

# CALIFORNIA.

## TRIANGULATION STATIONS.

Argus Peak, Bagdad, Berry, Elizabeth Lake, Freeman, Hinkley, Kramer, Johannesburg, Pilot Knob, 17, Tecopa, and Telescope Peak 30' quadrangles.

INYO, KERN, LOS ANGELES, AND SAN BERNARDINO COUNTIES.

During the seasons of 1911, 1912, and 1913 Messrs. C. F. Urquhart, W. R. Chenoweth, and Charles Hartman extended triangulation over the above-named quadrangles.

Positions are on approximate North American datum as derived from United States Geological Survey stations Odell and Soledad, described in Bulletin 201. Connections were also made with stations El Paso, Grey, Kelso, Kingston, Oro Grande, Owens Peak, and Telescope, previously located and described in Bulletin 310. Sixteen stations were occupied and 14 points were located by intersections.

### ARGUS, SAN BERNARDINO COUNTY, CAL.

An exceptionally rocky mountain, 10 miles northeast of "Borax Flat" headquarters. It can be reached on horseback from "Borax Flat" by going to Joe Peterson's ranch (7 miles), thence by trail which starts on south side of ranch to summit of mountains.

Station mark: A large boulder, 18 feet high, with a bronze triangulation tablet set in top.

[Latitude 35° 51' 09.20". Longitude 117° 26' 45.23".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Red.....	12	36	54.14	192	32	05.90	4.7577497	35.571
El Paso.....	40	42	11.52	220	28	20.43	4.7412037	34.242
Owens.....	75	54	15.61	255	34	56.51	4.7104814	31.903
Volcano.....	108	26	39.53	288	13	06.72	4.5636742	22.752
Telescope.....	222	19	44.31	42	32	20.67	4.6789270	29.667
Needle.....	264	08	54.17	84	23	35.73	4.5790223	23.571
Brown.....	295	11	26.86	115	26	31.71	4.6336203	26.728
Pilot.....	338	22	17.12	158	29	58.87	4.7345946	33.725

### AVAWATZ, SAN BERNARDINO COUNTY, CAL. (Not occupied.)

Signal was built and marked, but was not occupied, and there is no available description.

[Latitude 35° 30' 46.83". Longitude 116° 19' 51.10".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Tie Fort.....	38	43	50.36	218	36	01.83	4.5141646	20.301
Calico.....	38	56	38.19	218	39	04.75	4.8670768	45.754
Pilot.....	81	18	13.04	260	47	04.40	4.9150675	51.100
Brown.....	107	27	07.20	287	03	11.61	4.8129266	40.390
Kingston.....	237	39	34.78	57	54	06.89	4.6487748	27.677
Kelso.....	309	11	00.35	129	32	03.02	4.8535638	44.352
Cave.....	359	08	32.33	179	08	49.07	4.6904511	30.465

**BALD, KERN COUNTY, CAL.**

A bald granite mountain about 15 miles north of Mojave and 4.5 miles southwest of Cinco. It is easily ascended on horseback from Cinco by keeping along the base of foothills and following up a ridge on the north side of a prominent canyon 1,200 feet wide and 2 miles south of Cinco.

Station mark: A 7-foot rock cairn over a bronze triangulation tablet.

[Latitude 35° 16' 21.92". Longitude 118° 05' 40.54".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Soledad.....	14	53	09.44	194	49	55.45	4.5222702	20.683
Owens.....	189	45	14.16	9	48	39.52	4.7197137	32.583
El Paso.....	225	32	30.00	45	41	16.72	4.5070022	19.969
Red.....	259	32	41.17	79	50	24.81	4.6743912	29.359
Rich.....	313	36	32.25	133	50	52.26	4.7193548	32.561
Desert.....	325	30	45.90	145	36	09.73	4.4004706	15.625

**BROWN, SAN BERNARDINO COUNTY, CAL.**

A prominent double-topped mountain in southern part of the Panamint Range and just south of Wingate Pass. It is about 6 miles due east across the valley from Lone Willow Spring, which is situated on the Ballarat and Granite Wells Spring. The mountain can be easily climbed from any direction. The signal is on the easternmost part of mountain.

Station mark: A cairn 9 feet high and 7 feet at base.

Reference mark: A bronze triangulation tablet cemented in a prominent rock about 3.5 feet west of signal.

[Latitude 35° 41' 12.37". Longitude 117° 00' 57.22".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Opal.....	20	57	06.80	200	50	44.75	4.6674440	28.893
Pilot.....	30	43	49.48	210	36	30.44	4.5716914	23.176
Red.....	54	06	37.58	233	46	50.60	4.8040016	39.569
El Paso.....	72	50	43.12	252	21	52.98	4.8946108	48.749
Argus.....	115	26	31.71	295	11	26.86	4.6336203	26.728
Telescope.....	173	03	02.48	353	00	29.00	4.7326507	33.574
Needle.....	177	11	03.35	357	10	37.92	4.3465047	13.799
Kingston.....	267	06	37.30	87	45	10.63	4.9988570	61.974
Avawatz.....	287	03	11.61	107	27	07.20	4.8129266	40.390
Tie Fort.....	316	51	34.36	137	07	36.39	4.7870874	38.057
Calico.....	348	01	29.73	168	07	40.57	4.8940800	48.689

**CALICO, SAN BERNARDINO COUNTY, CAL.**

Highest point upon what is known as the Calico Mountains, lying about 7 miles a little west of north of the town of Otis, on the San Pedro, Los Angeles & Salt Lake Railroad, and about 10 miles north of the town of Daggett. Animals can be ridden nearly to summit of mountain from the south by following the trail up first main canyon east of the site of the old town of Calico.

Signal and station mark: A cairn 7 feet high and 8 feet at base.

Reference mark: A bronze triangulation tablet cemented in rock 11 feet north of signal.

[Latitude 34° 59' 44.63". Longitude 116° 50' 16.14".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Sharp.....	38	27	04.91	218	17	17.36	4.6241388	26.151
General.....	80	13	32.84	260	03	31.63	4.4314649	16.781
Rich.....	86	09	16.38	265	40	20.21	4.8866935	47.868
Red.....	120	11	45.91	299	45	59.68	4.8944157	48.727
Pilot.....	141	43	20.19	321	29	55.35	4.7549816	35.345
Brown.....	168	07	40.57	348	01	29.73	4.8940800	48.689
Avawatz.....	218	39	04.75	38	56	38.19	4.8670768	45.754
Tie Fort.....	218	49	17.15	38	59	02.03	4.6123915	25.453
Kingston.....	225	41	11.35	46	13	14.23	5.0670688	72.514
Cave.....	259	45	36.32	80	03	20.63	4.6788306	29.661
Kelso.....	262	52	40.58	83	31	03.33	5.0100266	63.588
Tit.....	333	48	19.49	153	55	30.92	4.6394214	27.088

**CAVE, SAN BERNARDINO COUNTY, CAL.**

No description furnished.

Station mark: A triangulation tablet under a rock monument.

[Latitude 35° 04' 16.07". Longitude 116° 19' 22.13".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Tit.....	30	31	05.40	210	20	37.60	4.7410748	34.231
Calico.....	80	03	20.63	259	45	36.32	4.6788306	29.661
Pilot.....	114	02	35.71	293	31	20.47	4.9533513	55.809
Tie Fort.....	138	01	40.95	317	53	38.26	4.5005084	19.672
Avawatz.....	179	08	49.07	359	08	32.33	4.6904511	30.465
Kingston.....	206	52	03.67	27	06	14.31	4.9120250	50.743
Kelso.....	265	53	32.01	86	14	11.13	4.7382534	34.010
Old Dad <sup>a</sup> .....	298	00	42.61	118	22	17.58	4.8137179	40.464

<sup>a</sup> Not adjusted.**DESERT, KERN COUNTY, CAL.**

A small bald hill about 14 miles east of Mojave, a town at the junction of the Southern Pacific &amp; Santa Fe railroads.

Signal and station mark: A cairn about 6 feet high over a triangulation tablet.

[Latitude 35° 05' 08.98". Longitude 117° 56' 18.47".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Soledad.....	63	25	40.99	243	17	04.79	4.4065554	15.845
Bald.....	145	36	09.73	325	30	45.90	4.4004706	15.625
Red.....	227	48	44.91	48	01	01.96	4.6390395	27.064
Fremont.....	254	35	15.21	74	51	59.12	4.6605822	28.440
Rich.....	303	07	46.39	123	16	41.88	4.4514375	17.571
Muroc.....	342	47	50.82	162	49	56.96	4.2757725	11.725

**EL PASO, KERN COUNTY, CAL.**

This point is a Wheeler Survey station, on the highest point of range of mountains, about 12 miles northwest of Johannesburg, and can be reached on horseback.

Station mark: A cairn 7 feet high over a bronze triangulation tablet.

62510°—Bull. 644—17 —3

[Urquhart, 1913: Latitude 35° 28' 31.33''; longitude 117° 50' 30.70''. Goode, 1900: Latitude 35° 28' 32.61''; longitude 117° 50' 33.28'']

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	''	°	'	''	<i>Log. meters.</i>	<i>Miles.</i>
Soledad.....	30	05	02.10	209	53	02.77	4.8000085	39.207
Bald.....	45	41	16.72	225	32	30.00	4.5070022	19.969
Owens.....	154	25	54.70	334	20	30.84	4.5103725	20.124
Volcano.....	181	03	32.17	1	03	55.15	4.7273318	33.165
Argus.....	220	28	20.43	40	42	11.52	4.7412037	34.242
Needle.....	237	59	22.60	58	27	51.60	4.9378501	53.852
Brown.....	252	21	52.98	72	50	43.12	4.8946108	48.749
Pilot.....	278	35	11.78	98	56	37.89	4.7528974	35.176
Red.....	300	46	59.26	120	55	58.34	4.4368487	16.990
Fremont.....	311	21	04.41	131	34	32.01	4.6726467	29.241
Rich.....	345	47	32.32	165	53	20.88	4.7820496	37.618
Laurela.....	267	47	38.86	87	53	09.80	4.1579419	.....
Government a.....	311	39	38.03	131	45	30.87	4.3134470	.....

a Goode, 1900.

#### FREMONT PEAK, SAN BERNARDINO COUNTY, CAL. (Not occupied.)

The highest point of a mountain well known as Fremont Peak. It is about 12 miles southeast of Johannesburg.

[Latitude 35° 11' 40.23''. Longitude 117° 27' 14.31'']

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	''	°	'	''	<i>Log. meters.</i>	<i>Miles.</i>
Rich.....	36	47	16.93	216	39	30.98	4.5360744	21.351
Soledad.....	70	52	41.10	250	27	21.56	4.8510179	44.093
Desert.....	74	51	59.12	254	35	15.21	4.6605822	28.440
El Paso.....	131	34	32.01	311	21	04.41	4.6726467	29.241
Red.....	145	31	52.10	325	27	22.97	4.3179348	12.921
Pilot.....	222	35	39.57	42	43	34.41	4.4863110	19.040
General.....	311	54	35.89	132	05	47.77	4.6005743	24.770

#### GENERAL, SAN BERNARDINO COUNTY, CAL.

On highest point of a prominent mountain about 3 miles east of Hinkley, a station on the Atchison, Topeka & Santa Fe Railway.

Signal and station mark: A cairn 8 feet high.

Reference mark: A bronze triangulation tablet, set 3 feet northwest of cairn.

[Latitude 34° 57' 14.60''. Longitude 117° 07' 45.09'']

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	''	°	'	''	<i>Log. meters.</i>	<i>Miles.</i>
Oro Grande.....	20	57	14.19	200	51	47.82	4.6102313	25.327
Iron.....	42	58	57.97	222	55	23.93	4.1441013	8.659
Rich.....	89	10	10.61	268	51	16.25	4.7011500	31.225
Fremont.....	132	05	47.77	311	54	35.89	4.6005743	24.770
Red.....	136	45	25.15	316	29	43.04	4.7801131	37.451
Calico.....	260	03	31.03	80	13	32.84	4.4314649	16.781
Sharp.....	358	56	19.91	178	56	31.68	4.4529785	17.633

#### GREY BUTTE, LOS ANGELES COUNTY, CAL.

A small butte in the Mojave Desert, northeast of mouth of canyon, and 25 miles west of Hesperia. Station can be reached by driving from Hesperia to "Aleck the Frenchman's," distance about 25 miles, which is a ranch at the head of Wescal Canyon, where one can get hay and water. The point is about 12 miles northwest of this ranch and in plain sight. Take road leading to Rock Creek until it joins main Hesperia road, thence directly across desert to Butte (do not take Canaigne-Diggets

road). There are several ranches to the southwest of the Rock Creek settlement which appear much nearer than "Aleck the Frenchman's." The road leading to Aleck's from the Hesperia road is marked by large granite rock with several small ones placed on it.

Station mark: Aluminum tablet set in gravel and cement.

Signal: Rock cairn 6 feet high over station mark.

[Latitude  $34^{\circ} 33' 25.02''$ . Longitude  $117^{\circ} 43' 20.79''$ .]

To station—	Azimuth.			Back azimuth.		Distance.	
	°	'	"	°	'	Log. meters.	Miles.
West Baldy <sup>a</sup> .....	9	51	13.32	189	49	4.3487810	.....
Little Rock <sup>a</sup> .....	42	47	58.40	222	41	4.4012929	.....
Morley <sup>a</sup> .....	52	57	08.28	232	53	4.1130401	.....
Pacifico <sup>a</sup> .....	56	00	55.62	235	50	4.5385670	.....
Almondale Schoolhouse <sup>a</sup> .....	73	19	22.25	253	12	4.2796344	.....
Emma.....	73	36	53.76	253	25	4.4987313	.....
Palmer <sup>a</sup> .....	81	27	45.96	261	20	4.2899405	.....
Odell.....	88	20	09.80	268	02	4.6720994	29.205
Soledad.....	138	03	29.17	317	47	4.8036980	39.541
Rich.....	185	13	19.06	5	14	4.6371514	26.946
Oro Grande.....	261	20	52.85	81	35	4.6052554	25.038
Oro Grande <sup>a</sup> .....	261	20	14.92	81	35	4.6052096	.....
Cleghorn <sup>a</sup> .....	315	29	31.03	135	40	4.6106263	.....
San Antonio <sup>a</sup> .....	346	36	53.48	166	39	4.4843982	.....

<sup>a</sup> Yolo datum.

#### IRON, SAN BERNARDINO COUNTY, CAL. (Not occupied.)

A prominent low mountain covered with black rock about 5 miles south of Hinkley, a station on the Santa Fe Railroad.

Station mark and signal: A cairn 7 feet high over a bronze triangulation tablet.

[Latitude  $34^{\circ} 51' 43.63''$ . Longitude  $117^{\circ} 13' 59.11''$ .]

To station—	Azimuth.			Back azimuth.		Distance.	
	°	'	"	°	'	Log. meters.	Miles.
Oro Grande.....	10	15	45.76	190	13	4.4522241	17.602
Red.....	149	29	58.77	329	17	4.7976055	38.990
General.....	222	55	23.93	42	58	4.1441013	8.659

#### KELSO, SAN BERNARDINO COUNTY, CAL.

On highest point of low range of mountains about 8 miles northeast of Kelso, a small town on the San Pedro, Los Angeles & Salt Lake R. R. There is no road to the station.

Signal and station mark: Cairn 6 feet high.

Reference mark: Triangulation tablet 1.3 meters north of signal.

[Urquhart, 1913: Latitude  $35^{\circ} 06' 17.97''$ ; longitude  $115^{\circ} 43' 26.51''$ . Urquhart, 1909: Latitude  $35^{\circ} 06' 16.57''$ ; longitude  $115^{\circ} 43' 27.83''$ .]

To station—	Azimuth.			Back azimuth.		Distance.	
	°	'	"	°	'	Log. meters.	Miles.
Calico.....	83	31	03.33	262	52	5.0100266	63.588
Cave.....	86	14	11.13	265	53	4.7382534	34.010
Tie Fort.....	104	51	39.54	284	22	4.8935640	48.631
Avawatz.....	129	32	03.02	309	11	4.8535638	44.352
Kingston.....	165	57	14.88	345	50	4.8522307	44.216
Kingston <sup>a</sup> .....	165	57	05.76	345	50	4.8523483	.....
Rocky <sup>a</sup> .....	170	48	25.96	350	47	4.3667854	.....
Clark <sup>a</sup> .....	194	47	57.35	14	52	4.6840579	.....
McCullough <sup>a</sup> .....	221	42	12.68	42	01	4.8705980	.....
New York <sup>a</sup> .....	245	10	16.30	65	24	4.6161919	.....
Old Dad <sup>b</sup> .....	355	32	27.97	175	33	4.5394017	21.516

<sup>a</sup> Urquhart, 1909.

<sup>b</sup> Not adjusted.

**KINGSTON,<sup>1</sup> SAN BERNARDINO COUNTY, CAL. (Not occupied.)**

On the highest point of Kingston Range. It is about 20 miles west-southwest of Sandy post office. The nearest known water is at Horse Spring, on northeast side of mountain.

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

Station mark: A triangulation tablet under center of cairn.

[Latitude 35° 43' 36.58" (Urquhart, 1909). Longitude 115° 54' 55.30".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Nopah.....	154	23	33.23	334	17	45.05	4.5369904	.....
Olcott.....	234	34	49.68	54	49	23.12	4.6614279	.....
Ivanpah.....	274	18	06.35	94	34	17.15	4.6225419	.....
McCollough.....	281	26	27.24	101	52	12.00	4.8327703	.....
Clark.....	306	54	53.01	127	06	18.76	4.5693575	.....
New York.....	313	13	46.85	133	34	47.43	4.8769283	.....
Kelso.....	345	50	27.38	165	57	05.76	4.8523483	44.228
Rocky.....	343	29	20.85	163	34	40.75	4.6815389	.....

**KINGSTON, SAN BERNARDINO COUNTY, CAL. (Not occupied.)**

On the highest point of Kingston Range. It is about 20 miles west-southwest of Sandy post office. The nearest known water is at Horse Spring, on northeast side of mountain.

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

Station mark: A triangulation tablet under center of cairn.

[Latitude 35° 43' 37.40" (Urquhart, 1913). Longitude 115° 54' 53.67".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Cave.....	27	06	14.31	206	52	03.67	4.9120250	50.743
Calico.....	46	13	14.23	225	41	11.35	5.0670688	72.514
Tie Fort.....	49	54	19.71	229	32	00.26	4.8818844	47.341
Avawatz.....	57	54	06.89	237	39	34.78	4.6487748	27.677
Brown.....	87	45	10.63	267	06	37.30	4.9988570	61.974
Kelso.....	345	50	36.66	165	57	14.88	4.8522307	44.216

**KINGSTON, SAN BERNARDINO COUNTY, CAL. (Not occupied.)**

On the highest point of Kingston Range. It is about 20 miles west-southwest of Sandy post office. The nearest known water is at Horse Spring, on northeast side of mountain.

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

Station mark: A triangulation tablet under center of cairn.

[Latitude 35° 43' 36.40" (Blackburn, 1907; Moor, 1907). Longitude 115° 54' 55.04".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Furnace.....	139	50	31	319	25	55	4.98632	.....
Nopah.....	154	24	04	334	18	10	4.53715	.....
Charleston.....	198	06	52	18	14	39	4.80381	.....
Olcott.....	234	34	34	54	49	00	4.66141	.....

<sup>1</sup> See p. 37.

**MUROC, KERN COUNTY, CAL. (Not occupied.)**

Station mark: Center of water tank at Muroc station on Santa Fe Railway, between Mojave and Barstow.

[Latitude 34° 55' 23.98". Longitude 117° 52' 38.60".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Soledad.....	103	09	32.71	282	58	51.58	4.4646310	18.113
Desert.....	162	49	56.96	342	47	50.82	4.2757725	11.725
Red.....	209	29	02.32	29	39	11.35	4.7347212	33.734
Rich.....	261	56	57.78	82	03	46.27	4.2620078	11.359

**NEEDLE, INYO COUNTY, CAL. (Not occupied.)**

The highest point on a prominent peak which was not occupied.

[Latitude 35° 53' 12.07". Longitude 117° 01' 40.72".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Pilot.....	18	19	17.11	198	12	22.34	4.7569460	35.506
El Paso.....	58	27	51.60	237	59	22.60	4.9378501	53.852
Argus.....	84	23	35.73	264	08	54.17	4.5780223	23.571
Brown.....	357	10	37.92	177	11	03.35	4.3465047	13.799

**ODELL, LOS ANGELES COUNTY, CAL.**

On the western end of a long flat ridge, 6 miles north-northwest of Acton and 0.2 mile north-northwest of Mr. Odell's house. The ridge is nearly free from brush and can be easily ascended on horseback.

Station mark: A copper bolt sunk in the solid outcropping ledge, above which a cairn 8 feet high and 8 feet in diameter was erected.

[Latitude 34° 32' 36.87". Longitude 118° 14' 03.23".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Fernando.....	40	12	54.37	220	06	17.92	4.4431714	.....
Frazier.....	111	07	16.02	290	42	12.40	4.8577810	.....
Liebre.....	116	22	54.38	296	11	14.73	4.5440811	.....
Soledad.....	184	55	39.21	4	57	13.63	4.6893126	30.385
Rich.....	228	31	47.11	48	50	45.84	4.8303542	42.044
Grey.....	268	02	44.87	88	20	09.80	4.6720994	29.205
San Gabriel.....	339	20	32.83	159	25	09.77	4.5510244	.....
Gleason.....	344	10	08.58	164	12	05.70	4.2843385	.....

**OLD DAD, SAN BERNARDINO COUNTY, CAL. (Not occupied.)**

No description furnished.

[Latitude 34° 47' 37.71". Longitude 115° 41' 40.62".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Tit.....	79	11	33.64	258	39	39.98	4.9401265	54.135
Cave.....	118	22	17.58	298	00	42.61	4.8137179	40.464
Kelso.....	175	33	28.63	355	32	27.97	4.5394017	21.516

## OPAL, SAN BERNARDINO COUNTY, CAL. (Not occupied.)

A prominent mountain not very high, about 7 miles south-southeast of Pilot Knob.  
Station mark: A small cairn on highest point.

[Latitude 35° 17' 42.84". Longitude 117° 11' 55.29".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Red.....	99 46 48.64	279 33 27.82	4.5501007	22.052
Pilot.....	167 48 46.19	347 47 49.95	4.0652366	7.221
Brown.....	200 50 44.75	20 57 06.80	4.6674440	28.893

## ORO GRANDE, SAN BERNARDINO COUNTY, CAL.

A rocky mountain, 6 miles northwest of Victorville, a station on the Santa Fe Railway. The summit can be reached on horseback, but it is very rough.

Station mark: A copper triangulation bolt under a cairn 9 feet high.

