

OREGON.

TRIANGULATION STATIONS.

Cline Falls, Heisler, Prineville, Round Mountain, and Twickenham quadrangles.

CROOK, JEFFERSON, AND WASCO COUNTIES.

During the season of 1916 Charles Hartmann extended triangulation southwest from stations Pisgah and Wagner. Eleven new stations were occupied, and nine points were located by intersections, all on approximate North American datum.

For other positions in Oregon see U. S. Geological Survey Bulletins 122, 216, 245, 440, 496, 551, and 644; Part I of the 18th, 19th, and 20th Annual Reports; and U. S. Coast and Geodetic Survey Special Publications No. 13 and No. 31.

BLACK CRATER, DESCHUTES COUNTY, OREG. (Not occupied).

A conical butte on an east spur of the Cascade Range, about 9 miles west of Sisters post office. The McKenzie road crosses the range about 2 miles north of station.

Station mark: Cairn on highest part of butte.

[Latitude $44^{\circ} 15' 59.17''$ (H); $44^{\circ} 15' 59.3''$ (S). Longitude $121^{\circ} 44' 50.72''$ (H); $121^{\circ} 44' 51.5''$ (S.)

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Horsepasture (S).....	58	31	49.3	238	17	37.5	4.56327	19.80
Scott (S).....	78	07	11.3	258	00	12.6	4.13374	8.45
Lookout (S).....	79	34	10.1	259	18	11.5	4.49155	19.27
Gray Butte (H).....	251	47	54.0	72	15	02.7	4.7345382	33.720
Cline Butte (H).....	272	09	43.9	92	28	22.3	4.5511577	22.106
Pilot Butte (H).....	301	19	54.2	121	39	22.0	4.6401944	27.126

(H)=positions by Hartmann; (S)=positions by Staack in 1916.

CLINE BUTTE, CROOK COUNTY, OREG.

An isolated butte immediately southwest of Cline Falls; best reached from Cline Falls by taking wagon road leading to town of Sisters for about 4 miles west, thence south by a well-defined homesteaders' road to the northwest base of main ridge leading to summit. Thence follow the ridge up to summit of butte. It is easy to go on horseback from the base of the ridge to the station.

Signal: A juniper tree 18 feet high, in the top of which was erected a 10-foot pole with two 4 by 5 foot targets.

Station mark: A bronze triangulation tablet, cemented in solid rock 12.6 feet southwest of signal.

True azimuth from tablet to tree, $244^{\circ} 03'$.

121166°—23—Bull, 709—23.

[Latitude 44° 15' 12.56". Longitude 121° 18' 08.27".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Lava.....	6 27 58	186 25 47	4.57380	23.289
Triangle.....	49 05 30	227 55 35	4.40694	15.860
Black Crater.....	92 28 22.3	272 09 43.9	4.5511577	22.106
Juniper Butte.....	196 11 29.49	16 15 22.14	4.4210817	16.384
Railroad Pier.....	209 20 06	29 24 36	4.24462	10.914
Gray Butte.....	221 29 14.64	41 37 43.23	4.3856762	15.102
Terrebonne School.....	221 31 15	41 36 22	4.16761	9.140
Sheep Rock.....	228 38 40.02	48 58 23.13	4.6965862	30.899
Redmond Church.....	258 31 36	78 36 55	4.01465	6.427
Powell Butte.....	283 56 24.40	104 10 03.05	4.4290545	16.688
Pine.....	327 53 00	148 08 34	4.75170	35.079
Pilot Butte.....	355 37 22.55	175 38 13.76	4.3311839	13.721

GRAY BUTTE, JEFFERSON COUNTY, OREG.

A sharp-pointed butte 7 miles east of Opal City. Best reached by taking road east from Opal City to O. M. Cyrus's ranch. Go 0.25 mile south across field to drain, thence follow drain up to main ridge.

Signal and reference mark: Cairn 8 feet high, with a 6-foot base.

Station mark: A bronze triangulation tablet, cemented in shale rock and 9.1 feet south of signal. True azimuth from tablet to cairn, 182° 56'.

[Latitude 44° 25' 01.76". Longitude 121° 06' 00.52".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Redmond Church.....	20 24 39	200 21 30	4.23590	10.697
Terrebonne School.....	41 34 37	221 31 16	3.98201	5.962
Cline Butte.....	41 37 43.23	221 29 14.64	4.3856762	15.102
Triangle.....	45 00 40	224 42 16	4.69674	30.909
North Sister.....	62 49 12.4	242 21 05.5	4.7805197	37.486
Railroad Pier.....	69 01 35	248 57 39	3.90498	4.993
Black Crater.....	72 15 02.7	251 47 54.0	4.7345382	33.720
Juniper Butte.....	129 16 13.84	309 11 37.21	4.0521743	7.007
Teller Butte.....	211 04 04.56	31 13 00.19	4.5131818	20.255
Samson.....	227 15 23.14	47 28 54.43	4.5406960	21.580
Sheep Rock.....	235 31 41.69	55 42 56.59	4.4114538	16.025
Pisgah.....	265 57 25.34	86 33 46.30	4.8390938	42.898
Lookout Mountain.....	279 28 53.84	99 59 27.16	4.7700475	36.593
Powell Butte.....	338 08 58.14	158 14 09.67	4.4250841	16.536
Pilot Butte.....	20 12 53.06	200 05 16.62	4.6247102	26.185

JUNIPER BUTTE, JEFFERSON COUNTY, OREG.

A double-topped butte 1.5 miles south of Culver and 1.5 miles north of Opal City. Best reached by taking road south from Culver toward Opal City to divide, thence turn west and go up main ridge to summit. Station is situated on the highest point of the east ridge.

Signal and reference mark: A 7-foot cairn, having a 6-foot base and two 3 by 4 foot targets on top.

Station mark: A bronze tablet cemented in shale rock 9.5 feet northeast of signal. True azimuth from tablet to cairn, 27° 22'.

[Latitude 44° 28' 52.82". Longitude 121° 12' 35.55".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Cline Butte.....	16 15 22.14	196 11 29.49	4.4210817	16.384
Teller Butte.....	230 47 54.47	51 01 27.67	4.5176858	20.466
Samson.....	244 16 51.35	64 35 00.25	4.5794976	23.597
Sheep Rock.....	255 57 21.50	76 13 13.74	4.4900307	19.204
Gray Butte.....	309 11 37.21	129 16 13.84	4.0521743	7.007
Powell Butte.....	329 34 59.59	149 44 47.37	4.5669179	22.923
Terrebonne School.....	350 33 00	170 34 15	4.16163	9.015

LAVA, CROOK COUNTY, OREG.

About 11 miles due south of the town of Bend.

Signal: A white flag and target on a pole 15 feet high. Under the target is a cone-shaped pile of logs 8 feet in diameter at the base and 6 feet high. Signal is on the highest point of the butte.

Monument was established by members of the National Forest Service, of Bend, Oreg., and description was furnished by Forest Supervisor. Sightings were taken to Forest Service signal.

[Latitude 43° 55' 05.90". Longitude 121° 21' 17.44".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Cline Butte.....	186	25	47	6	27	58	4. 57380	23. 289
Pilot Butte.....	200	13	28	20	16	30	4. 22820	10. 509
Powell Butte.....	224	30	33	44	46	19	4. 63524	26. 828

LOOKOUT MOUNTAIN, CROOK COUNTY, OREG.

Best reached by taking road from Prineville to Ochoco ranger station, 26 miles, thence go 0.5 mile east and take road to right leading to Big Summit Prairie. Continue on this road until the divide is reached, thence take road to right to quicksilver mines, and from here take road leading up the mountain to station. It is a three-hour drive from Ochoco ranger station, and the distance is about 9 miles.

Signal and reference mark: Cairn 7 feet high by 6 feet wide with two 3 by 4 foot targets nailed on a 4 by 4 inch pole 15 feet high standing in center of cairn.

Station mark: A triangulation tablet 7.1 feet northwest of cairn, cemented in large rock. True azimuth from tablet to cairn, 317° 24'.

[Latitude 44° 19' 39.09". Longitude 120° 22' 18.95".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Powell Butte.....	73	13	01.39	252	47	43.01	4. 7020651	31. 356
Gray Butte.....	99	59	27.16	279	28	53.84	4. 7700475	36. 593
Sheep Rock.....	123	55	40.15	303	26	19.06	4. 6446228	27. 414
Pisgah.....	217	00	41.23	37	06	26.46	4. 2582450	11. 921

MAUPIN BUTTE (2), WASCO COUNTY, OREG.

A haystack-shaped butte, facing northwest and southeast 8 miles southeast of Antelope. Easily reached by taking the Shaniko-Clarno road to Cox's ranch, 4.5 miles southeast of Antelope and 1 mile northeast of Gold Camp, where Harry Smith resides; thence continue up drain, following dim road, until summit is reached. Signal is readily seen from the summit.

Signal: A cairn 5 feet high with a 6-foot base, having a large juniper bush standing in its center. It is 7.2 feet north of station mark. True azimuth from cairn to station mark, 351° 21'.

Station mark: A triangulation tablet cemented in solid rock.

[Latitude 44° 52' 51.44". Longitude 120° 36' 51.64".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Tompkins.....	4	55	07.76	184	54	19.66	4. 2435994	10. 888
Samson.....	24	58	44.93	204	51	48.23	4. 4898828	19. 197
Teller Butte.....	42	35	56.93	222	24	23.01	4. 5060285	19. 924
Wagner.....	300	55	32.43	121	03	35.93	4. 2447190	10. 916

NORTH SISTER, LANE, AND DESCHUTES COUNTIES, OREG. (Not occupied.)

In main Cascade Range, on the northern one of three buttes, locally known as the Three Sisters. The point located is the highest point of rugged summit, which is approximately 0.25 mile long. This point is about 12 miles southwest from Sisters post office.

Station mark: None.

[Latitude 44° 10' 01.85" (H); 44° 10' 01.464" (C. & G. S.). Longitude 121° 46' 16.04" (H); 121° 46' 17.183" (C. & G. S).]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Fairview (C).....	47	57	31.4	227	20	53.1	4.981379	59.529
Spencer (C).....	79	34	17.3	258	39	03.3	5.033231	67.068
Roman (C).....	80	30	32.5	259	08	32.0	5.204400	99.483
Peterson (C).....	112	13	06.1	291	22	55.0	5.011964	63.872
Gray Butte (H).....	242	21	05.5	62	49	12.4	4.7805197	37.486
Cline Butte (H).....	255	28	51.4	75	48	28.3	4.5874685	24.034
Pilot Butte (H).....	286	35	36.8	106	55	02.9	4.6117350	25.414

(C)=by Coast and Geodetic Survey in 1903; (H)=by C. Hartmann in 1916.

PILOT BUTTE, CROOK COUNTY, OREG.

A small, round butte, 1.5 miles east of Bend. Best reached by taking road east from Bend to west base of butte, thence go on horseback around the north side and up to summit.

Signal: A wooden tripod, centered over station mark, with two 4 by 5 foot targets, 18 feet from ground and centered over the tablet.

Station mark: A bronze triangulation tablet cemented in solid rock.

[Latitude 44° 03' 40.01". Longitude 121° 16' 54.76".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Lava.....	20	16	30	200	13	28	4.22820	10.509
Triangle.....	101	51	36	281	40	51	4.32387	13.098
North Sister.....	106	55	02.9	286	35	36.8	4.6117350	25.415
Black Crater.....	121	39	22.0	301	19	54.2	4.6401944	27.136
Cline Butte.....	175	38	13.76	355	37	22.55	4.3311839	13.321
Gray Butte.....	200	05	16.62	20	12	53.06	4.6247102	26.185
Powell Butte.....	238	37	31.93	58	50	17.99	4.4566364	17.782
Pine.....	312	59	19	133	14	03	4.58867	24.100

PINE, CROOK COUNTY, OREG.

A clear-topped, conical butte in the Deschutes National Forest about 4 miles immediately south of Millican's ranch, which is about 28 miles southeast of Bend.

Monument was erected by members of the Deschutes National Forest Office at Bend, and sights were taken to their signal. For directions to reach this point apply to the Forest Supervisor at Bend.

[Latitude 43° 49' 21.15". Longitude 120° 55' 45.16".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Pilot Butte.....	133	14	03	312	59	19	4.58867	24.100
Cline Butte.....	148	08	34	327	53	00	4.75170	35.079
Powell Butte.....	174	48	18	354	46	20	4.61840	25.808

PISGAH, WHEELER COUNTY, OREG.

Situated on the highest part of high ridge known locally as Pisgah Mountain, about 8 miles southwest of Mitchell, 5 miles north of Big Summit Prairie, and 7 miles northeast of Round Mountain. To reach the station take road from Prineville to Ochoco ranger station, 26 miles, thence continue to Blake ranger station, 3 miles northwest of Big Summit Prairie; take road from Blake ranger station to summit trail on top of divide, thence go eastward on this trail to Carrol ranger station, 2 miles; 0.25 mile west of ranger cabin is a good trail leading to station, which is 1.5 miles from and about 600 feet above cabin. There is a good pasture at Carrol ranger station.

Signal: A cairn 7 feet high with a 6-foot base, having two 4 by 3 foot targets on fir tree standing in its center. True azimuth from tablet, $151^{\circ} 27'$.

Station mark: A triangulation tablet set in solid rock 5 feet southeast of signal.

[Latitude $44^{\circ} 27' 27.66''$. Longitude $120^{\circ} 14' 05.46''$.]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Lookout Mountain (H).....	37	06	26.46	217	00	41.23	4.2582450	11.261
Powell Butte (H).....	63	58	22.12	243	27	17.12	4.8192845	40.985
Gray Butte (H).....	86	33	46.30	265	57	25.34	4.8390938	42.898
Rooster Rock (H).....	109	58	36	289	46	58	4.36914	14.538
Samson (H).....	113	56	19.30	293	33	25.84	4.6741595	29.343
Tompkins (H).....	133	12	33.35	312	55	46.31	4.6306123	26.913
Wagner (E).....	158	31	08.81	338	23	10.75	4.6111267	25.380
Rancheria (E).....	189	00	15.48	9	04	24.47	4.6958656	30.848
Baldy (E).....	222	13	42.63	42	24	30.09	4.4807326	18.797
Juniper (E).....	249	49	29.16	70	07	47.45	4.5661538	22.882
Spanish (E).....	278	23	37.73	98	42	59.31	4.5695024	23.060
Suplee (E).....	306	27	06.77	126	52	56.66	4.7877728	38.117
Maupin Butte (E).....	331	17	09.61	151	29	32.95	4.6931505	30.655

(H)=positions by C. Hartmann in 1916; (E)=positions by J. R. Ellis in 1913.

POWELL BUTTE, CROOK COUNTY, OREG.

One of a group of buttes 2 miles east of Powell Butte post-office and 8 miles south-east of Prineville. The central and highest butte, on which the station is placed, is best reached from Powell Butte post-office. Take county road 1 mile east to ranch and continue east through ranch 0.5 mile to ridge; turn south on ridge, following homesteader's road to its end at old homestead, thence go up main ridge to station.

Signal: A cairn 6 feet high with a 6-foot base and covered with white cloth. There are two 3 by 4 foot targets on its top.

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

[Latitude $44^{\circ} 11' 41.26''$. Longitude $120^{\circ} 58' 34.51''$.]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Lava.....	44	46	19	224	30	33	4.63524	26.828
Pilot Butte.....	58	50	17.99	238	37	31.93	4.4566364	17.732
Cline Butte.....	104	09	03.05	283	56	24.40	4.4290545	16.688
Redmond Church.....	118	23	19	298	14	59	4.25692	11.227
Railroad Pier.....	141	30	38	321	21	30	4.44586	17.346
Juniper Butte.....	149	44	47.37	329	34	59.59	4.5669179	22.923
Gray Butte.....	158	14	09.67	338	08	58.14	4.4250841	16.536
Sheep Rock.....	196	12	20.45	16	13	22.12	4.6117849	25.417
Pisgah.....	243	27	17.12	63	58	22.12	4.8192845	40.985
Lookout Mountain.....	252	47	43.91	73	13	01.39	4.7029651	31.356
Pine.....	354	46	20	174	48	18	4.61840	25.808

RAILROAD PIER, JEFFERSON COUNTY, OREG. (Not occupied.)

Southwest pier of railroad bridge over Crooked River, about 4 miles north of Terrebonne.

[Latitude 44° 23' 28.44". Longitude 121° 11' 39.50".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Cline Butte.....	29 24 36	209 20 06	4.24462	10.914
Gray Butte.....	248 57 39	69 01 35	3.90498	4.993'
Powell Butte.....	321 21 30	141 30 38	4.44586	17.346

REDMOND CHURCH, CROOK COUNTY, OREG. (Not occupied.)

Station mark: Church spire in the southwest corner of street intersection in the most southwesterly part of the town of Redmond. The church is about 2 blocks south and 2 blocks west of post office.

[Latitude 44° 16' 18.96". Longitude 121° 10' 31.22".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Cline Butte.....	78 36 55	258 31 36	4.01465	6.427
Gray Butte.....	200 21 30	20 24 39	4.23590	10.697
Powell Butte.....	298 14 59	118 23 19	4.25692	11.227

ROOSTER ROCK, WHEELER COUNTY, OREG. (Not occupied.)

A rocky, isolated bluff 2.5 miles northeast of Trail ranger station and 2 miles south of the northern boundary of the Ochoco National Forest.

[Latitude 44° 31' 45.4". Longitude 120° 30' 41.25".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Samson.....	117 36 58	297 25 47	4.37909	14.874
Tompkins.....	155 56 49	335 51 41	4.37448	14.717
Pisgah.....	289 46 58	109 58 36	4.36914	14.538

SAMSON, JEFFERSON COUNTY, OREG.

On land owned by H. C. Pridy on highest and most southerly part of what is locally known as Blizzard Ridge. Best reached by taking road from Hay Creek 4 miles east to Dunham's place, thence take road to right to point within 0.25 mile west of Kelley's homestead; at this point signal can be seen to the northeast. Continue on road leading in same direction and pass schoolhouse on the northerly edge of a timbered area; thence take private road to left, which winds northwesterly upgrade to homesteader's house. From house drive across open field to station.

Signal: A tripod with 3 by 4 foot targets faced with white cloth; base covered with black cloth.

Station mark: A triangulation tablet cemented in limestone rock, which was placed 9 feet northeast of signal. Azimuth to signal, 56° 44'.

Reference mark: A quart bottle buried 2.5 feet in ground, 14.8 feet south of station mark, and 7.6 feet southeast of signal.

[Latitude, 44° 37' 43.78". Longitude 120° 48' 43.49".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Sheep Rock.....	25	32	00.11	205	29	44.03	3.9968158	6.168
Gray Butte.....	47	28	54.43	227	15	23.14	4.5406960	21.580
Juniper Butte.....	64	35	00.25	244	16	51.35	4.5794976	23.597
Teller Butte.....	116	50	05.69	296	45	29.23	3.9873002	6.035
Maupin Butte (2).....	204	51	48.23	24	58	44.93	4.4898828	19.197
Tompkins.....	227	28	08.95	47	34	17.08	4.1941355	9.716
Pisgah.....	293	33	25.84	113	56	19.30	4.6741595	29.343
Rooster Rock.....	297	25	47	117	36	58	4.37909	14.874

SHEEP ROCK, CROOK COUNTY, OREG.

On highest point in this locality and on most westerly edge of long, high, wooded ridge 10 miles east of Honey Creek. Best reached by taking Hay Creek-Prineville road to first house on east side of road, distance 1.5 miles; thence turn east in private road and go 3 miles up drain in southeasterly direction to Elkins's place. Turn east and go up drain, following main road for 3 miles to Stody's place. The station is 3 miles southeast of Stody's at the head of drain. Follow path up drain past coal mines on the south.

Signal and reference mark: A cairn 6 feet high with 6-foot base 10.5 feet northwest of station mark. Cairn is covered with black and white cloth and has a juniper tree in its top.

Station mark: A triangulation tablet cemented in shale rock. True azimuth from tablet to cairn, 115° 36'; distance, 10.5 feet.

[Latitude 44° 32' 53.54". Longitude 120° 49' 57.33".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Powell Butte.....	16	18	22.12	196	12	20.45	4.6117848	25.417
Cline Butte.....	48	58	23.13	228	38	40.02	4.6965862	30.898
Gray Butte.....	55	42	56.59	235	31	41.69	4.4114538	16.025
Juniper Butte.....	76	13	13.74	255	57	21.50	4.4906307	19.204
Teller Butte.....	161	45	35.44	341	43	15.30	4.1475010	8.727
Samson.....	205	29	44.03	25	32	00.11	3.9968158	6.168
Tompkins.....	218	56	30.88	39	04	54.93	4.4000172	15.609
Lookout Mountain.....	303	36	19.06	123	55	40.15	4.6446228	27.414

TELLER BUTTE, JEFFERSON COUNTY, OREG.

Best reached from Hay Creek by taking Hay Creek-Madras road 1.5 miles north, thence turn east on road for 3 miles to private road leading north and up draw, and follow that road until top of plateau is reached. Station is plainly seen from here. Station is situated on the southerly summit of a double-topped butte named Teller Buttes and adjacent to George Long's ranch on the east side.

