 24.67	4.1038132	7.892
Gruber.....	211 43 38.63	31 44 36.66	3.6604077	2.843
Miller No. 3.....	249 43 47.76	69 47 18.14	3.9684437	5.778
Tumey.....	00 11 59	180 11 57	4.32968	13.275
Indian.....	32 26 22	212 23 54	4.05886	7.116
Dux.....	233 41 09	53 45 07	4.08812	7.611
Chaney.....	318 36 48	138 39 46	4.03864	6.792

#### TUMEY, FRESNO COUNTY, CALIF.

On a high foothill 5 miles south of mouth of Panoche Canyon. From Mendota go 20 miles southwestward to mouth of Panoche Canyon; continue up canyon 5 miles to forks of New Idria and Panoche roads, thence southeastward along trail up west side of canyon. Trail passes just east of station.

Signal: A 2 by 2 inch redwood pole bearing a flag.

Station mark: A sandstone boulder, in which is a 1-inch drill hole, at base of flag.

Latitude  $36^{\circ} 32' 07.82''$ . Longitude  $120^{\circ} 39' 20.07''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Indian.....	152 35 02	332 32 36	4.11989	8.189
Tierra Loma.....	180 11 57	00 11 59	4.32968	13.275
Chaney.....	209 00 54	29 03 53	4.17760	9.357
Dux.....	199 09 45	19 13 44	4.48140	18.827
Levis.....	246 34 16	66 42 22	4.39042	15.268

#### VALLEY PIPE LINE NO. 5, MERCED COUNTY, CALIF.

Station and signal: Center of smokestack at Valley Pump Line Co.'s station about 8 miles south of Los Banos.

[Latitude  $36^{\circ} 58' 16.73''$ . Longitude  $120^{\circ} 52' 55.90''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Bonanza.....	25 33 36	205 30 04	4.30818	12.634
Carrisalito.....	48 59 15	228 53 55	4.24494	10.922
Wright.....	82 44 37	262 40 56	3.96376	5.716

**WHITE, MERCED COUNTY, CALIF.**

On a bald plateau about 4 miles southwest of the Miller & Lux Co.'s Jamison ranch, which is on the westernmost canal and 9 miles south of Los Banos. It is about 11 miles by road west of South Dos Palos. The signal is on a smooth, grass-covered hill with no rock on it. There is a point a little higher about 0.25 mile south. Animals can be ridden to station; a light wagon even may be driven to it, though the hill is rather steep.

Signal: A 4 by 4 inch pole, standing 12 feet above ground, on which are two targets at right angles to each other.

Station mark: Triangulation tablet in rock placed in ground 0.65 meter northwest of signal. The rock is 6 inches above ground on the northwest side of tablet.

[Latitude  $36^{\circ} 54' 48.435''$ . Longitude  $120^{\circ} 50' 27.300''$ ]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Laguna Seca Flag.....	4 33 40.56	184 33 30.64	3.71147	3.198
Langan.....	26 28 47.95	206 27 11.98	3.9487170	5.522
Bonanza.....	46 16 03.78	225 11 02.36	4.2364938	10.711
Carrisalito.....	73 13 37.67	253 06 47.04	4.2478847	10.996
Wright.....	112 21 01.33	292 15 50.36	4.1411907	8.601

**WRIGHT, MERCED COUNTY, CALIF.**

On highest point of hill, 1 mile south of Los Banos Creek and 2 miles northeast of Gaston Bede ranch house.

Station mark: Cross on rock flush with ground under small cairn.

Signal: A timber structure on which are cross targets.

Reference mark: A bronze tablet 24.6 feet from signal, azimuth  $64^{\circ} 08'$ .

[Latitude  $36^{\circ} 57' 35.87''$ . Longitude  $120^{\circ} 59' 04.78''$ ]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Carrisalito.....	21 41 02.51	201 39 22.46	4.0479295	6.939
Valley Pipe Line.....	262 40 56	82 44 37	3.96376	5.716
White.....	292 15 50.36	112 21 01.33	4.1411907	8.601
Laguna Seca Flag.....	309 53 57.02	129 58 57.90	4.20882	10.050
Langan.....	326 08 23.23	146 11 57.92	4.2014256	9.880
Bonanza.....	358 45 37.10	178 45 46.10	4.2351166	10.677

**Avenal, Lapanza, Nipomo, and Pozo quadrangles.****KERN, SAN LUIS OBISPO, AND SANTA BARBARA COUNTIES.**

In the spring of 1919 L. F. Biggs extended triangulation over the above-named quadrangles, based on stations San Luis and San Jose of the U. S. Coast and Geodetic Survey.