[Latitude 34° 36' 38.97". Longitude 117° 17' 17.20".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Cleghorn <sup>a</sup> .....	17 57 42.60	197 53 30.81	4.5671803	.....
San Antonio <sup>a</sup> .....	42 45 28.44	222 33 20.31	4.6856852	.....
Lone Pine <sup>a</sup> .....	44 51 30.96	224 39 26.64	4.6665360	.....
Grey Butte <sup>a</sup> .....	81 35 02.26	261 20 14.92	4.6052096	.....
Grey Butte.....	81 35 40.36	261 20 52.85	4.6052554	25.038
Rich.....	136 12 57.05	315 59 33.89	4.7129535	32.085
Red.....	161 51 24.21	341 41 14.69	4.9355717	53.570
Ivan.....	190 13 52.89	10 15 45.76	4.4522241	17.602
General.....	200 51 47.82	20 57 14.19	4.6102313	25.327
Sharp.....	237 13 11.93	57 18 48.99	4.2539194	11.150
Antelope <sup>a</sup> .....	301 56 01.30	122 03 07.61	4.3539870	.....
San Geronio <sup>a</sup> .....	322 54 57.27	143 10 39.59	4.8511948	.....

<sup>a</sup> Yolo datum.

## OWENS, KERN COUNTY, CAL. (Not occupied.)

A high peak, 20 miles east of Kernville, on the waters of the South Fork of Kern River.

Station mark: A cairn, probably erected by the Wheeler Survey.

[Urquhart, 1913: Latitude 35° 44' 18.94"; longitude 117° 59' 46.95". Perkins, 1901: Latitude 35° 44' 18.60"; longitude 117° 59' 46.99".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Bald.....	9 48 39.52	189 45 14.16	4.7197137	32.588
Pah Ute <sup>a</sup> .....	48 24 22.08	228 10 35.43	4.6802818	.....
Sunday <sup>a</sup> .....	95 25 22.55	275 04 45.81	4.7274706	.....
Big Meadows <sup>a</sup> .....	124 18 30.89	304 06 42.62	4.5649336	.....
Volcano.....	211 41 37.65	31 47 26.46	4.4534702	17.653
Argus.....	255 34 56.51	75 54 15.61	4.7104814	31.903
El Paso.....	334 20 30.84	154 25 54.70	4.5103725	20.124

<sup>a</sup> Perkins, 1901.



**PILOT, SAN BERNARDINO COUNTY, CAL.**

A Wheeler Survey station, about 25 miles east of Johannesburg and 2 miles east of Granite Springs. Can be ascended on horseback from the south side.

Signal and station mark: A cairn 9 feet high.

Reference mark: A bronze triangulation tablet 2 feet southwest of cairn.

[Latitude 35° 23' 51.41". Longitude 117° 13' 32.50".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Rich.....	39	39	24.34	219	23	43.82	4.8123792	40.339
Fremont.....	42	43	34.41	222	35	39.57	4.4863110	19.040
Soledad.....	62	34	41.94	242	01	24.95	4.9956979	61.525
Red.....	80	40	34.07	260	28	08.52	4.5179146	20.477
El Paso.....	98	56	37.89	278	35	11.78	4.7528974	35.176
Volcano.....	138	42	12.91	318	21	02.16	4.9176920	51.409
Argus.....	158	29	58.87	338	22	17.12	4.7345946	33.725
Telescope.....	188	11	27.37	8	16	16.06	4.9375483	53.814
Needle.....	198	12	22.34	18	19	17.11	4.7569460	35.506
Brown.....	210	36	30.44	30	43	49.48	4.5716914	23.176
Avawatz.....	260	47	04.40	81	18	13.04	4.9150675	51.100
Tie Fort.....	281	35	16.24	101	58	31.73	4.7940311	38.671
Cave.....	293	31	20.47	114	02	35.71	4.9533513	55.809
Calico.....	321	29	55.35	141	43	20.19	4.7549816	35.345
Tit.....	326	44	18.41	147	04	53.36	4.9996874	62.092
Opal.....	347	47	49.95	167	48	46.19	4.0652366	7.221
Sharp.....	353	06	52.24	173	10	23.61	4.8928770	48.554

**RED, SAN BERNARDINO COUNTY, CAL.**

The highest point on a prominent mountain about 3 miles southeast of Johannesburg. It can be reached on horseback.

Signal and station mark: An 8-foot rock cairn.

Reference mark: Bronze tablet set 2 feet southwest of cairn.

[Latitude 35° 20' 56.26". Longitude 117° 35' 00.38".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Rich.....	11	05	00.57	191	01	42.03	4.6582249	28.286
Muroc.....	29	39	11.35	209	29	02.32	4.7347212	33.734
Desert.....	48	01	01.96	227	48	44.91	4.6390395	27.064
Soledad.....	53	46	19.02	233	25	25.01	4.8354356	42.539
Bald.....	79	50	24.81	259	32	41.17	4.6743912	29.359
El Paso.....	120	55	58.34	300	46	59.26	4.4368487	16.990
Volcano.....	161	40	33.58	341	31	54.26	4.8513739	44.129
Argus.....	192	32	05.90	12	36	54.14	4.7577497	35.571
Telescope.....	206	01	01.74	26	18	22.89	5.0065117	63.076
Brown.....	233	46	50.60	54	06	37.58	4.8040016	39.569
Pilot.....	260	28	08.52	80	40	34.07	4.5179146	20.477
Opal.....	279	33	27.82	99	46	48.64	4.5501007	22.052
Calico.....	299	45	59.68	120	11	45.91	4.8944157	48.727
General.....	316	29	43.64	136	45	25.15	4.7801131	37.451
Fremont.....	325	27	22.97	145	31	52.10	4.3179348	12.921
Iron.....	329	17	53.43	149	29	58.77	4.7976055	38.990
Oro Grande.....	341	41	14.69	161	51	24.21	4.9355717	53.570

**RICH, KERN COUNTY, CAL.**

On the highest point of ridge about 4 miles south of Rich station on Santa Fe Railway. It can be easily reached on horseback.

Signal and station mark: A cairn 7 feet high.

Reference mark: A bronze bolt set in rock, 3 feet northeast of cairn.

[Latitude 34° 56' 46.48". Longitude 117° 40' 45.25".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Grey.....	5 14 47.72	185 13 19.06	4.6371514	26.946
Odell.....	48 50 45.84	228 31 47.11	4.8303542	42.044
Muroc.....	82 03 46.27	261 56 57.78	4.2620078	11.359
Soledad.....	95 07 27.73	274 49 57.62	4.6689780	28.995
Desert.....	123 16 41.88	303 07 46.39	4.4514375	17.571
Bald.....	133 50 52.26	313 36 32.25	4.7193548	32.561
El Paso.....	165 53 20.88	345 47 43.32	4.7820496	37.618
Red.....	191 01 42.03	11 05 00.57	4.6582249	28.286
Fremont.....	216 39 30.98	36 47 16.93	4.5360744	21.351
Pilot.....	219 23 43.82	39 39 24.34	4.8123792	40.339
Calico.....	265 40 20.21	86 09 16.38	4.8866935	47.868
General.....	268 51 16.25	89 10 10.61	4.7011500	31.225
Sharp.....	298 15 10.97	118 34 13.50	4.7620027	35.921
Oro Grande.....	315 59 33.89	136 12 57.05	4.7129535	32.085

**SHARP, SAN BERNARDINO COUNTY, CAL. (Not occupied.)**

A very prominent cone-shaped peak on east side of Mojave River about 15 miles south-southwest of Barstow.

[Latitude 34° 41' 53.84". Longitude 117° 07' 24.43".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Oro Grande.....	57 18 48.99	237 13 11.93	4.2539194	11.150
Rich.....	118 34 13.50	298 15 10.97	4.7620027	35.921
Pilot.....	173 10 23.61	353 06 52.24	4.8928770	48.554
General.....	178 56 31.68	358 56 19.91	4.4529785	17.633
Calico.....	218 17 17.36	38 27 04.91	4.6241388	26.151
Tit.....	277 33 30.47	97 50 25.24	4.6611459	28.477

**SOLEDAD, KERN COUNTY, CAL.**

A butte 7 miles southeast of Mojave, around the eastern end of which the Southern Pacific Railroad passes. It can be best reached by road to the Grey Eagle mine and then by trail to summit.

Station mark: A bronze triangulation tablet cemented in solid rock, above which a cairn 10 feet high was erected.

[Latitude 34° 58' 57.89". Longitude 118° 11' 17.68".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Odell.....	4 57 13.63	184 55 39.21	4.6893126	30.385
Liebre.....	47 01 04.14	226 47 46.03	4.6868484	.....
Frazier.....	72 21 45.60	251 54 58.97	4.8748714	.....
Double.....	101 35 48.84	281 25 36.86	4.4410062	.....
Pajuela.....	147 51 29.34	327 47 50.69	4.2581887	.....
Cache.....	168 06 58.16	348 04 51.10	4.4335946	.....
Bald.....	194 49 55.45	14 53 09.44	4.5222702	20.683
El Paso.....	209 53 02.77	30 05 02.10	4.8000085	39.207
Red.....	233 25 25.01	53 46 19.02	4.8354356	42.539
Pilot.....	242 01 24.95	62 34 41.94	4.9956979	61.525
Desert.....	243 17 04.79	63 25 40.99	4.4065554	15.845
Fremont.....	250 27 21.56	70 52 41.10	4.8510179	44.093
Rich.....	274 49 57.62	95 07 27.73	4.6689780	28.995
Muroc.....	282 58 51.53	103 09 32.71	4.4646310	13.113
Grey.....	317 47 32.86	138 03 29.17	4.8036980	39.541

**TELESCOPE PEAK, INYO COUNTY, CAL. (Not occupied.)**

The highest point of Panamint or Telescope Range. It is about 11 miles northeast of the town of Ballarat, and 23 miles southwest of Furnace Creek ranch in Death Valley. It is best reached from west side, following wagon road up Tuber Canyon. From end of road follow trail northeast to summit of "Baldy" Mountain, thence southward about 3 miles following a good trail along summit range. Animals may be taken to station when there is little or no snow. Station of Wheeler Survey, 1873 (?).

Station mark: Aluminum tablet cemented in slate stone 12 by 10 by 4 inches under cairn 4 feet base and 5 feet high. This is on site of small monument which was destroyed. No record of Wheeler station found.

[Urquhart, 1913: Latitude  $36^{\circ} 10' 12.52''$ ; longitude  $117^{\circ} 05' 18.80''$ . Blackburn, 1907: Latitude  $36^{\circ} 10' 12.88''$ ; longitude  $117^{\circ} 05' 20.24''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Pilot <sup>a</sup> .....	8	16	16.06	188	11	27.37	4.9375483	58.814
Red <sup>a</sup> .....	26	18	22.89	206	01	01.74	5.0065117	63.076
Argus <sup>a</sup> .....	42	32	20.67	222	19	44.31	4.6789270	29.667
Maturango.....	81	32	11.00	261	17	48.00	4.5681200	.....
Tin.....	157	41	10.00	337	26	44.00	4.9349500	.....
Death.....	174	17	17.00	354	15	50.00	4.5658200	.....
Grape.....	176	31	04.00	356	27	46.00	4.9467000	.....
Furnace.....	239	59	44.00	60	16	41.00	4.6941900	.....
Charleston.....	264	26	55.00	85	16	11.00	5.0996500	.....
Funeral.....	279	54	31.00	100	10	59.00	4.6286800	.....
Nopah.....	281	00	42.00	101	36	01.00	4.9668300	.....
Brown <sup>a</sup> .....	353	00	29.00	173	03	02.48	4.7326507	33.574

<sup>a</sup> Urquhart, 1913.

**TIE FORT, SAN BERNARDINO COUNTY, CAL. (Not occupied.)**

Signal was built, but as station was not occupied there is no available description. Station mark: A cairn.

[Latitude  $35^{\circ} 16' 59.07''$ . Longitude  $116^{\circ} 33' 19.97''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Tit.....	5	20	22.46	185	17	53.12	4.8532216	44.317
Calico.....	38	59	02.03	218	49	17.15	4.6123915	25.453
Pilot.....	101	58	31.73	281	35	16.24	4.7940311	38.671
Brown.....	137	07	36.39	316	51	34.36	4.7870874	38.057
Avawatz.....	218	36	01.83	38	43	50.36	4.5141646	20.301
Kingston.....	229	32	00.26	49	54	19.71	4.8818844	47.341
Kelso.....	284	22	54.25	104	51	39.54	4.8935640	48.631
Cave.....	317	53	38.26	138	01	40.95	4.5005084	19.672

**TIT, SAN BERNARDINO COUNTY, CAL.**

No description available

[Latitude  $34^{\circ} 38' 34.58''$ . Longitude  $116^{\circ} 37' 40.57''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Sharp.....	97	50	25.24	277	33	30.47	4.6611459	28.477
Pilot.....	147	04	53.36	326	44	18.41	4.9996874	62.092
Calico.....	153	55	30.92	333	48	19.49	4.6394214	27.088
Tie Fort.....	185	17	53.12	5	20	22.46	4.8532216	44.317
Cave.....	210	20	37.60	30	31	05.40	4.7410748	34.231
Old Dad <sup>a</sup> .....	258	39	39.98	79	11	33.64	4.9401265	54.135

<sup>a</sup> Not adjusted.

## VOLCANO, INYO COUNTY, CAL.

A round-top mountain, 4 miles east of Little Lake station on the Southern Pacific Railroad (Mojave and Owens Valley branch). From Little Lake on Owens Valley road 2 miles, thence east after crossing railroad until a dry lake about 1 mile from railroad is reached, thence across a sandy wash southeast until a well-defined drain is reached, up this drain to within a short distance of summit. Animals can be taken to summit.

Station mark: An 8-foot rock cairn.

Reference mark: Bronze triangulation tablet set 5 feet east of cairn.

[Latitude  $35^{\circ} 57' 22.86''$ . Longitude  $117^{\circ} 49' 51.34''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	''	°	'	''	Log. meters.	Miles.
El Paso.....	1	03	55.15	181	03	32.17	4.7273318	33.165
Owens.....	31	47	26.46	211	41	37.65	4.4534702	17.653
Argus.....	288	13	06.72	108	26	39.58	4.5636742	22.752
Pilot.....	318	21	02.16	138	42	12.91	4.9176920	51.409
Red.....	341	31	54.26	161	40	33.58	4.8513739	44.129

## Ivanpah quadrangle.

## SAN BERNARDINO COUNTY.

The positions in the following list were determined by L. F. Biggs in September and October, 1915, by extending triangulation from stations Clark, Olcott, and Kingston, on approximate North American datum. This base is weak and positions can not be accurately computed until connection has been made with well-determined points.

For stations in this scheme in Nevada, see Bulletin 644-M.

## CLARK, SAN BERNARDINO COUNTY, CAL.

Described as follows in Bulletin 496, page 35:

Highest and most western peak on Clark Mountain, a well-known point about 25 miles northwest of Leastalk, a station on the San Pedro, Los Angeles & Salt Lake Railroad. The nearest water is at Benson's mine at foot of mountain on east side. There is a road from Leastalk to mine.

Signal: Cairn 6 feet high.

Station mark: Triangulation tablet set in rock 1 meter west of signal.

[Latitude  $35^{\circ} 31' 31.98''$ . Longitude  $115^{\circ} 35' 18.04''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	''	°	'	''	Log. meters.	Miles.
Kingston.....	127	06	18.76	306	54	53.01	4.5693575	23.052
Green Monster.....	174	59	42.76	354	58	17.75	4.6218156	26.012
Ripley.....	177	45	02.95	357	44	35.38	4.4810177	18.809
Olcott.....	189	09	32.54	9	12	36.11	4.6942983	30.736
Shenandoah.....	191	13	51.51	11	16	37.81	4.5650049	22.822
Diablo Grande.....	212	36	11.41	32	40	54.31	4.3554467	14.086

**KINGSTON,<sup>1</sup> SAN BERNARDINO COUNTY, CAL.**

Described in Bulletin 496, pages 35 et seq., as follows:

On the highest point of Kingston Range. It is about 20 miles west-southwest of Sandy post office. The nearest known water is at Horse Spring, on the northeast side of the mountain.

Signal: Cairn 6 feet high, with tree in center.

Station mark: Triangulation tablet under center of cairn.

[Latitude 35° 43' 36.58". Longitude 115° 54' 55.30".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Mesa.....	221	42	52.89	41	54	59.92	4.6689748	28.995
Green Monster.....	233	07	25.91	53	17	29.58	4.5097518	20.096
Olcott.....	234	34	49.68	54	49	23.12	4.6614279	28.496
Shenandoah.....	249	26	07.91	69	40	23.08	4.5932003	24.353
Diablo Grande.....	274	18	01.28	94	34	12.06	4.6225326	26.055
Clark.....	306	54	53.01	127	06	18.76	4.5693575	23.052

**KNIGHTS WELL, SAN BERNARDINO COUNTY, CAL.**

Station is west one of two pumps at Knights Well on the State Line road, 9 miles southeast of Ripley.

[Latitude 35° 41' 42.42". Longitude 115° 31' 53.35".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Green Monster.....	159	00	20.84	338	56	55.93	4.3895211	15.236
Shenandoah.....	186	41	07.23	6	41	54.22	4.2387279	10.767
Diablo Grande.....	207	44	32.44	87	47	16.50	3.8496820	4.396

**CORNER SECS. 1, 2, 35, AND 36, T. 18 N., R. 13 E., SAN BERNARDINO COUNTY, CAL.**

Station is iron pipe on township line, west edge of State Line road, 7 miles southwest of Ripley.

Station mark: A regulation United States Land Office iron township-line post.

[Latitude 35° 43' 17.71". Longitude 115° 32' 18.43".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Green Monster.....	157	46	10.68	337	43	00.38	4.3335927	13.395
Shenandoah.....	190	30	19.51	10	31	21.18	4.1618474	9.020
Diablo Grande.....	289	02	35.21	109	05	33.96	3.9109050	5.061

**Santa Rosa and Sebastopol quadrangles.****NAPA AND SONOMA COUNTIES.**

In the spring of 1914 C. F. Urquhart extended triangulation from Coast and Geodetic Survey stations Ross and Mount Helena so as to control all of Santa Rosa and part of Sebastopol 15' quadrangles. Seven stations were occupied and four points were located by intersections, all based on North American datum.

<sup>1</sup> See p. 30.

**BENNETT, SONOMA COUNTY, CAL. (Not occupied.)**

A tree on highest point of Bennett Mountain, 6 miles east-southeast of Santa Rosa.  
Station mark: Center of signal tree.

[Latitude 38° 24' 49.47". Longitude 122° 37' 27.29".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Cotati.....	26	33	36	206	30	52	4.15944	8.970
Taylor.....	72	05	42	252	03	51	3.65975	2.838
Hood.....	230	22	54	50	25	40	3.90905	5.040
Black.....	332	12	56	152	14	37	3.92712	5.254

**BLACK, SONOMA COUNTY, CAL.**

On highest point of Sonoma Mountain, near fence, between pasture and grain field, owned by Mrs. M. A. Black. It is about 0.75 mile north of the public road and about 8 miles north of Petaluma. The station can be reached with buckboard, the last 1.2 miles being over a private road which turns off at the Anderson place.

Station mark: Laurel sapling in cairn 5 feet in diameter.

Reference mark: An aluminum tablet set in a rock 6.7 feet west of signal.

[Latitude 38° 20' 46.84". Longitude 122° 34' 44.99".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Cotati.....	62	26	30.19	242	22	04.83	4.0692896	7.289
West Hill.....	89	54	02.00	269	43	33.00	4.3891400	15.223
School.....	108	03	19.00	287	57	14.00	4.1725800	9.245
Ross.....	110	43	46.31	290	23	37.97	4.7021686	31.298
Taylor.....	126	16	22.28	306	12	50.32	4.0118458	6.386
Bennett.....	152	14	37.00	332	12	56.00	3.9271200	5.254
Mount Helena.....	172	36	04.38	352	34	04.34	4.5587256	22.494
Hood.....	190	21	43.71	10	22	42.98	4.1092648	7.991
Peak.....	168	03	56	348	02	00.00	4.3407700	13.618

**COTATI, SONOMA COUNTY, CAL.**

On highest point of a bald hill, in the Meacham pasture, about 2 miles west of Penn Grove, a station on the Northwestern Pacific Railroad, between Santa Rosa and Petaluma, and can be easily reached.

Station mark: The signal.

Reference mark: Tablet set in solid rock. Azimuth from signal to mark 124° 47', distance 2.3 feet.

[Latitude 38° 17' 50.62". Longitude 122° 41' 52.94".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
West.....	110	49	34.00	290	43	34.00	4.1787600	9.378
Ross.....	122	16	48.26	302	01	06.39	4.6380503	27.002
School.....	159	27	08.00	339	25	32.00	4.0299900	6.658
Santa Rosa.....	175	05	03.00	355	04	28.00	4.2018500	9.890
Taylor.....	190	20	09.74	10	21	03.42	4.0681581	7.270
Bennett.....	206	30	52.00	26	33	36.00	4.1594400	8.970
Black.....	242	22	04.83	63	26	30.19	4.0692896	7.289

**MOUNT HELENA, NAPA COUNTY, CAL.**

A station of the United States Coast and Geodetic Survey on the summit of Mount Helena, about 12 miles to the northward of Calistoga. The station was originally marked by a fine drill hole and cross in the top of a one-half-inch copper bolt

5 inches long, which was cemented in a drill hole in bedrock, and by a brick pier 3 bricks square and 43 inches high, built over the bolt. When visited in 1908 it was found that the pier had been dynamited. Other instrument piers are at the following distances and directions from the station: Collimator pier, 2 bricks square and 61 inches high, 2.27 meters northwest; transit pier, 2 by 3 bricks and 39 inches high, 17.04 meters southwest; latitude pier, 2 by 2½ bricks and 36 inches high, 17.74 meters southwest of the station and 1.68 meters east of the transit pier; vertical angle pier, 2 bricks square and 44 inches high, 33.31 meters southwest of the station and 16.92 meters a little south of east of the latitude pier. A boundary mark between Lake and Napa counties, a large drill hole in a basaltic rock, is 2.18 meters northwest of the station.

The brick pier spoken of in description has about all fallen down or been pulled down. Copper bolt was found. There is a good trail from Mount Helena down to summit of peak. The rim is on road from Calistoga to Middletown and 7 miles from former.

[Latitude 38° 40' 11.080". Longitude 122° 37' 57.817".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Taylor.....	6 53 39.44	186 52 06.84	4.47769110	18.666
West Hill.....	28 51 43.00	208 43 19.00	4.61336000	25.510
Mount Lola.....	245 56 18.019	67 22 03.416	5.33015644	.....
Round Top.....	269 20 15.615	90 58 57.263	5.36002670	.....
Mount Diablo.....	324 01 34.822	144 28 18.913	5.03233246	.....
Hood.....	343 15 59.73	163 18 59.42	4.38512020	15.082
Black.....	352 34 04.34	172 36 04.38	4.55872560	22.494
Peak.....	359 27 11	179 27 12	4.16010000	8.984

#### HOOD, SONOMA COUNTY, CAL.

On Hood Mountain, 12 miles by road and trail east of Santa Rosa.

Signal and station mark: A small sapling in center of a cairn 5 feet in diameter, on highest point of mountain.

Reference mark: A tablet set in rock, 2 feet east of cairn.