Signal and reference mark: A cairn 6.5 feet high with a 7-foot base, covered with white cloth, having a small juniper set in the top.

Station mark: A bronze triangulation tablet cemented in solid rock 9.8 feet south-east of signal. Azimuth from tablet to cairn, 127° 29'.

[Latitude 44° 40' 05.62". Longitude 120° 53' 16.88".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Gray Butte.....	31	13	00.19	211	04	04.56	4.5131818	20.255
Juniper Butte.....	51	01	27.67	230	47	54.47	4.5176858	20.466
Maupin Butte (2).....	222	24	23.01	42	35	56.93	4.5060285	19.924
Tompkins.....	252	53	16.50	73	04	01.45	4.3245914	13.120
Samson.....	296	45	29.23	116	50	05.69	3.9873002	6.035
Sheep Rock.....	341	43	15.30	161	45	35.44	4.1475010	8.727

TERREBONNE SCHOOL, CROOK COUNTY, OREG. (Not occupied.)

Chimney in the middle of the north side of a square, white-painted, two-story schoolhouse in the western part of the town of Terrebonne, on the railroad running to Bend.

[Latitude 44° 21' 09.14". Longitude 121° 10' 48.00".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Cline Butte.....	41 36 22	221 31 15	4.16761	9.140
Juniper Butte.....	170 34 15	350 33 00	4.16163	9.015
Gray Butte.....	221 31 16	41 34 37	3.98201	5.902

TOMKINS, JEFFERSON COUNTY, OREG.

Situated on highest part of what is locally known as Axehandle Ridge. Best reached by taking road from Ashwood to Red Jacket mines, distant 5 miles, thence continue on road leading to right and through cultivated land for 1.5 miles; from here a good road winds up to summit of ridge, from which point the signal can be seen to the south.

Signal: A cairn 6.4 feet high with 6-foot base having a juniper tree centered over triangulation tablet.

Station mark: A triangulation tablet cemented in solid rock under cairn.

[Latitude 44° 43' 25.87". Longitude 120° 37' 59.91".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Sheep Rock.....	39 04 54.93	218 56 30.88	4.4000172	15.609
Samson.....	47 34 17.08	227 28 08.95	4.1941355	9.716
Teller Butte.....	73 04 01.45	252 53 16.50	4.3245914	13.120
Maupin Butte (2).....	184 54 19.66	4 55 07.76	4.2435994	10.888
Wagner.....	243 01 37.91	63 10 28.81	4.2693582	11.553
Pisgah.....	312 55 46.31	133 12 33.35	4.6366123	26.913
Rooster Rock.....	335 51 41	155 56 49	4.37448	14.717

TRIANGLE, COOK COUNTY, OREG. (Not occupied.)

A partly wooded, conical-shaped butte about 12 miles west of the town of Bend. It is in the southwest part of T. 19 S., R. 8 E., and immediately inside the eastern boundary of the Deschutes National Forest.

For definite directions as to best way of reaching this station, apply to the forest supervisor at Bend, Oreg. as he had established a monument and erected a signal on this point, to which the sights were taken.

[Latitude 44° 05' 59.33". Longitude 121° 32' 22.25".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Gray Butte.....	224 42 16	45 00 40	4.6974	30.909
Cline Butte.....	227 55 35	48 05 30	4.40694	15.860
Pilot Butte.....	281 40 51	101 51 36	4.32387	13.098

WAGNER, JEFFERSON COUNTY, OREG.

Situated on highest point on Wagner Butte, a double-topped butte on the west side of John Day River and about 1.5 miles west of Wagner's ranch house. The butte is on the divide between the John Day River and Currant Creek. To reach the station from Fossil take the Fossil-Clarno wagon road to Pine Creek and go down

the creek about 1.5 miles, leave public road and follow private road southwest over divide, thence road down canyon to John Day River. From this point a trail leads up the river to Wagner's ranch. This route can only be used at times of low water, as the river must be forded at several places.

Signal: A cairn of 5 feet base and 6 feet high, centered over tablet, and covered with white cloth.

Station mark: An aluminum tablet cemented in solid rock.

[Latitude 44° 47' 53.38". Longitude 120° 25' 25.96".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Tompkins (H).....	63	10	28.81	243	01	37.91	4.2693582	11.553
Maupin Butte 2 (H).....	121	03	35.93	300	55	32.43	4.2447190	10.916
Clarno (E).....	191	10	56.22	11	13	04.52	4.3125803	12.762
Fossil (E).....	227	05	56.55	47	16	16.73	4.4199205	16.341
Rancheria (E).....	243	59	14.07	64	11	23.72	4.4024218	15.695
Craggy (E).....	252	11	11.57	72	21	03.69	4.28720	12.038
Baldy (E).....	293	43	33.68	114	02	22.01	4.5864176	23.977
Plsгах (E).....	338	23	10.75	158	31	08.81	4.6111267	25.379
Black Butte (E).....	335	49	41.20	155	56	02.89	4.46624	18.180

(H)=positions by Charles Hartmann in 1916; (E)=positions by J. R. Ellis in 1913.

Diamond Peak, Disston, Maiden Peak, McKinzie Bridge, Mount Washington, and Wendling quadrangles.

CROOK, DESCHUTES, LANE, LINN, AND KLAMATH COUNTIES.

During the summer of 1916 J. G. Staack and S. G. Lunde extended triangulation northward through the Cascade National Forest from stations Black and Fairview (see U. S. Coast and Geodetic Survey Special Pub. No. 13) as a base.

In addition to reoccupying two old stations 14 new primary stations were monumented and occupied, 3 secondary stations were occupied, and 18 points were located by intersections.

Positions are given on North American datum.

NOTE: Occupied first.—Juniper, Diamond, Maiden, Irish, Horse, and Scott by J. G. Staack. Hardesty, Cowhorn, Indian, and Buck by S. G. Lunde. Occupied second.—Buckhead, Clark's Butte, and Gray by S. G. Lunde. Occupied in common.—Look-out, Horsepasture, Chucksney, and Huckleberry. Intersected.—Belknap, Black Crater, Deer, North Sister, Middle Sister, Substitute, Paulina, Mule, Waldo, Ray, Odell, and Cowhorn Mountain by J. G. Staack. Heckletooth, Sardine, Castle Rock, and Deathball by S. G. Lunde. Intersected in common.—Squaw and Tid Bits.

BELKNAP, LINN-DESCHUTES COUNTY LINE, OREG. (Not occupied.)

On the summit of Belknap Crater, a bald mountain on the summit of the Cascade Range, about 2 miles north of the McKenzie road where it crosses the divide. It stands in a large lava field and can be ascended from any direction. The nearest feed is at Scott Lake.

Signal: A cairn 4 feet at the base and 5 feet high over the station mark.

Station mark: A bronze tablet set in a boulder sunk in the ground.

[Latitude 44° 17' 07.5". Longitude 121° 50' 28.9".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Horse.....		187 33 51.3	4.52249	20.69
Horsepasture.....		226 11 05.3	4.43433	16.89
Lookout.....		251 11 23.5	4.38525	15.09

BLACK CRATER, DESCHUTES COUNTY, OREG. (Not occupied.)

The summit of Black Crater, a rocky mountain east of the summit of the Cascade Range and 2 miles south of the McKenzie road, where it leaves the summit of the Cascade Range.

Signal and station mark: A cairn 4 feet high.

[Latitude 44° 15' 59.3". Longitude 121° 44' 51.5".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Horsepasture.....		238 17 37.5	4.50327	19.80
Scott.....		258 00 12.6	4.13374	8.45
Lookout.....		259 18 11.5	4.49155	19.27

BUCK, LANE COUNTY, OREG.

On the highest point on Buck Mountain, at the head of Blue River. A wagon road leads from the town of Blue River to the Cinderella mine, 9 miles distant, from where it is 2 miles by an old trail along the ridge in an easterly direction to the station.

Signal: Pole 8 inches at butt and 20 feet long, with crossbars and streamer attached, wedged in crevasse in the rocks, bearing 327° 20' true azimuth, distance 7.94 feet from station mark.

Station mark: A bronze tablet cemented in bedrock.

Reference marks: A cross in bed rock bears 336° 00' true azimuth, distance 1.72 feet; a cross in bed rock bears 206° 00' true azimuth, distance 2.13 feet; a cross in bed-rock bears 70° 00' true azimuth, distance 3.75 feet.

[Latitude 44° 13' 49.93". Longitude 122° 18' 16.45".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Deathball.....	8 26 03.4		4.04839	6.95
Cowhorn.....	36 46 09.05	216 37 52.31	4.4237996	16.49
Tid Bits.....	162 37 57.3		3.63580	2.69
Lookout.....	276 49 38.36	96 56 58.47	4.1494762	8.77
Horsepasture.....	306 03 07.06	126 12 12.61	4.3331017	13.58
Castle Rock.....	319 29 54.0		4.06074	7.15
Indian.....	350 47 30.70	170 49 37.15	4.4029185	15.71

BUCKHEAD, LANE COUNTY, OREG. (Secondary point occupied.)

Situated on highest point of the south end of Buckhead Mountain, 6 miles northwest of Oakridge, Oreg. The point is used as a U. S. Forest Service lookout station, and there is a Forest Service telephone on tree about 200 feet north. It is reached by trail from Oakridge direct to point.

Signal: Braced pole with crossbars and streamer bears 180° 02' true azimuth, distance 8.27 feet, from station mark.

Station mark: A round hole 1 inch in diameter and 2.5 inches deep in bedrock.

[Latitude 43° 47' 37.7". Longitude 122° 29' 36.1'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Hardesty.....	92 40 56.8	272 33 42.1	4.14788	8.73
Huckleberry.....	247 13 25.5	67 20 44.4	4.18628	9.54
Diamond.....	317 20 24.9	137 34 41.3	4.61398	25.55

CASTLE ROCK, LANE COUNTY, OREG. (Not occupied.)

Situated on the highest point of Castle Rock, a lone, prominent peak on the south side of McKenzie River valley, near the junction of South Fork of McKenzie River with the main river, about 6 miles west of McKenzie Bridge, Oreg. The point is used as a U. S. Forest Service lookout station. A trail leads directly from McKenzie Bridge to point.

Signal: A Forest Service lookout house having a flagpole over its center.

[Latitude 44° 09' 06.4". Longitude 122° 12' 40.3'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Indian.....	191 57 36.3	4.21939		10.30
Buck.....	319 29 54.0	4.06075		7.15
Lookout.....	42 54 14.4	3.98362		5.98
Horsepasture.....	111 42 08.5	4.02886		6.64

CHUCKSNEY, LANE COUNTY, OREG.

Situated on north end of north main peak of Chucksney Mountain. It is reached by road to South Fork bridge; thence by road down left bank of McKenzie River and up South Fork of same; thence by trail up South Fork 20.5 miles to Frizzell's crossing; thence by trail 5.5 miles to Box Canyon ranger station; thence by trail 2.5 miles to top of Chucksney Mountain, and thence north along ridge 1.25 miles to station. It may also be reached from Oakridge by road and trail to Box Canyon ranger station, 32 miles. Lanes through the timber were cut to other points south, west, and north.

Signal: Quadripod signal of timber with crossbars and streamer centered over station mark.

Station mark: A bronze tablet cemented in solid rock.

Reference marks: Cross cut in large boulder bears 242° 00' true azimuth, distance 13.75 feet; cross cut in large boulder bears 349° 00' true azimuth, distance 11.07 feet; cross cut in bedrock bears 175° 00' true azimuth, distance 12.97 feet.

[Latitude 43° 55' 39.18". Longitude 122° 06' 54.92'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Huckleberry.....	61 15 25.28	241 07 01.07	4.2678662	11.51
Indian.....	128 02 04.85	307 56 17.81	4.1504226	8.79
Horsepasture.....	186 08 05.19	6 09 15.63	4.3241084	13.11
Horse.....	248 55 01.19	69 04 08.38	4.2747873	11.70
Irish.....	306 30 07.01	126 35 59.70	4.1503161	8.78

CLARK BUTTE, LANE COUNTY, OREG. (Secondary point occupied.)

Situated on Clark Butte, a peak used as a United States Forest Service lookout point, about 24 miles northeast of Lowell, Oreg. It is 2 miles north of Big Fall Creek and 4 miles by trail from Big Fall Creek ranger station.

Signal: An 18-inch fir tree, the branches cut off to about 10 feet of top, with small crossbars and streamer attached. A Forest Service telephone is attached to tree. The tree is also the station mark. It stands on the south slope about 75 feet from top of the butte.

Reference marks: A 40-penny spike in a 16-inch fir stump bears about N. 20° E., distance 36.6 feet; a 40-penny spike in a 16-inch fir stump is about due west, distance 4.0 feet.

[Latitude 43° 59' 22.8". Longitude 122° 34' 28.7".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Hardesty.....		199 29 51.2	4.35054	13.93
Cowhorn.....		46 25 35.7	3.90097	4.95
Sardine.....		94 36 21.2	4.34803	13.85

COWHORN, LANE COUNTY, OREG.

Situated on highest point of Cowhorn Peak, on ridge between Little Fall and Alder creeks, at head of creeks. It is 25 miles northeast of Lowell, a station on the Natron Branch of the Southern Pacific Railroad, and is reached by wagon road 14 miles to Big Fall Creek ranger station; thence by trail 4 miles to Clark Butte, and thence through timber and brush along ridge 5 miles to station.

There is no horse feed near station, but water can be had in saddle 0.5 mile west.

Signal: A 6-inch tree cut off 10 feet above ground, crossbars and streamer attached. The signal bears 149° 51' true azimuth, distance 9.50 feet, from station mark.

Station mark: A bronze tablet cemented in bedrock.

[Latitude 44° 02' 20.67". Longitude 122° 30' 09.80".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Hardesty.....	26 32 55.55	206 26 03.23	4.4732040	18.47
Clark Butte.....	46 25 35.7		3.90097	4.95
Buck.....	216 37 52.31	36 46 09.05	4.4237996	16.49
Deathball.....	234 15 51.4		4.24345	10.88
Lookout.....	236 38 18.85	56 53 54.87	4.5530576	22.20
Indian.....	280 24 00.13	100 34 22.09	4.3068849	12.60
Sardine.....	293 42 21.6		4.25436	11.16
Huckleberry.....	325 00 45.48	145 08 28.72	4.4150582	16.16

COWHORN MOUNTAIN, DOUGLAS AND KLAMATH COUNTY LINE, OREG. (Not occupied.)

A sharp peak, locally known as Cowhorn Mountain, on the summit of the Cascade Range; can be reached from Crescent Lake.

Station mark: A cairn 5 feet high.

[Latitude 43° 24' 00.6". Longitude 122° 03' 11.2".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Maiden.....		15 58 02.7	4.41901	16.31
Black.....		231 12 40.5	4.62931	26.50
Diamond.....		330 01 45.9	4.19079	9.64

DEATHBALL, LANE COUNTY, OREG. (Not occupied.)

Situated on highest point of peak locally known as Deathball, 2 miles south of Blue River, Oreg. Ferry across McKenzie River and follow dim trail leading up to saddle just west of point; thence go along ridge east about 0.25 mile.

Signal: A dead tree trimmed of branches to within 15 feet of top, with crossbars and streamer attached.

[Latitude 44° 07' 51.6". Longitude 122° 19' 30.2".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Cowhorn.....	234 15 51.4	4.24345	10.88
Buck.....	8 26 03.4	4.04839	6.95
Lookout.....	59 10 59.2	4.26112	11.34

DEER, LANE COUNTY, OREG. (Not occupied.)

On the summit of Deer Butte, a brushy mountain overlooking Lost Creek valley, and on the north side of McKenzie River about 15 miles from McKenzie Bridge post office. Can be reached by trail from Alder Springs. It is a Forest Service lookout point.

Signal: A trimmed tree with crossbar and streamer.

Station mark: A bronze tablet set in a rock near base of the tree.

[Latitude 44° 10' 51.7". Longitude 121° 55' 55.1".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Horse.....	172 24 34.8	4.33455	13.42
Horsepasture.....	239 50 58.0	4.15673	8.91
Lookout.....	283 30 23.9	4.21024	10.08

DIAMOND, LANE AND KLAMATH COUNTIES, OREG.

Situated on the highest point of Diamond Peak, which is one of the principal peaks of the Cascade Range and stands near the source of Middle Fork of Willamette River. It is best ascended from the south and can be reached from Summit Lake, where a trail leaves the Oregon Central Military Road near the upper end of the lake. There is no feed near its base.

Signal: A cairn with 4-foot base and 5 feet high built of porous lava.

Station mark: A bronze tablet set in porous rock sunk in volcanic ash and pumice.

Reference marks: A cross cut in rock bears 86° true azimuth, distance 17.7 feet; a cross cut in rock bears 356° true azimuth, distance 50 feet.

[Latitude 43° 31' 16.18". Longitude 122° 08' 55.61".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Black.....	32 35 16.64	212 22 19.28	4.7676784	29.52
Fairview.....	100 14 52.18	279 54 02.96	4.6162954	25.68
Juniper.....	107 54 59.45	287 47 45.05	4.1724242	9.24
Squaw.....	150 05 31.8	329 58 03.0	4.46642	18.19
Huckleberry.....	159 29 45.86	339 22 46.86	4.5875578	24.04
Waldo.....	188 32 21.2	.....	4.43883	17.07
Irish.....	200 56 05.01	21 03 19.76	4.594900	24.45
Ray.....	206 35 11.9	.....	4.25647	11.23
Malden.....	231 38 20.33	51 45 58.90	4.2792421	11.82
Paulina.....	255 10 20.5	.....	4.87290	46.37
Odell.....	283 26 10.3	.....	4.37587	14.76
Cowhorn Mountain.....	330 01 45.9	.....	4.19079	9.64

FAIRVIEW, LANE COUNTY, OREG.

A station of the United States Coast and Geodetic Survey, on the west side of the summit of Fairview Peak, in the Bohemia Mountains, about 25 miles southeast of Cottage Grove, and 6 miles by road from Mineral post office. The station mark is in a boulder. Three reference marks are in rock ledges and at the following distances and azimuths from the station: 6.69 meters, $74^{\circ} 29'$; 2.92 meters, $181^{\circ} 39'$; and about 175 feet, $266^{\circ} 09'$.

Station mark: Copper bolt in boulder beneath bronze tablet.

Reference marks: Copper bolts in rock.

[Latitude $43^{\circ} 35' 10.459''$. Longitude $122^{\circ} 39' 08.622''$.]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Hardesty.....	176	59	53.81	356	59	15.40	4.3754333	14.75
Huckleberry.....	222	51	11.49	43	05	05.20	4.5979231	24.619
Squaw.....	235	00	48.1	...	...	...	4.50104	19.70
Juniper.....	275	37	55.74	95	51	30.77	4.4259576	16.569
Diamond.....	279	54	02.96	100	14	52.18	4.6162954	25.683
Black (C. & G. S.).....	341	59	37.72	162	07	24.98	4.6965851	.....
White (C. & G. S.).....	31	14	40.80	210	58	49.21	4.7811331	.....
Scott (C. & G. S.).....	54	40	43.54	234	23	43.86	4.6116108	.....

C. & G. S.=by U. S. Coast and Geodetic Survey in 1904.

GRAY, LANE COUNTY, OREG.

A secondary point situated on Short Ridge Rock, a United States Forest Service lookout station, on ridge between Gray and Lairson creeks, about 4 miles south of Oakridge, Oreg. It is reached by road from Oakridge 5.3 miles up Middle Fork of Willamette River to Jap Hills ranch, and thence by trail across river and up ridge 5 miles to station.

Station mark: A bronze tablet set in pinnacle of solid rock 10 feet south of and 6 feet below its top.

[Latitude $43^{\circ} 42' 43.0''$. Longitude $122^{\circ} 28' 15.4''$.]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Buckhead.....	348	46	50.9	3.96731	5.76
Huckleberry.....	39	31	04.3	4.28925	12.09
Squaw.....	69	54	37.8	4.08264	7.52
Diamond.....	129	18	14.2	4.52568	20.85

HARDESTY, LANE COUNTY, OREG.

Situated on north end of Mount Hardesty, a narrow ridge peak about 5 miles south of Reserve, a station on the Natron Branch of the Southern Pacific Railroad. It is used as a fire-lookout station and is reached by trail from Reserve. Good horse feed is plentiful just north, and water is obtained at a spring on trail about 0.25 mile north of the station.

Signal: A leaning fir tree 60 feet high with a vertical top, trimmed to about 20 feet from top, and having a cloth cross-bar signal about 30 feet from the ground. Top of tree is centered over station mark.

Station mark: A bronze tablet cemented in a large, solidly set boulder.

Reference marks: A solid rock with cross cut in top bears $12^{\circ} 00'$ true azimuth, distance 3.84 feet; a solid rock with cross cut in top bears $240^{\circ} 00'$ true azimuth, distance 2.03 feet; two 8-penny nails driven closely together in blaze on signal tree, bear $199^{\circ} 00'$ true azimuth, distance 0.95 foot.