Fifteen stations were located on North American datum.

**ALLEN, SAN LUIS OBISPO COUNTY, CALIF.**

On north end and highest point of long timbered ridge, just west of the Carrizo ranch.

From Simmler follow road past Carrizo ranch to Buckhorn ranch, thence go southwest by trail up canyon to summit, and continue southwestward to second summit, where point can be seen and approached to the southward. Point can also be reached from Avenal ranch.

Station mark: Bronze tablet in rock under signal.

Signal: Tree and small cairn over tablet.

121166°—23—Bull. 709—38

[Latitude 35° 11' 07.97". Longitude 120° 05' 03.79'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Pamasse.....	24 27 57.53	204 25 36.53	4.1759076	9.317
Stanley.....	50 37 39.48	230 31 55.01	4.2926926	12.191
Hathaway.....	88 39 52.24	268 34 39.45	4.1379504	8.537
McChesney.....	128 01 38.17	307 56 34.97	4.2269035	10.477
Freeborn.....	194 10 10.82	14 11 14.80	4.0587497	7.114
Las Yeguas.....	202 17 37.99	22 22 04.74	4.4868705	19.065
Cuyama B.....	356 48 32.95	176 48 56.78	4.2759012	11.729

**CHICHES, SAN LUIS OBISPO COUNTY, CALIF.**

On a high brushy peak, 9 miles west of Pozo. From Pozo follow Simmler road 7.0 miles to top of Pozo grade and take road to left 1 mile to Ranger Cabin. A trail leads from Ranger Cabin to station; distance about 4 miles.

Station and signal: A 10-foot tree placed in the ground.

Reference mark: A bronze tablet in rock flush with the ground, distant 1.5 feet from station; azimuth from tablet to station 236°.

[Latitude 35° 23' 34.30". Longitude 120° 21' 05.095'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
San Luis.....	56 19 25.42	236 12 08.76	4.3603682	14.280
Creston.....	150 57 55.20	330 54 03.74	4.3158950	13.160
Red Hill.....	200 57 41.63	21 01 05.47	4.3927193	15.348
Las Yeguas.....	261 21 39.98	81 35 24.51	4.5598618	22.553
Panza Tree.....	279 05 26.31	99 08 49.58	3.9529260	5.575
McDonald.....	279 11 19.99	99 20 16.03	4.3743874	14.714
Freeborn.....	293 38 20.85	113 48 41.03	4.4709454	18.378
San Jose.....	318 51 34.49	138 54 26.26	4.0568484	7.083
McChesney.....	318 52 59.07	138 57 11.08	4.2238956	10.405

**CRESTON, SAN LUIS OBISPO COUNTY, CALIF.**

On fence line half a mile south of road, on highest point of bare hill, 6 miles east of Creston. From Creston take Shandon road 5 miles to foot of hill, here take right-hand fork and follow past summit one-quarter of a mile westward.

Station mark: A bronze tablet in rock flush with ground under fence and signal.

Signal: A timber structure, on which are cross targets.

[Latitude 35° 33' 21.28". Longitude 120° 27' 43.92'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
San Luis.....	16 16 52.18	196 13 25.78	4.5065952	19.996
Red Hill.....	255 11 07.20	75 28 23.49	4.2905877	12.132
Chiches.....	330 54 03.74	150 57 55.20	4.3158950	13.160

**CUYAMA B, SANTA BARBARA COUNTY, CALIF. (Not occupied.)**

On a sharp brushy ridge, about 4 miles south of Pamasse ranch house, which is in the Santa Maria Canyon about 25 miles by road east of Santa Maria.

Station and signal: Highest point of hill.

[Latitude 35° 00' 56.40". Longitude 120° 04' 22.35'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
McChesney.....	153 53 18.25	333 47 51.83	4.5126632	20.231
Allen.....	176 48 56.78	356 48 32.95	4.2759012	11.729
Las Yeguas.....	192 38 30.52	12 42 32.81	4.6849016	30.078

**FREEBORN, SAN LUIS OBISPO COUNTY, CALIF.**

On highest point of hill, 6 miles southwest of Simmler. From Cavanaugh & Freeborn ranch skirt hill 1 mile eastward to canyon; follow trail up canyon to pass, thence along ridge to summit. Station can also be approached from south.

Station mark: A bronze tablet set in large rock under signal.

Signal: A 12-foot tree braced to boulder.