[Latitude 38° 27' 37.12". Longitude 122° 33' 09.58".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Black.....	10 22 42.98	190 21 43.71	4.1092648	7.991
Bennett.....	50 25 40.00	230 22 54.00	3.9090500	5.040
Taylor.....	58 13 01.52	238 08 23.99	4.0958674	7.748
Santa Rosa.....	81 02 50.00	260 56 49.00	4.1531800	8.842
Ross.....	95 59 51.24	275 38 42.01	4.6962906	30.877
Mount Helena.....	163 18 59.42	343 15 59.73	4.3851202	15.082

#### PEAK, SONOMA COUNTY, CAL. (Not occupied.)

A lone tree on north side of a round peak northeast of mark West Springs which is probably the nearest stopping place.

Station mark: Center of lone tree used for signal.

[Latitude 38° 32' 22.18". Longitude 122° 37' 52.10".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Taylor.....	13 42 02	193 40 26	4.19900	9.825
Mount Helena.....	179 27 12	359 27 11	4.16010	8.984
Black.....	348 02 00	168 03 56	4.34077	13.618

## ROSS MOUNTAIN, SONOMA COUNTY, CAL.

A station of the United States Coast and Geodetic Survey on the mountain locally known as Pole Mountain, on land belonging to Baker & Sons. It may be reached from Cazadero by a wagon road for about 3 miles to the ranch of W. H. Knowles and then about 2 miles by a good trail to the station. A good camping place with a fine spring of water is about one-fourth mile southeast and about 250 feet below the station.

Station mark: Copper bolt in the top of a concrete pier.

Reference marks: Three stones, each with a half-inch drill hole in the top, placed level with the surface of the ground and 6 feet from the station, one nearly in line to Tomales Bay, one toward Mount Helena, and the third toward Walalla. A charred oak stump with a wrought-iron nail in the top was 20 feet 4 inches N. 54° 01' W. (true) from station.

Signal: A tree 49.9 feet distant trimmed up. All other timber higher than this was cut from summit of peak.

[Latitude 38° 30' 20.583". Longitude 123° 07' 09.221".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Mount Helena <sup>a</sup> .....	246	36	09.171	66	54	21.548	4.6640160	.....
Hood.....	275	38	42.010	95	59	51.240	4.6962906	30.877
Taylor.....	286	30	03.900	106	46	40.640	4.6081249	25.204
Black.....	290	23	37.970	110	43	46.310	4.7021686	31.298
Cotati.....	302	01	06.390	122	16	48.260	4.6380503	27.002
Mount Diablo <sup>a</sup> .....	302	51	49.822	123	36	33.990	5.1013702	.....
Mount Tamalpais <sup>a</sup> .....	324	27	22.348	144	46	47.824	4.8984717	.....

<sup>a</sup> Coast Survey.

## SANTA ROSA, SONOMA COUNTY, CAL. (Not occupied.)

Station mark: Center of gilded cupola on Santa Rosa Bank, side of street west of courthouse. (Not Santa Rosa National Bank.)

[Latitude 38° 26' 24.91". Longitude 122° 42' 49.16".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Hood.....	260	56	49	81	02	50	4.15318	8.842
Taylor.....	321	27	28	141	28	57	3.74498	3.454
Cotati.....	355	04	28	175	05	03	4.20185	9.890

## TAYLOR, SONOMA COUNTY, CAL.

On highest bald point of Taylor Mountain, a well-known mountain 3 miles south-southeast of Santa Rosa.

Signal and station mark: A tree in center of cairn.

Reference mark: A tablet in solid rock, true azimuth 23° 53', distance 6.8 feet from signal.

[Latitude 38° 24' 03.88". Longitude 122° 40' 26.43".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Cotati.....	10	21	03.42	190	20	09.74	4.0681581	7.270
West Hill.....	69	15	06.00	249	08	12.00	4.2388200	10.769
School.....	75	52	21.00	255	49	51.00	3.7812300	3.755
Ross.....	106	46	40.64	286	30	03.90	4.6081249	25.204
Santa Rosa.....	141	28	57.00	321	27	28.00	3.7449800	3.454
Mount Helena.....	186	52	06.84	6	53	39.44	4.4776911	18.666
Peak.....	193	40	26.00	13	42	02.00	4.1990000	9.825
Hood.....	238	08	29.99	58	13	01.52	4.0958674	7.748
Bennett.....	252	03	51.00	72	05	42.00	3.6597500	2.838
Black.....	306	12	50.32	126	16	22.28	4.0118458	6.386



**TODD SCHOOL, SONOMA COUNTY, CAL.**

The small one-story frame schoolhouse 4.5 miles south-southwest of Santa Rosa.  
Station mark: Center of cupola.

[Latitude 38° 23' 15.98". Longitude 122° 44' 27.88".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Taylor.....	255 49 51	75 52 21	3.78123	3.755
Black.....	287 57 12	108 03 15	4.17258	9.245
Cotati.....	339 25 32	159 27 08	4.02999	6.658

**WEST HILL, SONOMA COUNTY, CAL. (Not occupied.)**

A very high tree in grove on high point on ridge 5 or 6 miles west-southwest of Sebastopol.

Station mark: Center of tree.

[Latitude 38° 20' 44.24". Longitude 122° 51' 33.84".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Mount Helena.....	208 43 19	28 51 43	4.61336	25.510
Taylor.....	249 08 12	69 15 06	4.23882	10.770
Black.....	269 43 33	89 54 02	4.38914	15.223
Cotati.....	290 43 34	110 49 34	4.17876	9.378

Banta, Butlers, Ceres, Cooperstown, Crows Landing, Denair, Dickinson, Empire, Hospital Creek, Lone Tree Creek, Modesto, Montpelier, Newman, Oakdale, Orestimba Creek, Patterson, Reservoir, Tracy, Waterford, Westley, and Westport 7½' quadrangles; Bonanza, Capitola, Copperopolis, Gilroy, Hot Springs, Grevison Peak, Hollister, Morgan Hill, Mount Boardman, Mount Hamilton, and Pajaro 15' quadrangles.

**ALAMEDA, MERCED, MONTEREY, SAN BENITO, SAN JOAQUIN, SANTA CLARA, SANTA CRUZ, AND STANISLAUS COUNTIES.**

The field work was done by C. F. Urquhart, topographic engineer, assisted by Roy B. Kilgore, jr., topographer, in October, November, and December, 1912, and January, February, May, and June, 1913. Sixty-three stations were occupied, four of which were stations of the Coast and Geodetic Survey, and 27 points were located by intersections. The control of twenty-one 7½' quadrangles and ten 15' quadrangles was completed, on North American datum. For points previously located, see Bulletin 551.

The work was done in cooperation with the State of California.

**BAREILLAS, MERCED COUNTY, CAL.**

On a bald peak, the lowest and most eastern of three peaks on land owned by J. C. Barreillas. It is about 3 miles a little east of south of 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 signal.

[Latitude 37° 01' 33.570". Longitude 121° 02' 19.456".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Santa Ana.....	52	17	14.01	232	10	14.11	4.3394995	13.578
Pacheco.....	84	55	47.40	264	46	49.16	4.3461620	13.788
Howard.....	133	51	38.01	313	45	06.23	4.3468888	13.811
Christian.....	165	13	30.43	345	11	30.55	4.2836434	11.940

**BARTLETT, SANTA CRUZ COUNTY, CAL.**

Station is on a sagebrush sand hill about half a mile northwest of Watsonville landing on the ocean. It is situated about 4 miles southwest of the town of Watsonville and can be reached in buggy.

Signal: A 4 by 4 inch redwood pole, 14 feet high, set 4½ feet in ground, with two targets at right angles to each other on pole.

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

[Latitude 36° 53' 14.996". Longitude 121° 49' 48.109".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Lillian.....	167	14	50.16	347	13	55.96	4.0046368	6.280
Loma Prieta.....	177	15	03.64	357	14	34.56	4.3957141	15.455
Church.....	232	54	24.75	52	57	37.10	3.9971654	6.173
Watsonville.....	243	51	39.96	63	54	09.97	3.8381432	4.280
Lux.....	267	24	37.45	87	35	08.75	4.4160516	16.196
School.....	249	42	56.77	69	47	37.62	4.0913279	7.668
Pajaro.....	277	35	00.16	97	37	45.61	3.8380452	4.280
Gavilan.....	297	44	29.16	117	55	38.46	4.4955250	19.448

**BATCHER, SANTA CLARA COUNTY, CAL.**

This station is on a high ridge with scattering oak trees on it. It is on the highest point of ridge and about 3 miles southeast of Gilroy Hot Springs, a health resort, 14 miles from the town of Gilroy. The land is owned by Mr. Batcher, a San Francisco capitalist.

Station mark and signal: A laurel tree placed in ground and braced by four laurel poles.

Reference mark: A triangulation tablet set in rock and placed in ground 4.4 feet southwest of signal.

Instrument placed over tablet. True azimuth from station to reference mark, 22° 11'.

[Latitude 37° 05' 44.077". Longitude 121° 26' 04.231".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Gavilan.....	11	25	24.44	191	22	19.95	4.5850532	23.900
Lux.....	22	46	36.68	202	42	52.69	4.3766676	14.792
Thompson.....	51	33	25.41	231	26	52.85	4.3134420	12.788
Loma Prieta.....	92	52	57.61	272	38	09.52	4.5610335	22.614
Corral.....	107	10	21.70	287	07	28.41	3.8705606	4.612
Lick.....	146	00	42.20	325	53	09.81	4.5176506	20.465
Madrone.....	152	02	08.73	331	59	16.73	4.1753466	9.305
Mocho.....	165	59	12.58	345	47	49.34	4.6408546	27.177
Gerber.....	185	21	58.69	5	22	56.86	4.4033932	15.731
Orestimba.....	216	11	39.40	36	19	15.29	4.4973537	19.530
Castle.....	224	12	51.29	44	18	05.20	4.2642706	11.419
Howard.....	248	06	28.73	68	14	16.67	4.3141378	12.808
Pacheco.....	306	28	41.90	126	34	01.70	4.2126976	10.140
Santa Ana.....	319	32	23.27	139	39	40.49	4.4427328	17.222

**BELL, SAN JOAQUIN COUNTY, CAL.**

A windmill situated near a flat-topped red tank, on land owned by Mr. W. E. Moore, about 6 miles west of Tipon, a station of the Southern Pacific Railroad.

Station mark: Center of windmill tower.

[Latitude 37° 44' 42.351". Longitude 121° 13' 55.813".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Vernalis.....	18	45	27.11	198	43	35.73	4.1427815	8.632
Moy.....	44	06	24.85	224	01	00.34	4.2719258	11.622
Ripon.....	273	47	54.43	93	51	53.45	3.9814538	5.954
Mill.....	305	43	09.28	125	44	37.02	3.6359280	2.687
Kern.....	359	20	14.90	179	20	22.88	4.4434398	17.250

**BLACK GULCH, STANISLAUS COUNTY, CAL.**

On highest point of mountain, 6 miles west of Patterson, which can be reached by following road which leads due west from Patterson 3 miles, then to the southwest up Black Gulch about one-fourth mile beyond deserted cabin where dim road turns to the right to lone deserted cabin up gulch. From this point follow up ridge to right to signal.

Signal and station mark: A cairn 7 feet high.

Reference mark: A bronze triangulation tablet set in rock, 6.1 feet east of center of signal.

True azimuth, station to reference mark, 277° 00'.

[Latitude 37° 27' 02.070". Longitude 121° 13' 28.246".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Orestimba.....	0	12	48.64	180	12	47.35	4.1477756	8.732
Gerber.....	48	53	20.91	228	46	40.27	4.3336888	13.398
Red.....	78	05	36.20	257	57	01.93	4.3276709	13.214
Oso.....	115	45	06.50	295	39	40.03	4.1652690	9.091
Vernalis.....	165	14	54.87	345	12	47.07	4.3053402	12.551
Kern.....	175	52	00.32	355	51	51.50	3.6938497	3.070
Westley.....	192	12	04.43	12	13	00.52	4.0295501	6.651
Grayson.....	197	54	02.07	17	55	42.38	4.1190908	8.174
School (Haight).....	218	23	47.29	38	25	33.08	3.8373690	4.273
Modesto.....	224	01	54.73	44	10	28.63	4.4734037	18.482
Van Ormer.....	230	58	48.22	51	01	35.47	3.9390751	5.400
Westport.....	236	41	50.42	56	48	56.84	4.3132812	12.783
Patterson.....	253	49	08.71	73	52	30.56	3.9289646	5.276
Joven.....	257	11	12.75	77	19	40.86	4.3230684	13.074
Turlock.....	261	28	27.24	81	42	29.84	4.5365767	21.376
Crows Landing.....	295	51	45.92	115	57	16.84	4.1727906	9.250
Newman.....	310	19	24.09	130	26	41.98	4.3672457	14.474
Crow.....	326	28	58.19	146	31	47.61	4.0944841	7.724
Cleveland.....	337	31	47.10	157	35	11.81	4.3373999	13.513

**BLOODSÖE, MERCED COUNTY, CAL.**

A lumber tripod on pasture hill on G. W. Bloodsöe's ranch. The nearest stopping place is Hickman, 6 miles southeast of Montpelier, on the Santa Fe Railway.

Station mark: An iron bench-mark post set under center of tripod.

[Latitude 37° 30' 47.722". Longitude 120° 35' 58.085".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Dallas.....	80	42	32.53	260	37	20.87	4.1052710	7.918
Montpelier.....	112	53	39.21	292	49	43.77	4.0127644	6.399
School (Dickinson).....	190	32	07.44	10	32	27.15	3.6375438	2.697
Pillsbury.....	201	48	35.94	21	49	55.12	3.9334675	5.331
Holmes.....	223	33	10.67	43	36	56.90	4.1210219	8.211
Thomsen.....	256	58	57.48	77	02	28.17	3.9403839	5.417

**BROWN, ALAMEDA COUNTY, CAL.**

Situated on a high prairie point in pasture land owned by Mr. Brown. It is best reached from Livermore via road up Mocho Creek to summit of ridge; thence a road turns northwest and passes very near station.

Station mark: A small pile of rock around signal tree and over a tablet.

[1901: Latitude  $37^{\circ} 36' 22.98''$ ; longitude  $121^{\circ} 37' 10.84''$ . 1913: Latitude  $37^{\circ} 36' 22.978''$ ; longitude  $121^{\circ} 37' 10.775''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Trenouth.....	61	53	05.56	241	43	55.02	4.4006441	.....
Sunol.....	93	25	59.84	273	14	56.27	4.4266916	.....
Wiedeman.....	114	04	36.83	293	50	52.92	4.5581580	.....
Brushy.....	157	51	19.54	337	48	17.29	4.2868343	.....
Byron.....	172	32	14.88	352	30	27.36	4.5189234	.....
Bridge.....	195	00	51.94	15	03	31.56	4.3915751	.....
Tracy.....	230	32	57.01	50	40	23.58	4.3649212	14.397
Oso.....	236	38	36.81	116	47	36.87	4.3864221	15.128
Mocho.....	338	14	25.24	158	16	46.61	4.1868513	9.554

**BUTLERS, STANISLAUS COUNTY, CAL.**

A line windmill, situated on the south side of the road, 7 miles due west of Modesto, on land owned by Mrs. Butler. The windmill tower has been wrapped with white cloth.

Station mark: Center of windmill tower.

[Latitude  $37^{\circ} 38' 17.540''$ . Longitude  $121^{\circ} 07' 04.155''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Kern.....	31	38	28.36	211	34	25.35	4.2710137	11.597
Vernalis.....	84	58	45.18	264	52	42.58	4.1648865	9.083
Patrick.....	123	04	06.47	303	02	14.68	3.7285138	3.326
Theobald.....	266	23	21.34	86	24	59.53	3.5965564	2.454
Modesto.....	267	14	28.77	87	19	09.20	4.0519460	7.003
Young.....	321	26	56.94	141	27	59.09	3.6027343	2.489

**CASHMAN, STANISLAUS COUNTY, CAL.**

A timber tripod on summit of small sharp butte, about 8 miles east of Oakdale, on land owned by Mr. T. J. Cashman.

Station mark: A bench-mark post set under center of tripod.

[Latitude  $37^{\circ} 46' 02.394''$ . Longitude  $120^{\circ} 41' 31.459''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Walters.....	22	40	22.24	202	39	35.26	3.6880395	3.030
Levison.....	51	52	47.23	231	47	45.15	4.1868793	9.555
Windmill.....	64	29	50.20	244	27	10.84	3.8488699	4.388
Crane.....	79	48	22.76	259	41	28.21	4.2264375	10.466
Riverbank.....	80	13	53.03	260	04	53.32	4.3405264	13.611
Oakdale Church.....	89	12	06.09	269	06	18.83	4.1423894	8.625
Oakdale.....	102	08	21.47	282	02	20.13	4.1691066	9.172
Wolfing.....	301	00	51.30	121	03	27.86	3.8636908	4.540
No. 1.....	327	53	45.51	147	56	52.65	4.1494960	8.767
Hagen.....	358	50	45.45	178	50	53.43	4.2009964	9.871

**CASTLE, STANISLAUS COUNTY, CAL. (Not occupied.)**

Highest point of prominent mountain 5 miles northwest of Howard triangulation station.

[Latitude 37° 12' 51.025". Longitude 121° 17' 24.493".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Batcher.....	44	18	05.20	224	12	51.29	4.2642706	11.419
Madrone.....	90	14	41.74	270	06	35.17	4.2974719	12.326
Gerber.....	139	07	24.10	319	03	07.61	4.2023768	9.902
Orestimba.....	205	19	00.35	25	21	22.13	4.1296786	8.376
Howard.....	311	04	59.38	131	07	33.80	3.9223223	5.196
Pacheco.....	359	19	05.49	179	19	12.14	4.3593694	14.214

**CERES, STANISLAUS COUNTY, CAL.**

Red tank in town of Ceres on the Southern Pacific Railroad.  
Station mark: Center of tank.

[Latitude 37° 35' 24.871". Longitude 120° 57' 10.546".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Joven.....	17	52	05.76	197	50	38.94	4.0572643	7.089
Westport.....	58	11	32.38	238	08	43.34	3.9034910	4.976
Courtney.....	88	22	57.37	268	19	55.10	3.8653274	4.557
Modesto.....	150	38	31.37	330	37	09.32	3.8275030	4.177
Hughson.....	264	09	13.06	84	12	26.12	3.8922953	4.849
Turlock.....	316	17	10.62	136	21	18.80	4.1606864	8.996
Keyes.....	318	20	07.71	138	21	43.00	3.7611671	3.585

**CHRISTIAN, MERCED COUNTY, CAL.**

On highest summit of bald, round hill, locally known as Christian Hill, on land owned by Simon Newman Co., about 7 miles southwest of town of Gustine, a station on the Southern Pacific Railroad, and half a 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, with three cross targets, and is sunk in the ground a depth of 3 feet.

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". Longitude 121° 05' 38.142".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Howard.....	74	01	28.25	253	56	55.78	4.0633837	7.190
Orestimba.....	141	16	09.99	321	11	24.08	4.2691191	11.547
Cleveland.....	158	49	17.23	338	47	56.90	3.9568293	5.626
Crow.....	165	29	11.90	345	27	16.10	4.2736010	11.667
Newman.....	204	41	18.77	24	43	50.78	4.1704023	9.199
Gustine.....	230	36	21.94	50	39	43.78	4.0269475	6.611
Stack.....	260	34	00.83	80	38	10.83	4.0143355	6.422
Barreillas.....	345	11	30.55	165	13	30.43	4.2836434	11.940

**CHURCH, SANTA CRUZ COUNTY, CAL. (Not occupied.)**

A church 2 miles northeast of Watsonville, Cal.

[Latitude 36° 56' 29.254". Longitude 121° 44' 27.855".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Pajaro.....	9	05	29.07	189	05	02.29	3.8443243	4.342
Bartlett.....	52	57	37.10	232	54	24.75	3.9971654	6.173
Gavilan.....	316	10	02.62	136	18	00.26	4.4552729	17.726

**CLAUS, STANISLAUS COUNTY, CAL.**

A red water tank in Claus, belonging to the Santa Fe Railway. It can be occupied.  
Station mark: Center of tank.

[Latitude 37° 41' 12.238". Longitude 120° 55' 05.734".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Modesto.....	52	39	33.91	232	36	55.50	3.9027590	4.967
Stack.....	121	19	54.51	301	17	25.26	3.8449099	4.348
Riverbank.....	162	25	13.61	342	24	32.45	3.7368615	3.390
Empire.....	344	29	23.22	164	29	59.00	3.7298971	3.336

**CLEVELAND, STANISLAUS COUNTY, CAL.**

On a low cultivated hill on land owned by Mrs. John Miller, and a quarter mile north of her ranch house. About three-fourths mile north of Cleveland District School and 8 miles west of Gustine, a station on the Southern Pacific Railroad.

Signal: A 4 by 4 inch redwood pole, 14 feet long, with 3 feet cross targets and placed in the ground a depth of 3 feet.

Station mark: Center of 4 by 4 inch pole.

[Latitude 37° 16' 10.069". Longitude 121° 07' 50.897".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Howard.....	34	00	54.30	213	57	41.89	4.1470847	8.718
Orestimba.....	125	54	13.50	305	50	47.80	4.0136237	6.412
Black Gulch.....	157	35	11.81	337	31	47.10	4.3373999	13.513
Crow.....	171	35	42.08	351	35	06.66	3.9929778	6.114
Newman.....	242	03	43.93	62	07	36.52	4.0293702	6.648
Gustine.....	278	20	24.12	98	25	06.52	4.0650988	7.219
Stack.....	296	35	36.71	116	41	07.26	4.1779102	9.360
Christian.....	338	47	56.90	158	49	17.23	3.9568293	5.626

**CORRAL, SANTA CLARA COUNTY, CAL.**

Station is on highest point of ridge about 3 or 4 miles west of Gilroy Hot Springs, a health resort, 14 miles from the town of Gilroy, a station on the Southern Pacific Railroad. Land is owned by Mr. Hyde, or has been sold to Mr. Batcher. The "Diamond Fields" trail from Gilroy Hot Springs goes to Summit of ridge, thence west along ridge to a corral. Signal is about a quarter mile north of corral.

Signal: An oak tree 40 or 50 feet high, with all limbs except the top cut off. A triangle is cut in the east side of tree with U. S. printed in nails on it.

As the Santa Clara Valley can not be seen from this point, a line was measured 618.4 feet west to summit of hill overlooking the valley; at this point a United States Geo-

logical Survey triangulation tablet was set in rock and placed in ground. Triangles were blazed on two trees north and northwest of triangulation tablet, distant about 30 feet each from tablet.

[Latitude  $37^{\circ} 06' 55.073''$ ; longitude  $121^{\circ} 30' 51.479''$ . Tablet on hill west: Latitude  $37^{\circ} 06' 55.539''$ ; longitude  $121^{\circ} 30' 58.400''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Lux.....	4 58 50.16	184 57 59.01	4.3844156	15.058
Thompson.....	31 00 48.97	210 57 09.38	4.2429236	10.871
Madonna.....	56 01 05.73	235 54 15.52	4.3073100	12.608
Loma Prieta.....	89 14 39.97	269 02 45.00	4.4662553	18.180
Murphy.....	92 36 38.28	272 30 54.59	4.1484306	8.745
Lick.....	155 41 29.67	335 36 50.95	4.4401055	17.118
Madrone.....	180 18 55.27	00 18 56.76	4.0427551	6.857
Batcher.....	287 07 28.41	107 10 21.70	3.8705606	4.612
Pacheco.....	300 25 26.87	120 33 39.86	4.3702019	14.573

#### COURTNEY, STANISLAUS COUNTY, CAL.

A windmill on Mr. Courtney's ranch,  $4\frac{1}{2}$  miles west of Ceres.