[Latitude 43° 47' 58.53". Longitude 122° 40' 0.22".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Cowhorn.....	206	26	03.23	26	32	55.55	4.4732040	18.47
Huckleberry.....	259	15	37.67	79	30	11.50	4.4577525	17.83
Squaw.....	281	28	28.3	...	...	...	4.44356	17.25
Heckletooth.....	284	51	35.8	...	...	...	4.39782	15.53
Fairview.....	356	59	15.40	176	59	53.81	4.3754333	14.75

HECKLETOOTH, LANE COUNTY, OREG. (Not occupied.)

Situated on the highest point of Heckletooth Peak, on the ridge between Salmon and Salt creeks, about 5 miles east of Oakridge. A trail leads from Oakridge, crossing Salmon Creek at the Southern Pacific railroad bridge, leading up to and along the ridge directly to station. The point is used as a United States Forest Service lookout station.

Signal: Flagpole on building used as lookout station.

[Latitude 43° 44' 29.4". Longitude 122° 22' 04.6".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Hardesty.....				284	51	35.8	4.39782	15.53
Huckleberry.....				19	10	17.6	4.09441	7.72

HORSE, LANE COUNTY, OREG.

On west end of the summit of Horse Mountain, which lies approximately 2 miles west of the Lane and Crook county line, near the head of Horse Creek, a tributary of McKenzie River. Can best be reached from Horse Lake through saddle. There are small patches of feed on the east and west slopes of the mountain and good feed at Horse Lake ranger station, 2 miles northeast.

Signal: A target signal 12 feet high set over the station mark.

Station mark: A bronze tablet set in top of a vertical rock ledge.

Reference marks: A cross cut in rock bears 261° true azimuth, distance 9.7 feet; a cross cut in rock bears 80° true azimuth, distance 22.4 feet.

[Latitude 43° 50' 17.85". Longitude 121° 53' 46.62".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Irish.....	22	22	50.62	202	19	36.69	4.2148431	10.19
Chucksney.....	69	04	08.38	248	55	01.19	4.274873	11.70
Horsepasture.....	132	59	19.94	312	51	22.30	4.3197808	12.98
Lookout.....	143	35	35.12	323	25	51.36	4.4965762	19.50
Deer.....	172	24	34.8	...	...	...	4.33455	13.42
Scott.....	177	04	00.95	357	03	15.79	4.4492175	17.48
Substitute.....	180	14	11.8	...	...	...	4.14447	8.67
Belknap.....	187	33	51.3	...	...	...	4.52249	20.69
Middle Sister.....	206	52	43.6	...	...	...	4.30100	12.43

HORSEPASTURE, LANE COUNTY, OREG.

Situated on the highest point on Horsepasture Mountain, 10 miles southeast of McKenzie Bridge, Oreg. It is reached by road and trail from McKenzie Bridge. Horse feed is plentiful, and water is to be had 0.5 mile south of station.

Signal: Rock cairn 7 feet in diameter at base and 8 feet high, having a trimmed tree in center with white streamer attached, bears $36^{\circ} 53'$ true azimuth, distance 1,121 feet, from station mark.

Station mark: A bronze tablet cemented in bedrock.

Reference marks: Cross cut in bedrock bears $167^{\circ} 00'$ true azimuth, distance 3.98 feet; cross cut in bedrock bears $244^{\circ} 00'$ true azimuth, 3.26 feet; cross cut in bedrock bears $34^{\circ} 00'$ true azimuth, distance 3.43 feet.

[Latitude $44^{\circ} 06' 58.61''$. Longitude $122^{\circ} 05' 13.56''$.]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	''	°	'	''	Log. meters.	Miles.
Chucksney.....	6	09	15.63	186	98	05.19	4.3241084	13.11
Indian.....	47	32	43.21	227	25	45.08	4.2589876	11.28
Castle Rock.....	111	42	08.5				4.02886	6.64
Buck.....	126	12	12.61	306	03	07.06	4.3331017	13.38
Tid Bits.....	132	05	08.7				4.40030	15.62
Lookout.....	162	57	56.38	342	56	13.56	4.0610447	7.15
Scott.....	224	49	19.42	44	56	32.94	4.2918556	12.17
Belknap.....	226	11	05.02				4.43433	16.89
Black Crater.....	238	17	37.5				4.50327	19.80
Deer.....	239	50	58.0				4.15673	8.91
North Sister.....	257	27	36.2				4.41221	16.05
Middle Sister.....	261	26	49.2				4.39061	15.28
Substitute.....	270	57	30.8				4.18572	9.53
Horse.....	312	51	22.30	132	59	19.94	4.3197808	12.98

HUCKLEBERRY, LANE COUNTY, OREG.

Situated on highest point of Huckleberry Mountain, 15 miles northeast of Oakridge, Oreg. It is reached by road 6 miles and trail from Oakridge, Oreg., the present terminal of the Natron branch of the Southern Pacific Railroad. From end of the road on High Prairie follow the main Brock Cabin trail 2.5 miles to first trail leading to the right. Scattered grass and a small spring are found on the south side near the top of the ridge about 1 mile east of the station.

Signal: A fir tree with tuft of branches at top, braced by 3 poles; crossbars and streamers are attached, and tree is centered over station mark.

Station mark: A bronze tablet cemented in rock 6 by 8 by 18 inches, which projects 3 inches above ground.

Reference marks: Three 10-penny nails in 7-inch fir stump bear $130^{\circ} 00'$ true azimuth, distance 10.85 feet; three 10-penny nails in 12-inch fir stump bear $53^{\circ} 00'$ true azimuth, distance 15.82 feet; cross cut in large solid rock bears $284^{\circ} 00'$ true azimuth, distance 7.63 feet.

[Latitude $43^{\circ} 50' 49.83''$. Longitude $122^{\circ} 19' 02.25''$.]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	''	°	'	''	Log. meters.	Miles.
Juniper.....	0	58	21.91	180	58	05.36	4.5005871	19.68
Squaw.....	5	22	05.8	185	21	35.3	4.03797	6.78
Heckletooth.....	19	10	17.6				4.09441	7.72
Fairview.....	43	05	05.20	222	51	11.49	4.5979230	24.62
Buckhead.....	67	20	44.4	247	13	25.5	4.18628	9.54
Hardesty.....	79	30	11.50	259	15	37.67	4.4577525	17.83
Cowhorn.....	145	08	28.72	325	00	45.48	4.4150582	16.16
Sardine.....	186	20	50.4				4.15128	8.80
Indian.....	196	01	50.33	16	04	28.11	4.2635914	11.40
Chucksney.....	241	07	01.07	61	15	25.28	4.2678662	11.51
Irish.....	268	49	06.54	89	03	22.84	4.4411264	17.16
Waldo.....	297	06	25.0				4.29726	12.32
Maiden.....	310	31	16.07	130	45	55.41	4.5741693	23.31
Ray.....	312	46	33.8				4.47018	18.35
Diamond.....	339	22	46.86	159	29	45.86	4.5875578	24.039

INDIAN, LANE COUNTY, OREG.

Situated on the highest point on Indian Ridge. There is a point on the ridge of nearly the same height about 1 mile farther north. Station is reached by wagon road from Lowell, 14 miles to Big Fall Creek ranger station; thence by trail 25 miles up Big Fall Creek to Indian Ridge; thence by Indian trail north along ridge 3 miles; or it can be reached by trail from McKenzie Bridge, Oreg., up South Fork of McKenzie River to Hardy's cabin and thence up Indian Ridge trail. There is scattered horse feed along Indian Ridge. No water was found near station.

Signal: A 14-inch hemlock tree, 55 feet high, with 10-foot tuft of branches at top, then trimmed for 10 feet down and streamer attached; then branches left for 10 feet down. The branches were trimmed off the lower 25 feet, and crossbars were attached 20 feet up from the ground. The signal bears $82^{\circ} 19'$ true azimuth, distance 3.55 feet, from station mark.

Station mark: A bronze tablet cemented in rock 8 by 14 by 18 inches, which projects 4 inches above the ground.

Reference marks: A 30-penny spike in 12-inch fir stump bears $247^{\circ} 00'$ true azimuth, distance 10.31 feet; a 30-penny spike in 8-inch hemlock stump bears $13^{\circ} 00'$ true azimuth, distance 2.75 feet.

[Latitude $44^{\circ} 00' 21.13''$. Longitude $122^{\circ} 15' 14.81''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Huckleberry.....	16 04 28.11	196 01 50.33	4.2635914	11.40
Sardine.....	44 36 04.5		3.69800	3.10
Cowhorn.....	100 34 22.09	280 24 00.13	4.3068849	12.60
Buck.....	170 49 37.15	350 47 30.70	4.4029185	15.71
Castle Rock.....	191 57 36.3		4.21939	10.40
Lookout.....	203 11 49.04	23 17 09.83	4.4035759	15.74
Horsepasture.....	227 25 45.08	47 32 43.21	4.2589876	11.28
Chucksney.....	307 56 17.81	128 02 04.85	4.1504226	8.79

IRISH, LANE AND DESCHUTES COUNTIES, OREG.

On summit of middle peak of Irish Mountain, a mountain on the divide between North Fork of Middle Fork of Willamette River and Deschutes River. Can best be reached from Irish Lake by a blind trail. Good camp and feed at foot of east side of mountain.

Signal: A target signal 12 feet high set in a rock cairn over the station mark.

Station mark: A bronze tablet set in solid rock on highest crag of the mountain.

Reference marks: Cross cut in rock bears 162° true azimuth, distance 28.9 feet; cross cut in rock bears $293^{\circ} 30'$ true azimuth distance 169 feet.

[Latitude $43^{\circ} 51' 06.42''$. Longitude $121^{\circ} 58' 26.19''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Ray.....	16 18 02.9		4.33158	13.33
Diamond.....	21 03 19.76	200 56 05.01	4.5949000	24.45
Waldo.....	46 16 29.4		4.14096	8.60
Mule.....	83 19 37.7		4.29979	12.39
Huckleberry.....	89 03 22.84	268 49 06.54	4.4411264	17.16
Chucksney.....	126 35 59.70	306 30 07.01	4.1503161	8.78
Horse.....	202 19 36.69	22 22 50.62	4.2148431	10.19
Paulina.....	287 01 24.0		4.78324	37.72
Odeil.....	348 01 58.3		4.63577	26.86
Maiden.....	358 09 14.77	178 09 39.56	4.3972163	15.51

JUNIPER, LANE COUNTY, OREG.

Situated on the highest bald point on Juniper Ridge, between Middle Fork of Willamette River and Hills Creek, its tributary. Can easily be reached by trail from Rigdon ranger station on the Oregon Central Military Road, 26 miles from Oakridge.

Signal: A target signal 15 feet high set in rock cairn; true azimuth $310^{\circ} 52' 45''$, distance 8.2 feet from station mark.

Station mark: Bronze tablet set in rock ledge under a rock cairn 3 feet high.

Reference marks: Cross cut in rock ledge bears $149^{\circ} 30'$ true azimuth, distance 13.3 feet; cross cut on rock bears $311^{\circ} 30'$ true azimuth, distance 8.2 feet.

[Latitude $43^{\circ} 33' 43.96''$. Longitude $122^{\circ} 19' 26.20''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Black.....	14 15 32.58	194 09 47.89	4.6632095	28.61
Fairview.....	95 51 30.77	275 37 55.74	4.4259576	16.60
Squaw.....	178 39 51.3	.....	4.31806	12.92
Huckleberry.....	180 58 05.36	0 58 21.91	4.5005871	19.68
Waldo.....	218 47 13.5	.....	4.46282	18.04
Malden.....	255 54 46.03	76 09 39.60	4.4764409	18.61
Diamond.....	287 47 45.05	107 54 59.45	4.1724242	9.24

LOOKOUT, LANE COUNTY, OREG.

Situated on the south end of Lookout Mountain, 5 miles northeast of McKenzie Bridge, Oreg. It is reached by following road up the right bank of McKenzie River for about 1 mile; thence along trail northeasterly to top of ridge; thence west and north along ridge by sheep trail to station. Lookout Mountain is forested on the west and north sides. Lookout ranger station site is about 0.5 mile south of point.

Signal: Fir tree trimmed so as to leave an 8-foot tip of branches, fastened in a crotched tree snag with crossbars and streamer attached, bears $143^{\circ} 29'$ true azimuth, distance 4.59 feet, from station mark.

Station mark: A bronze tablet cemented in rock 8 by 10 by 16 inches, which projects 4 inches above ground.

Reference marks: Cross cut in large boulder bears $276^{\circ} 00'$ true azimuth, distance 2.82 feet; drilled hole 1 inch deep and 1 inch in diameter bears $212^{\circ} 00'$ true azimuth, distance 3.62 feet; drilled hole 1 inch deep and 1 inch in diameter bears $136^{\circ} 00'$ true azimuth, distance 2.44 feet.

[Latitude $44^{\circ} 12' 55.11''$. Longitude $122^{\circ} 07' 45.43''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Indian.....	23 17 01.83	203 11 49.04	4.4035759	15.74
Castle Rock.....	42 54 14.4	.....	3.98361	5.98
Cowhorn.....	56 53 54.87	236 38 18.85	4.5530576	22.20
Deathball.....	59 10 59.2	.....	4.26112	11.34
Buck.....	96 56 58.48	276 49 38.37	4.1494762	8.77
Belknap.....	251 11 23.6	.....	4.38525	15.09
Black Crater.....	259 18 11.5	.....	4.49155	19.27
Scott.....	260 26 04.57	80 35 04.41	4.2409397	10.82
North Sister.....	280 39 15.8	.....	4.46378	18.07
Deer.....	283 30 29.8	.....	4.21024	10.08
Middle Sister.....	284 50 17.2	.....	4.45695	17.80
Substitute.....	301 01 09.5	.....	4.33913	13.57
Horse.....	323 25 51.36	143 35 35.12	4.4965762	19.50

MAIDEN, LANE AND DESCHUTES COUNTIES, OREG.

Situated on the highest part of Maiden Peak, one of the minor peaks on the summit of the Cascade Range, near the common corner of Lane, Klamath, and Deschutes counties. Can be ascended from any side but best by trail from Davis Lake ranger station. There is no feed for stock close to the top.

Signal: A target and flagstaff 15 feet high nailed to the support of U. S. Forest Service lookout station bears $288^{\circ} 44' 39''$ true azimuth, distance 8.9 feet.

Station mark: A bronze tablet set in a hard boulder sunk flush with the surface of the ground.

Reference mark: A cross chiseled on a rock bears $332^{\circ} 30'$ true azimuth, distance 47.7 feet.

[Latitude $43^{\circ} 37' 38.15''$. Longitude $121^{\circ} 57' 50.33''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Cowhorn Mountain.....	15 58 02.7	.....	4.41901	16.31
Diamond.....	51 45 58.90	231 38 20.33	4.2792421	11.82
Juniper.....	76 09 39.60	255 54 46.03	4.4764409	18.61
Ray.....	122 30 36.1	.....	3.90826	5.03
Huckleberry.....	130 45 55.41	310 31 16.07	4.5741693	23.31
Waldo.....	144 55 49.3	.....	4.27408	11.68
Irish.....	178 09 39.56	358 09 14.77	4.3972163	15.51
Odell.....	334 48 40.0	.....	4.28256	11.91

MIDDLE SISTER, LANE AND DESCHUTES COUNTIES, OREG. (Not occupied.)

On the summit of Middle Sister, the middle peak of a group of three peaks on the summit of the Cascade Range known as the Three Sisters. A very good outlook to be had from this station

Signal and station mark: A rock cairn.

[Latitude $44^{\circ} 08' 55.7''$. Longitude $121^{\circ} 46' 59.8''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Horse.....	206 52 43.6	4.30100	12.43
Horsepasture.....	261 26 49.2	4.39061	15.27
Lookout.....	284 50 17.1	4.45695	17.80
Scott.....	314 22 02.9	4.16630	9.11

MULE, LANE COUNTY, OREG. (Not occupied.)

Station mark: A trimmed tree on the southern end of Mule Mountain, a flat-topped and timbered mountain on the divide between Salmon Creek and North Fork of Middle Fork of Willamette River.

[Latitude $43^{\circ} 49' 50.3''$. Longitude $122^{\circ} 13' 12.7''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Irish.....	83 19 37.7	4.29979	12.39
Huckleberry.....	283 11 16.7	3.90438	4.99

NORTH SISTER, LANE AND DESCHUTES COUNTIES, OREG. (Not occupied.)

On the summit of North Sister, the northernmost peak of a group of three peaks, known as the Three Sisters, on the summit of the Cascade Range.

Signal and station mark: Highest point on the peak near the south end.

[Latitude 44° 09' 58.8". Longitude 121° 46' 18.7".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Horsepasture.....		257 27 36.2	4.41221	16.05
Lookout.....		280 39 15.8	4.46378	18.07
Scott.....		306 05 04.4	4.14915	8.76

ODELL, KLAMATH COUNTY, OREG. (Not occupied.)

A cone-shaped mountain, 9 miles west of Crescent, Oreg., having a sharp, rocky top, locally known as Odell Butte.

Station mark: The highest pointed rock.

[Latitude 43° 28' 16.0". Longitude 121° 51' 47.4".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Diamond.....		283 26 10.3	4.37587	14.76
Maiden.....		334 48 40.0	4.28256	11.91
Irish.....		348 01 58.3	4.63577	26.86

PAULINA, CROOK COUNTY, OREG. (Not occupied.)

The highest part of Paulina Peak, about 12 miles east of Lapine. The summit is a Forest Service lookout and may be reached on horseback from Paulina Lake.

[Latitude 43° 41' 22.4". Longitude 121° 15' 14.4".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Diamond.....		255 10 20.5	4.87290	46.37
Irish.....		287 10 24.0	4.78324	37.72

RAY, LANE COUNTY, OREG. (Not occupied.)

On the summit of Mount Ray, a lone mountain at the south end of Waldo Lake.

Station mark: A cross chiseled in a rock, over which a cairn 4 feet high was placed.

[Latitude 43° 39' 59.0". Longitude 122° 02' 55.0".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Irish.....		16 18 02.9	4.33158	13.33
Huckleberry.....		312 46 33.7	4.47018	18.35
Diamond.....		206 35 11.9	4.25647	11.23
Maiden.....		122 30 36.1	3.90826	5.03

SARDINE, LANE COUNTY, OREG. (Not occupied.)

Situated on the highest point of Sardine Butte on ridge between Indian Ridge and Sinker Mountain. Sardine Butte is a very sharp and prominent butte. It is reached from Lowell, Oreg., by wagon road 14 miles to Big Fall Creek ranger station, thence over the Indian Ridge trail 23 miles to within 0.5 mile of point, and thence along ridge through timber to station.

Signal: A rock cairn 3.5 feet in height, with 4-foot base, a 20-foot tree, trimmed except tuft at top, standing in center of cairn. Streamer of white cloth attached to tree.

Station mark: A bronze tablet is cemented in solid rock under cairn.

[Latitude 43° 58' 26.1". Longitude 122° 17' 51.9".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Huckleberry.....	6 21 38.9	186 20 50.4	4.15128	8.80
Cowhorn.....	113 50 54.4	293 42 21.6	4.25436	11.16
Indian.....		44 36 04.6	3.69800	3.10

SCOTT, LANE COUNTY, OREG.

On the summit of Scott Mountain, formerly known as Olallie Mountain, which is bald topped and stands 3 miles west of the summit of the Cascade Range where the McKenzie Road crosses the divide. Can be easily reached from the McKenzie Road and Scott Lake.

Signal: A target signal 10 feet high set in a rock cairn over the station mark.

Station mark: A bronze tablet set in a rock sunk in the ground under the cairn.

Reference marks: A cross cut in rock bears 291° 30' true azimuth, distance 79 feet, a cross cut in rock bears 154° 30' true azimuth, distance 50.7 feet.

[Latitude 44° 14' 28.15". Longitude 121° 54' 51.49".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Horsepasture.....	44 56 32.94	224 49 19.42	4.2918556	12.17
Lookout.....	80 35 04.41	260 26 04.57	4.2409397	10.82
Tid Bits.....	95 19 32.1		4.51311	20.25
Black Crater.....	258 00 12.6		4.13374	8.45
North Sister.....	306 05 04.4		4.14915	8.76
Middle Sister.....	314 22 02.9		4.16630	9.11
Substitute.....	353 56 33.7		4.15316	8.84
Horse.....	357 03 15.79	177 01 00.95	4.4492175	17.48

SQUAW, LANE COUNTY, OREG. (Not occupied.)

Situated on highest point of Squaw Butte, a bald butte about 7 miles east of Oakridge, Oreg. It is reached by a trail which crosses Salmon Creek at Southern Pacific R. R. bridge and leads southeast up on divide between Salmon and Salt creeks. Follow trail along ridge east about 3 miles to point where it leaves ridge. The trail there turns south-southeast toward Mineral Springs. From this point follow top of ridge about 1 mile to station.

Signal: Cross bars and streamer attached to a snag 8 inches in diameter and 12 feet high.

Station mark: A bronze tablet is cemented in a rock about 3 feet south of signal.