[Latitude 35° 17' 08.15". Longitude 120° 03' 12.89".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
	° ' "	° ' "		
Allen.....	14 11 14.80	194 10 10.82	4.0587497	7.114
McChesney.....	87 28 50.41	267 22 42.78	4.2068429	10.004
Chiches.....	113 48 41.03	293 38 20.85	4.4709454	18.374
McDonald.....	155 27 21.51	335 25 56.92	3.9490249	5.526
Las Yeguas.....	207 05 30.42	27 08 53.32	4.2881364	12.064
Simmler School.....	216 02 56.42	36 05 58.32	3.9565127	5.622

**HATHAWAY, SAN LUIS OBISPO COUNTY, CALIF.**

On brush-covered peak, 1 mile south of Pine Mountain and 2 miles north of Hathaway ranch house. From Huasna take road eastward to top of hill three-quarters of a mile east of William Lane's ranch house and half a mile west of Hathaway ranch house. Take left-hand road up hill; continue around hill 1½ miles to east slope of hill, on which are scattering oaks. Station is half a mile west of road.

Station mark: Cross on rock buried flush with ground under signal.

Signal: Live-oak tree 10 feet high, set in ground.

[Latitude 35° 10' 57.25". Longitude 120° 14' 06.64".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
	° ' "	° ' "		
Stanley.....	6 38 44.53	186 38 16.43	4.0867225	7.587
San Luis.....	109 44 47.56	289 33 29.91	4.4984270	19.578
San Jose.....	168 13 58.95	348 12 48.04	4.1778311	9.358
McChesney.....	182 20 04.08	2 20 14.04	4.0300830	6.659
Allen.....	268 34 39.45	88 39 52.24	4.1379504	8.537

**LOMA PALOMA, SAN LUIS OBISPO COUNTY, CALIF. (Not occupied.)**

Station is a small leaning tree on small peak in saddle on high bare ridge northeast of Arroyo Grande.

Station mark and signal: A tree.

[Latitude 35° 09' 54.71". Longitude 120° 28' 35.63".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
	° ' "	° ' "		
San Luis.....	148 26 29.31	328 23 33.72	4.1673568	9.135
San Jose.....	228 31 23.75	48 38 35.01	4.4013924	15.658
McChesney.....	240 31 01.71	60 39 32.88	4.4104343	15.988

**LAS YEGUAS, KERN COUNTY, CALIF.**

On highest point of hill 7 miles north of Simmler and 1½ miles southwest of Las Yeguas ranch house; road passes through saddle one-eighth of a mile north of station.

Station mark: Tablet set in rock flush with ground under signal.

Signal: A timber structure on which are cross targets.

[Latitude 35° 26' 28.88". Longitude 119° 57' 22.32'']

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Cuyama B.....	12 42 32.81	192 38 30.52	4.6849016	30.078
Simmler School.....	19 29 29.53	199 28 08.60	4.0241725	6.569
Allen.....	22 22 04.74	202 17 37.99	4.4868705	19.065
Freeborn.....	27 08 53.32	207 05 30.42	4.2881364	12.064
McDonald.....	53 47 39.41	233 42 51.58	4.1916443	9.660
McChesney.....	54 14 01.13	234 04 32.91	4.487773 6	19.102
San Jose.....	63 55 01.86	243 44 09.98	4.5005937	19.676
Panza Tree.....	75 57 59.52	255 47 38.52	4.4453531	17.366
Chiches.....	81 35 24.51	261 21 39.98	4.5598618	22.553
Red Hill.....	123 18 10.95	303 07 48.30	4.5089033	20.056

**M'CHESNEY, SAN LUIS OBISPO COUNTY, CALIF.**

Near U. S. Coast and Geodetic Survey point "Dome."

On a high brushy dome-shaped mountain, 10 miles southeast of Pozo. From Pozo follow the Avenal road 10 miles to Conway's ranch. From Conways follow trail up canyon to eastward, keeping just south of east-west fence; follow this fence about 2 miles to foot of point leading to brushy ridge on which are scattering pine trees; follow trail past pines to top of hill and signal, 4 miles from Conways.

Station mark: A bronze tablet set in large boulder under signal.

Signal: A 12-foot tree braced over tablet.

[Latitude 35° 16' 44.723". Longitude 120° 13' 49.362'']

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Hathaway.....	2 20 14.04	182 20 04.08	4.0300530	6.659
Stanley.....	4 38 02.21	184 37 20.12	4.3600442	14.236
Loma Paloma.....	60 39 32.88	210 31 01.71	4.4104343	15.988
San Luis.....	89 52 58.66	269 41 30.95	4.4784551	18.698
Chiches.....	138 57 11.88	318 52 59.07	4.2238956	10.405
San Jose.....	139 00 11.44	318 58 51.20	3.7281113	3.322
Las Yeguas.....	234 04 32.91	54 14 01.13	4.4877346	19.102
Freeborn.....	267 22 42.78	87 28 50.41	4.2068429	10.004
Allen.....	307 56 34.97	128 01 38.17	4.2269035	10.477
Cuyama B.....	333 47 51.83	153 53 18.25	4.5126632	20.231
Pamasse.....	313 31 06.36	163 33 47.94	4.3988740	15.568

**M'DONALD, SAN LUIS OBISPO COUNTY, CALIF.**

On the south end and at highest point of mesa, 1 mile south of Pozo-Simmler road and 6 miles west of Simmler.