Station mark: Center of windmill tower.

[Latitude  $37^{\circ} 35' 18.050''$ . Longitude  $121^{\circ} 02' 09.346''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Kern.....	58 43 43.43	238 36 40.92	4.2994734	12.383
Modesto.....	213 34 59.53	33 36 39.86	3.8624533	4.527
Ceres.....	268 19 55.10	88 22 57.37	3.8653274	4.557
Westport.....	352 28 57.79	172 29 10.94	3.6072166	2.515

#### CRANE, STANISLAUS COUNTY, CAL.

A tall wooden windmill, 3 miles east of Riverbank, a town on the Santa Fe Railway, on J. W. Crane's place. It can be occupied for some sights.

Station mark: Center of windmill tower.

[Latitude  $37^{\circ} 44' 25.166''$ . Longitude  $120^{\circ} 52' 48.539''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Modesto.....	42 00 05.95	221 56 03.58	4.1620978	9.025
Riverbank.....	81 31 50.43	261 29 45.28	3.7043614	3.146
Oakdale.....	199 19 16.46	19 20 09.91	3.8097394	4.010
Cashman.....	259 41 28.21	79 48 22.76	4.2264375	10.466
Windmill.....	270 13 02.71	90 17 17.82	4.0088101	6.341
Walters.....	275 46 52.64	95 53 00.04	4.1695734	9.182
Levison.....	325 21 19.88	145 23 12.05	3.8978509	4.911

#### CROW, STANISLAUS COUNTY, CAL.

On highest point of round foothill 5 miles southwest of Crows Landing, just south of Crow Creek, on land owned by George Crow and  $1\frac{1}{2}$  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 with 3 feet 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, station to reference mark  $355^{\circ} 11'$ .

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

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Orestimba.....	61	58	05.31	241	55	14.85	3.8942543	4.871
Black Gulch.....	146	31	47.61	326	28	58.19	4.0944841	7.724
Kern.....	154	46	22.64	334	43	24.32	4.2281635	10.508
Patterson.....	185	50	14.80	5	50	46.97	4.1070391	7.950
Crows Landing.....	239	24	05.94	59	26	47.20	3.8803463	4.717
Newman.....	293	25	33.12	113	30	01.38	4.0744560	7.376
Christian.....	345	27	16.10	165	29	11.90	4.2736010	11.667
Cleveland.....	351	35	06.66	171	35	42.08	3.9929778	6.114

**CROWS LANDING, STANISLAUS COUNTY, CAL. (Not occupied.)**

The most southern church in Crows Landing.

Station mark: Center of church spire.

[Latitude 37° 23' 31.082". Longitude 121° 04' 23.685".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Crow.....	59	26	47.20	239	24	05.94	3.8803463	4.717
Black Gulch.....	115	57	16.84	295	51	45.92	4.1727906	9.250
Kern.....	129	48	19.60	309	42	39.70	4.2522857	11.108

**DALLAS, STANISLAUS AND MERCED COUNTIES, CAL.**

A lumber tripod on Mrs. Hickman's land, about 5½ miles due east of Turlock and 500 feet north of county road running from Turlock to Snelling.

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

[Latitude 37° 29' 40.680". Longitude 120° 44' 30.025".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Turlock.....	90	57	36.79	270	54	01.77	3.9384440	5.393
Denair.....	130	01	28.82	309	59	36.85	3.7705831	3.664
Hughson.....	136	19	31.09	316	15	00.47	4.1979657	9.802
Waterford.....	174	35	51.39	354	35	12.58	4.2193571	10.297
Hickman.....	177	34	41.00	357	34	26.03	4.1537439	8.853
Hall.....	185	50	35.07	5	51	00.47	4.0021038	6.244
Hagen.....	198	05	21.48	18.	07	18.28	4.1799298	9.403
Pillsbury.....	237	27	50.42	57	34	21.51	4.2713761	11.607
School (Dickinson).....	244	35	45.38	64	41	16.89	4.1699578	9.190
Bloodsoe.....	260	37	20.87	80	42	32.53	4.1052710	7.918

**DENAIR, STANISLAUS COUNTY, CAL. (Not occupied.)**

Station mark: Cupola on school in Denair, a station on the Santa Fe Railway.

[Latitude 37° 31' 43.642". Longitude 120° 47' 33.916".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Turlock.....	48	44	43.35	228	43	00.23	3.7430046	3.438
Hughson.....	140	01	42.92	319	59	04.31	3.9971780	6.173
Hall.....	221	43	20.14	41	45	37.54	3.9199441	5.168
Dallas.....	309	59	36.85	130	01	28.83	3.7705831	3.664



**DICKINSON SCHOOL, MERCED COUNTY, CAL. (Not occupied.)**

Station Mark: Center of cupola on Dickinson School, 6 miles east of Montpelier, on the Santa Fe Railway.

[Latitude 37° 33' 06.140". Longitude 120° 35' 25.752".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Bloodsøe.....	10	32	27.15	190	32	07.44	3.6375436	2.697
Dallas.....	64	41.	16.89	244	35	45.38	4.1699678	9.190
Hagen.....	132	57	49.01	312	54	13.90	4.0725356	7.343
No. 1.....	173	01	27.47	353	00	50.99	4.0815762	7.493
Pillsbury.....	212	55	19.36	32	56	18.86	3.6439801	2.737
Thomsen.....	286	39	47.29	106	42	58.36	3.9050916	4.994

**EMPIRE, STANISLAUS COUNTY, CAL. (Not occupied.)**

A church spire in Empire, a station on the Santa Fe Railroad. Station mark: Center of spire.

[Latitude 37° 38' 24.426". Longitude 120° 54' 07.174".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Modesto.....	92	23	49.57	272	20	35.48	3.8919838	4.845
Riverbank.....	163	27	24.33	343	26	07.39	4.0343524	6.725
Claus.....	164	29	59.00	344	29	23.22	3.7298971	3.336
Levison.....	234	15	33.63	54	18	13.69	3.8981668	4.915
Hughson.....	325	27	50.44	445	29	11.67	3.7603148	3.578

**GAVILAN, MONTEREY COUNTY, CAL.**

A station of the Coast and Geodetic Survey on the crest of the mountain separating Pajaro Valley from the Valley of Salinas and about 4 miles to the southward of the Mission of San Juan. The crest is composed of a line of sharp peaks from 2,800 to 3,000 feet high, and the station is on the western extremity, on a small platform of level land just where the ground commences to fall rapidly. The station was marked by a stone block, with a drill hole in the top, filled with lead, set 2½ feet below the surface of the ground. Three lead bolts in fixed rocks are as follows: One 13 feet 2 inches south by west (approximately), one 13 feet 9 inches southeast (approximately), and one 5 feet 9 inches north by east (approximately), from the center.

[Latitude 36° 45' 20.910". Longitude 121° 31' 11.350".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Bartlett.....	117	55	38.46	297	44	29.16	4.4955250	19.448
Pajaro.....	123	23	12.42	303	14	48.39	4.3970080	15.501
Watsonville.....	129	28	26.40	309	19	46.67	4.4440520	17.274
Church.....	136	18	00.26	316	10	02.62	4.4552729	17.726
School.....	139	38	05.18	319	31	36.00	4.3945269	15.413
Loma Prieta.....	143	56	25.47	323	44	45.39	4.6890356	30.366
Thompson.....	161	06	14.56	351	02	47.79	4.4202423	16.353
Lick.....	170	31	19.45	350	26	53.84	4.8188815	40.948
Lux.....	174	09	25.86	354	08	46.82	4.1995939	9.839
Batcher.....	191	22	19.95	11	25	24.44	4.5850534	23.900
Pacheco.....	216	28	36.92	36	36	59.77	4.5421347	21.651
Santa Ana.....	236	58	11.66	57	08	31.24	4.4846064	18.965

**GERBER, SANTA CLARA AND-STANISLAUS COUNTIES, CAL.**

Station is on highest point of a high brushy mountain on east side of San Antonio Valley, and near the source of San Antonio Creek. It is about 4 miles from Mr. Gerber's ranch in San Antonio Valley. This valley can be reached by wagon road from Mount Hamilton and from Livermore. The best road is via Livermore and there is a very good trail from Gerber's ranch to signal.

Station mark and signal: A juniper tree set  $3\frac{1}{2}$  feet in ground.

Reference mark: A triangulation tablet cemented in rock placed in ground 3.2 feet from signal. Instrument was placed over center of tablet.

True azimuth, station to reference mark  $18^{\circ} 07'$ .

[Latitude  $37^{\circ} 19' 21.678''$ . Longitude  $121^{\circ} 24' 28.069''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	''	°	'	''	Log. meters.	Miles.
Batcher.....	5	22	56.86	185	21	58.69	4.4033932	15.731
Madrone.....	38	06	22.19	218	02	31.51	4.1824226	9.457
Loma Prieta.....	58	53	42.45	238	37	53.85	4.6553767	28.101
Lick.....	95	47	41.42	275	39	09.52	4.3198304	12.977
Mocho.....	142	51	14.33	322	45	51.99	4.3343459	13.418
Red.....	154	54	11.81	334	52	18.76	4.0334548	6.711
Oso.....	188	23	09.54	8	24	24.45	4.3172692	12.901
Black Gulch.....	228	46	40.27	48	53	20.91	4.3336888	13.398
Orestimba.....	269	26	56.51	89	33	35.28	4.2093470	10.062
Howard.....	316	17	12.91	136	24	03.87	4.3846073	15.065
Castle.....	319	03	07.61	139	07	24.10	4.2023768	9.902
Pacheco.....	342	53	33.88	162	57	56.42	4.5626024	22.696

**GILROY, SANTA CLARA COUNTY, CAL. (Not occupied.)**

Catholic Church in Gilroy.

Station mark: Center of spire.

[Latitude  $37^{\circ} 01' 00.304''$ . Longitude  $121^{\circ} 34' 22.514''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	''	°	'	''	Log. meters.	Miles.
Thompson.....	43	03	13.40	223	01	41.06	3.7449825	3.454
Loma Prieta.....	113	39	26.77	293	29	39.81	4.4191614	16.312
Murphy.....	142	35	17.03	322	31	40.94	4.1633691	9.051
Lux.....	346	42	06.63	166	43	22.42	4.1325515	8.431

**GRAYSON, STANISLAUS COUNTY, CAL. (Not occupied.)**

Church in old town of Grayson on west side of San Joaquin River, near town of Westley.

Station mark: Center of church spire.

[Latitude  $37^{\circ} 33' 48.090''$ . Longitude  $121^{\circ} 10' 43.495''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	''	°	'	''	Log. meters.	Miles.
Black Gulch.....	17	55	42.38	197	54	02.07	4.1190908	8.174
Kern.....	30	07	40.30	210	05	51.11	3.9431290	5.451
Oso.....	70	20	29.37	250	13	22.11	4.2622189	11.365

**GUSTINE, MERCED COUNTY, CAL. (Not occupied.)**

Station mark: Center of steeple on church in town of Gustine on Southern Pacific Railroad.

[Latitude 37° 15' 15.154". Longitude 121° 00' 04.475".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Christian.....	50 39 43.78	230 36 21.94	4.0269475	6.611
Howard.....	62 52 09.21	242 44 14.78	4.3374611	13.515
Cleveland.....	98 25 06.52	278 20 24.12	4.0650988	7.219
Orestimba.....	111 22 06.63	291 13 58.38	4.3285122	13.239

**HAGEN, STANISLAUS COUNTY, CAL.**

A 6 by 6 inch post with cross targets, on north edge of Martin Hagen's ranch. Located just east of high power line pole and on fence line, 3½ miles due east of Hickman.

Station mark: An iron bench-mark post set at foot of wood post.

[Latitude 37° 37' 27.244". Longitude 120° 41' 18.412".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Montpelier.....	11 02 58.60	191 02 18.25	3.9280379	5.265
Dallas.....	18 07 18.28	198 05 21.48	4.1799298	9.403
Hall.....	39 58 48.31	219 57 16.83	3.7577625	3.557
Turlock.....	43 14 28.32	223 08 56.18	4.2908557	12.140
Hughson.....	79 13 40.95	259 07 13.01	4.2006798	9.863
Hickman.....	88 24 32.34	268 22 20.38	3.7245243	3.295
Modesto.....	94 34 04.27	274 23 00.81	4.4268888	16.605
Waterford.....	108 40 58.32	288 38 22.45	3.8199323	4.105
Levison.....	117 13 50.24	297 08 40.68	4.1450398	8.677
Walters.....	169 03 59.99	349 03 05.11	4.0642228	7.204
Cashman.....	178 50 53.43	358 50 45.45	4.2009964	9.871
Wolfling.....	206 07 22.24	26 09 50.57	4.1302031	8.386
No. 1.....	241 17 56.02	61 20 54.88	3.9129691	5.085
Pillsbury.....	291 28 11.62	111 32 46.36	4.0744735	7.376
School (Dickinson).....	312 54 13.90	132 57 49.01	4.0725356	7.343

**HAIGHT SCHOOL, STANISLAUS COUNTY, CAL.**

Haight School, about 2 miles west of Vanormer, on the Southern Pacific Railroad. Station mark: Center of belfry.

[Latitude 37° 29' 56.850". Longitude 121° 10' 34.370".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Black Gulch.....	38 25 33.08	218 23 47.29	3.8373690	4.273
Kern.....	84 20 32.03	264 18 37.36	3.6674577	2.889

**HALL, STANISLAUS COUNTY, CAL.**

A round observatory on Mrs. Hall's home, a white house 3 miles southeast of Hickman, a station on the Santa Fe Railway.

Station mark: Center of observatory.

[Latitude 37° 35' 04.927". Longitude 120° 43' 48.331".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Dallas.....	5 51 00.47	185 50 35.07	4.0021038	6.244
Denair.....	41 45 37.64	221 43 20.14	3.9199441	5.168
Turlock.....	44 33 56.05	224 29 55.41	4.1406707	8.591
Hughson.....	96 46 12.63	276 41 16.31	4.0791821	7.456
Levison.....	140 56 08.69	320 52 30.80	4.1422234	8.621
Hickman (2).....	159 01 49.26	339 01 08.84	3.6570022	2.821
Waterford.....	158 20 15.83	338 19 11.54	3.8448338	4.347
Hagen.....	219 57 16.83	39 58 48.31	3.7577625	3.557
Montpelier.....	332 22 17.53	152 23 08.60	3.6467811	2.755

**HICKMAN, STANISLAUS COUNTY, CAL.**

A church spire in town of Hickman.

Station mark: Center of spire.

[Latitude 37° 37' 22.413". Longitude 120° 44' 54.577".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Turlock.....	29	48	51.82	209	45	31.46	4.2105739	10.091
Hughson.....	74	38	38.86	254	34	22.84	4.0282561	6.632
Hagen.....	268	22	20.38	88	24	32.34	3.7245243	3.295
Hall.....	339	01	08.84	159	01	49.26	3.6570022	2.821
Dallas.....	357	34	26.03	177	34	41.00	4.1537439	8.853

**HOLMES, STANISLAUS COUNTY, CAL. (Not occupied.)**

A dismantled wooden windmill near old deserted house on hill about 6 miles south west of La Grange, known as the old "Jim Holmes" place.

Station mark: Center of windmill tower.

[Latitude 37° 35' 58.186". Longitude 120° 29' 46.936".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Thomsen.....	4	39	10.64	184	38	55.26	3.8829431	4.746
Bloodsoe.....	43	36	56.90	223	33	10.67	4.1210219	8.211
Pillsbury.....	74	49	58.29	254	47	31.13	3.7876239	3.810
No. 1.....	124	21	19.39	304	17	16.02	4.0731554	7.354
Russian.....	152	27	10.24	332	25	20.57	3.9784706	5.913

**HOWARD, SANTA CLARA COUNTY, CAL.**

On high point of ridge with scattering oak trees, on divide between Quinto and Romero creeks. The highest point of ridge is round brushy hill with lone tree on southwest side, 1 mile west of station. Can be reached from Howard Cattle Co.'s ranch, 10 miles west of Gustine, by following up Quinto Creek about 5 miles to cabin, thence by trail on up creek about 2 miles to sulphur spring to south end of trail. Follow up ridge here about 1½ miles southwest to station.

Signal and station mark: An oak tree 13 feet high, placed 3 feet in the ground.

Reference mark: A bronze triangulation tablet set in rock 4.3 feet northwest of signal.

True azimuth, station to reference mark, 110° 21'.

[Latitude 37° 09' 52.689". Longitude 121° 13' 09.023".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Santa Ana.....	2	24	01.10	182	23	31.76	4.4593361	17.893
Pacheco.....	19	10	52.12	199	08	24.71	4.2647058	11.430
Batcher.....	68	14	16.67	248	06	28.73	4.3141378	12.808
Madrone.....	102	05	34.46	281	54	53.74	4.4269767	16.609
Castle.....	131	07	33.80	311	04	59.38	3.9223223	5.196
Gerber.....	136	24	03.87	316	17	12.91	4.3846073	15.065
Orestimba.....	178	17	49.68	358	17	36.76	4.2476912	10.991
Cleveland.....	213	57	41.89	34	00	54.30	4.1470847	8.718
Gustine.....	242	44	14.78	62	52	09.21	4.3374611	13.515
Christian.....	253	56	55.78	74	01	28.25	4.0633837	7.190
Bareillas.....	313	45	06.23	133	51	38.01	4.3468888	13.811

**HUGHSON, STANISLAUS COUNTY, CAL.**

Flagpole on flat-roofed hotel in Hughson, a town on the Santa Fe Railway.

Station mark: Center of flagpole.

[Latitude 37° 35' 50.536". Longitude 120° 51' 54.092".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Keyes.....	37	37	26.18	217	35	48.50	3.8089621	4.002
Ceres.....	84	12	26.12	264	09	13.06	3.8922953	4.849
Modesto.....	114	39	26.48	294	34	51.25	4.0850366	7.558
Empire.....	145	29	11.67	325	27	50.44	3.7603148	3.578
Levison.....	198	38	43.46	18	40	02.18	3.9948177	6.140
Waterford.....	241	19	38.04	61	23	30.26	4.0265409	6.605
Hickman.....	254	34	22.84	74	38	38.86	4.0282561	6.632
Hagen.....	259	07	13.01	79	13	40.95	4.2006798	9.863
Hall.....	276	41	16.31	96	46	12.63	4.0791821	7.456
Montpelier.....	290	50	38.36	110	56	25.64	4.1749079	9.295
Dallas.....	316	15	00.47	136	19	31.09	4.1979657	9.802
Denair.....	319	59	04.31	140	01	42.92	3.9971780	6.173
Turlock.....	348	47	37.56	168	48	32.91	4.0599436	7.133

**JACKSON, STANISLAUS COUNTY, CAL.**

Cupola on Jackson School, 3 miles southwest of Salida, a station on the Southern Pacific Railroad.

Station mark: Center of cupola.

[Latitude 37° 41' 19.378". Longitude 121° 07' 53.941".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Kern.....	21	43	51.83	201	40	19.05	4.3644007	14.380
Patrick.....	50	33	06.38	230	31	44.96	3.6261328	2.627
Salida.....	240	06	26.11	60	08	09.08	3.6773654	2.956

**JOVEN, STANISLAUS COUNTY, CAL.**

A wooden windmill just east of flat-roofed tank house, which may be occupied, 9 miles west of Turlock, on Mr. Young's place.

Station mark: Center of windmill tower.

[Latitude 37° 29' 32.613". Longitude 120° 59' 33.051".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Orestimba.....	47	50	13.43	227	41	44.76	4.4442363	17.282
Black Gulch.....	77	19	40.86	257	11	12.75	4.3230684	13.074
Kern.....	90	51	39.27	270	43	02.08	4.3196252	12.971
Westport.....	153	30	57.60	333	29	35.53	3.8701367	4.608
Modesto.....	180	40	44.22	0	40	49.16	4.2232140	10.389
Ceres.....	197	50	38.94	17	52	05.76	4.0572643	7.089
Keyes.....	228	13	21.81	48	16	23.77	3.9927314	6.111
Turlock.....	268	18	03.75	88	23	38.38	4.1306910	8.395

**KEYES, STANISLAUS COUNTY, CAL. (Not occupied.)**

Cupola on school in Keyes, on the Southern Pacific Railroad.

Station mark: Center of cupola.

[Latitude 37° 33' 05.027". Longitude 120° 54' 34.285".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Joven.....	48	16	23.77	228	13	21.81	3.9927314	6.111
Ceres.....	138	21	43.00	318	20	07.71	3.7611671	3.585
Hughson.....	217	35	48.50	37	37	26.18	3.8089621	4.002
Turlock.....	314	57	21.56	134	59	54.45	3.9401931	5.414

## KERN, STANISLAUS COUNTY, CAL.

On high foothill 6 miles northwest of Patterson. It can be reached by following road north from Patterson 2 miles, or just south of Vanormer oil station, where road turns due west about 4 miles to base of foothill.

Station mark: A redwood post 4 by 4 inches square, 14 feet high, with cross targets and placed in the ground 3 feet.

Reference mark: A bronze triangulation tablet set in a rock 4 feet northeast of signal.

True azimuth, station to reference mark,  $221^{\circ} 45'$ .

[Latitude  $37^{\circ} 29' 41.938''$ . Longitude  $121^{\circ} 13' 42.745''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Oso.....	96	21	12.28	276	15	54.47	4.11062010	8.016
Moy.....	137	03	10.37	316	57	38.81	4.29174290	12.164
Tracy.....	148	31	08.66	328	24	15.23	4.50181990	19.732
Vernalis.....	161	50	59.57	341	49	00.54	4.18666520	9.550
Windmill.....	175	31	52.56	355	31	29.44	4.07704600	7.420
Ball.....	179	20	22.88	359	20	14.90	4.44343980	17.250
Mill.....	187	12	24.50	7	13	44.02	4.40544210	15.805
Patrick.....	195	41	09.43	15	43	20.91	4.29101970	12.144
Ripon.....	198	48	48.45	18	52	38.82	4.45720400	17.805
Jackson.....	201	40	19.05	21	43	51.83	4.36440070	14.380
Westley.....	205	19	11.11	25	20	16.06	3.78868921	3.804
Salida.....	207	56	39.21	28	01	54.79	4.43189970	16.798
Grayson.....	210	05	51.11	30	07	40.30	3.94312900	5.451
Butler.....	211	34	25.35	31	38	28.36	4.27101370	11.597
Ranch (2).....	220	22	02.84	40	25	38.20	4.12673640	8.319
Theobald (1).....	220	19	42.38	40	25	23.43	4.32614940	13.167
Young.....	223	51	36.36	43	56	41.34	4.24827950	11.006
Modesto.....	231	57	14.93	52	05	57.93	4.42656770	16.593
Courtney.....	238	36	40.92	58	43	43.43	4.29947340	12.353
Westport.....	250	03	27.19	70	10	42.66	4.27112720	11.600
School (Haight).....	264	18	37.36	84	20	32.03	3.66745770	2.889
Van Ormer.....	265	37	37.09	85	40	33.25	3.85304340	4.430
Turlock.....	269	42	41.20	89	56	53.05	4.53627900	21.361
Joven.....	270	43	02.08	90	51	39.27	4.31962530	12.971
Patterson.....	286	45	09.42	106	48	40.19	3.94881640	5.523
Crows Landing.....	309	42	39.70	129	48	19.60	4.25228540	11.108
Crow.....	334	43	24.32	154	46	22.64	4.22816350	10.508
Black Gulch.....	355	51	51.50	175	52	00.32	3.69384970	3.070

## LEVISON, STANISLAUS COUNTY, CAL.

A 5 by 5 inch redwood post, with cross targets, on north-south fence line, 300 feet south of county road which runs east from Claus. On land owned by Mr. Levison, which is rented to Mr. G. W. Litt.