[Latitude 43° 44' 57.8". Longitude 122° 19' 47.9".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Fairview.....		235 00 48.1	4.50104	19.70
Hardesty.....		281 28 28.3	4.44356	17.25
Huckleberry.....	185 21 35.3	5 22 05.8	4.03797	6.78
Diamond.....	329 58 03.0	150 05 31.8	4.46642	18.19
Juniper.....		178 39 51.3	4.31806	12.92

SUBSTITUTE, LANE COUNTY, OREG. (Not occupied.)

On the summit of an unnamed mountain between North Fork of Horse Creek, a tributary of McKenzie River, and Lost Creek and about 3 miles due west of The Husband, a craggy mountain near the head of Lost Creek.

Signal: A target signal set over the station mark.

Station mark: A bronze tablet set in a rock ledge.

[Latitude 44° 06' 49.07". Longitude 121° 53' 44.0".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Horse.....		180 14 11.8	4.14447	8.67
Horsepasture.....		270 57 30.6	4.18572	9.53
Lookout.....		301 01 09.5	4.33913	13.57
Scott.....		353 56 33.7	4.15316	8.84

TID BITS, LANE COUNTY, OREG. (Not occupied.)

Situated on top of south peak of Tid Bits Mountain, a mountain with two sharp cliff peaks about 10 miles north from Blue River, Oreg. It is reached by road and trail direct from Blue River.

Signal: Flag pole on center of Forest Service lookout station house.

[Latitude 44° 16' 03.6". Longitude 122° 19' 14.6".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Scott.....				
Horsepasture.....		132 05 08.7	4.40030	15.62
Buck.....		162 37 57.3	3.63580	2.69

WALDO, LANE COUNTY, OREG. (Not occupied.)

On the summit of Waldo Mountain near the head of Salmon Creek. Can be reached from Oakridge by way of the Salmon Creek trail.

Signal: A target signal over the station mark.

Station mark: A cross chiseled in a rock over which is a cairn 4 feet high.

[Latitude 43° 45' 56.3". Longitude 122° 05' 53.2".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Diamond.....		188 32 21.2	4.43883	17.07
Juniper.....		218 47 13.5	4.46282	18.04
Huckleberry.....		297 06 21.3	4.29726	12.32
Irish.....		46 16 29.4	4.14096	8.60
Maiden.....		144 55 49.3	4.27408	11.68

Lowell quadrangle.

LANE COUNTY.

During the summer of 1917 George T. Hawkins and L. F. Biggs relocated station Castle Rock and located station Jacoby by inter-sections by occupying old stations Pisgah and Spencer.

Positions are on North American datum.

CASTLE ROCK, LANE COUNTY, OREG.

About 7.5 miles nearly east from Saginaw and 3 miles northeast of the old Booth-Kelley sawmill. There is no trail. Can go to the mill by road thence through the woods. Partly cleared on top. Lone pine left for signal.

Station mark: Cross and letters "U. S." cut in solid ledge.

[Latitude 43° 50' 36.524". Longitude 122° 53' 27.598".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Harness (G).....	26 08 35.2	205 59 37.3	4.5987349	.....
Yellow Creek (G).....	51 34 00.4	231 12 47.9	4.7226620	.....
Wards (G).....	61 00 54.9	240 49 52.6	4.3889250	.....
Seavies (G).....	163 42 47.3	343 38 18.2	4.4875925	.....
Spencer (H).....	133 37 13.8	313 28 44.9	4.3538334	14.034
Pisgah (H).....	161 54 46.1	341 51 43.0	4.2774224	11.077
Jacoby (H).....	191 05 40.1	11 07 12.1	4.1863615	9.544

(G)=by W. T. Griswold, 1895-6; (H)=by G. T. Hawkins in 1917.

JACOBY, LANE COUNTY, OREG. (Not occupied.)

On a partly cleared hill about 1.5 miles southeast from Jacoby railroad station.

The highest tree on the hill was trimmed of branches, leaving a small tuft in top. A flag pole was fastened to top of tree with white flag about 15 feet above tree top. Base of tree was blazed, and large nail was driven in center of blaze.

[Latitude 43° 58' 44.84". Longitude 122° 51' 14.99".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Castle Rock.....	11 07 12.1	191 05 40.1	4.1863615	9.544
Spencer.....	91 32 14.4	271 22 12.9	4.2858395	12.000
Pisgah.....	108 23 36.8	288 19 01.3	3.9689770	5.785

SPENCER, LANE COUNTY, OREG. (U. S. C. & G. S. station.)

This station is near a U. S. Geological Survey station. It is on the south end and highest point of the summit of Spencer Butte, about 4 miles south of Eugene, Oreg. Two trees used by the Geological Survey are at the north end of the summit. The station is marked by a $\frac{3}{8}$ -inch copper bolt 3 inches long cemented into a drill hole in rock, and directly above the bolt in the same drill hole is cemented an old-type station mark, a brass disk 85 millimeters in diameter marked "U. S. C. & G. S."

Four reference marks, drill holes in $\frac{3}{8}$ -inch copper bolts 3 inches long cemented into drill holes in boulders, are at the following distances and azimuths from the station: 21.04 meters, 197° 31'; 20.70 meters, 107° 02'.

[Latitude 43° 59' 00.715". Longitude 123° 05' 41.248".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Yellow.....	27	10	28.02	206	57	41.38	4.7362330	33.852
Pisgah.....	256	49	13.38	76	54	39.61	4.0312723	6.678
Jacoby.....	271	22	12.9	91	32	14.4	4.2858395	12.000
Castle Rock.....	313	28	44.9	133	37	13.8	4.3538334	14.034
Fairview.....	320	57	05.87	141	15	27.90	4.7537056	35.242

PISGAH, LANE COUNTY, OREG.

Situated north and east from Goshen on a hill known as Mount Pisgah, about 200 feet southwest or toward Spencer Butte from the highest point of the hill. The station is on top of a rock about 4 by 6 feet in area, which projects 16 inches above ground. This rock is the largest one of a cluster and except one on the west slope about 175 feet to the north is the largest rock in the vicinity.

Station mark: A 0.5-inch drill hole 1.25 inches deep 6 inches from west edge of the rock and 23 inches from the south point.

[Latitude 44° 00' 19.836". Longitude 122° 57' 51.568".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Spencer.....	76	54	39.61	256	49	13.38	4.0312723	6.678
Willamette South Base.....	111	24	00.79	291	14	40.27	4.2849731	11.976
Seavies 2.....	164	45	06.65	344	43	30.67	4.0671380	7.253
Jacoby.....	288	19	01.3	108	23	36.8	3.9689770	5.785
Castle Rock.....	341	51	43.0	161	54	46.1	4.2774224	11.770

PRIMARY TRAVERSE.

Alsea No. 2, Alsea No. 3, Alsea No. 4, Black Butte, Cape Foulweather, Coos Bay, Cottagegrove, Elmira, Eugene, Glenada, Heceta, Head, Mound, Roseburg No. 1, Roseburg No. 2, Scottsburg No. 1, Scottsburg No. 2, Scottsburg No. 3, Scottsburg No. 4, Waldport, and Yoncalla quadrangles.

LANE COUNTY.

The following geographic positions on North American datum were determined in 1917 by George T. Hawkins, J. C. Fales, and F. J. McMaugh as indicated at head of the several quadrangle lists.

They are based on triangulation and traverse positions previously established in this locality.

ALSEA NO. 2 QUADRANGLE.

Northwest along highways. (By J. C. Fales in 1917.)

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	Feet.
Middle of large wooden gate, on south side of road, opposite yellow house of W. M. Summers.....	44	15	12.3	123	46	08.8	.....
On west side of road, in sandstone ledge; tablet stamped "Prim. Trav. Sta. No. 105, 1917".....	44	16	00.4	123	46	37.8	5,369
West end of plank bridge 20 by 12 feet, without railing.....	41	16	27.0	123	47	07.0	3,431
Road fork westerly, distance sign "Ocean View 22 miles" at northwest corner.....	44	16	26.8	123	47	31.5	1,784
East end of bridge 30 by 14 feet, railing on south side only.....	41	16	55.7	123	47	59.8	3,577
Road fork, old road runs over hill to north of new road.....	44	16	52.4	123	48	35.2	2,594
Road opposite three-bar gate at end of fence on south side of road.....	44	16	50.5	123	49	11.0	2,611
Southwest corner of plank and log bridge 30 by 14 feet, railed on both sides.....	44	17	27.1	123	49	49.9	4,669
T road south over covered bridge, 10 feet north of north end of bridge.....	44	17	32.9	123	50	24.4	2,575
Road opposite center line of T road south over bridge.....	44	17	53.1	123	50	37.3	2,254
Road opposite wooden gate at entrance to unpainted abandoned house, 400 feet north of road.....	44	18	21.6	123	50	41.2	2,892
West end of bridge 20 by 14 feet, 200 feet southeast of old house.....	44	18	38.0	123	51	21.5	3,364
Center line at south end of timber-truss bridge across creek.....	44	19	00.0	123	51	30.3	2,321
South end of timber-truss bridge about 800 feet east of Seit's house.....	44	19	13.3	123	50	46.9	3,430
North edge of road, opposite front door of cottage of M. L. Earnest.....	44	19	45.5	123	50	44.3	3,261
Road opposite gate at entrance to unpainted shack of W. E. Churchill.....	44	20	01.9	123	50	12.6	2,844
T road near north end of covered bridge, center line 15 feet north of north end.....	44	20	17.5	123	49	33.0	3,284
Center of gate in rail fence at entrance to barnyard of C. B. Fleece.....	44	20	23.8	123	49	16.4	1,362
Road fork east up short incline.....	44	20	41.3	123	49	13.9	1,785
Road, opposite large door of barn 40 feet west of road.....	44	20	50.2	123	49	28.1	1,372
West edge of road, opposite middle of woodshed of log dwelling on west side of road.....	44	21	15.4	123	48	44.0	4,098
T road at west end of covered bridge, junction of road from Dancer and Alsea-Newport road.....	44	21	36.4	123	49	41.7	4,700
In rock, 30 feet west of road; tablet stamped "Prim. Trav. Sta. No. 108, 1917".....	44	21	24.6	123	49	55.4	1,552
Bar gate, 30 feet east of corner of rail fence, on east side of road.....	44	21	07.2	123	50	04.7	1,594
South junction of old road with new.....	44	21	19.7	123	50	22.4	1,805
Road, opposite triangular blaze on twin maple tree 40 feet west of road.....	44	21	39.2	123	50	11.9	2,118
Center of double wagon gate diagonally across road from unpainted shack.....	44	22	31.1	123	49	59.4	5,333
Road, opposite small picket gate in front of residence of Howell Thistle.....	44	23	21.7	123	50	26.1	5,480
Road fork southeast.....	44	23	36.9	123	49	45.7	3,310
West end of covered bridge over Scott Creek.....	44	24	02.7	123	49	53.5	2,675
South edge of road, opposite double sliding door of barn 10 feet south of road.....	44	24	00.8	123	50	59.6	4,806
Road, opposite small gate at front entrance to G. N. Barclay's house.....	44	24	09.4	123	52	22.3	6,066
Northwest corner of fish hatchery.....	44	24	15.1	123	52	34.4	1,057
Road, opposite stable door of barn 30 feet south of road.....	44	24	28.8	123	53	29.3	4,216
Tidewater, road opposite rotary saw of Luderman and McMillan's sawmill, which is 50 feet south of road.....	44	24	41.8	123	54	02.6	2,751
Road, opposite small gate in picket fence at entrance to yellow house of J. H. Early.....	44	24	39.8	123	54	43.2	2,960
Road, opposite broad wagon gate at corner of garden patch, 300 feet southeast of unpainted house.....	44	23	56.8	123	55	31.3	5,575
Road, opposite west end of cribbed log retaining wall on north side of road.....	44	23	52.0	123	56	27.4	4,106
Extreme end of northeast log wing wall of 25 by 18 feet timber bridge without railing.....	44	24	21.9	123	56	58.6	3,783
Road, opposite triangular blaze on 36-inch hemlock tree at south edge of road.....	44	24	38.6	123	57	45.5	3,800
West end of three-bar gate in barbed wire fence on north side of road.....	44	24	40.2	123	59	03.0	5,632
Road opposite small picket gate in board fence, at entrance to red house south of road.....	44	24	46.1	123	59	30.3	2,067

Magnetic declination for northwest part of quadrangle, 21.5° E.

ALSEA NO. 2 QUADRANGLE—Continued.

East near south border of quadrangle. (By J. C. Fales in 1918.)

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	Feet.
Road, opposite log with railing used as foot bridge.....	44	17	43.2	123	59	52.5	
North bank of river, set in rock, U. S. G. S. aluminum tablet stamped "Prim. Trav. Sta. No. 112, 1917".....	44	17	54.4	123	59	32.5	1,846
Road, at T road and board gate in wire fence to house of Guy Hayes.....	44	17	58.6	133	59	14.9	1,349
Timber-truss bridge across river, north end of center line of.....	44	17	51.9	123	58	33.6	3,076
Road, opposite picket gate at entrance to unpainted small house 50 feet south of road.....	44	17	34.3	123	58	53.3	2,283
Point in fence line at picket foot gate at entrance to unpainted house 30 feet south of road.....	44	16	53.7	123	58	20.8	4,745
Timber-truss bridge across river, south end of center line.....	44	16	57.7	123	57	51.1	2,198
Timber-truss bridge across river, southeast corner of.....	44	17	02.5	123	57	31.2	1,528
Timber-truss bridge across river, west end of center line.....	44	17	03.0	123	57	18.0	962
Point in north and south rail fence with double posts 45 feet south of T with fence on south side of road.....	44	17	13.7	123	56	24.8	4,013
Opposite small picket gate in wire fence at entrance to house of Silas Howell.....	44	17	03.3	123	56	13.7	1,320
East edge of road at lowest switchback turn.....	44	16	55.7	123	55	47.0	2,089
Road, opposite triangular blaze on 30-inch spruce tree 10 feet north of road.....	44	17	20.3	123	55	47.7	2,497
Road, opposite triangular blaze on 24-inch fir tree at west edge of road.....	44	17	40.0	123	54	59.0	4,061
Road, opposite triangular blaze on 30-inch fir tree at west edge of road.....	44	17	55.7	123	54	17.7	3,401
Road, opposite triangular blaze on 24-inch fir tree at west edge of road.....	44	17	43.4	123	53	46.4	2,598
Road, opposite 15-inch fir tree at west edge of road.....	44	17	58.8	123	53	03.4	3,495
Road, opposite board wagon gate in rail fence on north side of road.....	44	17	50.7	123	52	36.2	2,137
Point in barbed-wire fence 20 feet north of fence corner, 60 feet north of road.....	44	18	15.3	123	51	57.6	3,759

Magnetic declination for south border of quadrangle, 21.5° E.

ALSEA NO. 3 QUADRANGLE.

Southwest along Southern Pacific R. R. (By F. J. McMaugh in 1917.)

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	Feet.
Rainrock station, north rail opposite.....	44	04	34.9	123	51	47.1	6,343
Road crossing.....	44	04	01.7	123	52	47.8	5,564
East end of bridge 702J.....	44	03	24.2	123	53	18.0	4,388
Road crossing.....	44	02	35.4	123	52	34.9	5,860
Road crossing.....	44	02	15.5	123	51	50.6	3,815
Mapleton, 380 feet south of railroad station, 123 feet northeast of track, 50 feet northwest of brown house, 8 feet southeast of plank walk, 12 feet southwest of telephone pole; iron post stamped "Prim. Trav. Sta. No. 8, Elev. 16, 1917".....	44	01	49.4	123	51	26.7	3,161
Center of track at road crossing.....	44	01	23.1	123	51	28.5	2,670
Road crossing.....	44	01	08.8	123	52	02.2	2,853
East end of bridge 706K.....	44	01	23.7	123	52	38.2	3,034
Road crossing.....	44	01	27.9	123	53	42.1	4,685
Beck siding, intersection of tracks, 100 feet east of switch.....	44	00	57.9	123	56	08.4	11,117

ALSEA NO. 3 QUADRANGLE—Continued.

Along Southern Pacific R. R.

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	Feet.
Nekoma, opposite west end of station, center of track.....	44	02	48.5	123	45	09.6	.....
Siuslaw River, south end of bridge 5, 432 feet long.....	44	03	00.5	123	45	47.6	3,027
Bridge 694G.....	44	02	56.0	123	46	33.7	3,400
Road crossing.....	44	03	12.9	123	46	48.2	2,008
Center of track at road crossing 696B.....	44	03	23.3	123	47	36.3	3,665
Swishome, 120 feet south of railroad track, in northwest corner of yard of section house; iron post stamped "Prim. Trav. Sta. No. 7, 1917".....	44	03	24.5	123	48	04.8	2,086
Crossroad.....	44	03	38.7	123	49	27.9	6,233
Crossroad.....	44	03	56.1	123	49	50.1	2,395
Cleveland Creek, east end of bridge over.....	44	04	10.2	123	50	27.2	3,066
Road crossing.....	44	00	59.6	123	56	27.5	1,402
East end of bridge 711E.....	44	01	14.0	123	57	56.8	6,689
Betzen, center of track opposite sign.....	44	01	07.4	123	58	43.9	3,510
East end of bridge 712G.....	44	01	00.0	123	59	15.0	2,392

Magnetic declination near south border of quadrangle, 21.7° E.

North along highways near east border of quadrangle. (By J. C. Fales in 1917.)

Swishome, Prim. Trav. Sta. No. 7, McM.....	44	03	24.6	123	48	04.8	.....
West side of road opposite sign on 18-inch alder tree at east side of road, "Lake Creek Route, Eugene, 43 miles".....	44	03	27.8	123	47	39.8	1,855
Road opposite north end of pole stable with slate roof partly destroyed.....	44	04	10.9	123	47	22.1	4,554
North end of plank bridge 10 by 12 feet, without railing.....	44	04	44.0	123	47	51.6	3,420
Southeast corner of covered bridge.....	44	04	53.3	123	47	21.6	1,193
Fork whence new road leaves old road and runs parallel to it, west junction.....	44	05	11.6	123	46	27.4	4,366
Road, opposite gate at entrance to house of Siuslaw Fish Hatchery, district 42.....	44	05	38.2	123	46	26.7	2,699
East end of covered bridge.....	44	05	44.7	123	45	32.3	4,025
T road at Deadwood where Deadwood road leaves Lake Creek road.....	44	05	43.2	123	45	18.2	1,037
T road, second-class road leading to house of E. H. Berkshire.....	44	06	14.1	123	45	01.4	3,359
East end of corduroy bridge 150 feet long, with railing on south side.....	44	06	30.5	123	45	07.8	1,724
Southeast end of wagon bridge 40 by 14 feet, without railing.....	44	07	04.1	123	45	04.6	3,418
Road, opposite small gate in picket fence at entrance to two-story white house with blue trimmings.....	44	07	40.7	123	45	16.4	3,798
Road, opposite triangular blaze on 18-inch fir tree at lower edge of road.....	44	13	25.9	123	45	29.3	.....
Summit of hill.....	44	13	38.7	123	45	34.0	1,339
Gate across road, hung from 22-inch fir tree at east edge of road.....	44	14	01.1	123	45	35.8	2,267
Fork in road whence second-class road leads to house approximately 1,000 feet south.....	44	14	36.3	123	46	12.3	4,727

Magnetic declination for east border of quadrangle, 21.5° E.

Checked spur line along highways north near center of quadrangle. (By F. J. McMaugh in 1917.)

Rainrock station, north rail opposite.....	44	04	34.9	123	51	47.1	.....
Center of bridge.....	44	05	05.0	123	52	09.1	3,428
Rainrock station, north rail opposite.....	44	04	34.9	123	51	47.1	.....
North end of small bridge.....	44	05	16.4	123	52	23.7	4,981
South end of small bridge.....	44	05	20.4	123	52	28.5	530
North end of small bridge.....	44	05	28.1	123	52	25.9	808
Summit of road, tree blazed with large triangle.....	44	06	03.9	123	51	30.3	5,436
Rainrock, 3.90 miles north of, 80 feet southeast of ranch house occupied by Mr. Vickery, 60 feet west of road, 8 feet north of gate, 2 feet west of fence, in rock; bronze tablet stamped "Prim. Trav. Sta. No. 21, 1917".....	44	06	27.2	123	51	07.8	2,881
East end of bridge.....	44	06	44.4	123	50	58.2	1,869
Large tree with two projecting snags, marked with large triangle blaze.....	44	07	24.6	123	50	41.0	4,259
Intersecting trail uphill to Mr. Nick Saul's house; hub.....	44	07	32.3	123	50	24.5	1,437
North end of covered bridge.....	44	08	04.5	123	50	38.3	.....
North end of small bridge.....	44	08	19.2	123	50	27.2	1,757
North end of small bridge.....	44	08	44.6	123	50	14.3	2,730
Center of road opposite Gibson's mail box.....	44	09	02.0	123	49	56.5	2,192
Telephone pole with triangle blaze, 70 feet south of gateway.....	44	09	25.2	123	50	11.8	2,607

ALSEA NO. 3 QUADRANGLE—Continued.