Station mark: Tablet cemented in rock under signal.

Signal: A 10-foot cedar tree braced over station.

[Latitude 35° 21' 30.61". Longitude 120° 05' 39.20'']

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Chiches.....	99 20 16.03	279 11 19.99	4.3743874	14.714
Las Yeguas.....	233 42 51.58	53 47 39.41	4.1916443	9.660
Simmler School.....	274 53 01.24	94 56 27.91	3.9567018	5.624
Freeborn.....	335 25 56.92	155 27 21.51	3.9490249	5.526

**PAMASSE, SANTA BARBARA COUNTY, CALIF.**

On a small butte, elevation about 2,500 feet, 1 mile south of Pamasse ranch house, on Santa Maria River, about 25 miles by road from Santa Maria. The ridge increases in height toward the southeast. From Santa Maria follow the Santa Maria River road to point 3 miles beyond where road leaves river to pass the Narrows, to gate with sign-board reading "Santa Barbara National Forest Boundary"; continue one-eighth mile farther to small saddle in which is an iron post marked "A. T. Co. Elev. 1388. Sta. 2234±52", thence go up open ridge 1 mile to signal.



Station mark: Aluminum tablet set in rock on small butte.

Signal is a double oak tree bearing a white cloth, 19 feet distant, azimuth 320° from station.

[Latitude 35° 03' 45.03". Longitude 120° 09' 08.85".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Stanley.....	97 36 00.76	277 32 37.62	3.9560414	5.616
McChesney.....	163 33 47.94	343 31 06.36	4.3988740	15.568
Allen.....	204 25 36.53	24 27 57.53	4.1759076	9.317

**PANZA TREE, SAN LUIS OBISPO COUNTY, CALIF. (Not occupied.)**

Station is a pine tree on top of hill 4 miles north of La Panza.

Signal and station mark is the tree.

[Latitude 35° 22' 48.16". Longitude 120° 15' 14.07".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Chiches.....	99 08 49.58	279 05 26.31	3.9529260	5.575
Red Hill.....	180 00 06.62	00 00 06.63	4.3888864	15.214
Las Yeguas.....	255 47 38.52	75 57 59.52	4.4453531	17.366

**RED HILL, SAN LUIS OBISPO COUNTY, CALIF.**

On south end of mountain, locally known as Red Hill, 10 miles southeast of Shandon. From Shandon follow road up San Juan River 7 miles to E. A. Hall's ranch house, thence go southward over second-class road to station.

Station mark: A bronze tablet set in rock.

Signal: A cedar tree set in ground 26 feet distant; azimuth from station to signal, 198°.

[Latitude 35° 36' 02.63". Longitude 120° 15' 14.04".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Panza Tree.....	00 00 06.64	180 00 06.62	4.3888864	15.214
Chiches.....	21 01 05.47	200 57 41.63	4.3927193	15.348
Creston.....	75 28 23.49	255 11 07.20	4.2905877	12.132
Las Yeguas.....	303 07 48.30	123 18 10.95	4.5089033	20.056

**SAN JOSE, SAN LUIS OBISPO COUNTY, CALIF.**

Described in U. S. Coast and Geodetic Survey Report for 1904, App. No. 9, on page 629, as follows:

"On the top of a peak about 8 miles from the town of San Jose, which is about 30 miles from San Luis Obispo. About 4 miles from San Jose in a canyon is the house of Vidal Garcia. The station is about 4 miles from there by the American Canyon. The station was marked by a concrete pier, a cross on a copper bolt marking the center. Four reference stones were put down, approximately north, south, east, and west, and each 5 feet from the station."