Station mark: An iron bench-mark post set at foot of wood post.

[Latitude  $37^{\circ} 40' 54.208''$ . Longitude  $120^{\circ} 49' 45.165''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Hughson.....	18	40	02.18	198	38	43.46	3.9948177	6.140
Empire.....	54	18	13.69	234	15	33.63	3.8981668	4.915
Modesto.....	73	13	54.16	253	07	59.91	4.1716075	9.225
Riverbank.....	121	14	44.39	301	10	47.17	4.0456656	6.903
Crane.....	145	23	12.05	325	21	19.88	3.8978509	4.911
Windmill.....	221	29	42.22	41	32	04.99	3.9357975	5.360
Cashman.....	231	47	45.15	51	52	47.23	4.1868793	9.555
Walters.....	243	52	15.77	63	56	30.78	4.0558776	7.067
Hagen.....	297	08	40.68	117	13	50.24	4.1450398	8.677
Waterford.....	304	40	12.44	124	42	46.12	3.8748880	4.658
Hall.....	320	52	30.80	140	56	08.69	4.1422234	8.621

**LICK, SANTA CLARA COUNTY, CAL.**

Station mark is center of the large observatory on Mount Hamilton. Not the observatory located by the United States Coast and Geodetic Survey.

[Latitude 37° 20' 29.242". Longitude 121° 38' 32.191".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Murphy.....	6	15	54.10	186	14	48.25	4.3912199	15.296
Loma Prieta.....	35	01	18.61	214	54	00.48	4.4935714	19.361
Mocho.....	206	59	03.95	27	02	14.35	4.2297124	10.545
Gerber.....	275	39	09.52	95	47	41.42	4.3198304	12.977
Madrone.....	320	54	29.82	140	59	10.36	4.2579461	11.254
Santa Ana.....	322	55	43.55	143	10	33.43	4.7821472	37.627
Batcher.....	325	53	09.81	146	00	42.20	4.5176506	20.465
Corral.....	335	36	50.95	155	41	29.67	4.4401055	17.118
Gavilan.....	350	26	53.84	170	31	19.45	4.8188815	40.946
Thompson.....	356	36	10.30	176	37	08.40	4.6038834	24.959

**LILLIAN, SANTA CRUZ COUNTY, CAL. (Not occupied.)**

Station mark: A flag on hill about 7 miles northwest of Watsonville, Cal.

[Latitude 36° 58' 34.782". Longitude 121° 51' 18.315".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Pajaro.....	319	54	40.39	139	58	20.21	4.1483064	8.743
Bartlett.....	347	13	55.96	157	14	50.16	4.0046368	6.280

**LOMA PRIETA, SANTA CLARA AND SANTA CRUZ COUNTIES, CAL.**

This station of the Coast and Geodetic Survey was formerly known as Mount Bache, and is on the highest peak of the range of mountains forming the boundary line between the counties of Santa Clara and Santa Cruz. It may be reached from Wrights on the Southern Pacific by a wagon road for about 4 miles to D. H. Montgomery's ranch, and then by a fair trail for about 6 or 7 miles to the top of the mountain. The underground mark was a 2 by 3 inch brown stone with a copper bolt in the center, 3 feet 2 inches below the surface. A rock with drill hole filled with lead, having cross lines on the top, was placed 24 $\frac{3}{8}$  inches below the surface and three-eighths inch west of the copper bolt in the brown stone. A concrete foundation 3 $\frac{1}{2}$  feet square and 9 inches deep was laid around this stone, and upon it was built a hexagonal pier 30 inches in diameter at the base and 26 inches at the top. An 8 by  $\frac{1}{2}$  inch copper bolt in top of pier marked the center.

°[Latitude 37° 06' 40.912". Longitude 121° 50' 36.423".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Mocho.....	212	04	03.95	32	14	32.67	4.6814337	29.839
Lick.....	214	54	00.48	35	01	18.61	4.4935714	19.361
Gerber.....	238	37	53.85	58	53	42.45	4.6553767	28.101
Madrone.....	248	31	05.58	68	43	02.86	4.4977960	19.550
Murphy.....	265	56	07.85	86	02	19.19	4.1827286	9.464
Corral.....	269	02	45.00	89	14	39.97	4.4662553	18.180
Batcher.....	272	38	09.52	92	52	57.61	4.5610335	22.614
Pacheco.....	282	52	32.40	103	12	39.46	4.7058346	32.299
Santa Ana.....	292	37	25.88	112	59	29.33	4.7706278	36.642
Gilroy.....	293	29	39.81	113	39	26.77	4.4191614	16.312
Thompson.....	305	37	10.10	125	45	24.37	4.3972921	15.511
Madonna.....	311	11	35.22	131	16	39.15	4.2192995	10.296
Lux.....	310	59	06.23	131	10	08.26	4.5610335	22.614
Gavilan.....	323	44	45.39	143	56	25.47	4.6890356	30.366
Pajaro.....	342	41	38.92	162	44	53.88	4.4309190	16.760
Bartlett.....	357	14	34.56	177	15	03.64	4.3957141	15.455

**LUX, SANTA CLARA COUNTY, CAL.**

On western knob of bald hill,  $1\frac{1}{2}$  miles southwest of Sargent, a station on the Southern Pacific (Coast Line) Railroad. Station may be reached on horseback from any direction.

Station mark and signal: An oak tree 11 feet high, placed in the ground a depth of 3 feet.

Reference mark: A bronze triangulation tablet set in rock, 4 feet northwest of signal and station mark.

True azimuth, station to reference mark,  $126^{\circ} 27'$ .

[Latitude  $36^{\circ} 53' 51.907''$ . Longitude  $121^{\circ} 32' 16.454''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	''	°	'	''	Log. meters.	Miles.
Bartlett.....	87	35	08.75	267	24	37.45	4.4160516	16.196
Watsonville.....	95	31	10.30	275	23	08.83	4.2997344	12.390
Loma Prieta.....	131	10	08.26	310	59	06.23	4.5610335	22.614
Thompson.....	142	55	01.60	322	52	13.63	4.0593523	7.124
Gilroy.....	166	43	22.42	346	42	06.63	4.1325515	8.431
Corral.....	184	57	59.01	4	58	50.16	4.3844156	15.058
Batcher.....	202	42	52.69	22	46	36.68	4.3766676	14.792
Pacheco.....	241	12	15.89	61	21	18.72	4.4061085	15.829
Santa Ana.....	268	07	33.07	88	18	32.78	4.4348091	16.911
Gavilan.....	354	08	46.82	174	09	25.86	4.1995939	9.839

**MADONNA, SANTA CLARA COUNTY, CAL. (Not occupied.)**

Station mark: A very prominent tree on Madonna Hill, about 7 miles west of Gilroy.

[Latitude  $37^{\circ} 00' 46.622''$ . Longitude  $121^{\circ} 42' 12.086''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	''	°	'	''	Log. meters.	Miles.
Loma Prieta.....	131	16	39.15	311	11	35.22	4.2192995	10.296
Murphy.....	192	53	04.54	12	54	11.49	4.0898192	7.641
Corral.....	235	54	15.52	56	01	05.73	4.3073100	12.608
Thompson.....	294	56	54.69	115	00	04.93	3.9356804	5.358

**MADRONE, SANTA CLARA COUNTY, CAL.**

Station is on highest point of a ridge known as the Blue Ridge, lying between the main fork and the east fork of Coyote Creek. It is about 5 miles northeast of Madrone Springs, a small summer resort on Soda Springs Creek, a tributary of Coyote Creek from the west. It can be reached on horseback from almost any direction, but probably best from Madrone Springs.

Signal and station mark: A pine tree trimmed up with the top left on it.

Reference mark: Bronze triangulation tablet set in rock on summit of hill, the signal is 223.9 feet north-northwest of tablet. Highest point has scattering trees on it.



[Latitude 37° 12' 53.015"; longitude 121° 30' 49.015". Tablet on summit: Latitude 37° 12' 51.088; longitude 121° 30' 47.654".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Corral.....	00	18	56.76	180	18	55.27	4.0427551	6.857
Thompson.....	19	13	18.82	199	09	37.48	4.4403645	17.128
Loma Prieta.....	68	43	02.86	248	31	05.58	4.4977960	19.550
Lick.....	140	59	10.36	320	54	29.82	4.2579461	11.254
Mocho.....	172	48	49.52	352	47	18.67	4.4685892	18.278
Red.....	192	24	21.71	12	26	19.71	4.3479766	13.846
Gerber.....	218	02	31.51	38	06	22.19	4.1824226	9.457
Orestimba.....	244	34	00.89	64	44	29.85	4.4520375	17.595
Castle.....	270	00	35.17	90	14	41.74	4.2974719	12.326
Howard.....	281	54	53.74	102	05	34.46	4.4209767	16.609
Pacheco.....	318	39	02.78	138	47	14.84	4.4845820	18.964
Batcher.....	331	59	16.73	152	02	08.73	4.1753466	9.305

## MILL, SAN JOAQUIN COUNTY, CAL.

A wooden windmill with 14-foot wheel, on ranch owned by W. C. Miller, about 4 miles southwest of Ripon, on the Southern Pacific Railroad.

Station mark: Center of windmill tower.

[Latitude 37° 43' 20.438". Longitude 121° 11' 32.452".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Kern.....	7	13	44.02	187	12	24.50	4.4054421	15.805
Vernalis.....	36	54	50.91	216	51	31.94	4.1235570	8.259
Moy.....	56	36	29.35	236	29	37.30	4.2967110	12.304
Bell.....	125	44	37.02	305	43	09.28	3.6359280	2.687
Ripon.....	252	40	35.90	72	43	07.12	3.8019704	3.938

## MOCHO, ALAMEDA OR SANTA CLARA COUNTY, CAL.

A station of the Coast and Geodetic Survey.

On the summit of the highest peak of the group of mountains lying to the eastward of Santa Clara Valley, on the eastern flank of the Mount Diablo Range and overlooking the San Joaquin Valley; about 11½ miles northeast from the Lick Observatory on Mount Hamilton and about 30 miles southeast of the town of Livermore. The station was marked in 1879 by a copper bolt sunk in the rock, over which, in 1887, was built a concrete pier 45 inches high by 24 inches square, enlarged to the top to 26 inches, to receive the theodolite.

Since the above description was written another concrete pier has been built about 5 feet east of the station and a small house built over the two piers. The crooked tree at this station was sighted from stations "Red" and "Gerber," but from all other stations a signal over center was sighted.

[Latitude 37° 28' 39.696". Longitude 121° 33' 18.781".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Lick.....	27	02	14.35	206	59	03.95	4.2297124	10.545
Loma Prieta.....	32	14	32.67	212	04	03.95	4.6814337	29.839
Brown.....	158	16	46.61	338	14	25.24	4.1868513	9.554
Oso.....	258	12	43.76	78	19	21.82	4.2150722	10.196
Orestimba.....	300	10	25.93	120	22	27.75	4.5295001	21.031
Red.....	311	12	47.99	131	16	17.40	4.0515329	6.997
Gerber.....	322	45	51.99	142	51	14.33	4.3343459	13.418
Pacheco.....	335	22	57.78	155	32	41.97	4.7581030	35.600
Santa Ana.....	335	38	02.09	155	49	43.91	4.8430541	43.292
Batcher.....	345	47	49.34	165	52	12.58	4.6408546	27.177
Madrone.....	352	47	18.67	172	48	49.52	4.4685892	18.278

## MODESTO, STANISLAUS COUNTY, CAL.

High city water tank in Modesto.

Station mark: Center of water tank.

[Latitude 37° 38' 34.886". Longitude 120° 59' 24.970".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Joven.....	0	40	49.15	180	40	44.22	4.2232140	10.389
Westport.....	19	10	25.15	199	08	58.02	4.0282731	6.632
Orestimba.....	30	27	52.41	210	19	17.95	4.6133547	25.510
Courtney.....	33	36	39.86	213	34	59.53	3.8624533	4.527
Black Gulch.....	44	10	28.63	224	01	54.73	4.4734037	18.482
Kern.....	52	05	57.93	231	57	14.93	4.4265677	16.593
Oso.....	66	12	16.86	245	58	15.44	4.5686249	23.014
Young.....	67	19	03.96	247	15	25.78	3.9777505	5.903
Moy (2).....	86	36	12.94	266	21	57.06	4.5369794	21.396
Vernalis (1).....	86	02	30.84	265	51	47.83	4.4130241	16.083
Butler.....	87	19	09.20	267	14	28.77	4.0519460	7.003
Theobald.....	87	46	43.81	267	43	41.58	3.8646070	4.549
Patrick.....	98	40	01.64	278	33	29.34	4.2019739	9.893
Salida.....	131	44	53.28	311	41	25.11	4.0485074	6.948
Stack.....	182	30	44.10	2	30	53.39	3.9291913	5.279
Riverbank.....	205	03	22.06	25	05	19.41	4.0452347	6.896
Oakdale.....	215	00	24.57	35	05	20.49	4.3144711	12.818
Crane.....	221	56	03.58	42	00	05.95	4.1620078	9.025
Claus.....	232	36	55.50	52	39	33.91	3.9027590	4.967
Walters.....	249	04	27.35	69	14	36.69	4.4171911	16.238
Levison.....	253	07	59.91	73	13	54.16	4.1716075	9.225
Empire.....	272	20	35.48	92	23	49.57	3.8919838	4.845
Hagen.....	274	23	00.81	94	34	04.27	4.4268888	16.605
Hughson.....	294	34	51.25	114	39	26.48	4.0850366	7.553
Turlock.....	320	48	12.87	140	53	43.16	4.3233657	13.083
Ceres.....	330	37	09.32	150	38	31.37	3.8275030	4.177

## MONTPELIER, STANISLAUS COUNTY, CAL. (Not occupied.)

A windmill located by the public school in Montpelier, a station on the Santa Fe Railway. It can not be seen from Dallas.

Station mark: Center of windmill tower.

[Latitude 37° 32' 57.499". Longitude 120° 42' 24.568".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Turlock.....	63	16	59.24	243	12	07.68	4.1194054	8.180
Hughson.....	110	56	25.64	290	50	38.36	4.1749079	9.295
Hall.....	152	23	08.60	332	22	17.53	3.6467811	2.755
Hagen.....	191	02	18.25	11	02	58.60	3.9280379	5.265
Pillsbury.....	252	35	14.75	72	40	29.59	4.1231511	8.251
Bloodsoe.....	292	49	43.77	112	53	39.21	4.0127644	6.399

## MOY, SAN JOAQUIN COUNTY, CAL.

On fence line on top of small hill 7.5 miles south of Banta. It is about 300 feet west of road, on land owned by Peter Moy.

Station mark: Iron bench-mark post.

[Latitude 37° 37' 26.404". Longitude 121° 22' 46.659'']

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Black Butte.....	110	32	26.50	290	28	50.91	3.9657369	5.742
Western Pacific tank.....	160	23	23.00	340	22	02.00	3.9235800	5.284
Banta.....	181	59	03.00	1	59	45.00	4.1534905	8.848
Red barn.....	195	15	32.00	15	17	02.00	4.1391300	8.560
Fitzsimmons.....	201	49	59.79	21	51	46.62	4.0611109	7.153
Manteca.....	216	19	24.16	36	25	26.60	4.3886584	15.206
Hinkle.....	232	37	01.00	52	39	31.00	3.8809600	4.724
Tracy.....	163	37	38.51	345	36	16.95	4.1192620	8.177
Bell.....	234	01	00.34	44	06	24.85	4.2719258	11.622
Mill.....	236	29	37.30	56	36	29.35	4.2967110	12.304
Ripon.....	240	22	11.34	60	31	34.53	4.4141724	16.126
Salina.....	249	44	26.60	69	55	15.01	4.4425550	17.215
Patrick.....	256	21	43.77	76	29	27.64	4.2822830	11.902
Modesto.....	266	21	57.06	86	36	12.94	4.5369794	21.396
Vernalis.....	268	03	55.97	88	07	28.82	3.9322097	5.316
Windwill.....	280	58	00.57	101	03	09.38	4.1018339	7.856
Westport.....	284	21	46.00	104	34	33.88	4.5037590	19.820
Kern.....	316	57	38.81	137	03	10.37	4.2917429	12.164
Oso.....	357	36	55.94	177	37	09.27	4.1110144	8.024

**MURPHY, SANTA CLARA COUNTY, CAL.**

On the highest point of a high hill about 1 mile west of Morgan Hill, a small town on the Southern Pacific Co.'s Coast Line. Animals can be ridden to summit.

Station mark and signal: A small tree left standing; other trees and brush were cut from the summit.

Reference mark: A bronze triangulation tablet set on large rock.

At this station, signal and mark are on same azimuth from position of instrument, the signal being 5.7 feet from instrument and mark 15 feet from instrument. True azimuth, station to reference mark, 247° 17'.

[Latitude 37° 07' 15.489". Longitude 121° 40' 21.006'']

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Madonna.....	12	54	11.49	192	53	04.54	4.0898192	7.641
Loma Prieta.....	86	02	10.19	265	56	07.85	4.1827286	9.464
Lick.....	186	14	48.25	6	15	54.10	4.3912199	15.296
Corral.....	272	30	54.59	92	36	38.28	4.1484306	8.745
Pacheco.....	289	57	46.35	110	11	42.64	4.5622606	22.678
Gilroy.....	322	31	40.94	142	35	17.03	4.1633691	9.051
Thompson.....	342	01	11.94	162	03	15.49	4.2156193	10.209

**MOUNT OSO, STANISLAUS COUNTY, CAL.**

On summit of Mount Oso, 17 miles south of Tracy and 10 miles southwest of Westley. Can be reached from Westley by following due west road, 1 miles north of town about 4 miles, where road turns due south past Mr. G. W. Hamilton's ranch house, to mouth of Ingram Creek Canyon. Road can be followed up canyon about 6 miles from Hamilton's. At forks of creek, at sheep camp, take the right-hand road up a grade. The road stops at an old lone chimney. Ridge south of creek can be followed on horse-back about 2 miles to summit.

It can also be reached from the west side by following road up Hospital Creek canyon, about 19 miles from Vernalis or 2 miles beyond Sperry's ranch, then climb to top.

Station mark and signal: Pine tree about 12 feet high, placed in the ground and braced with four poles.

Reference mark: A bronze triangulation tablet set in rock 5.7 feet southeast of signal.

True azimuth, station to reference mark, 311° 44'.

[Latitude 37° 30' 27.925". Longitude 121° 22' 24.785".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Gerber.....	8	24	24.45	188	23	09.54	4.3172692	12.901
Red.....	35	17	24.37	215	14	16.09	4.1198399	8.188
Mochó.....	78	19	21.82	258	12	43.76	4.2150722	10.196
Brown.....	116	47	36.87	296	38	36.81	4.3864221	15.128
Tracy.....	171	34	04.87	351	32	30.07	4.4138071	16.112
Moy.....	177	37	09.27	357	36	55.94	4.1110144	8.024
Vernalis.....	211	16	52.58	31	20	11.82	4.1884572	9.590
Windmill.....	228	31	44.00	48	36	39.08	4.1999876	9.848
Modesto.....	245	58	15.44	66	12	16.86	4.5686429	23.014
Ranch.....	247	42	25.53	67	51	19.06	4.3657573	14.425
Grayson.....	250	13	22.11	70	20	29.37	4.2622189	11.365
Westley.....	255	01	06.76	75	07	29.71	4.2054832	9.927
Westport.....	260	40	23.66	80	52	57.21	4.4881356	19.120
Turlock.....	271	26	03.08	91	45	32.87	4.6740870	29.338
Kern.....	276	15	54.47	96	21	12.28	4.1106201	8.016
Patterson.....	280	30	16.72	100	39	05.24	4.3365104	13.485
Black Gulch.....	295	39	40.03	115	45	06.50	4.1652690	9.091
Orestimba.....	327	09	52.67	147	15	17.38	4.3849974	15.078

## NEWMAN, STANISLAUS COUNTY, CAL. (Not occupied.)

Station mark: Center of a large black steel water tank in Newman, a town on the Southern Pacific Railroad.

[Latitude 37° 18' 52.506". Longitude 121° 01' 27.013".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Christian.....	24	43	50.78	204	41	18.77	4.1704023	9.199
Cleveland.....	62	07	36.52	242	03	43.93	4.0293702	6.648
Orestimba.....	93	24	02.38	273	16	43.84	4.2514212	11.086
Crow.....	113	30	01.38	293	25	33.12	4.0744560	7.376
Black Gulch.....	130	26	41.98	310	19	24.09	4.3672457	14.474

## NO. 1, STANISLAUS COUNTY, CAL.

A lumber tripod on pasture hill north of road which runs from Waterford to La Grange. Signal can not be seen from road. Turn north across canal at white house on south side of road about 8 miles east of Waterford.

Station mark: An iron bench-mark post under center of tripod.

[Latitude 37° 39' 34.627". Longitude 120° 36' 25.540".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Hagen.....	61	20	54.88	241	17	56.02	3.9129691	5.085
Walters.....	128	31	34.80	308	27	40.82	4.0784010	7.443
Cashman.....	147	56	52.65	327	53	45.51	4.1494960	8.767
Wolfing.....	171	27	44.54	351	27	13.84	3.9180228	5.145
Russian.....	251	47	36.34	71	49	50.17	3.7520325	3.511
Holmes.....	304	17	16.02	124	21	19.39	4.0731554	7.354
Pillsbury.....	334	59	41.74	155	01	17.81	3.9606918	5.676
School.....	353	00	50.99	173	01	27.47	4.0815762	7.498

**OAKDALE, STANISLAUS COUNTY, CAL.**

A lumber tripod on top of hill  $\frac{1}{2}$  miles north of Oakdale and three-quarters of a mile northeast of Burnetts station.

Station mark: A bench-mark post under center of tripod.

[Latitude  $37^{\circ} 47' 42.664''$ . Longitude  $120^{\circ} 51' 21.278''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	''	°	'	''	Log. meters.	Miles.
Crane.....	19	20	09.91	199	19	16.46	3.8097394	4.010
Modesto.....	35	05	20.49	215	00	24.57	4.3144711	12.818
Riverbank.....	46	16	28.69	226	13	30.01	3.9950055	6.143
Cashman.....	282	02	20.13	102	08	21.47	4.1691066	9.172
Walters.....	301	06	18.92	121	11	33.11	4.1665594	9.118
Oakdale Church.....	350	23	47.52	170	24	01.48	3.5241722	2.077

**OAKDALE CHURCH, STANISLAUS COUNTY, CAL. (Not occupied.)**

Methodist Episcopal Church in Oakdale, a town on the Southern Pacific Railroad.  
Station mark: Center of spire.