Checked spur line along highways north near center of quadrangle—Continued.

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	<i>Feet.</i>
Blazed tree.....	44	09	39.4	123	50	28.0	1,853
West gatepost at road leading into Reed post office.....	44	10	22.7	123	50	12.4	4,524
Reed post office, 0.84 mile north of, 74 feet northeast of schoolhouse, 110 feet southeast of northwest end of bridge, in large boulder; bronze tablet stamped "Prim. Trav. Sta. No. 22, 1917".....	44	10	44.0	123	50	52.2	3,055
Fork in roads to north and northwest.....	44	11	01.5	123	50	57.9	2,119
Corner of sections 11, 12, 13, and 14.....	44	11	10.4	123	50	52.5	983
North end of bridge.....	44	12	05.4	123	50	47.7	5,581
Gate across road.....	44	12	27.3	123	50	40.4	2,302
West end of bridge near sawmill.....	44	12	41.9	123	50	52.7	1,730
West end of bridge.....	44	12	37.6	123	51	06.1	1,076
Gateway across road.....	44	12	36.9	123	51	24.8	1,060
Reed post office, 4.50 miles north of, 60 feet east of Mr. Brazee's house, 12 feet south of trail, 2 feet west of north gatepost at barway inside of fence, in rock in place; bronze tablet stamped "Prim. Trav. Sta. No. 23, 1917".....	44	12	44.6	123	51	49.0	1,913

Magnetic declination for center of quadrangle, 20° 33' E.

ALSEA NO. 4 QUADRANGLE.

West along Southern Pacific R. R. (By F. J. McMaugh in 1917.)

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	<i>Feet.</i>
Road crossing.....	44	01	42.4	123	30	56.4	.....
East end of trestle 673E.....	44	02	04.1	123	32	24.5	6,806
Cram station, north end of bridge near.....	44	02	12.5	123	32	44.2	1,672
Walton, 276 feet west of railroad station, 55 feet north of main track in southeast corner of section-house yard; iron post stamped "Prim. Trav. Sta. No. 4, 1917, Elev. 404 ft.".....	44	01	48.5	123	35	03.4	10,454
Shann flag station.....	44	01	49.7	123	35	48.5	3,301
West rail at north end of bridge 677.....	44	01	21.2	123	36	25.1	3,933
North end of bridge over Wild Cat Creek.....	44	01	09.8	123	36	31.3	1,235
Road crossing at schoolhouse.....	44	00	35.8	123	36	12.0	3,725
East end of tunnel 14.....	44	00	00.6	123	38	13.5	.....
North end of bridge 7 over Wild Cat Creek.....	44	00	12.6	123	38	28.8	1,651
East end of Siuslaw River bridge No. 1.....	44	00	10.2	123	39	16.8	3,516
East end of bridge 682E.....	44	00	33.1	123	39	42.1	2,963
Kirbros flag station, 310 feet west of west end of Siuslaw River bridge No. 2, 51 feet south of track at east end of siding, 2 feet north of railroad barbed wire fence; iron post stamped "Prim. Trav. Sta. No. 5, 1917".....	44	00	07.9	123	40	09.9	3,257
Richardson, milepost 685a, near road crossing.....	44	00	08.6	123	41	51.9	7,459
Road crossing, 350 feet northwest of schoolhouse.....	44	00	59.4	123	42	25.7	5,704
Southwest end of bridge.....	44	01	25.5	123	41	39.6	4,285
North end of bridge 687J.....	44	01	32.2	123	40	41.2	4,317
Signpost "Beecher 1 mile".....	44	02	02.3	123	40	30.1	3,155
East end of bridge.....	44	02	31.1	123	40	48.1	3,202
Beecher station, south rail opposite.....	44	02	32.3	123	41	13.9	1,886
South end of bridge 689H.....	44	02	51.3	123	41	13.0	1,922
East end of bridge 690D, No. 3 Siuslaw.....	44	03	21.6	123	41	51.8	4,178
Crossroads.....	44	03	17.9	123	43	02.3	5,161
Road crossing 692F.....	44	03	08.4	123	43	51.1	3,691
Nekoma, 1.00 mile northeast of, in southwest corner of yard at Wise Villa, 50 feet north of track; iron post stamped "Prim. Trav. Sta. No. 6, 1917".....	44	03	06.5	123	44	04.0	962
Center of track at road crossing.....	44	03	00.8	123	44	32.9	2,186
Road fork.....	44	00	01.5	123	39	23.9	.....
East end of Siuslaw bridge No. 1.....	44	00	10.2	123	39	16.8	1,022

Magnetic declination for quadrangle 21.7° E.

ALSEA NO. 4 QUADRANGLE—Continued.

North along highways near west border of quadrangle. (By J. C. Fales in 1917.)

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	<i>Feet.</i>
East end of plank bridge 100 feet long railing on north side only.	44	07	47.0	123	44	31.0	.....
Southeast corner of A. Finseth's auto shelter.	44	07	58.9	123	44	15.1	1,666
200 feet east of covered bridge, in rock at north edge of road; tablet marked "Prim. Trav. Sta. No. 104, 1917"	44	08	10.9	123	43	45.6	2,473
Road, opposite wooden wagon gate at entrance to house of F. W. Taylor.	44	08	36.2	123	43	38.4	2,619
West end of bridge across Deadwood Creek.	44	08	41.8	123	43	14.0	1,857
Opposite and 15 feet across road from wooden mail box and sign "Five Rivers 13 miles"	44	08	55.5	123	43	09.6	1,427
Opposite and 10 feet east of southeast corner of rail and log bridge with railing on both sides.	44	09	26.6	123	42	53.4	3,370
Northeast corner of new timber bridge 40 by 14 feet, railing on both sides.	44	09	39.7	123	42	22.4	2,616
South end of plank bridge 20 by 16 feet, no railing.	44	10	03.6	123	42	09.1	2,605
Road, opposite gate on west side of road whence path leads west along small creek.	44	10	24.4	123	42	15.2	2,153
Road, opposite small gate at entrance to unpainted house 60 feet south of road.	44	11	03.9	123	42	23.9	4,052
Road fork and right angle whence road leads east to unpainted house of Leonard Brooks, white schoolhouse with red roof is 100 feet southwest of fork.	44	11	41.6	123	42	34.0	3,884
East end of plank bridge 18 by 14 feet.	44	12	18.0	123	43	03.4	4,264
East end of log and plank bridge 30 by 16 feet.	44	12	17.2	123	43	55.1	3,771
Road, opposite south face of unpainted abandoned dwelling.	44	12	07.0	123	44	40.0	3,428

Magnetic declination for west border of quadrangle, 21.7° E.

BLACK BUTTE QUADRANGLE.

Southwest along Southern Pacific R. R. and northwest along highways in northwest corner of quadrangle. (By G. T. Hawkins in 1917.)

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	<i>Feet.</i>
Comstock station, main line opposite.	43	44	22.4	123	11	08.1	.....
Comstock station, 0.25 mile south of, on fence line east of railroad; iron post stamped "Prim. Trav. Sta. No. 4, 1917"	43	44	15.2	123	11	23.0	1,310
Crossing of Pacific Highway, 20 feet southeast of crossing sign.	43	43	52.0	123	12	03.1	3,769
Curtin station, road crossing.	43	43	19.3	123	12	37.3	4,153
Junction with line to Oakland.	43	42	39.9	123	13	08.2	4,590
Three corners, 30 feet east of sign "Lorane 6 miles"	43	42	58.5	123	13	12.1	1,908
North end of wooden bridge, 50 feet southwest of, unpainted two-story house and sawmill.	43	43	35.3	123	13	28.5	3,016
Highway bridge 16 feet wide and 60 feet long.	43	43	55.1	123	13	29.7	2,014
Road, opposite unpainted two-story house.	43	44	11.2	123	13	29.7	1,624
Anlauf station at.	43	42	35.2	123	13	13.8	.....
Anlauf crossing.	43	42	33.8	123	13	16.0	210
Opposite mile post 614.	43	42	12.8	123	14	26.5	5,605
Safety, 300 feet north of second-class road crossing, north end of siding.	43	42	06.4	123	14	55.6	2,233

Northeast along highways.

Road fork into brown house, on east side of road.	43	30	19.1	123	12	40.4	.....
Center line plank wagon bridge 10 feet long.	43	31	35.4	123	12	42.5	7,725
Wooden gate in board fence closing second-class road from main road.	43	31	57.3	123	11	57.0	4,079
Point 20 feet in front of yard gate to house, barn across road, house on north side of mountain.	43	32	16.2	123	11	17.4	3,429
Shoestring, road opposite north end of school.	43	32	24.4	123	11	03.6	1,315
Shoestring, 0.25 mile north of, in middle of ledge on west side of road; tablet stamped "Prim. Trav. Sta. No. 10"	43	32	34.5	123	10	54.8	1,206
T road west, 100 feet northwest of unpainted barn, 80 feet west of green and white house.	43	33	05.6	123	10	22.8	3,935
Road, opposite white church, a white schoolhouse is about 275 feet S. 35° W.	43	33	55.7	123	09	41.4	5,913
House owned and occupied by H. Witte, 10 feet south and 20 feet east of road opposite; iron post stamped "955 24 1917"	43	34	25.3	123	09	18.4	3,440

BLACK BUTTE QUADRANGLE—Continued.

Northeast along highways—Continued.

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Centerline of road opposite and 90 feet east of schoolhouse.....	43 34 51.2	123 09 04.6	2,818
Centerline of road opposite and 50 feet west of white residence of O. Thornton.....	43 35 42.4	123 08 48.1	5,324
T road west.....	43 36 14.8	123 08 53.9	3,307
Road, opposite telephone pole 35/12/A.....	43 36 41.0	123 08 06.3	4,389
Road forks, 20 feet west of stump.....	43 36 49.3	123 07 54.0	1,239
London, south of, on top of ridge, on southeast side of road, 6 feet from milepost 36; iron post stamped "1766 23 1917".....	43 37 00.1	123 07 27.8	2,209
Road, opposite telephone pole 36/11, which stands 30 feet west of line.....	43 37 10.8	123 07 15.6	1,411
Road, opposite old house.....	43 37 23.9	123 07 12.3	1,340
Fence corner at southeast corner of a residence yard, hub in northwest corner of road.....	43 37 59.2	123 05 32.4	8,171
London, concrete wall to yard of Emerson Keithly, 13 feet from southeast corner of porch, 60 feet from corner of store; tablet stamped "Prim. Trav. Sta. No. 11".....	43 38 05.0	123 05 26.3	739
Road, opposite telephone pole 40/10/A.....	43 39 34.6	123 04 44.5	9,583
Plank wagon bridge 10 by 16 feet, water trough 20 feet east of line, telephone pole 40/24 15 feet west of line.....	43 39 52.8	123 04 35.0	1,963
Road, opposite and 40 feet west of residence of C. E. Gilman.....	43 40 43.2	123 04 10.7	5,413
Grange Hall, 600 feet north of, on east edge of road, opposite T road west to covered bridge; iron post stamped "Prim. Trav. Sta. No. 21, Elev. 792, 1917".....	43 41 28.4	123 04 01.5	4,616
Point in turn where road forks north, wooden mail box of J. Keibelbeck is 15 feet east.....	43 42 27.0	123 03 40.9	6,121
Middle of new covered bridge 190 feet long, about 100 paces southeast of white schoolhouse.....	43 42 52.3	123 03 10.2	3,413
Three corners at two mail boxes, 200 feet southwest of red bungalow.....	43 43 25.8	123 03 19.0	3,454
Opposite gate to house of J. Green.....	43 44 22.0	123 03 22.6	5,695

Magnetic declination for northeast part of quadrangle, 20.5° E.; for north part of quadrangle, 21.8° E.

Checked spur east from London and return. (By G. T. Hawkins in 1917.)

London, 20 feet north of fence corner at southeast corner of residence yard, northwest corner of road; hub.....	43 37 59.2	123 05 32.4	.....
35 feet west of two mail boxes belonging to George Sutherland and W. T. Jones, 20 feet northwest of woven-wire fence gate 20 feet southwest of fence T.....	43 37 14.1	123 05 16.6	4,709
Northeast end of covered bridge.....	43 37 03.5	123 05 03.9	1,424
Wooden mail box marked A. L. Lent, 45 feet north of north end of foot bridge.....	43 36 28.4	123 04 45.0	3,812
Point in road fork opposite 4 mail boxes, one marked R. B. Sarman, covered bridge 300 feet south.....	43 35 49.1	123 04 05.5	4,930
200 feet south of residence of M. W. Witte.....	43 35 39.5	123 03 02.3	4,753
Point 50 feet west of where road forks to house 0.25 mile east of road.....	43 35 40.5	123 01 59.2	4,638
Cross mark on a rock 4 by 2.5 feet by 2 feet lying on south side of trail and 100 feet west of dam.....	43 35 07.8	123 00 49.1	6,130
Point in road fork 60 feet west to bridge.....	43 35 39.7	123 02 14.4	7,061
Nail in burnt log.....	43 35 48.7	123 03 57.3	7,624
Point in road fork; second-class road runs over wagon bridge 50 feet southwest.....	43 36 32.7	123 04 51.1	5,958
London, 60 feet from corner of store, in concrete wall to yard of Emerson Keithly, 13 feet from southeast corner of porch; tablet stamped "Prim. Trav. Sta. No. 11".....	43 38 05.0	123 05 26.3	9,698

Magnetic declination for quadrangle, 20.8° E.

CAPE FOULWEATHER QUADRANGLE.

North along highways near east border of quadrangle. (By J. C. Fales in 1917.)

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Fork at south junction of winter road and summer road.....	44 30 02.4	124 04 49.9	.....
Seal Rock, south of, 80 feet east of point where hill road runs on to beach, in gore whence a separate plank road runs east and southeast.....	44 30 33.4	124 04 46.8	3,149
Opposite and 140 feet west of point of bluff on south side of inlet at Beaver Creek.....	44 31 18.1	124 04 33.5	4,632
Hub on clay point at south end of ridge; a small knob with grass on west face lies 75 feet north of hub.....	44 31 53.0	124 04 28.2	3,551
Center of fresh water creek across beach, 105 feet west of where creek emerges from gravel bar.....	44 33 17.1	124 04 18.8	8,543
Opposite and 81 feet west of south end of a road which runs north from the beach up the bluff.....	44 34 22.2	124 04 09.7	6,625
Life triangulation station of U. S. C. & G. S., 160 feet from old lookout cabin on edge of bluff, 2.5 miles south of Newport (U. S. C. & G. S. Special Pub. No. 31).....	44 35 17.47	124 03 58.23	5,662

Magnetic declination for east border of quadrangle, 21.5° E.

COOS BAY QUADRANGLE.

South along Southern Pacific R. R. (By F. J. McMaugh in 1917.)

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Hauser, 60 feet north of railroad station, on east side of right of way, 90 feet east of main track, 15 feet west of timber; iron post stamped "Prim. Trav. Sta. No. 15, 1917".....	43 29 34.4	124 13 21.2	.....
North end of bridge 761 B.....	43 27 38.6	124 13 47.0	1,875
Coos, north end of siding.....	43 26 41.4	124 14 03.2	5,917
North end of steel bridge across Coos Bay.....	43 25 51.1	124 14 09.3	5,103
North end of approach to north end of drawbridge over Coos Bay.....	43 25 29.6	124 14 04.1	2,208
Overhead wagon-road bridge.....	43 24 57.4	124 13 21.3	4,544
North Bend, center of station.....	43 24 24.3	124 13 15.9	3,375
Sign post, North Bend city limits.....	43 23 17.4	124 13 11.9	6,781
Marshfield city limits on south, 8 feet south of bridge 767 C.....	43 23 04.3	124 13 11.2	1,327
Marshfield Hill triangulation station of the U. S. Coast and Geodetic Survey, on brow of hill just back of Marshfield, about 230 feet above bay, about 45 meters north of Nashburg's house. Station mark: A 1/2-inch copper bolt set in a stone buried 3 feet below surface; directly above this is a standard disk station mark set in a stone. Reference marks are 1/2-inch copper bolts driven in large stumps, one distant 15.22 meters in azimuth 150° 16' 45" and the other distant 4.68 meters in azimuth 264° 23' 17".....	43 22 25.59	124 12 51.69	4,172
Marshfield, at Commercial Avenue, West and Front Streets, in north face of Eldorado Building, 2 feet west of northeast corner and 2.5 feet above sidewalk; bronze tablet stamped "Prim. Sta. No. 16, 1917".....	43 22 08.4	124 12 41.5	1,892

COTTAGE GROVE QUADRANGLE.

South along Southern Pacific R. R. (By G. T. Hawkins in 1917.)

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Road crossing.....	43 59 11.6	123 00 37.8	.....
Road crossing, 20 feet west of crossing sign.....	43 58 18.8	123 00 41.3	5,360
Second-class east and west crossing.....	43 58 06.4	123 00 44.4	1,278
North side of abandoned east and west road, 8 feet west of railroad; iron post stamped "Prim. Trav. Sta. No. 1, 1917".....	43 57 56.9	123 00 45.6	960
Second-class road crossing, 20 feet east of bridge.....	43 56 48.3	123 00 53.2	6,970
Second-class road crossing, 30 feet west to gate, 30 feet east to gate, 100 feet southeast to red barn.....	43 55 52.9	123 00 59.5	5,630
Creswell, crossing at south end of station.....	43 55 05.9	123 01 04.2	4,769
Crossing of Pacific Highway.....	43 54 43.7	123 01 04.9	2,240
Crossing of east and west road.....	43 54 25.6	123 01 05.4	1,840
Crossing of Pacific Highway.....	43 53 55.9	123 01 06.3	3,000

COTTAGEGROVE QUADRANGLE—Continued.

South along Southern Pacific R. R.—Continued.

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	<i>Fet.</i>
East and west crossing, 400 feet east to house on east side of highway.....	43	53	11.5	123	01	16.8	4,563
Halfway between Creswell and Walker, on fence line, east of railroad; iron post stamped "Prim. Trav. Sta. No. 2, 1917".....	43	52	47.3	123	01	29.2	2,607
Crossing east and west, 150 feet southeast to section post 23.....	43	52	36.3	123	01	35.4	1,200
Walker, north end of siding.....	43	51	38.1	123	02	06.4	6,320
Walker, crossing of Pacific Highway.....	43	50	59.9	123	02	26.8	4,140
Crossing at milepost 630.....	43	50	39.7	123	02	49.9	2,654
Saginaw, 0.25 mile north of, crossing of Pacific Highway.....	43	50	08.8	123	02	41.0	3,191
Saginaw, station at.....	43	49	55.9	123	02	38.4	1,320
Crossing of Pacific Highway.....	43	49	30.9	123	02	39.4	2,526
Crossing of Pacific Highway, 30 feet southwest to crossing bell.....	43	48	51.5	123	02	41.9	3,987
North end of bridge 400 feet long.....	43	48	32.8	123	02	55.9	2,159
Cottage Grove, road crossing at.....	43	47	51.5	123	03	27.2	4,763
Crossing 50 feet south of south end of siding.....	43	47	34.4	123	03	40.2	1,979
North end of bridge 520 feet long.....	43	47	07.1	123	04	00.8	3,150
Latham, opposite station.....	43	46	40.0	123	04	21.3	3,120
Latham, 0.5 mile south of, hub at crossing.....	43	46	17.5	123	04	38.4	2,605
Latham, 1 mile southwest of, on fence line on northwest side of railroad, 200 feet to sign reading "Latham 1 mile"; iron post stamped "Prim. Trav. Sta. No. 3, 1917".....	43	45	43.6	123	05	11.6	4,202
Veatch, opposite station board.....	43	45	26.2	123	05	59.5	3,329
Divide, 0.25 mile east of, private crossing.....	43	45	08.7	123	06	48.5	4,010
Divide, 200 feet west of main line, opposite head block.....	43	45	04.3	123	07	14.0	1,927
Crossing, 20 feet northwest of post marked "621B".....	43	45	14.1	123	08	04.3	3,820
Lane and Douglas county line.....	43	45	17.5	123	08	14.0	790
Center of track opposite milepost 620.....	43	45	14.8	123	09	15.3	4,507
Milepost 619.....	43	45	06.6	123	10	23.4	5,071

North along highways near west border of quadrangle.