[Latitude 35° 18' 55.652". Longitude 120° 16' 08.225".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Loma Paloma.....	48 38 35.01	228 31 23.75	4.4013924	15.058
San Luis.....	81 13 00.12	261 02 52.35	4.4297266	16.714
Chiches.....	138 54 26.26	318 51 34.49	4.0568484	7.083
Las Yeguas.....	243 44 09.98	63 55 01.86	4.5005937	19.676
McChesney.....	318 58 51.20	139 00 11.44	3.7281113	3.322
Hathaway.....	348 12 48.04	168 13 58.95	4.1778311	9.358

**SAN LUIS, SAN LUIS OBISPO COUNTY, CALIF.**

Described in U. S. Coast and Geodetic Survey Report for 1904, App. No. 9, page 628, as follows:

"On what is known as the Pine Ridge, in the Santa Lucia or Coast Range, about 6 miles east of San Luis Obispo. This is the highest peak in the vicinity and is covered with pine trees. To reach the station from San Luis Obispo take the main road running toward Arroyo Grande. About 2 miles from the town and just before crossing the first of what are known as the Twin Bridges the peak comes in sight, and can be distinguished by its being somewhat dome-shaped. After crossing the first of these small bridges, turn to the left and continue on to what is known as the Larsen Dairy on the Rancho Corral de Piedra, owned by the Steele Brothers of San Luis Obispo. Follow the creek back of the Larsen Dairy, known as the Canal de Piedra Creek, passing through the place of Patrick McHenry, and about 1½ miles up the creek from the Larsen Dairy take the trail around to the southeast until you arrive at the main ridge and follow this to the top. The station was marked by a concrete pier, with a cross on a copper bolt in the top of the pier marking the center. The reference stones for the station were put approximately north, south, east, and west, each 4 feet from the station."

[Latitude 35° 16' 41.102". Longitude 120° 33' 40.087".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Creston.....	196 13 25.78	16 16 52.18	4.5065952	19.996
Chiches.....	236 12 08.76	56 19 25.42	4.3603682	14.280
San Jose.....	261 02 52.35	81 13 00.12	4.4297266	16.714
McChesney.....	269 41 30.95	89 52 58.66	4.4784551	18.698
Hathaway.....	289 33 29.91	109 44 47.55	4.4984278	19.578
Loma Paloma.....	328 23 33.72	148 26 29.31	4.1673568	9.135

**SIMMLER SCHOOL, SAN LUIS OBISPO COUNTY, CALIF. (Not occupied.)**

Station is windmill at Simmler schoolhouse.

Station mark: Pipe in ground under windmill.

Signal: The windmill.

[Latitude 35° 21' 05.46". Longitude 119° 59' 42.03".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Freeborn.....	36 05 58.32	216 02 56.42	3.9565127	5.622
McDonald.....	94 56 27.91	274 53 01.24	3.9567018	5.624
Las Yeguas.....	199 28 08.60	19 29 29.53	4.0241725	6.569

**STANLEY, SAN LUIS OBISPO COUNTY, CALIF.**

On a high brushy hill, locally known as Stanley Mountain, about 16 miles by road northeast of Santa Maria. From Santa Maria, following the road up Alma Creek about 16 miles to Stanley ranch house, which is at foot of hill. Go up hill eastward about 1 mile to top of steep rocky cliff, thence along ridge another mile to highest point and signal.

Station mark: A copper bolt three-eighths by 1½ inches cemented in rock flush with ground under signal.

[Latitude 35° 04' 23.69". Longitude 120° 15' 02.42".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
McChesney.....	184 37 20.12	4 38 02.21	4.3600442	14.236
Hathaway.....	186 38 16.43	6 33 44.53	4.0867225	7.587
Allen.....	230 31 55.01	50 37 39.48	4.2926926	12.191
Pamasse.....	277 32 37.62	97 36 00.76	3.9560414	5.616

# NEVADA.

## TRIANGULATION STATIONS.

Coppereid, Dry, Farrell, Lake, Lovelocks, Mazuma, Mill City, and Rochester quadrangles.

### CHURCHILL AND HUMBOLDT COUNTIES.

During the season of 1916 L. F. Biggs extended triangulation over parts of the above-named quadrangles. Positions are based on U. S. Coast and Geodetic Survey stations Augusta, Carson Sink, Granite, and North Augusta, on North American datum.

#### AUGUSTA, CHURCHILL COUNTY, NEV. (Not occupied.)

Elevation of top of peak, 9,979 feet.

[Latitude 39° 32' 25.167". Longitude 117° 55' 07.696".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Carson Sink (Job Peak) (C).....	100 05 22.2	279 53 17.8	4.4404349	17.131
Mount Grant (C).....	35 18 40.6	214 45 42.8	5.1188124	.....
Pah-Rah (C).....	102 27 16.9	281 27 44.1	5.1347074	.....
Mount Callahan (C).....	256 56 55.9	77 33 59.8	4.9307815	.....
Toiyabe dome (C).....	327 53 19.7	148 14 48.1	4.9662608	.....
Buffalo (B).....	166 44 51.34	346 36 47.08	4.8915134	48.402

C=U. S. Coast and Geodetic Survey in 1878. B=L. F. Biggs in 1916.