[Latitude  $37^{\circ} 45' 55.743''$ . Longitude  $120^{\circ} 50' 58.490''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	''	°	'	''	Log. meters.	Miles.
Riverbank.....	65	20	22.93	245	17	10.36	3.9281348	5.266
Oakdale.....	170	24	01.48	350	23	47.52	3.5241722	2.077
Cashman.....	269	06	18.83	89	12	06.09	4.1423894	8.625

**ORESTIMBA, STANISLAUS COUNTY, CAL.**

On highest point of mountain 11 miles due west of Newman, and north of Orestimba Creek; it can be reached from Orestimba School, 6 miles west of Newman, by following road up creek 3 miles to gate where road turns due north uphill. Follow road 2 miles to Stonesifer's cabin, thence by trail up creek half a mile, then follow up ridge on the south to station, about 2 miles.

Station mark and signal: An oak tree 11 feet high placed in the ground 3 feet.

Reference mark: A bronze triangulation tablet set in rock 3.9 feet south of signal.

True azimuth, station to reference mark,  $348^{\circ} 59'$ .

[Latitude  $37^{\circ} 19' 26.221''$ . Longitude  $121^{\circ} 13' 30.373''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	''	°	'	''	Log. meters.	Miles.
Castle.....	25	21	22.13	205	19	00.35	4.1296786	8.376
Batcher.....	36	19	15.29	216	11	39.40	4.4973537	19.530
Madrone.....	64	44	29.85	244	34	00.89	4.4520375	17.595
Gerber.....	89	33	35.28	269	26	56.51	4.2093470	10.062
Red.....	114	58	14.86	294	49	42.62	4.3597532	14.227
Mochó.....	120	22	27.75	300	10	25.93	4.5295001	21.031
Oso.....	147	15	17.38	327	09	52.67	4.3849974	15.078
Black Gulch.....	180	12	47.35	0	12	48.64	4.1477756	8.732
Van Ormer.....	199	12	49.78	19	15	38.21	4.3154824	12.848
Patterson.....	206	33	27.39	26	36	50.23	4.2637837	11.406
Modesto.....	210	19	17.95	30	27	52.41	4.6133547	25.510
Westport.....	214	13	47.10	34	20	54.20	4.4865596	19.051
Joven.....	227	41	44.76	47	50	13.43	4.4442363	17.282
Turlock.....	240	39	32.06	60	53	34.74	4.5920418	24.288
Crow.....	241	55	14.85	61	58	05.31	3.8942543	4.871
Newman.....	273	16	43.84	93	24	02.38	4.2514212	11.086
Gustine.....	291	13	58.38	111	22	06.63	4.3285122	13.239
Stacks.....	300	19	10.25	120	28	06.57	4.4031347	15.721
Cleveland.....	305	50	47.80	125	54	13.50	4.0136237	6.412
Christian.....	321	11	24.08	141	16	09.99	4.2691191	11.547
Howard.....	358	17	36.76	178	17	49.68	4.2476912	10.991

**PACHECO, SANTA CLARA COUNTY, CAL.**

Sharp rock, the highest point of rocky summit of mountain in Santa Clara County, known as Pacheco Peak. The summit has been cleared of laurel trees, but one was left standing about 30 feet northeast of rock used as signal. Peak is about 3 miles southeast of Bell station, a well-known stopping place on Pacheco Pass road, and is most easily reached from this place on horseback.

Signal: Sharp rock, the highest point of summit.

Station mark: A bronze triangulation tablet set in top of rock used as signal.

[Latitude 37° 00' 29.018". Longitude 121° 17' 13.483".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Gavilan.....	36	36	59.77	216	28	36.92	4.5421347	21.651
Lux.....	61	21	18.72	241	12	15.89	4.4061085	15.829
Thompson.....	84	03	00.87	263	51	09.33	4.4684031	18.271
Loma Prieta.....	103	12	39.46	282	52	32.40	4.7058346	32.299
Murphy.....	110	11	42.64	289	57	46.35	4.5622606	22.678
Corral.....	120	33	39.86	300	25	26.87	4.3702019	14.573
Batcher.....	126	34	01.70	306	28	41.90	4.2126976	10.140
Madrone.....	138	47	14.84	318	39	02.78	4.4845820	18.964
Mocho.....	155	32	41.97	335	22	57.78	4.7581030	35.600
Gerber.....	162	57	56.42	342	53	33.88	4.5626024	22.696
Castle.....	179	19	12.14	359	19	05.49	4.3593694	14.214
Howard.....	199	08	24.71	19	10	52.12	4.2847058	11.430
Bareillas.....	264	46	49.16	84	55	47.40	4.3461620	13.788
Santa Ana.....	336	57	30.96	156	59	28.64	4.0927644	7.693

**PAJARO, SANTA CRUZ COUNTY, CAL.**

Station is on a small hill one-fourth mile north of Pajaro and Castorville road and about a mile a little west of south of Pajaro Railroad station. It can be reached in a buggy.

Signal and station mark: An eucalyptus tree about 12 feet above ground and 4 feet or more in the ground.

Reference mark: A United States Geological Survey bronze triangulation tablet set in granite rock which was set in ground at base of tree.

[Latitude 36° 52' 45.422". Longitude 121° 45' 12.438".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Bartlett.....	97	37	45.61	277	35	00.16	3.8380452	4.280
Lillian.....	139	58	20.21	319	54	40.39	4.1483064	8.743
Loma Prieta.....	162	44	53.88	342	41	38.92	4.4309190	16.760
Watsonville.....	170	47	22.36	350	47	06.85	3.6016018	2.483
Church.....	189	05	02.29	9	05	29.07	3.8443243	4.342
School.....	222	30	58.03	42	32	53.32	3.9470803	4.360
Gavilan.....	303	14	48.39	123	23	12.42	4.3970080	15.501

**PATRICK, STANISLAUS COUNTY, CAL.**

An old wooden windmill, near a cedar tree on Mr. Fitzpatrick's land, 6 or 7 miles southwest of Salida. The tower of the windmill has been wrapped with white cloth.

Station mark: Center of windmill tower.

[Latitude 37° 39' 52.222". Longitude 121° 10' 07.150".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Kern.....	15	43	20.91	195	41	09.43	4.2910197	12.144
Vernalis.....	67	20	41.04	247	16	30.11	4.0380988	6.783
Moy.....	76	29	27.64	256	21	43.77	4.2822830	11.902
Jackson.....	230	31	44.96	50	33	06.38	3.6261328	2.627
Salida.....	235	35	20.50	55	38	24.90	3.9520277	5.564
Modesto.....	278	33	29.34	98	40	01.64	4.2019739	9.893
Butler.....	303	02	14.68	123	04	06.47	3.7285138	3.326

**PATTERSON, STANISLAUS COUNTY, CAL. (Not occupied.)**

Station mark: Center of a large steel water tank in town of Patterson, on the Southern Pacific Railroad.

[Latitude 37° 28' 18.694". Longitude 121° 07' 56.380'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Crow.....	5 50 46.97	185 50 14.80	4.1070391	7.950
Orestimba.....	26 36 50.23	206 33 27.39	4.2637837	11.406
Black Gulch.....	73 52 30.56	253 49 08.71	3.9289646	5.726
Oso.....	100 39 05.24	280 30 16.72	4.3365104	13.485
Kern.....	106 48 40.19	286 45 09.42	3.9488164	5.523

**PILLSBURY, STANISLAUS COUNTY, CAL.**

A lumber tripod on hill on H. D. Pillsbury's land, about 12 miles east of Hickman, and 1 or 2 miles southwest of Alfred Davis's place.

Station mark: An iron bench-mark post set under center of tripod.

[Latitude 37° 35' 06.076". Longitude 120° 33' 48.167'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Bloodsøe.....	21 49 55.12	201 48 35.94	3.9334675	5.331
School (Dickinson).....	32 56 18.86	212 55 19.36	3.6439801	2.737
Dallas.....	37 34 21.51	237 27 50.42	4.2713761	11.607
Montpelier.....	72 40 29.59	252 35 14.75	4.1231511	8.251
Hagen.....	111 32 46.36	291 28 11.62	4.0744735	7.376
No. 1.....	155 01 17.81	334 59 41.74	3.9806918	5.676
Wolfing.....	162 50 54.25	342 48 47.43	4.2364223	10.710
Russian.....	188 33 10.51	8 33 48.14	4.0067203	6.311
Holmes.....	254 47 31.13	74 49 58.29	3.7876239	3.810
Thomsen.....	318 32 42.59	138 34 54.25	3.9036801	4.978

**RANCH, STANISLAUS COUNTY, CAL. (Not occupied.)**

Station mark: Center of cupola on residence near the junction of San Joaquin and Tuolumne rivers.

[Latitude 37° 35' 12.675". Longitude 121° 07' 49.301'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Kern.....	40 25 38.20	220 22 02.84	4.1267364	8.319
Oso.....	67 51 19.06	247 42 25.53	4.3657673	14.425

**RED MOUNTAIN, STANISLAUS COUNTY, CAL.**

A well-known mountain at the north end of San Antonio Valley. It is on the second summit from the south end of mountain and about 1 mile northeast of magnesite mine, which is reached by good road from Livermore (30 or 40 miles). San Antonio Valley can also be reached by road from Lick Observatory, but the road is not very good for a heavy load. There is no road to the San Joaquin Valley. No forage can be obtained at the mine but there is good water. Can be reached on horseback from mine. Camp can be located for a reasonable time at Mr. Gerber's ranch, 4 miles south, but he has no hay to sell in large quantities.

Signal: A pine tree with lower limbs cut off, about 25 feet high.

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

Position of instrument was changed to see Orestimba, as signal is not quite on highest point of mountain.

[Latitude 37° 24' 38.914". Longitude 121° 27' 34.351".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Madrone.....	12	26	19.11	192	24	21.71	4.3479766	13.846
Mochó.....	131	16	17.40	311	12	47.99	4.0515329	6.997
Oso.....	215	14	16.09	35	17	24.37	4.1198399	8.188
Black Gulch.....	257	57	01.93	78	05	36.20	4.3276709	13.214
Orestimba.....	294	49	42.62	114	58	14.86	4.3597532	14.227
Gerber.....	334	52	18.76	154	54	11.81	4.0334548	6.711

**RIPON, SAN JOAQUIN COUNTY, CAL. (Not occupied.)**

A light-colored tank house with green roof, in town of Ripon, a station on the Southern Pacific Railroad.

[Latitude 37° 44' 21.582". Longitude 121° 07' 25.326".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Kern.....	18	52	38.82	198	48	48.45	4.4572040	17.805
Moy.....	60	31	34.53	240	22	11.34	4.4141724	16.126
Mill.....	72	43	07.12	252	40	35.90	3.8019704	3.938
Bell.....	93	51	53.45	273	47	54.43	3.9814538	5.954
Salida.....	313	28	54.44	133	30	19.96	3.6737816	2.932

**RIVERBANK, STANISLAUS AND SAN JOAQUIN COUNTIES, CAL.**

A high white tank in Riverbank, a town on the Santa Fe Railway. The tank belongs to the Riverbank Water Co.

Station mark, center of tank.

[Latitude 37° 44' 00.933". Longitude 120° 56' 13.029".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Modesto.....	25	05	19.41	205	03	22.06	4.0452347	6.896
Stack.....	70	08	21.29	250	06	33.14	3.6629653	2.860
Salida.....	78	43	29.55	258	38	03.74	4.1238703	8.265
Oakdale.....	226	13	30.01	46	16	28.69	3.9950055	6.143
Oakdale Church.....	245	17	10.36	65	20	22.93	3.9281348	5.266
Cashman.....	260	04	53.32	80	13	53.03	4.3405264	13.611
Crane.....	261	29	45.28	81	31	50.43	3.7043614	3.146
Walters.....	272	07	25.81	92	15	38.32	4.2949653	12.255
Levison.....	301	10	47.17	121	14	44.39	4.0456656	6.903
Claus.....	342	24	32.45	162	25	13.61	3.7368615	3.390
Empire.....	343	26	07.39	163	27	24.33	4.0343524	6.725

**RUSSIAN, STANISLAUS COUNTY, CAL.**

A 6 by 6 inch post with cross targets, on pasture hill owned by Mr. Rushing, about 6 miles from La Grange, which is nearest stopping place. Cross iron bridge about 2 miles from town and take road that turns to right up hill by bridge. Follow on north side of canal and take road that turns to right.

Signal and station mark: The 6-inch post.

Reference mark: A triangulation tablet set in rock.

True azimuth, station to reference mark, 72° 45', distance, 2.7 feet.

[Latitude 37° 40' 31.829". Longitude 120° 32' 46.531".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Pillsbury.....	8	33	48.14	188	33	10.51	4.0067203	6.311
No. 1.....	71	49	50.17	251	47	36.34	3.7520325	3.511
Wolfing.....	134	16	28.39	314	13	43.74	3.9641017	5.721
Holmes.....	332	25	20.57	152	27	10.24	3.9784706	5.913



## SALIDA, STANISLAUS COUNTY, CAL.

A flagpole on the Salida Grain Co.'s warehouse at Salida, a station on the Southern Pacific Railroad. There is a platform at the base of the pole which can be occupied. Station mark: Center of flagpole.

[Latitude 37° 42' 36.249". Longitude 121° 05' 05.558".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Kern.....	28	01	54.79	207	56	39.21	4.4318997	16.798
Patrick.....	55	38	24.90	235	35	20.50	3.9520277	5.564
Jackson.....	60	08	09.08	240	06	26.11	3.6773654	2.956
Vernalis.....	62	06	02.43	241	58	47.06	4.2959553	12.283
Moy.....	69	55	15.01	249	44	26.60	4.4425550	17.215
Ripon.....	133	30	19.96	313	28	54.44	3.6737816	2.932
Riverbank.....	258	38	03.74	78	43	29.55	4.1238703	8.265
Stack.....	263	07	26.60	83	11	04.24	3.9433400	5.454
Modesto.....	311	41	25.11	131	44	53.28	4.0485074	6.948
Theobald.....	352	22	42.56	172	23	08.35	3.8919282	4.845

## SANTA ANA, SAN BENITO COUNTY, CAL.

A station of the Coast and Geodetic Survey.

On western summit of a double-topped peak, very rocky and covered with oaks, locally known as Henrietta Peak, about 2 miles from the one known as Santa Ana. The station is easily reached from the town of Hollister by going out the main street to the north, crossing the railroad track, and taking the first road to the right or east. Follow this road for about 2 miles to a road running north and south, turn to the north and proceed until a second road leading to the right is reached; take this and proceed easterly, following the main wagon road and crossing the creek at the mouth of the Dos Picachos Canyon. By following the grade which winds up the ridge on the north side of the Dos Picachos Canyon for about 6 or 8 miles a point is reached near the summit of the grade, about halfway between Herrington's ranch house and the Stayton mine, where the wagon road should be left and the backbone of the ridge followed in a southwesterly direction until the station is reached, about half a mile south of and 1,000 feet above Herrington's house.

Station was marked by an irregular-shaped rock with a copper bolt in the top, around which a concrete foundation 3 feet square and about 10 inches deep was laid, and upon this a concrete pier, hexagonal in shape, and 26 inches in diameter, was built. A copper bolt with cross cut upon it was set in top of pier to mark center of station, 5 feet 2½ inches above the subsurface mark. A concrete pier, occupied in 1885 for latitude observations, was 37 feet 6 inches from the triangulation station in azimuth 129° 07' 01".

Instrument was placed over center of mark.

[Latitude 36° 54' 19.368". Longitude 121° 13' 57.739".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Gavilan.....	57	08	31.24	236	58	11.66	4.4946064	18.965
Lux.....	88	18	32.78	268	07	33.07	4.4348091	16.911
Thompson.....	103	47	17.17	283	33	28.84	4.5452822	21.809
Loma Prieta.....	112	59	29.33	292	37	25.88	4.7706278	36.642
Batcher.....	139	39	40.49	319	32	23.27	4.4427328	17.222
Lick.....	143	10	33.43	322	55	43.55	4.7821472	37.627
Mocho.....	155	49	43.91	335	38	02.09	4.8430541	43.292
Pacheco.....	156	59	28.64	336	57	30.96	4.0927644	7.693
Howard.....	182	23	31.76	2	24	01.10	4.4593361	17.893
Barcillas.....	232	10	14.11	52	17	14.01	4.3394995	13.578

**WATSONVILLE SCHOOL, SANTA CRUZ COUNTY, CAL. (Not occupied.)**

A school about  $3\frac{1}{2}$  miles a little north of east of Watsonville, Cal.

Station mark: Center of cupola.

[Latitude  $36^{\circ} 55' 33.524''$ . Longitude  $121^{\circ} 42' 00.429''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Pajaro.....	42 32 53.32	222 30 58.03	3.8470803	4.369
Bartlett.....	69 47 37.62	249 42 56.77	4.0913279	7.668
Gavilan.....	319 31 36.00	139 38 05.18	4.3945289	15.413

**STACKS, MERCED COUNTY, CAL. (Not occupied.)**

The northern of two stacks at oil station about 4 miles south-southeast of Gustine, a town on the Southern Pacific Railroad.

Station mark: Center of northern stack.

[Latitude  $37^{\circ} 12' 30.985''$ . Longitude  $120^{\circ} 58' 44.658''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Christian.....	80 38 10.83	260 34 00.83	4.0143355	6.422
Cleveland.....	116 41 07.26	296 35 36.71	4.1779102	9.360
Orestimba.....	120 28 06.57	300 19 10.25	4.4031347	15.721

**STACK, STANISLAUS COUNTY, CAL.**

Station mark: Center of stack on mill about 3 miles west of Riverbank and 6 miles north of Modesto.

[Latitude  $37^{\circ} 43' 10.182''$ . Longitude  $120^{\circ} 59' 09.765''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Modesto.....	2 30 53.39	182 30 44.10	3.9291913	5.279
Salida.....	83 11 04.24	263 07 26.60	3.9433400	5.454
Riverbank.....	250 06 33.14	70 08 21.29	3.6629653	2.860
Claus.....	301 17 25.26	121 19 54.51	3.8449099	4.348

**THEOBALD, STANISLAUS COUNTY, CAL.**

A high red wooden tank on Theobald's ranch (Mrs. Cassius Crow, owner), located  $4\frac{1}{2}$  miles west of Modesto on north side of road.

Station mark: Center of tank.

[Latitude  $37^{\circ} 38' 25.578''$ . Longitude  $121^{\circ} 04' 23.379''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Young.....	23 09 52.92	203 09 16.91	3.5655681	2.285
Kern.....	40 25 23.43	220 19 42.38	4.3261494	13.167
Butler.....	86 24 59.53	266 23 21.34	3.5965564	2.454
Salida.....	172 23 08.35	352 22 42.56	3.8919282	4.845
Modesto.....	267 43 41.58	87 46 43.81	3.8546070	4.549

**THOMSEN, MERCED COUNTY, CAL.**

A lumber tripod on Henry Thomsen's place, 6 miles west of Snelling. Follow railroad from Snelling to Hopetown, then turn due west and take first main north and south road. Signal is on a little butte about 2 miles north of house and about one-fourth mile west of road.

Station mark: An iron bench-mark post set under center of tripod.

[Latitude 37° 31' 51.272". Longitude 120° 30' 12.169'.]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Bloodsøe.....	77	02	28.17	256	58	57.48	3.9403839	5.417
School.....	106	42	58.36	286	39	47.29	3.9050916	4.994
Pillsbury.....	138	34	54.25	318	32	42.59	3.9036801	4.978
Holmes.....	184	38	55.26	4	39	10.64	3.8829431	4.746

**THOMPSON, SANTA CLARA COUNTY, CAL.**

Station is on highest point of bald mountain about 2 miles southeast of Gilroy, a town on the Southern Pacific Railroad (Coast Line). The land is owned by the Miller & Lux Co., and can be easily reached on horseback from the California Wine Association's headquarters at the foot of mountain.

Station mark and signal: An oak tree set in ground.

Reference mark: A bronze triangulation tablet cemented in rock 4.4 feet northwest of signal. Instrument placed over tablet.

True azimuth, station to reference mark, 122° 15'.

[Latitude 36° 58' 48.509". Longitude 121° 36' 55.953'.]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Madonna.....	115	00	04.93	294	56	54.69	3.9356804	5.358
Loma Prieta.....	125	45	24.37	305	37	10.10	4.3972921	15.511
Murphy.....	162	03	15.49	342	01	11.94	4.2156193	10.209
Lick.....	176	37	08.40	356	36	10.30	4.6038834	24.959
Madrone.....	199	09	37.48	19	13	18.82	4.4403645	17.128
Corral.....	210	57	09.38	31	00	48.97	4.2429236	10.871
Gilroy.....	223	01	41.06	43	03	13.40	3.7449825	3.454
Batcher.....	231	26	52.85	51	33	25.41	4.3134420	12.788
Pacheco.....	263	51	09.33	84	03	00.87	4.4684031	18.271
Santa Ana.....	283	33	28.84	103	47	17.17	4.5452822	21.809
Lux.....	322	52	13.63	142	55	01.60	4.0593523	7.124
Gavilan.....	341	02	47.79	161	06	14.56	4.4202423	16.353

**TRACY, SAN JOAQUIN COUNTY, CAL.**

High red tank in town of Tracy, Cal.

Station mark: Center of tank.

[Latitude 37° 44' 19.886". Longitude 121° 25' 00.077'.]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Brown.....	50	40	23.58	230	32	57.01	4.3649212	14.397
Kern.....	328	24	15.23	148	31	08.66	4.5018199	19.732
Moy.....	345	36	16.95	165	37	38.51	4.1192620	8.177
Oso.....	351	32	30.07	171	34	04.87	4.4138071	16.112

## TURLOCK, STANISLAUS COUNTY, CAL.

An iron city tank in Turlock. It is east and north of twin tank in same town.  
Station mark: Center of tank.

[Latitude 37° 29' 45.251". Longitude 120° 50' 23.269".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Orestimba.....	60	53	34.74	240	39	32.06	4.5920418	24.288
Black Gulch.....	81	42	29.84	261	28	27.24	4.5365767	21.376
Joven.....	88	23	38.38	268	18	03.75	4.1306910	8.395
Kern.....	89	56	53.05	269	42	41.20	4.5362790	21.361
Oso.....	91	45	32.87	271	26	03.08	4.6740870	29.338
Westport.....	110	26	45.69	290	19	48.76	4.2536186	11.142
Keyes.....	134	59	54.45	314	57	21.56	3.9401931	5.414
Ceres.....	136	21	18.80	316	17	10.62	4.1606864	8.996
Modesto.....	140	53	43.16	320	48	12.87	4.3233657	13.083
Hughson.....	168	48	32.91	348	47	37.56	4.0599436	7.133
Waterford.....	203	27	38.03	23	30	34.60	4.2512474	11.081
Hickman.....	209	45	31.46	29	48	51.82	4.2105739	10.091
Hagen.....	223	08	56.18	43	14	28.32	4.2908557	12.140
Hall.....	224	29	55.41	44	33	56.05	4.1406707	8.591
Denair.....	228	43	00.23	48	44	43.35	3.7430046	3.438
Montpelier.....	243	12	07.68	63	16	59.24	4.1194054	8.180
Dallas.....	270	54	01.77	90	57	36.79	3.9384440	5.393

## VAN ORMER, STANISLAUS COUNTY, CAL. (Not occupied.)

Station mark: Center of the most western stack at oil pumping station at Van Ormer, on the Southern Pacific Railroad.