Center of road, opposite triangular cut in fir tree on west side of road.....	43	45	40.0	123	13	13.2	.....
Center of road, opposite big gate to house, near top of ledge.....	43	46	08.8	123	13	27.4	3,003
Near top of mountain, on west side of road, halfway between unpainted house and old barn on east side of road; iron post stamped "Elev. 1058, Prim. Trav. Sta. No. 9, 1917".....	43	46	19.7	123	13	31.3	1,147
Road, opposite north end of old barn on east side of road.....	43	46	36.7	123	13	26.2	1,758
Old road leading northeast.....	43	46	48.2	123	13	22.0	1,206
Near fence line, in front of white schoolhouse near sawmill, 10 feet south of road; iron post stamped "Elev. 679, Prim. Trav. Sta. No. 8, 1917".....	43	47	38.3	123	13	35.4	5,173
Opposite and 50 feet east of middle point of wagon bridge 40 feet long and 16 feet wide.....	43	47	50.7	123	13	31.3	1,293
Middle of three-way bridge, road forks east, west, and south.....	43	48	05.9	123	13	34.2	1,552
Small gate at entrance to brown dwelling 200 feet east of road.....	43	49	04.5	123	13	55.2	6,140
Road, opposite face of white residence 110 feet east.....	43	49	46.2	123	14	13.2	4,417
Lorane, 30 feet northeast of signboard, T road west.....	43	50	12.0	123	14	20.5	2,671
Lorane, 610 feet west of T road south, 15 feet north of road; tablet set in sandstone stamped "Prim. Trav. Sta. No. 12, 1917." Elevation, 649 feet.....	43	50	10.0	123	14	28.3	604

East along north border of quadrangle.

Middle of wood and woven-wire gate, 15 feet west of right-angle turn in woven-wire fence.....	43	59	43.4	123	14	49.5	.....
10 feet from fence, at T road fork east.....	43	59	40.1	123	14	30.5	1,430
Road, opposite north face of J. C. Schmidt's unpainted barn, 30 feet west of road.....	43	59	10.8	123	14	22.4	3,033
Crossing of center line south of roads, at T road 200 feet east of cabin.....	43	59	01.6	123	14	22.3	923
Road, opposite rail-fence T, on north side of road.....	43	58	49.3	123	13	38.8	3,420
Road, opposite small gate and mail box at entrance to canary-colored house.....	43	58	48.1	123	12	48.3	3,700
Hub, 50 feet from south leg and 435 feet from east fork of Y.....	43	58	35.6	123	12	12.0	2,942
Junction of Lorane and Eugene road and Spencer Creek road.....	43	58	36.5	123	12	06.5	413
In ledge on southeast side of road, on fence line, 400 feet south of small store and 30 feet north of apple tree; tablet stamped "Prim. Trav. Sta. No. 14, 1917. Elev. 505".....	43	58	55.6	123	11	05.9	4,836
Road, opposite large woven-wire wagon gate at barnyard entrance to white house.....	43	59	43.3	123	09	15.4	9,409
Intersection of T road, 400 feet north of covered bridge, 50 feet south of 6 mail boxes.....	43	59	47.6	123	09	07.3	740
Center of Southern Pacific R. R., opposite milepost 641.....	43	59	53.2	123	00	43.4	.....

Magnetic declination along east border of quadrangle, 22.3° E.; along north border of quadrangle, 22.3°.

COTTAGEGROVE QUADRANGLE—Continued.

South along highways near west border of quadrangle. (By G. T. Hawkins in 1917.)

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	Feet.
Hub, 50 feet from south leg of Y and 435 feet from east fork.....	43	58	35.6	123	12	12.0	.....
East end of bridge, at center line, road fork 10 feet west of west end.....	43	57	40.1	123	12	29.2	5,757
40 feet west of gate to one-story house 300 feet south of white schoolhouse.....	43	57	13.8	123	12	25.5	2,677
30 feet north of triangular blaze on 42-inch fir tree, 20 feet east of road; iron post stamped "E. 741 No. 3, 1917".....	43	56	37.0	123	12	13.8	3,831
South end of wagon bridge, 150 feet northwest of white house in hollow.....	43	56	17.8	123	12	12.5	1,954
Triangular blaze on 30-inch oak tree on west side of road.....	43	56	24.2	123	13	15.6	4,664
Road opposite gate to old house.....	43	56	22.8	123	13	35.6	1,472
Road opposite T fence east on east side of road.....	43	55	46.9	123	14	03.2	4,158
Road opposite gate to barnyard.....	43	55	20.5	123	14	11.9	2,752
Road, opposite T in board fence, 200 feet northeast of fork of Eugene-Lorane and Lorane-Crow roads.....	43	54	39.1	123	14	57.3	5,352
Fork south past white house.....	43	54	02.0	123	14	23.2	4,515
Road, on east side of, opposite triangular blaze on 30-inch fir-tree.....	43	52	56.5	123	13	53.3	6,990
Road fork northeast.....	43	52	49.0	123	13	48.1	853
Lorane post office, 2.6 miles north of, on top of hill, 15 feet west and 35 feet south of road; iron post stamped "761 Prim. Trav. Sta. No. 6, 1917".....	43	52	16.49	123	13	56.18	3,347
Road, opposite north face of white house with pink trimmings 30 feet west of road.....	43	51	04.7	123	14	08.3	7,326
Lorane, center of intersection of T road at Jackson's store.....	43	50	15.4	123	14	21.5	5,088

East along highways near south border of quadrangle.

Road, opposite small gate in wire fence of white house with green roof.....	43	50	34.6	123	13	08.0	5,724
Angle in road, opposite east face of yellow house.....	43	50	43.7	123	12	12.9	4,145
Point of forks of gravel road east over south side of hill and dirt road east.....	43	51	06.3	123	11	38.9	3,383
T road to Gleason house.....	43	51	11.7	123	11	20.0	1,488
Road, opposite wagon gate in fence on west side of road.....	43	51	20.3	123	10	28.3	3,895
Road, opposite mail box marked "E. N. Cruson".....	43	51	00.7	123	09	57.5	3,005
Road, opposite gate in T fence on north side of road.....	43	50	30.6	123	09	03.2	5,010
Road fork northwest through woods up steep grade.....	43	49	59.2	123	08	07.8	5,169
T road northwest over bridge 40 feet north, 8 mail boxes at corner.....	43	49	52.4	123	07	46.3	1,720
Road, opposite white church 80 feet northwest, 250 feet southwest of district school No. 48, 1906.....	43	49	26.4	123	07	40.6	2,670
Road, opposite gate of Heine place.....	43	49	22.0	123	07	20.9	1,509
North point of fork of dirt road and gravel road.....	43	48	51.7	123	06	21.1	5,356
Mail box between temporary road and gravel road.....	43	48	48.2	123	06	20.0	301
East end of wagon bridge.....	43	48	15.0	123	05	54.9	3,831
North edge of road, at east fork of Y branching north.....	43	47	52.7	123	04	48.8	5,348
Cottage Grove, cross mark in pavement at West Main Street and Pacific Highway.....	43	47	52.8	123	03	51.1	4,228
Cottage Grove, road crossing on Southern Pacific R. R.....	43	47	51.5	123	03	27.2	1,760

Magnetic declination for south border of quadrangle, 22.4° E.

Along highways. (By G. T. Hawkins in 1917.)

T whence one road runs to Cottage Grove and another to Latham, road to Cottage Grove runs through covered bridge, 0.25 mile east.....	43	45	44.5	123	03	58.1	.....
Station 548—61.....	43	46	17.5	123	04	38.4	4,456

ELMIRA QUADRANGLE.

Near south border of quadrangle. (By F. J. McMaugh in 1917.)

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Fect.
Crow, 1 mile north of, west side of road, 25 feet northwest of wood road running east uphill through woods; iron post stamped "Elev. 746.9. Prim. Trav. Sta. No. 1, 1917".....	44 00 15.3	123 19 36.8	.....
Rauch triangulation station of the U. S. Coast and Geodetic Survey, about 12 miles west by south from Eugene, 2.5 miles southwest of Llewellyn post office and about 0.5 mile west of road leading from Llewellyn to Crow post office, on land belonging to Mrs. Frances Rauch, about 150 meters east of summit on north side of a sloping ridge about 300 feet higher than the valley through which road runs, the first prominent ridge encountered in going from Llewellyn to Crow and only ridge in vicinity from which Willamette south base can be seen. Station mark: Copper bolt and brass tablet in boulders one beneath the other. Reference marks: bolts in rock.....	44 00 50.96	123 19 42.16	3,631
Crow post office, Rauch triangulation station (previously described).....	44 00 50.96	123 19 42.16	.....
Crow post office, 1 mile north of, on west side, 25 feet northwest of intersection of wood road east uphill through woods; iron post stamped "Prim. Trav. Sta. No. 1, 1917".....	44 00 15.3	123 19 36.8	3,631

West along highways and Southern Pacific R. R. near south border of quadrangle.

South end of wooden bridge.....	44 00 35.8	123 20 38.4	.....
Center of plank bridge, 80 feet southeast of gray bungalow and about 0.25 mile south of white schoolhouse east of road.....	44 01 36.4	123 21 07.5	6,490
Tps. 17 and 18 N., R. 5 W., quarter corner between secs. 6 and 31.	44 02 44.4	123 21 02.7	6,895
Center of road crossing, 3 feet east.....	44 03 10.5	123 21 02.2	2,650
Veneta, 130 feet northwest of railroad station, 42 feet west of track, in line with telephone poles; iron post stamped "Prim. Trav. Sta. No. 2, 1917".....	44 03 10.0	123 21 23.5	1,559
Bridge 661A, 214 feet long, trestle approach to steel girder.....	44 03 06.6	123 22 14.7	3,753
Elrus flag station, road crossing.....	44 02 57.1	123 24 17.0	8,981
Nail in plank walk, 5 feet south of south rail, at west edge of east abutment of Long Tom Creek bridge.....	44 02 53.7	123 25 29.7	5,322
Noti station, south rail, opposite west end of east approach to Long Tom Creek steel bridge No. 664H.....	44 03 20.7	123 26 18.7	4,502
Noti station, opposite south end of; south rail.....	44 03 27.2	123 26 46.8	2,156
Farm-road crossing.....	44 03 06.5	123 27 35.9	4,153
Road crossing, just south of water tank, 100 feet north of trestle 666G.....	44 02 33.7	123 27 50.2	3,482
South end of high trestle 667E.....	44 02 00.2	123 27 45.8	3,401
Vaughn, 300 feet east of station, 45 feet east of road crossing, 30 feet north of track at cattle guard, 2 feet west of wire fence; iron post stamped "Prim. Trav. Sta. No. 3, 1917".....	44 01 39.0	123 26 54.6	4,310
East portal of tunnel.....	44 01 42.9	123 27 51.3	4,158
West portal of tunnel.....	44 01 36.4	123 28 23.3	2,447
Center of track at road crossing.....	44 01 22.2	123 28 42.7	2,021
Ivison, south rail.....	44 01 16.3	123 29 08.0	1,440
Flagg station.....	44 01 30.2	123 29 53.4	3,602

Magnetic declination along south border of quadrangle, 22.3° E.

EUGENE QUADRANGLE.

East along highways near south border of quadrangle. (By G. T. Hawkins in 1917.)

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	Feet.
Road, opposite two mail boxes.....	44	00	40.4	123	08	00.1	.....
T road north, 200 feet northeast to brown house.....	44	00	55.8	123	07	00.7	4,612
T road west, 20 feet northeast to six mail boxes.....	44	00	59.3	123	06	24.5	2,671
Cross on rock in road fork, 1,000 feet north of gray schoolhouse.....	44	01	18.5	123	05	27.2	4,623
Eugene, hub at south end of Willamette Street.....	44	01	21.4	123	05	23.0	425
Eugene, 10 feet from north curb and 7 feet from west curb line at corner of 16th Avenue and Alder Street.....	44	02	34.1	123	04	45.2	7,858
Springfield Junction, head block at west end of Y.....	44	02	20.2	123	02	20.6	10,662
Milepost 644.....	44	02	15.1	123	01	58.7	1,678
West side of Southern Pacific R. R., 10 feet north and 30 feet east of mark on east rail; iron post stamped "Prim. Trav. Sta. No. 15, 1917".....	44	00	31.2	123	01	06.0	11,203

Magnetic declination along south border of quadrangle, 23.7° E.

GLENADA QUADRANGLE.

South along Southern Pacific R. R. (By F. J. McMaugh in 1917.)

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	Feet.
Wendson, signpost just east of water tank.....	43	59	53.2	124	01	21.5	.....
East end of trestle 715F.....	43	59	31.3	124	01	56.4	3,380
Cushman, 350 feet west of station, 12 feet east of side track, 12 feet northwest of main track, 50 feet south of semaphore pole; iron post stamped "Prim. Trav. Sta. No. 9, 1917".....	43	59	09.6	124	02	38.8	3,795
South end of long bridge over Siuslaw River.....	43	58	35.1	124	02	41.7	3,505
Siboco station.....	43	58	00.1	124	03	21.6	4,588
North end of bridge 719B.....	43	57	05.7	124	03	22.9	5,501
Milepost 720.....	43	56	22.7	124	03	06.7	4,515
Crossroad.....	43	56	08.1	124	02	57.7	1,621
Canary, 160 feet west of station, 25 feet west of road at gate, 3 feet south of fence on north side of right of way; iron post stamped "Prim. Trav. Sta. No. 10, 1917".....	43	55	42.5	124	02	05.7	4,606
Northwest end of tunnel 16.....	43	55	36.2	124	01	47.2	1,494
South end of tunnel 16.....	43	55	30.7	124	01	43.9	607
Road crossing.....	43	54	18.0	124	02	44.9	8,607
North end of bridge 723C.....	43	54	03.5	124	02	52.6	1,576
East end of bridge 724A.....	43	53	45.0	124	03	19.0	2,689
Lane, north end of station.....	43	53	23.1	124	03	48.4	3,095
East end of bridge 725C.....	43	52	35.5	124	04	12.7	5,136
South end of trestle 726A, 1,000 feet long.....	43	52	15.6	124	04	39.1	2,785
Ada station.....	43	51	44.2	124	04	52.7	3,334
North end of siding.....	43	51	05.4	124	05	07.9	4,089
Booth station, 98 feet northeast of track, 410 feet southeast of bridge 728A, on east side of right of way, 2 feet west of fence; iron post stamped "Prim. Trav. Sta. No. 11, 1917".....	43	50	52.8	124	05	19.4	1,527
East end of bridge 728E.....	43	50	26.4	124	05	34.6	2,889
North end of bridge 729C.....	43	49	59.0	124	06	10.7	3,834
North end of bridge 730A.....	43	49	29.8	124	06	28.2	3,221
North end of bridge 731A.....	43	48	54.0	124	06	56.1	4,163
North end of bridge 731E.....	43	48	23.1	124	07	17.7	3,506
Kroll station.....	43	47	27.6	124	07	30.4	5,694
Two-inch white post in ground.....	43	47	01.0	124	07	30.7	2,694
North end of bridge 733F.....	43	46	43.2	124	07	28.4	1,809
North end of tunnel 1,556 feet long.....	43	46	04.2	124	07	07.9	4,227
Brenham station, signpost.....	43	45	38.4	124	06	47.6	2,998
North end of bridge 736A.....	43	45	07.8	124	05	53.6	5,032
Bridge 736O.....	43	44	55.5	124	05	24.7	.....
North end of bridge 737O.....	43	44	20.7	124	04	52.3	4,253
North end of bridge.....	43	43	53.7	124	05	09.7	3,014
North end of siding.....	43	43	29.4	124	05	00.1	2,553
Gardiner, 118 feet west of railroad crossing, 260 feet southwest of signpost; iron post stamped "Prim. Trav. Sta. No. 12, 1917".....	43	43	11.4	124	04	57.3	1,839
North end of bridge over Umpqua River.....	43	42	36.4	124	05	33.3	4,415
Reedsport station.....	43	42	17.0	124	05	54.3	2,496
North end of bridge 740E.....	43	41	46.3	124	05	52.0	3,112
North end of bridge 741C.....	43	41	27.2	124	04	53.8	4,687
North end of bridge 742B.....	43	41	05.3	124	04	31.6	2,755
North end of bridge 743A.....	43	40	38.6	124	05	20.5	4,488
North end of bridge 743F.....	43	40	12.9	124	05	22.9	2,614

GLENADA QUADRANGLE—Continued.

South along Southern Pacific R. R.—Continued.

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	
School station, center of track opposite	43	39	48.0	124	05	20.0	2,528
Road crossing	43	39	40.7	124	05	27.9	935
Tharp station, main track	43	38	59.9	124	05	43.0	4,276
South end of tunnel 19	43	38	25.8	124	06	44.3	5,677
Willard, 85 feet south of signpost, 60 feet east of west rail, in line with north end of old bunk house, near edge of field; (not stamped) Prim. Trav. Sta. No. 13	43	38	01.8	124	07	21.9	3,681
North end of bridge 748C	43	37	25.2	124	08	02.4	4,757
Douglas and Coos county-line post	43	36	42.0	124	08	43.8	5,327
North end of tunnel 20	43	35	49.8	124	08	54.4	5,335
Burke, center of track	43	35	20.3	124	09	24.5	3,718
North end of trestle, just north of tunnel 21	43	35	10.4	124	09	28.0	1,032
Lakeside, 400 feet north of station, 86 feet west of track, in south-east corner of section-house yard; iron post stamped "Prim. Trav. Sta. No. 14, 1917"	43	34	43.0	124	10	21.9	4,845
East end of bridge	43	34	36.6	124	11	28.5	4,946
North end of bridge 753B, over highway	43	34	19.4	124	11	51.7	2,441
Road crossing	43	33	13.2	124	12	31.3	7,305
North end of bridge 755D	43	32	37.3	124	12	44.5	3,761
North end of bridge 756D	43	32	08.6	124	12	55.1	3,006
Butterfield station	43	31	15.2	124	13	22.5	5,775
Road crossing	43	30	09.1	124	13	29.4	6,713

No magnetic declination taken.

Along highways near east border of quadrangle. (By F. J. McMaugh in 1917.)

Northwest end of tunnel 16	43	55	36.2	124	01	47.2	.....
Road fork, 30 feet southeast to signpost marked "Gardiner 22 miles, Ten Mile Lake 2.5 miles, Fiddle Creek 6 miles"	43	55	41.7	124	01	30.7	1,330
T road south across bridge	43	55	39.1	124	01	27.6	347
West end of bridge	43	55	40.6	124	01	16.2	855
Road fork	43	55	42.9	124	00	41.7	2,531
Mr. Buss's house, 16 feet southwest of center of road at gateway into	43	55	48.6	124	00	01.4	3,008

Magnetic declination for east border of quadrangle, 21.4° E.

HECETA HEAD QUADRANGLE.

Along highways. (By F. J. McMaugh in 1917.)

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	
East end of bridge 713G	44	00	31.6	124	00	14.6	.....

South along highways near east border of quadrangle. (By J. C. Fales in 1917.)

Opposite and 20 feet east of board and barbed-wire wagon gate, at entrance to Sharman's barn	44	14	41.1	124	06	38.0	.....
Opposite and 60 feet west of wooden wagon gate with overhead bracing on north side of road	44	13	24.3	124	06	40.0	7,783
Opposite and 15 feet east of T fence where rail fence on west side of road ends in barbed-wire fence running along bluff	44	12	55.0	124	06	49.4	3,042
Opposite and 20 feet east of front door of a brown, shingled house on west side of road	44	12	31.2	124	06	47.2	2,415
T where board fence joins barbed-wire fence running along top of bluff	44	11	33.1	124	06	48.0	5,890
West of road, in middle of saddle	44	11	11.1	124	06	52.6	2,248
Fence on south side of Big Creek, 50 feet east of corner of intersection of Big Creek and Ocean Bluff	44	10	29.8	124	06	54.6	4,184
Opposite point where creek emerges from sand hills upon beach	44	09	28.8	124	07	05.6	6,228
Opposite and 100 feet west of small unpainted shack near point of bluff	44	08	45.9	124	07	13.0	4,379
Point where trail crosses summit in thick grove of spruce	44	08	25.4	124	07	16.9	2,097
Keepers Cottage, chimney (no check on this position). U. S. Coast and Geodetic Survey triangulation station (Special Pub. No. 31, p. 63)	44	08	13.38	124	07	28.68	1,490

Magnetic declination for east border of quadrangle, 21.2° E.

MOUND QUADRANGLE.

West along highways in southeast corner of quadrangle. (By G. T. Hawkins in 1917.)