#### BLACK KNOB, HUMBOLDT COUNTY, NEV.

On a point locally known as Black Knob, 4.5 miles southwest from Rochester.

Station mark: a bronze tablet.

Signal and reference mark: A bottle neck cemented in solid rock and surmounted by a cairn; distant 3.5 feet, true azimuth, 28° 39', from station.

[Latitude 40° 14' 29.229". Longitude 118° 13' 14.795".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Gypsum.....	62 18 58.93	242 13 50.56	4.1058191	7.928
Lone Mountain.....	192 38 39.84	12 39 38.75	3.9923364	6.105
Nenzel Hill.....	230 31 34.92	50 34 12.09	3.8717149	4.625
Buffalo.....	284 35 18.05	104 38 52.41	3.9089173	5.038

#### BUFFALO, HUMBOLDT COUNTY, NEV.

On highest point of Buffalo Peak, 6 miles southeast of Rochester. To reach station follow Packard trail from Rochester to saddle, thence go to left uphill to top of ridge, and along ridge 4 miles.

Station mark: A bronze tablet in solid rock 5-8 feet north of a 1-inch drill hole under signal. True azimuth, 173° 58'.

Signal: A juniper tree in small cairn over drill hole.

[Latitude 40° 13' 22.85". Longitude 118° 07' 42.925".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Carson Sink (Job Peak).....	7 19 07.36	187 15 02.20	4.8548881	44.488
Gypsum.....	78 35 13.60	258 26 31.05	4.2908238	12.139
Trinity.....	91 22 08.84	270 58 16.61	4.7196737	32.585
Black Knob.....	104 38 52.41	284 35 18.05	3.9089173	5.038
West Seven Troughs.....	119 21 36.14	298 54 41.39	4.8282328	41.839
Nenzel Tank.....	126 58 02.39	306 50 30.91	4.3145316	12.820
Lone Mountain.....	153 57 49.21	333 55 13.56	4.1122376	8.046
Nenzel Hill.....	162 49 16.41	342 48 19.11	3.8507749	4.407
Star.....	173 58 08.12	353 56 31.35	4.5246698	20.798
Granite.....	251 23 04.28	171 46 28.78	4.7328250	33.587
Cinnabar (west).....	256 21 09.70	76 33 16.01	4.4365681	16.979
North Augusta.....	335 06 41.72	155 19 07.00	4.8176519	40.832
Augusta.....	346 36 47.08	166 44 51.34	4.8915134	48.402

**CARSON SINK, CHURCHILL COUNTY, NEV.**

About 20 miles in an easterly direction from town of Stillwater, on highest point of Carson Sink Range of mountains. Station is marked by a copper bolt in a drill hole in solid rock. Also marked a few inches above bolt by a drill hole in a porous rock embedded in the masonry foundation used for mounting the instrument. Station is partly surrounded by a ring wall of rocks about 5.5 meters in diameter. Four drill holes in solid rock are at the following distances and azimuths from station: 5.36 meters, 253° 58'; 5.38 meters, 328° 07'; 3.12 meters, 69° 12'; and 1.99 meters, 163° 42'. Carson Sink latitude-station pier is 22.68 meters from station in azimuth 230° 40'. Vertical-circle station, partly surrounded by a small ring wall of rocks, is 8.13 meters from station in azimuth 39° 15'.

Elevation: Top of surface mark, 8,792.6 feet.

[Latitude 39° 35' 00.232". Longitude 118° 14' 05.093".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Mount Callahan (C).....	262 20 28.686	83 09 39.391	5.04590205	.....
Toiyabe Dome (C).....	317 16 00.680	137 49 28.718	5.05272206	.....
Trinity (B).....	148 59 53.48	328 40 15.88	4.9255561	52.349
Gypsum (B).....	171 26 13.25	251 21 39.24	4.8318167	42.186
Star Peak (B).....	183 00 25.80	3 02 55.59	5.0189040	64.901
Buffalo (B).....	187 15 02.20	7 19 07.36	4.8548881	44.488
Granite (C).....	214 17 32.85	34 44 53.67	5.0290744	66.439
North Augusta (B).....	252 42 23.32	72 58 47.40	4.5854878	23.924
Augusta.....	279 53 17.87	100 05 22.29	4.4404349	17.131

C=U. S. Coast and Geodetic Survey in 1880. B=L. F. Biggs in 1916.

**CINNABAR, WEST, HUMBOLDT COUNTY, NEV. (Not occupied.)**

Not described.