[Latitude 37° 29' 59.472". Longitude 121° 08' 53.350".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Orestimba.....	19	15	38.21	199	12	49.78	4.3154824	12.848
Black Gulch.....	51	01	35.47	230	58	48.22	3.9390751	5.400
Kern.....	85	40	33.25	265	37	37.09	3.8530434	4.430

## VERNALIS, SAN JOAQUIN COUNTY, CAL.

Station mark: Center of smokestack at Vernalis pumping station on Southern Pacific Railroad, 12 miles southeast of Tracy, Cal.

[Latitude 37° 37' 35.628". Longitude 121° 16' 57.991".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Oso.....	31	20	11.82	211	16	52.58	4.1884572	9.590
Moy.....	88	07	28.82	268	03	55.97	3.9322097	5.316
Bell.....	198	43	35.73	18	45	27.11	4.1427815	8.632
Mill.....	216	51	31.94	36	54	50.91	4.1235570	8.259
Salida.....	241	58	47.06	62	06	02.43	4.2959553	12.283
Patrick.....	247	16	30.11	67	20	41.04	4.0380988	6.783
Butler.....	264	52	42.58	84	58	45.18	4.1648865	9.083
Modesto.....	265	51	47.83	86	02	30.84	4.4130241	16.083
Kern.....	341	49	00.54	161	50	59.57	4.1866652	9.550
Black Gulch.....	345	12	47.07	165	14	54.87	4.3053402	12.551

## VERNALIS WINDMILL, STANISLAUS COUNTY, CAL. (Not occupied.)

A lone windmill about 3½ miles southeast of Vernalis, a station on the Southern Pacific Railroad.

Station mark: Center of windmill tower.

[Latitude 37° 36' 08.090". Longitude 121° 14' 20.674".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Oso.....	48	36	39.08	228	31	44.00	4.1998876	9.848
Moy.....	101	03	09.38	280	58	00.57	4.1018339	7.856
Kern.....	355	31	29.44	175	31	52.56	4.0770460	7.420

**WALTERS, STANISLAUS COUNTY, CAL.**

A lumber tripod on butte about a mile south of county road from Oakdale to Coopers-town, about 9 miles southeast of Oakdale on Mr. G. C. Walter's place.

Station mark: An iron bench-mark post, under center of tripod.

[Latitude 37° 43' 36.462". Longitude 120° 42' 48.206".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Waterford.....	23	38	14.41	203	36	33.27	4.0050559	6.286
Levison.....	63	56	30.78	243	52	15.77	4.0558776	7.067
Modesto.....	69	14	36.69	249	04	27.35	4.4171911	16.238
Riverbank.....	92	15	38.32	272	07	25.81	4.2949652	12.255
Crane.....	95	53	00.04	275	46	52.64	4.1695734	9.182
Windmill.....	107	58	19.08	287	56	26.76	3.6743535	2.936
Oakdale.....	121	11	33.11	301	06	18.92	4.1665594	9.118
Cashman.....	202	39	35.26	22	40	22.24	3.6880395	3.030
Wolfling.....	264	49	56.10	84	53	19.55	3.9124446	5.079
No. 1.....	308	27	40.82	128	31	34.80	4.0784010	7.443
Hagen.....	349	03	05.11	169	03	59.99	4.0642228	7.204

**WATERFORD, STANISLAUS COUNTY, CAL. (Not occupied.)**

A church spire, with red roof, in town of Waterford, a station on the Santa Fe Railway.

Station mark: Center of spire.

[Latitude 37° 38' 35.805". Longitude 120° 45' 33.664".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Turlock.....	23	30	54.60	203	27	38.03	4.2512474	11.081
Hughson.....	61	23	30.26	241	19	38.04	4.0265409	6.605
Levison.....	124	42	46.12	304	40	12.44	3.8748880	4.658
Walters.....	203	36	33.27	23	38	14.41	4.0050559	6.286
Hagen.....	288	38	22.45	108	40	58.32	3.8199323	4.105
Hall.....	338	19	11.54	158	20	15.83	3.8448338	4.347
Dallas.....	354	35	12.58	174	35	51.39	4.2193571	19.297

**WATSONVILLE, SANTA CRUZ COUNTY, CAL. (Not occupied.)**

Station mark: Center of spire on a church in Watsonville.

[Latitude 36° 54' 53.375". Longitude 121° 45' 38.276".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Bartlett.....	63	54	09.97	243	51	39.96	3.8381432	4.280
Lux.....	95	31	10.30	275	23	08.83	4.2997344	12.390
Gavilan.....	309	19	46.67	129	28	26.40	4.4440520	17.274
Pajaro.....	350	47	06.85	170	47	22.36	3.6016018	2.483

**WESTLEY, STANISLAUS COUNTY, CAL. (Not occupied.)**

Station mark center of water tank at school on west side of town of Westley on the Southern Pacific Railroad.

[Latitude 37° 32' 41.426". Longitude 121° 11' 56.091".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Black Gulch.....	12	13	00.52	192	12	04.43	4.0295501	6.651
Kern.....	25	20	16.06	205	19	11.11	3.7868921	3.804
Oso.....	75	07	29.71	255	01	06.76	4.2034832	9.927

**WESTPORT, STANISLAUS COUNTY, CAL.**

Station mark center of steeple on Westport Methodist Episcopal Church.

[Latitude 37° 33' 07.882". Longitude 121° 01' 47.773".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Orestimba.....	34	20	54.20	214	13	47.10	4.4865596	19.051
Black Gulch.....	56	48	56.84	236	41	50.42	4.3132812	12.783
Kern.....	70	10	42.66	250	03	27.19	4.2711272	11.600
Oso.....	80	52	57.21	260	40	23.66	4.4881356	19.120
Moy.....	104	35	33.88	284	21	46.00	4.5037590	19.820
Courtney.....	172	29	10.94	352	28	57.79	3.6072166	2.515
Modesto.....	199	08	58.02	19	10	25.15	4.0282731	6.632
Ceres.....	238	08	43.34	58	11	32.38	3.9034910	4.976
Turlock.....	290	19	48.76	110	26	45.69	4.2536186	11.142
Joven.....	333	29	35.53	153	30	57.60	3.8701367	4.608

**WINDMILL, STANISLAUS COUNTY, CAL. (Not occupied.)**

A steel windmill near old barn and deserted shack on south side of Oakdale and Cooperstown road, 7 miles southeast of Oakdale.

Station mark center of windmill tower.

[Latitude 37° 44' 23.705". Longitude 120° 45' 51.749".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Levison.....	41	32	04.99	221	29	42.22	3.9357975	5.360
Crane.....	90	17	17.82	270	13	02.71	4.0088101	6.341
Cashman.....	244	27	10.84	64	29	50.20	3.8488699	4.388
Walters.....	287	56	26.76	107	58	19.08	3.6743535	2.936

**YOUNG, STANISLAUS COUNTY, CAL.**

A high wooden windmill on Mr. William Young's place, about 6 miles southwest of Modesto. The windmill is north of the white tank house and dwelling on the north side of the road.

Station mark: Center of windmill tower.

[Latitude 37° 36' 35.902". Longitude 121° 05' 22.362".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Kern.....	43	56	41.34	223	51	36.36	4.2482795	11.006
Butler.....	141	27	59.09	321	26	56.94	3.6027343	2.489
Theobald.....	203	09	16.91	23	09	52.92	3.5655681	2.285
Modesto.....	247	15	25.78	67	19	03.96	3.9777506	5.903

Arena, Atwater, Cressy, Gustine, Merced, Mitchell School, Stevenson, Turlock, and Winton  $7\frac{1}{2}'$  quadrangles, and Edendale  $15'$  quadrangle.

**MERCED AND STANISLAUS COUNTIES.**

During the season of 1914 C. L. Nelson extended triangulation over the above-named quadrangles. The work was based on stations Bloodsoe, Dallas, Joven, Thomsen, and Turlock, previously located in this area, on North American datum. Twenty-seven new stations were occupied and 17 points were located by intersection.

**AMSTERDAM, MERCED COUNTY, CAL.**

A lumber tripod on hill about 1 mile southwest of Amsterdam.

Station mark: Iron post under center of tripod.

[Latitude  $37^{\circ} 25' 38.816''$ . Longitude  $120^{\circ} 33' 07.606''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
R. R. Red.....	10	56	38.38	190	56	01.69	3.8938515	4.866
Winton.....	49	51	05.64	229	48	54.14	3.8430305	4.329
Cressy.....	85	34	29.97	265	29	17.70	4.1029013	7.875
Dallas.....	114	01	38.55	293	54	43.51	4.2637301	11.405
Dry Creek.....	139	38	56.82	319	37	02.88	3.8510179	4.418
Bloodsoe.....	156	16	12.62	336	14	28.91	4.0171954	6.465
Thomsen.....	200	33	40.76	20	35	27.51	4.0886622	7.621
Wassom.....	250	44	21.65	70	47	00.81	3.8336014	4.236
Super.....	269	07	10.50	89	11	44.09	4.0441140	6.878
Blacksmith.....	278	29	30.80	98	35	36.48	4.1750801	9.299
Lighthouse.....	291	10	12.23	111	11	05.65	3.8651171	1.440
Nairn.....	335	21	47.35	155	23	01.72	3.8590502	4.492
Merced.....	335	30	18.05	155	32	48.29	4.1674108	9.136

**BLACKSMITH, MERCED COUNTY, CAL.**

A lumber signal on top of pasture hill about 2 miles northeast of Merced reservoir.

Station mark: An iron post under a cairn.

[Latitude  $37^{\circ} 24' 26.708''$ . Longitude  $120^{\circ} 23' 05.779''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Merced.....	38	01	52.87	217	58	17.90	4.1511041	8.800
Lakeside School.....	38	26	17.53	218	24	34.38	3.8277024	4.179
Nairn.....	69	48	02.42	249	43	11.34	4.0992809	7.810
Lighthouse.....	96	18	00.51	276	12	48.26	4.1042753	7.900
Amsterdam.....	98	35	36.48	278	29	30.80	4.1750801	9.299
Wassom.....	118	09	29.67	298	06	03.03	3.9767853	5.890
Super.....	122	37	10.43	302	35	38.27	3.6461410	2.751
Hurricane.....	321	23	46.90	141	25	40.76	3.8690886	4.597
South Point.....	337	23	40.96	157	25	55.17	4.1515650	8.809
Monument.....	357	06	20.74	177	06	36.17	4.0937836	7.711

**BLOODSOE, MERCED COUNTY, CAL.**

Lumber tripod on pasture hill of Mr. G. W. Bloodsøe's ranch. Nearest stopping place is Hickman, 6 miles southwest of Montpelier on the Santa Fe Railroad.

Station mark: An iron post set under center of tripod.

[Latitude 37° 30' 47.722". Longitude 120° 35' 58.085'".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Winton.....	4	36	53.25	184	36	25.28	4.1480588	8.738
Dry Creek.....	5	46	28.07	185	46	17.78	3.6155633	2.564
Roadmill.....	63	13	16.00	243	11	19.16	3.7227303	3.282
Dallas.....	80	42	32.53	260	37	20.87	4.1052710	7.918
Thomsen.....	256	58	57.48	77	02	28.16	3.9403839	5.417
Tank.....	276	47	18.26	96	52	57.07	4.1387903	8.553
Super.....	301	29	16.60	121	35	34.17	4.2527132	11.119
Wassom.....	304	22	46.12	124	27	09.18	4.1097493	8.000
Lighthouse.....	328	28	32.32	148	31	09.49	4.0846315	7.551
Amsterdam.....	336	14	28.91	156	16	12.62	4.0171954	6.465

**BRIDGE, MERCED COUNTY, CAL.**

A lumber tripod about 150 yards northeast of State highway and Southern Pacific Railroad, about 300 yards north of Merced River.

Station mark: An iron post under center of tripod.

[Latitude 37° 24' 13.379". Longitude 120° 44' 36.961'".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Leedom.....	133	16	25.43	313	14	35.83	3.7845550	3.784
Turlock.....	140	16	10.55	320	12	39.99	4.1241505	8.270
Dallas.....	180	58	02.59	0	58	06.81	4.0039668	6.271
Winton.....	279	02	38.12	99	07	25.31	4.0711270	7.319
Livingston.....	315	57	59.11	135	58	47.95	3.4542817	1.769
Swansen.....	338	56	32.61	158	57	55.30	3.9701677	5.801
Curtner.....	354	35	43.61	174	35	56.70	3.7508378	3.501

**CURTNER, MERCED COUNTY, CAL.**

A lumber tripod on top of low sand hill on Curtner ranch, about 3 miles southwest of Livingston and about one-half mile south of east-west oiled road and about one-half mile west of north-south oiled road.

Station mark: Iron bench-mark post set under center of tripod.

[Latitude 37° 21' 11.429". Longitude 120° 44' 15.399'".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Stilt.....	18	26	58.02	198	25	39.09	4.0060185	6.300
Tarweed.....	31	38	45.33	211	37	43.76	3.6780040	2.960
Tree Mill.....	92	42	59.33	272	40	01.23	3.8592457	4.494
Bridge.....	174	35	56.70	354	35	43.61	3.7508378	3.501
Livingston.....	202	07	01.80	22	07	37.52	3.5849892	2.390
Winton.....	251	18	19.26	71	22	53.19	4.0689655	7.283
W. C.....	279	14	11.53	99	17	47.81	3.9489693	5.525
Swansen.....	317.	42	15.41	137	43	24.97	3.6228253	2.607



**CRESSEY, MERCED COUNTY, CAL.**

On summit of hill 1 mile west of town of Cressey, on the Santa Fe Railway, about 100 feet south of road and about 200 yards southeast of Merced River.

Signal: A lumber tripod.

Station mark: An iron post.

[Latitude 37° 25' 06.788". Longitude 120° 41' 41.470".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Turlock.....	123 50 33.30	303 45 15.97	4.1884452	9.590
Dallas.....	153 52 51.22	333 51 08.71	3.9733707	5.844
Amsterdam.....	265 29 17.70	85 34 29.97	4.1029013	7.875
Winton.....	295 35 10.52	115 38 11.16	3.9090948	5.040

**DALLAS, STANISLAUS OR MERCED COUNTY, CAL.**

A lumber tripod on Mrs. Hickman's land, located about 5½ miles due east of Turlock and 500 feet north of county road running from Turlock to Snelling.

Station mark: Triangulation tablet set in rock under center of tripod.

[Latitude 37° 29' 40.680". Longitude 120° 44' 30.025".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Bridge.....	0 58 06.81	180 58 02.59	4.0039658	6.271
Leadom.....	37 53 22.72	217 51 28.79	3.8748583	4.658
Turlock.....	90 57 36.79	270 54 01.77	3.9384440	5.393
Bloodsue.....	260 37 20.87	80 42 32.53	4.1052710	7.918
Road Mill.....	272 15 35.01	92 18 49.78	3.8958438	4.889
Dry Creek.....	279 28 23.83	99 33 25.09	4.0910301	7.663
Amsterdam.....	293 54 43.51	114 01 38.55	4.2637301	11.405
Winton.....	316 10 27.13	136 15 10.40	4.2188775	10.286
Cressey.....	333 51 08.71	153 52 51.22	3.9733707	5.844

**DRY CREEK, MERCED COUNTY, CAL.**

On summit of hill about 100 yards northeast of road and 200 yards northwest of Dry Creek.

Station mark: A bottle buried in the ground under center of tripod and under an iron post.

[Latitude 37° 28' 34.555". Longitude 120° 36' 14.981".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Winton.....	4 07 49.47	184 07 31.77	3.9972663	6.175
Dallas.....	99 33 25.09	279 28 23.83	4.0910301	7.663
Road Mill.....	111 52 07.52	291 50 21.02	3.6658718	2.879
Bloodsue.....	185 46 17.78	5 46 28.07	3.6155633	2.564
Thomsen.....	235 43 56.50	55 47 37.38	4.0325899	6.698
Tank.....	260 01 02.81	80 06 51.76	4.1553506	8.886
Wassom.....	285 59 28.96	106 04 02.18	4.0601601	7.137
Lighthouse.....	312 43 41.72	132 46 29.10	3.9644879	5.726
Amsterdam.....	319 37 02.88	139 38 56.82	3.8519179	4.418

**EAST END, MERCED COUNTY, CAL. (Not occupied.)**

[Latitude 37° 09' 04.701". Longitude 120° 41' 38.253".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Lizard.....	180 06 27.61	0 06 28.24	4.1340065	8.471
Lost.....	208 44 40.75	28 46 18.86	3.9202851	5.172

**EYRAUD (1), MERCED COUNTY, CAL.**

High cement silo on the Eyraud ranch, about 7 miles southeast of Atwater.

[Latitude 37° 13' 39.437". Longitude 120° 33' 12.037".]

To station—	Azimuth.			Back azimuth.		Distance.	
	°	'	"	°	'	Log. meters.	Miles.
Merced.....	215	11	50.41	35	14	4.0320386	6.689
Hurricane.....	233	59	53.82	54	07	4.3828852	15.005
Monument.....	244	02	35.39	64	08	4.2381552	10.752
South Point.....	251	19	24.08	71	27	4.3327504	13.360

**EYRAUD (2), MERCED COUNTY, CAL.**

High cement silo on the Eyraud ranch, about 7 miles southeast of Atwater.

Station mark: Center of silo.

[Latitude 37° 13' 39.353". Longitude 120° 33' 12.146".]

To station—	Azimuth.			Back azimuth.		Distance.	
	°	'	"	°	'	Log. meters.	Miles.
Red chimney.....	38	27	31.29	218	26	3.5898351	2.416
Poplar A.....	49	28	44.79	229	26	3.8221991	4.126
Poplar C.....	49	52	43.79	229	50	3.9216519	5.188
Lost.....	82	10	01.39	262	06	3.9322484	5.316
Horse.....	115	11	47.45	295	08	3.8859770	4.779

**HORSE, MERCED COUNTY, CAL.**

A lumber tripod 6 miles south of Atwater, 40 yards east of tributary to Black Rascal Creek, and 20 feet east of unfenced road to white ranch buildings that lie about 0.8 mile to the south.

Station mark: Iron bench-mark post.

[Latitude 37° 15' 25.469". Longitude 120° 37' 54.549".]

To station—	Azimuth.			Back azimuth.		Distance.	
	°	'	"	°	'	Log. meters.	Miles.
Lost.....	18	48	38.61	198	48	3.6713635	2.916
Lizard.....	109	04	36.54	289	02	3.7637639	3.607
W. C.....	176	17	24.54	356	17	3.9662765	5.749
Eyraud (2).....	295	08	56.54	115	11	3.8859770	4.779
Poplar A.....	345	49	11.54	165	49	3.8935345	4.863
Poplar C.....	356	09	10.31	176	09	3.9381907	5.389

**HURRICANE, MERCED COUNTY, CAL.**

Low signal with cloth frames and wound with barbed wire on prominent round hill about 1½ miles northeast of deserted cattle-ranch building.

Station mark: Iron bench-mark post.

[Latitude 37° 21' 19.143". Longitude 120° 19' 58.235".]

To station—	Azimuth.			Back azimuth.		Distance.	
	°	'	"	°	'	Log. meters.	Miles.
Monument.....	31	07	40.84	211	06	3.8878027	4.799
Eyraud (1).....	54	07	54.76	233	59	4.3828852	15.005
Merced.....	68	05	31.15	248	00	4.1578133	8.936
Lakeside School.....	93	22	18.27	273	18	3.9450425	5.475
Lighthouse.....	112	36	59.49	292	29	4.2715056	11.611
Blacksmith.....	141	25	40.76	321	23	3.8690886	4.597
South Point.....	353	31	22.38	173	31	3.8665005	4.569

## JOVEN, STANISLAUS COUNTY, CAL.

A wooden windmill just east of flat-roofed tank house, which may be occupied, 9 miles west of Turlock on Mr. Young's place.

Station mark: Center of windmill tower.

[Latitude 37° 29' 32.613". Longitude 120° 59' 33.051".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Taylor.....	29	36	00.35	209	34	52.01	3.7474348	3.474
North Mill.....	86	14	20.40	266	12	59.94	3.5124963	2.022
Turlock.....	268	18	03.75	88	23	38.38	4.1306910	8.395
West End.....	299	36	46.88	119	39	00.99	3.7945667	3.872
Flagstaff.....	304	08	54.50	124	10	51.52	3.7559769	3.543
New Tower.....	332	58	31.51	153	00	44.70	4.0740378	7.369
Lone Mill.....	343	31	47.70	163	32	35.67	3.8349871	4.250

## LAKESIDE SCHOOL, MERCED COUNTY, CAL. (Not occupied.)

Station mark: Cupola of Lakeside School, southwest of Merced reservoir.

[Latitude 37° 21' 35.803". Longitude 120° 25' 55.669".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Merced.....	37	38	05.17	217	36	13.34	3.8713685	4.621
Nairn.....	96	55	09.99	276	52	02.17	3.8848483	4.766
Lighthouse.....	128	12	24.45	308	08	55.53	4.0320428	6.690
Super.....	183	20	58.75	3	21	09.81	3.8840584	4.764
Blacksmith.....	218	24	34.38	38	26	17.53	3.8277024	4.179
Hurricane.....	273	18	41.38	93	22	18.27	3.9450425	5.475

## LEEDOM, MERCED COUNTY, CAL.

Station is mill on tank tower which forms part of dwelling house on Leedom's ranch, 1 mile west of Delhi, on the Southern Pacific Railroad. The owner of the house lives about 200 yards east of tank house. Station is about 100 feet south of road.

Observation platform was built on top of tank roof and occupied.

Station mark: Center of windmill.

[Latitude 37° 26' 28.734". Longitude 120° 47' 37.310".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Turlock.....	146	04	03.58	336	02	22.64	3.8635084	4.538
Dallas.....	217	51	28.79	37	53	22.72	3.8748583	4.658
Bridge.....	313	14	35.83	133	16	25.43	3.7845550	3.784

## LIGHTHOUSE, MERCED COUNTY, CAL.

Willow tree set in top of Lighthouse Hill, about three-quarters of a mile south of Amsterdam, about one-quarter mile west of road and railroad.

Station mark: Center of willow signal tree.

[Latitude  $37^{\circ} 25' 11.653''$ . Longitude  $120^{\circ} 31' 39.699''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
R. R. Red.....	28	02	53.19	208	01	23.12	3.8900205	4.824
Winton.....	63	59	40.64	243	56	25.75	3.9207112	5.177
Amsterdam.....	111	11	05.65	291	10	12.23	3.3651171	1.440
Dry Creek.....	132	46	29.10	312	43	41.72	3.9644879	5.726
Bloodsue.....	148	31	09.49	328	28	32.32	4.0846315	7.551
Thomsen.....	189	53	42.81	9	54	36.07	4.0971237	7.771
Wasson.....	234	11	06.33	54	12	52.04	3.7219397	3.276
Super.....	263	33	45.75	83	37	25.89	3.9524544	5.569
Blacksmith.....	276	12	48.26	96	18	00.51	4.1042753	7.900
Hurricane.....	292	29	53.55	112	36	59.49	4.2715056	11.611
Lakeside School.....	308	08	55.53	128	12	24.45	4.0320428	6.690
Merced.....	342	35	55.06	162	37	31.95	4.1187726	8.168
Nairn.....	351	33	53.35	171	34	14.33	3.7631514	3.602

## LIVINGSTON, MERCED COUNTY, CAL. (Not occupied.)

White tower on church just east of Hotel Idanha in Livingston. Tower can be occupied.