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Road, opposite triangular cut on 30-inch fir tree 10 feet east of road.....	43 49 30.6	123 15 29.3	1,377
Road, opposite small gate at entrance to Crow's white residence.....	43 49 37.5	123 15 45.4	1,411
Siuslaw River, east end of bridge over.....	43 49 34.9	123 16 04.3	2,822
Road, opposite small gate, at entrance to Alder Park.....	43 49 11.2	123 16 24.7	1,851
Double gate at entrance to unpainted barn, 250 feet south of dwelling.....	43 48 58.7	123 16 43.0	1,752
East end of bridge 150 feet long.....	43 48 56.3	123 17 06.7	3,677
Rail gate at corner of rail and wire fence.....	43 49 12.3	123 17 51.7	2,096
East end of wagon bridge 16 by 20 feet.....	43 49 16.4	123 18 19.8	2,198
East end of wagon bridge at farm.....	43 49 19.7	123 18 49.4	2,335
Road opposite T road leading over bridge 75 feet south.....	43 49 24.4	123 19 20.6	4,863
T road through wooden gate to dwelling 500 feet south.....	43 49 53.5	123 20 13.3	3,911
Road fork, 400 feet west of box cabin.....	43 50 18.7	123 20 53.7	4,002
North end of wagon bridge.....	43 50 45.7	123 21 33.6	2,020
10 feet west of 1 by 1 foot culvert through which spring stream drains, north one of two 200 feet apart.....	43 51 02.1	123 21 49.2	1,267
Fork of trail to Owen's house from road, old road up steep hill to east.....	43 51 12.4	123 21 39.2	571
East end of wagon bridge 35 feet long.....	43 51 17.7	123 21 36.8	809
Triangular cut on 30-inch yellow-pine tree 15 feet south of road, at crossroads.....	43 51 18.2	123 21 47.8	2,410
Fork of trail to north.....	43 51 07.2	123 22 17.0	1,521
East end of rail wagon bridge.....	43 50 56.9	123 22 32.1	2,345
Triangular cut on north side of 30-inch cedar tree, nail in center; tree is 20 feet south of road.....	43 50 34.7	123 22 41.5	2,573
County road, opposite entrance of Mr. Hawley's farm.....	43 50 39.1	123 23 16.1	5,330
Triangle cut on hemlock tree 15 feet west of road, at sharp bend to north.....	43 51 09.5	123 24 15.4	1,241
Southeast end of bridge.....	43 51 20.6	123 24 08.2	3,158
Triangle cut on 18-inch hemlock tree on north side of road, on south slope of ridge, 0.25 mile west of deserted house.....	43 51 22.6	123 24 51.3	1,430
Middle of bridge, 60 feet east of fork of second-class road.....	43 51 35.8	123 24 58.1	2,200
Road, opposite deserted house on southwest side of.....	43 51 47.6	123 25 23.3	1,021
Triangle cut on 18-inch fir tree on northwest side of road, about 0.25 mile north of deserted homestead, on northwest slope of ridge.....	43 51 56.6	123 25 29.6	1,855
Pole bridge.....	43 52 14.9	123 25 30.8	2,319
Road, opposite deserted cabin in clearing.....	43 52 29.7	123 25 54.9	416
Triangle cut on 24-inch fir tree at northwest corner of clearing.....	43 52 32.3	123 25 59.3	3,203
North end of pole bridge, at old field.....	43 52 44.0	123 26 31.0	1,173
Triangle cut on 18-inch fir tree on west side of road.....	43 53 05.5	123 26 29.5	573
South end of long bridge.....	43 53 09.9	123 26 24.6	3,251
South end of pole bridge 40 feet long.....	43 53 41.6	123 26 31.9	1,468
Road, opposite triangle cut on 20-inch Douglas fir tree, at south side of trail, at sharp turn.....	43 53 41.1	123 26 52.0	1,123
Alma post office, 1 mile east of three corners at point where Mound post office was situated.....	43 53 46.5	123 27 05.3	2,214
Road, opposite Mr. Hooker's gate.....	43 54 03.6	123 26 46.4	3,615
Triangle cut on 5-foot fir tree, on top of ridge at old sand pit.....	43 54 38.7	123 26 55.0	2,381
Ledge of rock 8 feet high on north side of road; face of ledge is marked "U. S. B. M."; tablet stamped "Prim. Trav. Sta. No. 13, 1917." A triangle cut on 40-inch fir tree on opposite side of road, 20 feet east of tablet.....	43 55 00.9	123 27 05.8	

Northeast along highways through center of quadrangle.

Forks, 20 feet west of 6-foot fir tree, five fire warnings.....	43 55 26.4	123 26 05.5	5,119
South end of bridge over Wolf Creek.....	43 55 35.6	123 25 10.4	4,136
South end of bridge over branch.....	43 55 40.5	123 25 06.0	594
Wolf Creek bridge, 0.25 mile northeast of; triangle cut on 40-inch fir tree on west side of road.....	43 55 40.8	123 25 03.4	192
Second-class road fork to Mr. Peabody's house, east entrance from main road.....	43 56 04.0	123 23 46.3	6,114
Road, opposite south end of barn, at trail forks westerly to residence of Mr. Danewood.....	43 56 42.2	123 22 58.9	5,193
Wagon gate at 40° turn in board fence.....	43 56 45.1	123 22 56.6	339
150 feet north of white schoolhouse, T road, intersection of center lines.....	43 57 00.1	123 22 39.1	1,988
Gate in picket fence at entrance to whitewashed house, 90 feet south of gate.....	43 58 03.0	123 21 49.2	7,347
Fork at junction of new cut-off road with original road.....	43 58 43.0	123 21 33.9	4,198
South end of wagon bridge 40 by 16 feet.....	43 59 06.6	123 21 04.7	3,209
14-inch corner post at southeast corner of T road, 800 feet west of white school house.....	43 59 25.8	123 20 38.6	2,726
Crow post office and store, 20 feet east of southwest corner of fence, cross on rock at T road south.....	43 59 31.6	123 20 10.0	2,172

MOUND QUADRANGLE—Continued.

East along north border of quadrangle.

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Stake, 20 feet north of first telephone pole east of wooden gate on south side of road, at fork at farm of J. Gates, opposite large door of hay barn.....	43 59 10.4	123 19 42.1	2,961
West end of covered bridge.....	43 59 18.7	123 18 40.2	4,604
Road, opposite gate at entrance to residence of J. V. Jenkins....	43 59 25.1	123 17 37.5	4,631
Road, opposite 48-inch oak tree, which forks 6 feet above ground, tree is on north side of road.....	43 59 57.0	123 16 14.1	6,905
Center of Y of roads, T road to north at M. J. Smith's house, 300 feet northeast to house, 400 feet west to new barn, 300 feet southeast to old barn.....	43 59 57.2	123 15 53.3	1,522

Magnetic declination for center of quadrangle, 22.2° E.

ROSEBURG NO. 1 QUADRANGLE.

North along highways near northwest corner of quadrangle. (By G. T. Hawkins in 1917.)

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Covered bridge 345 feet long.....	43 26 25.9	123 14 23.9	1,704
Turn in road 55 feet east of gate at fence T.....	43 26 42.1	123 14 17.3	2,233
Fork in road, where Elkhead road leaves main road.....	43 26 55.1	123 13 52.9	3,701
Center line of wagon bridge 50 feet long.....	43 27 31.4	123 13 59.4	2,341
T road near small house.....	43 27 54.4	123 14 01.6	1,987
Intersection with old road over hill.....	43 27 59.6	123 13 35.6	2,489
Road, in front of schoolhouse.....	43 28 22.1	123 13 22.1	4,472
Road, opposite red gate, 200 feet south of barn.....	43 29 05.2	123 13 08.8	

Magnetic declination for northwest corner of quadrangle, 21.1° E.

ROSEBURG NO. 2 QUADRANGLE.

South along Southern Pacific R. R. (By G. T. Hawkins in 1917.)

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Opposite milepost 594.....	43 29 03.3	123 18 44.8	5,026
Opposite milepost 593.....	43 28 13.7	123 18 45.4	4,134
Crossing of Pacific Highway, 20 feet east of bridge.....	43 27 37.0	123 19 10.0	8,088
Yonges station board, track opposite.....	43 26 19.2	123 18 45.4	2,320
North end of bridge 1,120 feet long.....	43 26 01.6	123 18 25.3	3,356
Road crossing, 30 feet east of iron bridge.....	43 25 31.9	123 19 05.0	1,280
Oakland station, in front of window.....	43 25 20.7	123 17 57.0	118
Oakland station, about 84 feet west of Pacific Highway; iron post stamped "Prim. Trav. Sta. No. 9".....	43 25 20.8	123 17 55.4	6,124
Elbow in road east, 200 feet west of road fork.....	43 25 55.3	123 16 47.2	8,063
Road fork, 30 feet northwest of signpost reading "Oakland 3 miles; Cottage Grove 35 miles".....	43 26 21.2	123 15 03.9	

Magnetic declination for south part of quadrangle, 22.5° E.

SCOTTSBURG (NO. 1) QUADRANGLE.

West along Southern Pacific R. R. (By F. J. McMaugh in 1917.)

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
East end of bridge 679J.....	43 59 48.5	123 36 45.6	.....
Joler station, at east end of; south rail at switch stand.....	43 59 39.8	123 37 07.5	1,826
East end of Wild Cat Creek bridge.....	43 59 45.2	123 37 44.9	2,789
Nail in tie at road crossing, house west and gate east.....	43 59 51.0	123 37 51.6	761

East along highways near north border of quadrangle. (By F. J. McMaugh in 1917.)

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Tree with triangular blaze.....	43 57 04.1	123 44 43.1	.....
Tree with arrow blaze, at summit of mountain.....	43 56 49.1	123 44 33.8	1,667
Triangular blaze on tree at summit of mountain, 80 feet south-west of place where telephone line crosses road.....	43 56 25.7	123 44 21.3	2,536
Triangular blazed tree.....	43 56 45.6	123 43 55.1	2,788
Alder tree with triangular blaze.....	43 57 19.0	123 43 42.0	3,510
South end of corduroy bridge over draw.....	43 57 18.7	123 43 20.6	1,569
Small tree marked "Town line 9 tallies east to secs. 1 and 6, T. 9 S., R. 8 and 9 W., U. S. G. L. O".....	43 57 18.7	123 42 47.3	2,430
Gateway.....	43 57 28.4	123 42 32.1	1,488
First crossing of creek.....	43 57 26.6	123 42 20.3	878
Second crossing of creek.....	43 57 25.9	123 42 16.4	366
Tree on south bank of creek, blazed and marked "245 paces south to northwest corner of sec. 6, T. 19 S., R. 8 W., U. S. G. L. O".....	43 57 24.9	123 42 11.4	310
Tree on north side of road, marked "3 miles".....	43 57 33.2	123 41 22.8	3,654
Tree with triangular blaze at fork of road leading to cabin.....	43 57 39.0	123 41 08.1	1,225
West end of small bridge near camp site.....	43 57 45.2	123 40 31.8	2,733
South end of small bridge.....	43 58 08.8	123 40 14.7	2,694
Road fork.....	43 58 34.7	123 40 08.4	2,661
Road fork.....	43 59 04.6	123 39 59.6	3,099
Large fir tree with triangular blaze on west bank of Shuslaw River.....	43 59 06.1	123 39 33.6	1,913
Austa, south of, 610 feet north of road fork at ford across Shuslaw River, 3 feet east of road, in rock outcropping; bronze tablet stamped "Prim. Trav. Sta. No. 20, 1918".....	43 59 11.0	123 39 26.6	709
Tree marked with triangular blaze.....	43 59 29.8	123 39 45.6	2,357
Center of road, opposite fence corner just south of old barn.....	43 59 45.7	123 39 48.8	1,634

Magnetic declination for north border of quadrangle, 21.7° E.

SCOTTSBURG No. 2 QUADRANGLE.

East along highways near north border of quadrangle. (By F. J. McMaugh in 1917.)

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Northwest end of bridge, 200 feet north of house.....	43 55 34.5	123 53 07.7	.....
Corner of fence, 20 feet north of gate, 100 feet north of small house, 20 feet east of culvert; blazed and marked "Sta. 915 +186".....	43 55 48.1	123 53 06.0	4,720
West end of bridge, 5 miles east of Shultz place.....	43 56 11.9	123 57 25.4	3,825
Milepost marked "25 M. P.", on north side of road.....	43 56 10.8	123 57 18.4	524
Canary, 5 miles east of, 120 feet north of Coleman house, 110 feet east of small bridge, 15 feet south of road, 20 feet northwest of barn; iron post stamped "Prim. Trav. Sta. No. 17, 1917".....	43 56 12.4	123 56 52.1	1,931
Small stream.....	43 56 12.2	123 56 17.0	2,570
Northeast end of bridge, 10 feet east of tree marked "19.11 W 7".....	43 56 11.1	123 56 09.6	554
Culvert in bend of road.....	43 56 16.5	123 55 35.1	2,584
Burnt snag on left side of road, marked "Sta. 1041 +84".....	43 56 22.4	123 55 41.0	737
Road, opposite fir tree with triangular blaze and marked "Sta. 1080 U. S. G. S.".....	43 56 33.5	123 55 03.5	2,870
West end of bridge, 120 feet northeast of ranger's cabin.....	43 56 48.5	123 54 35.6	2,547
Opposite large fir tree marked "91 M R" (old blaze).....	43 56 53.0	123 54 27.2	765
Cedar stump at east side of road with triangular blaze, marked "U. S. G. S.".....	43 56 55.6	123 54 19.6	615
Northwest corner of abandoned cabin, at bend in road.....	43 56 39.4	123 54 19.5	1,637
Intersection of trail leading to Point Terrace.....	43 56 25.1	123 53 55.0	2,308
West end of corduroy bridge over Bear Creek.....	43 56 22.7	123 53 54.4	248
Southwest end of bridge over Sweet Creek.....	43 56 31.1	123 53 22.6	2,479

SCOTTSBURG NO. 2 QUADRANGLE—Continued.

East along highways near north border of quadrangle—Continued.

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	<i>Feet.</i>
West end of bridge, 60 feet southwest to intersection of road north, 110 feet northeast to schoolhouse.....	43	56	31.9	123	52	36.2	3,401
Earl post office, 0.5 mile west of, 32 feet northeast of northeast corner of Will Goodwin's house, 18 feet west of barn, 30 feet south of road, inside yard; bronze tablet in top of stone stamped "Prim. Trav. Sta. No. 18, 1917".....	43	56	28.6	123	52	06.7	2,184
Earl post office, just west of, west end of small bridge.....	43	56	33.4	123	51	34.2	2,426
Fir tree with triangular blaze.....	43	56	47.0	123	50	45.0	3,855
Tree with triangular blaze.....	43	56	52.8	123	50	15.6	2,231
Road fork.....	43	56	53.9	123	50	08.6	524
Fir tree with triangular blaze.....	43	57	05.1	123	50	02.0	1,229
Gate across road.....	43	57	16.9	123	49	51.4	1,431
West end of bridge.....	43	57	18.3	123	49	24.3	1,981
Gate post at south end of gate.....	43	57	03.0	123	48	41.5	3,495
North gatepost at gateway, 160 feet east of small cabin in field..	43	56	53.6	123	48	24.5	1,562
West end of corduroy bridge over small creek.....	43	56	54.0	123	48	07.9	1,220
South end of bridge.....	43	57	00.6	123	47	11.7	4,167
Earl post office, 6.5 miles east of, 0.2 mile southeast of house occupied by Charles Judd on Fiske ranch, 150 feet northeast of fence corner, 9 feet east of road, in large boulder; bronze tablet stamped "Prim. Trav. Sta. No. 19, 1917".....	43	56	56.5	123	46	57.5	1,118
Tree used for gatepost.....	43	57	04.8	123	46	27.8	2,335
Center of road, at gateway.....	43	56	59.9	123	46	08.5	1,494
Tree with old blaze, marked with S and A.....	43	56	59.2	123	46	03.2	396
Fork in road, shed to southeast.....	43	56	56.2	123	45	49.2	1,064
Tree at gateway.....	43	56	48.6	123	45	24.3	1,977
Tree with triangular blaze, 135 feet south of small corduroy bridge.....	43	56	53.2	123	45	13.6	911
Tree with triangular blaze, 90 feet south of small bridge.....	43	56	59.4	123	45	09.9	681

SCOTTSBURG NO. 3 QUADRANGLE.

Along highways near center of quadrangle. (By J. C. Fales in 1918.)

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	<i>Feet.</i>
West end of long new timber bridge.....	43	39	30.8	123	45	44.9	.....
Road, opposite wooden gate in woven-wire fence, at T on west side of road.....	43	39	39.7	123	47	09.8	6,303
South end of bridge 120 by 16 feet.....	43	40	07.6	123	47	25.5	3,051
South end of bridge, opposite gate on second-class road, on east side of road; this road forks at 2267+360.....	43	40	32.2	123	47	47.7	2,973
North end of unrailled wagon bridge 24 by 16 feet.....	43	39	51.9	123	48	31.6	5,197
In rock at T whence road leads south across Umpqua River toward Allegheny; tablet stamped "Prim. Trav. Sta. No. 102".....	43	39	15.4	123	49	03.1	4,363
Cross mark in rock, in center of road, 500 feet east of ferry landing.....	43	39	06.7	123	48	59.8	910
East end of center line of bridge 60 by 16 feet, railing on both sides.....	43	39	02.2	123	48	43.3	1,298
Triangle on 50-inch tree, on east side of road.....	43	38	37.8	123	48	34.7	2,550
Road, opposite triangle on 20-inch fir tree 8 feet east of road.....	43	38	27.6	123	48	20.0	1,493
Road fork whence road leads southwest on steep grade, picket fence opposite.....	43	37	54.5	123	48	47.3	3,905
Road, opposite triangle on 24-inch fir tree at east edge of road.....	43	37	18.0	123	48	31.4	3,874
Road, opposite front door of shack 30 feet north of road.....	43	37	15.0	123	48	16.1	1,167
South end of bridge 60 by 16 feet.....	43	37	08.4	123	48	07.5	916
Southwest corner of log bridge 40 by 18 feet.....	43	36	53.1	123	48	14.0	1,622
Road, opposite triangle on 15-inch fir tree at northeast corner of deserted blacksmith shop, 20 feet south of road.....	43	36	34.7	123	48	00.0	2,130
East end of bridge 10 by 14 feet, unrailled.....	43	36	32.9	123	47	23.2	2,719
Fork whence road leads northward, main road crosses bridge west end of which is at 2493+50.....	43	36	27.0	123	47	04.6	1,490
Road, opposite triangle on 36-inch fir tree at east edge of road.....	43	35	50.8	123	47	09.0	3,687
East end of log and plank culvert from spring 10 feet west of road.....	43	35	34.2	123	47	39.8	2,817
Road, opposite triangle on 36-inch fir tree at east edge of road.....	43	34	54.1	123	47	55.3	4,215
South end of log and plank bridge 18 by 16 feet, unrailled.....	43	34	41.9	123	48	31.9	2,971
Road, opposite gate in picket fence, at entrance to J. H. Boak's red bungalow.....	43	34	35.6	123	49	13.1	3,098
Road, opposite wooden gate, at corner where board fence joins woven-wire fence.....	43	33	54.7	123	49	41.7	4,644

SCOTTSBURG NO. 3 QUADRANGLE—Continued.

Along highways near center of quadrangle—Continued.

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	<i>Feet.</i>
North end of bridge 60 by 16 feet, railing on both sides; bridge is 120 feet south of John Babers's house.....	43 33 49.0	123 49 28.0	1,162
South end of wagon bridge, which is 100 feet north of north face of Ash Valley Cheese Factory.....	43 33 36.2	123 49 16.9	1,530
Fork in road whence road leads east past Parker's red bungalow 1,000 feet distant.....	43 33 20.2	123 49 19.0	1,624
Road, opposite door of white schoolhouse of Ash Valley school district No. 125, 30 feet east of road.....	43 33 03.7	123 49 22.7	1,695
Road, at a point where a 14 foot by 48 inch log has been cut out of a fir tree fallen across road.....	43 32 44.2	123 49 36.3	2,210
Road, opposite small gate in picket fence, at entrance to unpainted house.....	43 31 59.2	123 49 28.7	4,594
Road, opposite triangle on 36-inch fir tree at east edge of road.....	43 31 47.7	123 49 52.7	2,121
Road, opposite triangle on 60-inch fir tree 10 feet south of road.....	43 32 12.7	123 50 40.5	4,335
South edge of road, opposite triangle on 12-inch fir tree at north edge of road.....	43 32 16.3	123 51 38.7	4,298
Center of road, at intersection of trail to Reedsport. (From this point line follows trail).....	43 32 12.9	123 51 41.6	397
Fork in trail whence trail leads to spring about 300 feet north.....	43 32 46.6	123 51 56.8	3,586
Fork whence trail leads from Reedsport trail toward Elk's Peak, signboard shows distances to four points, Elk's Peak is 3 miles.....	43 33 01.6	123 52 13.4	1,951
Fork whence trail leads southwest downhill.....	43 33 03.3	123 53 10.3	4,196
First switchback in trail.....	43 32 30.5	123 54 27.2	6,566
Elk Peak triangulation station, on a narrow peak 200 feet long with a 15-foot summit. Point shown by the hub at station 2909 was identified by H. E. Baker of Ash, Oreg., as being near the original point of the signal, which he describes as a tree with a triangle on the side and a white signal flag fastened to the top. Two fir trees, each 24 inches in diameter, stand near together on the peak, and a white linen flag, measuring 3 by 4 feet, was fastened to the top of the eastern of these two trees. A U. S. Coast and Geodetic Survey tablet was also set on the ridge west of the signal. This tablet is set in sandstone, which is not durable but is the only rock available. Tablet stamped "Prim. Trav. Sta. No. 103, 1917." All angles shown are azimuth angles, 0° 00' 00", being set on station 2908. The signal trees are marked with a triangle on the west side and three nails are driven in to the tree within the triangle. Three sticks forming a ladder were nailed to tree.....	43 32 26.20	123 54 33.79	649

Magnetic declination for center of quadrangle, 21° 16' E.

SCOTTSBURG NO. 4 QUADRANGLE.

West along highways near center of quadrangle.