[Latitude 40° 16' 50.400". Longitude 117° 48' 58.888".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Buffalo.....	76 33 16.01	256 21 09.70	4.4365681	16.979
Nenzel Hill.....	90 51 30.79	270 38 26.71	4.4571332	17.803
Star Peak.....	131 57 05.22	311 43 19.85	4.6053665	25.045

**GRANITE PEAK, HUMBOLDT COUNTY, NEV. (Not occupied.)**

Elevation of top of peak, 9,779 feet.

[Latitude 40° 22' 36.653". Longitude 117° 31' 31.432".]

Tostation—	Azimuth.	Back azimuth.	Distance.	
			Log. meters.	Miles.
Diamond Peak (C).....	300 31 29.9	121 37 19.5	5.231148	.....
Mount Callahan (C).....	326 16 51.7	146 39 04.0	4.948721	.....
Taiyabe Dome (C).....	354 59 25.3	175 06 02.4	5.235650	.....
Carson Sink (C).....	34 44 53.7	214 17 32.9	5.029074	66.459
Buffalo (B).....	71 46 28.78	251 23 04.28	4.7328250	33.587
Nenzel Hill (B).....	79 16 17.83	258 51 55.06	4.7351222	33.765
Star Peak (B).....	106 42 47.17	286 17 41.42	4.7561888	35.444

C=United States Coast and Geodetic Survey in 1880. B=L. F. Biggs in 1916.

**GYPSUM, HUMBOLDT COUNTY, NEV.**

On a range of hills about 10 miles east of Lovelock. To reach station go east from Lovelock to old gypsum mine, thence up ridge on right to top of hill. Animals can be taken to station.

Station mark: A bronze tablet in rock at highest point.

Signal: A juniper tree over tablet.

[Latitude 40° 11' 16.768". Longitude 118° 21' 12.412".]

Tostation—	Azimuth.	Back azimuth.	Distance.	
			Log. meters.	Miles.
Trinity.....	98 35 57.55	278 20 48.43	4.5272242	20.921
Star Peak.....	202 40 29.24	22 47 36.67	4.6053736	25.045
Lone Mountain.....	220 50 08.16	40 56 15.68	4.3124407	12.758
Nenzel Hill.....	237 53 32.15	58 01 17.75	4.3032412	12.491
Black Knob.....	242 13 50.56	62 18 58.93	4.1058191	7.928
Buffalo.....	258 26 31.05	78 35 13.60	4.2908238	12.139
Carson Sink.....	251 21 39.24	171 26 13.25	4.8318167	42.186

**LONE MOUNTAIN, HUMBOLDT COUNTY, NEV.**

On highest point of hill west of Limerick Canyon, 3.5 miles west of Rochester.

Station mark: A bronze tablet.

Signal and reference mark: A drill hole surmounted by a cairn 8 feet high, distant 3.2 feet, true azimuth 221°, from station.

[Latitude 40° 19' 40.035". Longitude 118° 11' 43.692".]

Tostation—	Azimuth.	Back azimuth.	Distance.	
			Log. meters.	Miles.
Black Knob.....	12 39 38.75	192 38 39.84	3.9923364	6.105
Gypsum.....	40 56 15.68	220 50 08.16	4.3124407	12.758
Nenzel Tank.....	94 02 44.34	273 57 48.20	4.0345421	6.728
Nenzel Hill.....	323 30 21.21	143 31 59.59	3.7811116	3.754
Buffalo.....	333 55 13.56	153 57 49.21	4.1122376	8.046

**NENZEL HILL, HUMBOLDT COUNTY, NEV.**

On Nenzel Hill just east of Rochester.

Station mark: A bronze tablet.

Signal: A power pole with targets, distant 23 feet, 283° 01' true azimuth, from station.

Reference marks: Section corner, distant, 280 feet; true azimuth, 314° 24'; Rochester mines corner No. 2, distant, 108.8 feet; true azimuth, 71° 03' 30". The latter is a round piece of steel 1 inch in diameter, projecting 5 inches above rock in which it is cemented. There is an octagonal steel bar projecting 1.6 feet above surface, cemented in rock 0.9 foot east of round bar.