Station mark: Center of tower.

[Latitude  $37^{\circ} 23' 06.995''$ . Longitude  $120^{\circ} 43' 16.540''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Curtner.....	22	07	37.52	202	07	01.80	3.5849892	2.390
Bridge.....	135	58	47.95	315	57	59.11	3.4542817	1.769

## LIZARD, MERCED COUNTY, CAL.

A lumber tripod signal on high sand dune about 4 miles south of Swansen.

Station mark: Iron bench-mark post set under center of tripod.

[Latitude  $37^{\circ} 16' 26.951''$ . Longitude  $120^{\circ} 41' 37.213''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
East End.....	0	06	28.24	180	06	27.61	4.1346065	8.471
Tree J.....	52	57	00.47	232	53	47.31	3.9938074	6.126
Still.....	83	12	36.17	263	09	41.51	3.8547100	4.447
Tarweed.....	126	24	29.44	306	21	52.07	3.9001301	4.937
Swansen.....	169	17	47.36	349	17	21.00	3.7608871	3.583
W. C.....	213	37	55.09	33	39	55.30	3.9452260	5.477
Horse.....	289	02	21.72	109	04	36.54	3.7637693	3.667
Lost.....	327	53	03.24	147	54	40.86	3.8739444	4.648

## LONE MILL, STANISLAUS COUNTY, CAL.

Iron mill near watering trough in large field. A galvanized-iron tank, about 4 feet off the ground, lies about 10 feet to the northwest.

Station mark: Center of mill.

# CALIFORNIA.

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[Latitude 37° 25' 59.873". Longitude 120° 58' 14.185".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Taylor.....	109	52	17.09	289	50	20.85	3.6987425	3.105
Joven.....	163	32	35.67	343	31	47.70	3.8349871	4.250
West End.....	225	00	19.88	45	01	45.96	3.6919416	3.057
Turlock.....	238	58	47.85	59	03	34.29	4.1302786	8.387
New Tower.....	319	16	49.76	139	18	14.94	3.7231345	3.285

## LOST, MERCED COUNTY, CAL.

A lumber tripod 7 miles southwest of Atwater, on low levee, about one-half mile south of junction of two sloughs.

Station mark: An iron post.

[Latitude 37° 13' 01.391". Longitude 120° 38' 55.911".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
East End.....	28	46	18.86	208	44	40.75	3.9202851	5.172
Lizard.....	147	54	40.86	327	53	03.24	3.8739444	4.648
Horse.....	198	48	01.48	18	48	38.61	3.6713635	2.915
Eyraud.....	262	06	33.44	82	10	01.39	3.9322484	5.316
Red Chimney.....	287	10	46.94	107	13	15.51	3.8022145	3.941
Poplar A.....	312	30	35.24	132	31	59.35	3.6678604	2.892
Poplar C.....	333	33	07.14	153	33	58.49	3.6725273	2.923

## MERCED, MERCED COUNTY, CAL.

Center of cupola of courthouse in Merced.

[Latitude 37° 18' 24.733". Longitude 120° 29' 00.061".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Eyraud.....	35	14	22.99	215	11	50.41	4.0320386	6.689
Winton.....	127	55	52.07	307	51	10.57	4.1605318	8.993
Amsterdam.....	155	32	48.29	335	30	18.05	4.1674108	9.136
Nairn.....	155	41	02.32	335	39	46.45	3.8735923	4.645
Lighthouse.....	162	37	31.95	342	35	55.06	4.1187726	8.168
Wassom.....	181	17	09.35	1	17	18.02	4.1940220	9.713
Super.....	200	11	26.66	20	13	29.63	4.1593636	8.968
Lakeside School.....	217	36	13.34	37	38	05.17	3.8713685	4.621
Blacksmith.....	217	58	17.90	38	01	52.87	4.1511041	8.800
Hurricane.....	248	00	02.58	68	05	31.15	4.1578133	8.936
Monument.....	277	29	37.49	97	33	27.60	3.9746578	5.861
South Point.....	277	42	19.29	97	48	08.02	4.1554871	8.889

## MILL, MERCED COUNTY, CAL. (Not occupied.)

Lone windmill on wooden mill tower, with bunch of low willows against tower on the south side.

[Latitude 37° 17' 49.162". Longitude 120° 49' 35.400".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Tarweed.....	247	55	57.15	67	58	09.56	3.7638013	3.607
Stilt.....	305	52	47.32	125	54	42.27	3.7612400	3.586

**MITCHELL SCHOOL (FLAGSTAFF), STANISLAUS COUNTY, CAL. (Not occupied.)**

Station mark: White staff, west of yellow building with red roof. Appears from a distance as though it might be a school.

[Latitude  $37^{\circ} 27' 48.758''$ . Longitude  $120^{\circ} 56' 21.054''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Taylor.....	77	31	00.35	257	27	55.27	3.8843254	4.761
Joven.....	124	10	51.32	304	08	54.50	3.7559769	3.543

**MONUMENT, MERCED COUNTY, CAL. (Not occupied.)**

Station mark: Tall white shaft about 5 miles east of Merced near Santa Fe Railway.

[Latitude  $37^{\circ} 17' 44.657''$ . Longitude  $120^{\circ} 22' 40.337''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Eyraud.....	64	08	57.85	244	02	35.39	4.2381552	10.752
Merced.....	97	33	27.60	277	29	37.49	3.9746578	5.861
Super.....	163	35	07.18	343	33	19.70	4.1877880	9.575
Blacksmith.....	177	06	36.17	357	06	36.17	4.0937836	7.711
Hurricane.....	211	06	02.55	31	07	40.84	3.8878027	4.799

**NAIRN, MERCED COUNTY, CAL.**

Lone mill, with watering trough, 1 mile southwest of Nairn, on Oakdale Merced branch of Southern Pacific Railroad.

Station mark: Center of windmill tower.

[Latitude  $37^{\circ} 22' 05.668''$ . Longitude  $120^{\circ} 31' 05.145''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Winton.....	104	01	03.11	283	57	37.36	3.9341807	5.340
Amsterdam.....	155	23	01.72	335	22	47.34	3.8500502	4.492
Lighthouse.....	171	34	14.33	351	33	53.35	3.7631514	3.602
Super.....	230	05	44.41	50	09	03.44	4.0213085	6.526
Blacksmith.....	249	43	11.34	69	48	02.42	4.0992809	7.810
Lakeside School.....	276	52	02.17	96	55	09.99	3.8848483	4.766
Merced.....	335	39	46.45	155	41	02.32	3.8735923	4.645

**NEW TOWER, MERCED COUNTY, CAL. (Not occupied.)**

New yellow tank tower building that shows prominently from the north and west with an afternoon sun. Viewed from Lone Mill, only the upper part is visible and is partly concealed by the tops of two poplars. The triangulator has not been at the station and can give no better description. Tower has the usual pyramid-shaped roof with not much pitch.

[Latitude  $37^{\circ} 23' 49.893''$ . Longitude  $120^{\circ} 55' 53.988''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Taylor.....	125	01	18.26	304	57	56.87	3.9976891	6.181
Lone Mill.....	139	18	14.94	319	16	49.76	3.7231345	3.285
Joven.....	153	00	44.70	332	58	31.51	4.0740378	7.369

**NORTH MILL, STANISLAUS COUNTY, CAL. (Not occupied.)**

Lone mill on tank on open timber structure about 2 miles north of Taylor and 2 miles west of Joven.

Station mark: Center of windmill tower.

[Latitude 37° 29' 25.668". Longitude 121° 01' 45.247".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Joven.....	266 12 59.94	86 14 20.40	3.5124963	2.022
Taylor.....	354 00 14.13	174 00 26.21	3.6695605	2.903

**POPLAR A, MERCED COUNTY, CAL. (Not occupied.)**

[Latitude 37° 11' 19.348". Longitude 120° 36' 36.805".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Lost.....	132 31 59.35	312 30 35.24	3.6678004	2.892
Horse.....	165 49 58.57	345 49 11.54	3.8935345	4.863
Eyraud.....	229 26 41.03	49 28 44.79	3.8221991	4.126

**POPLAR C, MERCED COUNTY, CAL. (Not occupied.)**

[Latitude 37° 10' 44.743". Longitude 120° 37' 30.967".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Lost.....	153 33 58.49	333 33 07.14	3.6725273	2.923
Horse.....	176 09 24.57	356 09 10.31	3.9381907	5.389
Eyraud.....	229 50 07.29	49 52 43.79	3.9216519	5.188

**RED CHIMNEY, MERCED COUNTY, CAL.**

[Latitude 37° 12' 00.557". Longitude 120° 34' 50.226".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Lost.....	107 13 15.51	287 10 46.94	3.8022145	3.941
Eyraud.....	218 26 31.97	38 27 31.29	3.5898351	2.416

**ROAD MILL, MERCED COUNTY, CAL. (Not occupied.)**

Station is mill near tank on low structure about one-quarter mile southwest of school and about 100 feet south of road between Turlock and Snelling. The mill is on line of that section of road between itself and Dallas.

Station mark: Center of windmill tower.

[Latitude 37° 29' 30.497". Longitude 120° 39' 10.008".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Dallas.....	92 18 49.78	272 15 35.01	3.8958438	4.889
Bloodsoe.....	243 11 19.16	63 13 16.00	3.7227303	3.282
Dry Creek.....	291 50 21.02	111 52 07.52	3.6658718	2.879

**R. R. RED, MERCED COUNTY, CAL. (Not occupied.)**

Red tank on timber structure among group of red railroad buildings on Santa Fe Railway about 3 miles southeast of Winton.

Station mark: Center of tank.

[Latitude  $37^{\circ} 21' 29.394''$ . Longitude  $120^{\circ} 34' 08.023''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Winton.....	129	46	57.91	309	45	23.19	3.6985837	3.104
Amsterdam.....	190	56	01.69	10	56	38.38	3.8938515	4.866
Lighthouse.....	208	01	23.12	28	02	53.19	3.8900205	4.824

**SOUTH POINT, MERCED COUNTY, CAL. (Not occupied.)**

Tall green water tank on high open timber structure on Santa Fe Railroad about 8 miles east of Merced.

Station mark: Center of tank.

[Latitude  $37^{\circ} 17' 22.128''$ . Longitude  $120^{\circ} 19' 24.538''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Eyraud.....	71	27	45.04	251	19	24.08	4.3327504	13.369
Merced.....	97	48	08.02	277	42	19.29	4.1554871	8.889
Super.....	149	21	48.64	329	18	02.37	4.2550564	11.179
Blacksmith.....	157	25	55.17	337	23	40.96	4.1515650	8.809
Hurricane.....	173	31	42.80	353	31	22.38	3.8665005	4.569

**STILT, MERCED COUNTY, CAL.**

A lumber tripod on sand dune one-half mile north of trees skirting slough and about 3 miles south of Bloss ranch buildings.

Station mark: An iron bench-mark post under center of tripod.

[Latitude  $37^{\circ} 15' 59.407''$ . Longitude  $120^{\circ} 46' 25.630''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Tree J.....	8	27	21.51	188	27	02.92	3.7118323	3.200
Mill.....	125	54	42.27	305	52	47.32	3.7612400	3.586
Tarweed.....	187	14	35.67	7	14	53.06	3.7487691	3.484
Curtner.....	198	25	39.09	18	26	58.02	4.0060185	6.300
Swansen.....	222	46	36.92	42	49	05.33	3.9483550	5.517
Lizard.....	263	09	41.51	83	12	36.17	3.8547100	4.447

**SUPER, MERCED COUNTY, CAL.**

A lumber tripod with target signal on plateau about 2 miles north of Merced municipal reservoir.

Station mark: An iron bench-mark post.



[Latitude 37° 25' 44.095". Longitude 120° 25' 37.447".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Lakeside School.....	3	21	09.81	183	20	58.75	3.8846584	4.764
Merced.....	20	13	29.63	200	11	26.66	4.1593636	8.968
Nairn.....	50	09	03.44	230	05	44.41	4.0213085	6.526
Winton.....	74	12	02.61	254	05	17.64	4.2315483	10.590
Lighthouse.....	83	37	25.89	263	33	45.75	3.9524544	5.569
Amsterdam.....	89	11	44.00	269	07	10.50	4.0441140	8.878
Wassom.....	114	14	36.15	294	12	41.67	3.7056314	3.155
Bloodsoe.....	121	35	34.17	301	29	16.60	4.2527132	11.119
Thomsen.....	149	12	56.96	329	10	09.80	4.1198947	8.189
Blacksmith.....	302	35	38.27	122	37	10.43	3.6461410	2.751
South Point.....	329	18	02.37	149	21	48.64	4.2550564	11.179
Monument.....	343	33	19.70	163	35	07.18	4.1877880	9.575

**SWANSEN, MERCED COUNTY, CAL.**

Mill on red tank house on Ed. Swansen's ranch about 5 miles south of Livingston. There is a lumber observing platform built on the top of tank house which the topographer is requested to remove when he no longer needs it.

Station mark: Center of windmill tower.

[Latitude 37° 19' 30.738". Longitude 120° 42' 20.711".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Stilt.....	42	49	05.33	222	46	36.92	3.9483550	5.517
Tarweed.....	79	52	37.10	259	50	26.02	3.7330266	3.360
Curtner.....	137	43	24.97	317	42	15.41	3.6228253	2.607
Bridge.....	158	57	55.30	338	56	32.61	3.9701677	5.801
Winton.....	230	22	18.87	50	25	43.13	4.0314934	6.681
W. C.....	254	17	23.16	74	19	49.82	3.7912704	3.843
Lizard.....	349	17	21.00	169	17	47.36	3.7608871	3.583

**TANK, MERCED COUNTY, CAL. (Not occupied.)**

Red-roofed tank house, northeast of house. The tank house appears to have small balustrade around top. The buildings are white with red tops.

Station is south of Merced River between the river bottom and foothills in open country.

Station mark: Center of tank house.

[Latitude 37° 29' 54.579". Longitude 120° 26' 41.617".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Wassom.....	28	25	45.53	208	24	29.98	3.8069400	3.974
Dry Creek.....	80	06	51.76	260	01	02.81	4.1553506	8.886
Bloodsoe.....	96	52	57.07	276	47	18.26	4.1387903	8.553
Thomsen.....	124	50	44.42	304	48	36.20	3.7992856	3.914

**TARWEED, MERCED COUNTY, CAL.**

A lumber tripod on top of small hill about 1 mile northeast of Bloss ranch buildings and about 5 miles southwest of Livingston.

Station mark: An iron bench-mark post set under center of tripod.

[Latitude 37° 18' 59.851". Longitude 120° 45' 56.918".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Stillt.....	7	14	53.06	187	14	35.67	3.7487691	3.484
Mill.....	67	58	09.56	247	55	57.15	3.7638013	3.607
Tree Mill.....	132	56	26.66	312	54	30.21	3.8098806	4.011
Curtner.....	211	37	43.76	31	38	45.33	3.6780040	2.960
Swansen.....	259	50	26.02	79	52	37.10	3.7330266	3.360
Lizard.....	306	21	52.07	126	24	29.44	3.9001301	4.937

**TAYLOR, STANISLAUS COUNTY, CAL.**

Mill on red tank about 30 feet northwest of dwelling house on Taylor ranch, on edge of slough, about 10 miles southwest of Turlock.

Station mark: Center of mill.

[Latitude 37° 26' 54.930". Longitude 121° 01' 25.390".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
North Mill.....	174	00	26.21	354	00	14.13	3.6695605	2.903
Joven.....	209	34	52.01	29	36	00.35	3.7474348	3.474
Turlock.....	252	03	26.97	72	10	09.77	4.2328988	10.623
Flagstaff.....	257	27	55.27	77	31	00.35	3.8843254	4.761
West End.....	257	41	28.42	77	44	50.80	3.9227433	5.201
Lone Mill.....	289	50	20.85	109	52	17.09	3.6987425	3.105
New Tower.....	304	57	56.87	125	01	18.26	3.9976891	6.181

**THOMSEN, MERCED COUNTY, CAL.**

A lumber tripod on Henry Thomsen's place, 6 miles west of Snelling. Follow railroad from Snelling to Hopetown, then turn due west and take first main north and south road. Is about 2 miles north of house and about a quarter mile west of road. Signal on a little butte but not marked.

[Latitude 37° 31' 51.272". Longitude 120° 30' 12.169".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Lighthouse.....	9	54	36.07	189	53	42.81	4.0971237	7.771
Amsterdam.....	20	35	27.51	200	33	40.76	4.0886622	7.621
Winton.....	31	07	06.31	211	03	07.96	4.2707936	11.592
Dry Creek.....	55	47	37.38	235	43	56.50	4.0325899	6.698
Bloodsoe.....	77	02	28.16	256	58	57.48	3.9403839	5.417
Tank.....	304	48	36.20	124	50	44.42	3.7992856	3.914
Super.....	329	10	09.80	149	12	56.96	4.1198947	8.189
Wassom.....	347	03	11.48	167	04	04.05	3.9766622	5.889

**TREE J, MERCED COUNTY, CAL. (Not occupied.)**

[Latitude 37° 13' 14.154". Longitude 120° 46' 56.349".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Stillt.....	188	27	02.92	8	27	21.51	3.7118323	3.200
Lizard.....	232	53	47.31	52	57	00.47	3.9938074	6.126

**TREE MILL, MERCED COUNTY, CAL. (Not occupied.)**

Lone windmill in disrepair; about 20 feet east of acacia or locust tree and about 1.5 miles south of wagon bridge over Merced River.

Station mark: Center of windmill.

[Latitude 37° 21' 22.446". Longitude 120° 49' 08.922".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Curtner .....	272 40 01.23	92 42 59.33	3.8592457	4.494
Tarweed .....	312 54 30.21	132 56 26.66	3.8098806	4.011

**TURLOCK, STANISLAUS COUNTY, CAL. (Not occupied by C. L. Nelson in 1914.)**

An iron city tank in Turlock. It is east and north of twin tank in same town.  
 Station mark: Center of tank.

[Latitude 37° 29' 45.251". Longitude 120° 50' 23.269".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Lone Mill .....	59 03 34.29	238 58 47.85	4.1302786	8.387
Taylor .....	72 10 09.77	252 03 26.97	4.2328988	10.623
Joven .....	88 23 38.38	268 18 03.75	4.1306910	8.395
Dallas .....	270 54 01.77	90 57 36.79	3.9384440	5.393
Cressy .....	303 45 15.97	123 50 33.30	4.1884452	9.590
Bridge .....	320 12 39.99	140 16 10.55	4.1241505	8.270
Leedom .....	326 02 22.64	146 04 03.58	3.8635084	4.538

**WASSOM, MERCED COUNTY, CAL.**

A lumber tripod on hill on Mr. Wassom's ranch, about 3 miles northeast of town of Amsterdam.

Station mark: An iron bench-mark post set under center of tripod.

[Latitude 37° 26' 51.678". Longitude 120° 28' 45.789".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Merced .....	1 17 18.02	181 17 09.35	4.1940220	9.713
Lighthouse .....	54 12 52.04	234 11 06.33	3.7219397	3.276
Winton .....	60 13 30.09	240 08 39.46	4.1321170	8.423
Amsterdam .....	70 47 00.81	250 44 21.65	3.8336014	4.236
Dry Creek .....	106 04 02.18	285 59 28.96	4.0601601	7.137
Bloodsoe .....	124 27 09.18	304 22 46.12	4.1097493	8.000
Thomsen .....	167 04 04.05	347 03 11.48	3.9766622	5.889
Tank .....	208 24 29.98	28 25 45.53	3.8069400	3.984
Super .....	294 12 41.67	114 14 36.15	3.7056314	3.155
Blacksmith .....	298 06 03.03	118 09 29.67	3.9767853	5.890

**W. C., MERCED COUNTY, CAL.**

A lumber tripod signal on top of hill, 1 mile south of Southern Pacific Railroad and 2 miles west of Atwater, about 300 yards west of public road, on land belonging to W. C. Dallas.

Station mark: An iron bench-mark post.

[Latitude 37° 20' 24.985". Longitude 120° 38' 18.871".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Lizard .....	33 39 55.30	213 37 55.09	3.9452260	5.477
Swansen .....	74 19 49.82	254 17 23.16	3.7912704	3.843
Curtner .....	99 17 47.81	279 14 11.63	3.9489693	5.525
Winton .....	204 13 48.04	24 14 45.57	3.7545134	3.531
Horse .....	356 17 09.80	176 17 24.54	3.9662765	5.749

## WEST END, STANISLAUS COUNTY, CAL. (Not occupied.)

Station mark: West end of very high barn, with what appears to be galvanized-iron roof, with three pitches on either side.

[Latitude  $37^{\circ} 27' 52.681''$ . Longitude  $120^{\circ} 55' 52.613''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	''	°	'	''	Log. meters.	Miles.
Lone Mill.....	45	01	45.96	225	00	19.88	3.6919416	3.057
Taylor.....	77	44	50.80	257	41	28.42	3.9227433	5.201
Joven.....	119	39	00.99	299	36	46.86	3.7945667	3.872

## WINTON, MERCED COUNTY, CAL.

Station mark: Center of high tank in town of Winton, on the Santa Fe Railway.

[Latitude  $37^{\circ} 23' 13.054''$ . Longitude  $120^{\circ} 36' 44.077''$ .]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	''	°	'	''	Log. meters.	Miles.
W. C.....	24	14	45.57	204	13	48.04	3.7545134	3.531
Swansen.....	50	25	43.13	230	22	18.87	4.0314934	6.681
Curtner.....	71	22	53.19	251	18	19.26	4.0689655	7.283
Bridge.....	99	07	25.31	279	02	38.12	4.0711270	7.319
Cressy.....	115	38	11.16	295	35	10.52	3.9090948	5.040
Dallas.....	136	15	10.40	316	10	27.13	4.2188775	10.286
Dry Creek.....	184	07	31.77	4	07	49.47	3.9972663	6.175
Bloodsoe.....	184	36	25.28	4	36	53.25	4.1480588	8.738
Thomsen.....	211	03	07.96	31	07	06.31	4.2707936	11.592
Amsterdam.....	229	48	54.14	49	51	05.64	3.8430305	4.329
Wassom.....	240	08	39.46	60	13	30.09	4.1321170	8.423
Lighthouse.....	243	56	35.75	63	59	40.64	3.9207112	5.177
Super.....	254	05	17.64	74	12	02.61	4.2315483	10.590
Nairn.....	283	57	37.36	104	01	03.11	3.9341807	5.340
Merced.....	307	51	10.57	127	55	52.07	4.1605318	8.993
R. R. Red.....	309	45	23.19	129	46	57.91	3.6985837	3.104