[Latitude 40° 17' 02.554". Longitude 118° 09' 11.598".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Black Knob.....	50 34 12.09	230 31 34.92	3.8717149	4.625
Gypsum.....	58 01 17.75	237 53 32.15	4.3032412	12.491
Trinity.....	83 43 20.82	263 20 25.00	4.7044404	31.462
Nenzel Tank.....	111 21 24.57	291 14 50.17	4.1889881	9.601
West Seven Troughs.....	114 51 31.36	294 25 33.07	4.7950248	38.759
Lone Mountain.....	143 31 59.59	323 30 21.21	3.7811116	3.754
Star Peak.....	176 54 48.91	356 54 09.55	4.4240360	16.496
Granite.....	258 51 55.06	79 16 17.83	4.7351222	33.765
Cinnabar (west).....	270 38 26.71	90 51 30.79	4.4571332	17.803
Buffalo.....	342 48 19.11	162 49 16.41	3.8507749	4.407

**NENZEL TANK, HUMBOLDT COUNTY, NEV. (Not occupied.)**

Not described.

[Latitude 40° 20' 04.550". Longitude 118° 19' 21.260".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Star Peak.....	211 43 04.35	31 49 00.34	4.3905471	15.272
Lone Mountain.....	273 57 48.20	94 02 44.34	4.0345421	6.728
Nenzel Hill.....	291 14 50.17	111 21 24.57	4.1889881	9.601
Buffalo.....	306 50 30.91	126 58 02.39	4.3145316	12.820

**NORTH AUGUSTA, HUMBOLDT COUNTY, NEV. (Not occupied.)**

No description.

[Latitude 39° 41' 08.510". Longitude 117° 48' 22.386".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Mount Callahan (C).....	267 38 45.7	88 11 34.1	4.866121	.....
Toiyabe Dome (C).....	337 22 39.1	157 39 53.0	5.010504	.....
Carson Sink (C).....	72 58 47.4	252 42 23.3	4.585488	23.924
Buffalo (B).....	155 19 07.00	335 06 41.72	4.8176519	40.832

C=U. S. Coast and Geodetic Survey in 1880. B=L. F. Biggs in 1916.

**STAR PEAK, HUMBOLDT COUNTY, NEV.**

On highest point of Star Peak.

Station mark: A tablet set in rock under monument built over same place at which an old monument was found.

Signal: Center of monument over tablet.

Elevation of top of peak, 9,835 feet.

[Latitude 40° 31' 22.011". Longitude 118° 10' 12.323".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Mount Callahan (C).....	310 33 56.9	131 21 06.7	5.138977	.....
Toiyabe Dome (C).....	339 14 06.9	159 45 26.5	5.301670	.....
Carson Sink (C).....	3 02 55.7	183 00 25.8	5.018904	64.901
Gypsum (B).....	22 47 36.67	202 40 29.24	4.6053736	25.045
Nenzel Tank (B).....	31 49 00.34	211 43 04.35	4.3905471	15.272
Trinity (B).....	56 45 05.26	236 22 45.39	4.7669007	36.329
West Seven Troughs (B).....	89 41 28.04	269 16 05.40	4.7416937	34.280
Granite (C).....	286 17 41.42	106 42 47.17	4.7561888	35.444
Cinnabar, west (B).....	311 43 19.85	131 57 05.22	4.6053665	25.045
Buffalo (B).....	353 56 31.35	173 58 08.12	4.5246698	20.798
Nenzel Hill (B).....	356 54 09.55	176 54 48.91	4.4240360	16.496

C=U. S. Coast and Geodetic Survey in 1879. B=L. F. Biggs in 1916.

## TRINITY, HUMBOLDT COUNTY, NEV.

On the highest part of a black volcanic mountain about 15 miles west of Lovelocks. Top of hill is about 100 feet long north and south, and station is on south end. To reach station follow Seven Troughs road from Lovelocks about 6 miles to a dim road leading west. Seven Troughs road passes through a saddle 4 miles northeast of point.

Station mark: A bronze tablet 7 feet west of signal cairn.

Signal: A cairn 8 feet high.

[Latitude 40° 13' 57.608". Longitude 118° 44' 40.599".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Star.....	236 22 45.39	56 45 05.26	4.7669007	36.329
Nenzel Hill.....	263 20 25.00	83 43 20.82	4.7044404	31.462
Buffalo.....	270 58 16.61	91 22 08.84	4.7196737	32.585
Gypsum.....	278 20 48.43	98 35 57.55	4.5272242	20.921
Carson Sink (Job Peak).....	328 40 15.88	148 59 53.48	4.9255561	52.349

## WEST SEVEN TROUGHS, HUMBOLDT COUNTY, NEV. (Not occupied.)

Not described.

[Latitude 40° 31' 05.767". Longitude 118° 49' 15.847".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Star Peak.....	269 16 05.40	89 41 28.04	4.7416937	34.280
Nenzel Hill.....	294 25 33.07	114 51 31.36	4.7950248	38.759
Buffalo.....	298 54 41.39	119 21 36.14	4.8282328	41.839