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	<i>Feet.</i>
East end of center line of 450-foot steel and timber wagon bridge across Elk Creek.....	43 39 26.1	123 30 00.4	-----
Road, opposite board wagon gate, in wire and rail fence on south side of road.....	43 38 53.6	123 30 16.43	3,495
West edge of road, opposite triangle on 40-inch fir tree on west side of road.....	43 38 42.4	123 30 41.93	2,192
Southeast corner of wagon bridge 30 by 16 feet with railing on east side only.....	43 38 44.7	123 30 57.34	1,156
Small woven-wire foot gate, at entrance to unpainted house 150 feet south of road.....	43 38 35.4	123 31 58.5	4,592
Rock 2 by 2 by 1.5 feet, on south side of road, in gore, at east junction of original dirt and corduroy road and new gravel road.....	43 38 20.4	123 32 57.7	4,614
T road to Oakland, east fork of Y.....	43 38 04.0	123 33 51.5	4,286
Elkton, 15 feet east of road, in a ledge of rock, 50 feet north of north end of covered bridge; tablet stamped "Prim. Trav. Sta. No. 100, 1917".....	43 38 06.8	123 33 56.4	458
Road, opposite wooden foot gate in woven-wire fence, at entrance to white two-story house 100 feet east of road.....	43 38 32.1	123 34 36.5	3,907
Road, opposite fence T on south side of road, where a north and south barbed-wire fence ties to an east and west fence on the west and an east and west woven-wire fence on the east.....	43 38 57.25	123 35 40.2	5,336

SCOTTSBURG NO. 4 QUADRANGLE—Continued.

West along highways near center of quadrangle—Continued.

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Road, between small gates entering, respectively, barnyard on south and house on north, 90 feet south to red building, marked "Bruder Bros., 1915." Big red barn is 100 feet southwest (1916); white house is 80 feet north.....	43 39 03.1	123 36 06.2	1,999
Road, opposite dead, double, white-ash snag on south side of road, each fork 12 inches in diameter.....	43 39 04.8	123 37 43.7	7,172
East end of wagon bridge 50 by 16 feet.....	43 39 02.1	123 38 06.4	1,689
Road, opposite foot gate in woven-wire fence, at entrance to S. N. Brown's two-story white house 50 feet north of road....	43 38 49.7	123 38 54.7	3,767
T whence second-class road leads south toward river.....	43 38 24.9	123 39 50.6	4,814
Fork whence road leads south toward river, 60-inch fir tree in gore with mail box on east side of tree.....	43 39 39.9	123 39 11.6	8,118
North end of new wagon bridge 60 by 16 feet.....	43 40 13.8	123 39 4.8	3,468
South end of covered wagon bridge.....	43 40 19.1	123 39 2.4	573
East end of unrailed wagon bridge 16 by 16 feet.....	43 41 00.9	123 39 21.4	4,452
Road, opposite wooden wagon gate at T of woven-wire fences; on south side of road.....	43 40 56.0	123 40 22.7	4,538
Point 25 feet south of double wooden wagon gate, at entrance to William Sawyer's white two-story house, 100 feet north of road.....	43 40 48.5	123 40 48.6	2,040
North end of new wagon bridge.....	43 40 12.8	123 41 40.9	5,282
Road, opposite wagon gate at entrance to A. L. Butler's house, wooden stile 8 feet east of gate.....	43 39 44.6	123 42 31.8	4,706
Road, opposite woven-wire foot gate at entrance to white schoolhouse with red roof, marked "Long Prairie District School, No. 38".....	43 39 39.3	123 43 28.6	4,204
Patterson Creek, 1,000 feet south of bridge over, on rock on west side of road; tablet stamped "Prim. Trav. Sta. No. 10, 1917".....	43 39 43.5	123 44 14.0	3,371

Magnetic declination of quadrangle 21° 53' E.

WALDPORT QUADRANGLE.

South along highways near east border of quadrangle. (By J. C. Fales in 1917.)

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
T road to Collins's house, 200 feet west of.....	44 29 26.7	124 04 44.6	.....
Seal Rocks, road which leaves beach to get around to, south side of road, in rock; tablet stamped "Prim. Trav. Sta. No. 109, 1917".....	44 29 00.4	124 04 56.3	2,794
Opposite and 305 feet west of dilapidated inhabited shack in a draw down which stream runs.....	44 28 47.4	124 04 52.5	1,340
First telephone pole south of small creek, 15 feet west of.....	44 27 45.5	124 04 43.5	6,304
Opposite and 175 feet east of southern summit of the southwest mound of a group, east side of mound is grassed, south side is bare sand, mound is 250 feet long north and south and has a well-defined backbone ridge.....	44 26 31.5	124 04 48.3	7,409
Center line of tramway, automobile road is at point 305 feet east of junction of tramroad with plank road.....	44 26 01.6	124 04 45.1	3,136
Opposite and south of south end of a double line of piling 200 feet long.....	44 25 43.9	124 03 59.6	3,757
Waldorf, in truncated pyramid of concrete 24 inches deep, 6 inches square at bottom, and 3 inches square at top, wooden forms not removed; bronze tablet stamped "Prim. Trav. Sta. No. 110, 1917".....	44 26 01.8	124 03 32.9	2,652
North end of plank walk, on west side of road.....	44 25 26.8	124 04 12.1	4,545
Opposite and 205 feet west of a triangulation station of Alsea Bay survey, small shanty 20 feet south of point.....	44 24 59.7	124 05 00.3	4,446
Opposite and 220 feet west of sand indent in vertical sand bluff, indent is about 20 feet deep and has brush and scrub pines in it.....	44 24 08.1	124 05 08.8	5,263
Crossing of creek which flows out upon sand beach 200 feet east. Opposite and 200 feet west of dismantled and weather-beaten house, 60 feet from edge of bluff.....	44 23 36.1	124 05 13.9	3,200
Opposite and 115 feet west of unpainted shack, 30 feet from bluff, sign on door marked "San Marine".....	44 22 06.0	124 05 31.3	9,210
Opposite and 215 feet west of north end of bar of large rocks at edge of sand.....	44 21 24.7	124 05 39.9	4,230
	44 20 43.5	124 05 48.4	4,220

WALDPOR QUADRANGLE—Continued.

South along highways near east border of quadrangle—Continued.

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	Feet.
Opposite and 50 feet west of southwest corner of small green cottage with red trimmings.....	44	19	43.7	124	06	04.8	6,173
Ocean View, T road west, 400 feet west of store.....	44	18	38.5	124	06	08.1	6,604
Center line of covered bridge across Yahats Creek, north end of trestle approach.....	44	18	32.1	124	05	57.4	1,015
Telephone pole at north bank of creek.....	44	17	48.3	124	06	30.1	5,039
Gate in fence across road, 100 feet north of unpainted shelter shack.....	44	17	23.3	124	06	37.0	2,577
In rock at east edge of road; tablet stamped "Prim. Trav. Sta. No. 111, 1917".....	44	17	11.9	124	06	41.0	1,191
Southwest corner of log bridge 40 feet long.....	44	16	54.5	124	06	18.0	2,433
Gate across road.....	44	16	47.5	124	06	29.1	1,074
Fence line, 10 feet north of south post at bluff.....	44	16	11.6	124	06	26.3	3,642
Northwest corner of wagon bridge 12 by 20 feet.....	44	15	25.1	124	06	31.4	4,727

Magnetic declination for east border of quadrangle, 22.0° E.

Northwest along highways near east border of quadrangle. (By J. C. Fales in 1917.)

Opposite and 15 feet north of small gate in board and wire fence on north side of road.....	44	24	48.9	124	00	24.6	.....
Road, opposite board and wire gate at entrance to large unpainted barn with slate roof.....	44	24	49.6	124	00	58.3	2,445
Road, opposite triangular blaze on 36-inch hemlock tree at angle of road.....	44	24	56.8	124	02	03.5	4,793
East end of bridge 600 feet long, at road entrance to Waldport..	44	25	53.3	124	03	21.9	8,072
Waldport, Prim. Trav. Sta. No. 110, 1917.....	44	26	01.8	124	03	32.9	1,176

Magnetic declination for east border of quadrangle, 22.6° E.

East near south border of quadrangle. (By J. C. Fales in 1918.)

Center line of covered bridge across Yahats Creek.....	44	18	32.1	124	05	57.4	.....
Bridge 20 by 14 feet without railing, east end of.....	44	18	40.7	124	05	19.8	2,886
Bridge 10 by 12 feet across small creek, west end of, no railing on either side.....	44	18	31.8	124	04	28.7	3,817
Road opposite small wooden foot gate at fence, fork on south side of road, metal mail box near.....	44	18	22.3	124	04	13.3	1,479
Road, opposite 90-inch spruce snag 50 feet high, which stands 15 feet south of road.....	44	17	57.5	124	03	05.0	5,564
Road, opposite rail wagon gate in rail and post fence at entrance to unpainted barn, gate is 50 feet northwest of barn.....	44	17	55.8	124	02	45.6	1,416
Road, opposite small picket gate in rail and post fence on north side of road, at entrance to unpainted house 125 feet north of road.....	44	17	47.1	124	02	05.2	3,071
Ford at creek.....	44	17	46.6	134	01	21.6	3,168
Road, opposite southeast corner of large unpainted barn at north side of road.....	44	17	38.6	124	00	32.8	3,646

Magnetic declination for south border of quadrangle, 21.1° E.

YONCALLA QUADRANGLE.

South along Southern Pacific R. R. near east border of quadrangle. (By G. T. Hawkins in 1917.)

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	Feet.
Safety station board, second-class road crossing.....	43	42	03.7	123	15	30.2	-----
North end of iron bridge.....	43	41	53.7	123	16	20.7	3,841
I.eona, 560 feet southwest of, on east side of railroad, 10 feet south of wagon road, 6 feet northwest of gate to large house, in yard; iron post stamped "Prim. Trav. Sta. No. 5, 1917".....	43	41	46.6	123	17	03.9	3,254
North end of iron bridge.....	43	41	11.7	123	17	48.8	3,835
Krewson, crossing, 200 feet west of Howe truss bridge.....	43	40	45.2	123	18	00.2	2,820
Farm-road crossing.....	43	40	31.5	123	18	22.3	2,132
Drain, 685 feet north of station; iron post stamped "Prim. Trav. Sta. No. 6, 1917".....	43	39	59.1	123	18	47.3	3,759
Drain, opposite middle window of station.....	43	39	53.4	123	18	47.9	577
Drain, road crossing south of station.....	43	39	47.6	123	18	48.8	600
North end of Elk Creek bridge.....	43	39	03.3	123	18	34.5	4,604
Milepost 607.....	43	38	38.2	123	17	53.6	3,941
Farm-road crossing, 500 feet east of old barn.....	43	38	11.5	123	17	57.0	2,718
Devore station, private-road crossing.....	43	37	54.5	123	17	45.2	1,925
Milepost 605.....	43	37	05.0	123	17	07.3	5,740
Yoncalla, at north end of siding, road crossing.....	43	36	16.8	123	16	53.2	4,990
Yoncalla station, road crossing at north end of.....	43	36	01.4	123	16	51.2	1,567
Road crossing, 100 feet southwest of red house.....	43	35	40.4	123	16	48.8	2,130
Road crossing, 20 feet west of crossing sign.....	43	34	49.0	123	16	37.0	5,278
Yoncalla, 2 miles south of, at east fence line; iron post stamped "Prim. Trav. Sta. No. 7, 1917".....	43	34	11.4	123	16	24.8	3,912
Road crossing under railroad.....	43	33	39.1	123	16	38.9	3,443
Track, opposite milepost 600.....	43	32	52.7	123	16	56.8	4,879
Goodrich Highway crossing.....	43	32	01.4	123	17	02.3	5,213
On east side of railroad, 900 feet south of highway crossing, at old railroad crossing; iron post stamped "Prim. Trav. Sta. No. 8, 1917".....	43	31	47.5	123	17	01.2	1,410
Rice Hall station, track opposite.....	43	31	37.9	123	18	18.4	5,764
Private-road crossing under railroad, 120 feet northeast of barn.....	43	30	58.7	123	18	40.9	4,309
Private crossing.....	43	30	30.5	123	18	34.1	2,891
Isadoro station, private-road crossing.....	43	30	07.4	123	19	03.0	3,163

Checked spur line west from Drain and return. (By G. T. Hawkins in 1917.)

Crossing of Southern Pacific R. R., south of Drain.....	43	39	47.6	123	18	48.8	-----
Farm road with gate at each side.....	43	39	41.6	123	19	57.5	5,087
Fork of new road and old road, which join again about 0.5 mile west.....	43	39	44.6	123	20	53.3	4,117
Junction of old road and new road.....	43	39	58.0	123	21	20.6	2,424
Center line of bridge 75 feet long, about 100 feet southwest of old sawmill.....	43	39	57.1	123	22	05.6	3,303
Point in road fork, northeast of Sunnydale schoolhouse.....	43	39	47.9	123	23	21.9	5,686
70° angle in road, near bank of road, protected by rock.....	43	39	40.8	123	24	44.7	6,119
North edge of road, 90 feet north and 10 feet east from corner of red barn, marked "The Oaks Dairy, E. Snell;" iron post stamped "2 10 27, 1917".....	43	39	53.7	123	26	04.4	6,000
Road, about 200 feet N. 16° E. from Sunnydale school.....	43	39	47.9	123	23	21.3	12,015
Center of bridge 75 feet long.....	43	39	57.1	123	22	05.6	5,651
West end of concrete wing wall for bridge abutment.....	43	39	43.0	123	20	46.7	5,968
Drain, crossing of Southern Pacific R. R., south of.....	43	39	47.6	123	18	48.8	8,685

Magnetic declination for quadrangle, 21.2° E.

West along highways near center of quadrangle. (By J. C. Fales in 1917.)

Northeast corner of red barn marked "The Oaks Dairy".....	43	39	53.7	123	26	04.4	-----
Road, opposite small gate in mesh and barbed wire fence, at entrance to Crow's house; house is green, roof not painted....	43	40	08.84	123	27	02.6	4,543
West end of wagon bridge.....	43	40	02.2	123	28	11.9	5,136
Fork in road whence steep road leads toward creek, east of main road.....	43	39	49.0	123	29	18.4	5,066

Magnetic declination for center of quadrangle, 22.41° E.

WASHINGTON.

TRIANGULATION STATIONS.

Connell, Othello, and Riparia quadrangles.

ADAMS, FRANKLIN, GRANT, AND WALLA WALLA COUNTIES.

During the season of 1916 George T. Hawkins extended triangulation eastward from stations Crab and Jackson, described in Bulletin 245.

Beside occupying Crab and Jackson, Mr. Hawkins occupied and relocated Scooten and also occupied 12 primary stations and located three secondary points by intersections, all on approximate North American datum. For other positions in Washington see U. S. Geological Survey Bulletins Nos. 181, 216, 245, 440, 496, 551, and 644, and Part I of the 18th, 20th, and 21st Annual Reports. U. S. Coast and Geodetic Survey Special Pub. Nos. 13 and 31.

CRAB, ADAMS COUNTY, WASH.

The highest peak of the Saddle Mountain Range, east of the Ephrata-White Bluff road. Station is about 8 miles south of Sam Hutchinson's ranch on Crab Creek. Take road from Hutchinson's place to White Bluff, follow this road until summit of Saddle Mountain is reached, then go east along summit to highest point, which is about 10 miles north of White Bluff ferry. Water can be found in Crab Creek 4 miles north.

Signal: A lumber tripod 10 feet high.

Station mark: A bronze triangulation tablet set in stone and placed in ground level with surface.

[Latitude 46° 46' 31.10". Longitude 119° 19' 10.47".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Saddle (2).....	99	17	12.86	279	01	52.50	4.4333970	.....
Frenchman.....	132	33	44.15	312	20	36.00	4.4913920	.....
McManamon.....	173	35	13.29	353	33	57.80	4.2920014	.....
Jackson.....	218	11	56.36	38	20	50.03	4.4053183	.....
Mobley.....	252	58	27.37	73	19	13.88	4.5781338	23.523
Scooten.....	290	20	26.29	110	31	03.44	4.2968459	12.308
Miller.....	300	02	34.63	120	22	54.63	4.6153005	25.624

ERHART, FRANKLIN COUNTY, WASH.

In sec. 13, T. 13 N., R. 33 E., on land owned by Curt Erhart, 0.3 mile southwest of his house, 6 feet west of wire fence through center of sec. east and west.

Signal: Sawed-lumber tripod.

Station mark: Bench-mark post set 3.5 feet in the ground.

Reference marks: Nail in top of fence post 12.9 feet west and 6 feet south; nail in top of fence post 6.1 feet east and 6 feet south.

[Latitude 46° 37' 12.30". Longitude 118° 36' 47.88".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Miller.....	79	20	34.74	259	10	05.65	4.2731073	11.654
McNichols.....	165	38	42.09	345	37	02.00	4.0713560	7.323
Washtucna.....	227	25	27.95	47	32	42.91	4.2366091	10.714
Kinney.....	260	16	08.47	80	24	09.10	4.1543255	8.865

GRAY, ADAMS COUNTY, WASH.

Near south border of sec. 32, T. 16 N., R. 37 E., on land owned by Mr. Gray, on high cultivated knoll about 0.5 mile northwest of Mr. Burkhart's house.

Signal: Sawed lumber.

Station mark: Concrete block 18 by 10 by 10 inches with bronze tablet in top set with top 15 inches below surface.

Reference marks: Nail in top of fence post, 192.8 feet to first post visible on east slope of hill; nail in top of fence post, 188.8 feet to second post to west of first; nail in top of fence post, 205.8 feet to fourth post to west of first.

[Latitude 46° 49' 39.52". Longitude 118° 11' 56.77".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Howard.....	11	44	44.84	191	42	20.39	4.3164362	12.876
Washtucna.....	59	00	43.35	238	49	52.50	4.3448806	13.748
Stark.....	97	08	55.75	277	03	00.18	4.0175146	6.469
Mitchell.....	207	00	32.53	27	03	25.30	4.0425949	6.854
Hooper.....	285	01	13.55	105	06	37.01	3.9885243	6.052

HOOPER, ADAMS COUNTY, WASH.

In south half of sec. 8, T. 15 N., R. 38 E., about 4 miles northeast of Hooper, on high grassy hill, 0.25 mile northwest of a house (vacant). Road running northeast from Hooper passes 0.3 mile west of station.

Signal: Sawed lumber tripod.

Station mark: Basalt stone 22 by 10 by 10 inches, set 22 inches in the ground; cross cut on top of stone.

[Latitude 46° 48' 17.54". Longitude 118° 04' 33.16".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Howard.....	37	34	38.51	217	26	51.11	4.3500081	13.911
Gray.....	105	06	37.01	285	01	13.55	3.9885243	6.052
Mitchell.....	160	29	38.36	340	27	07.39	4.1176312	8.147

HOWARD, ADAMS COUNTY, WASH.

In sec. 2, T. 13 N., R. 36 E., on land owned by Mr. Howard and 600 feet southeast of his house, on northeast end of ridge, which breaks off abruptly toward Palouse River. Station is 9 miles southeast of Washtucna and 4.5 miles northwest of Lyons Ferry on Snake River.

Signal: Sawed lumber tripod.

Station mark: Basalt rock 24 by 12 by 10 inches, set 36 inches in the ground, 7 feet south of wire fence. Top of rock is 12 inches below the surface. Cross cut on top.

Reference marks: Nail in second post east 54.4 feet; nail in first post east 25 feet; nail in first post west 11.9 feet; nail in second post west 42.4 feet.

[Latitude 46° 38' 42.45". Longitude 118° 15' 15.13".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Pleasantview School.....	53	46	42	233	35	28	4.39000	15.253
Kinney.....	88	24	21.52	268	16	42.28	4.1283412	8.350
Washtucna.....	121	03	36.78	300	55	11.23	4.2361455	10.703
Stark.....	164	08	55.30	344	05	24.71	4.3508818	13.939
Gray.....	191	42	20.39	11	44	44.84	4.3164362	12.876
Hooper.....	217	26	51.11	37	34	38.51	4.3500081	13.911

JACKSON, DOUGLAS COUNTY, WASH.

On the highest part of a flat ridge about 8 miles south of Wheeler post office and 6 miles west of Petersburg post office. Station is on S. C. Harrison's land and is 0.5 mile west of Oliver Jackson's house.

Signal: A lumber tripod 14 feet high with targets at top.

Station mark: A bronze triangulation tablet, cemented in a stone and placed in ground level with surface under center of signal. (Replaced by iron bench-mark post set by Hawkins in 1916.)

[Latitude 46° 57' 17.56". Longitude 119° 06' 46.82".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Crab.....	38	20	59.03	218	11	56.36	4.4053183	.....
McManamon.....	88	29	46.89	268	19	27.84	4.2533409	.....
Lewis.....	145	20	58.57	325	10	14.06	4.5130523	.....
Wheeler.....	187	48	17.09	7	50	22.96	4.4256706	.....
Mobley.....	293	38	41.00	113	50	26.22	4.3487439	13.871
Scooten.....	354	05	57.90	174	07	33.28	4.4316730	16.789

KINNEY, FRANKLIN COUNTY, WASH.

On high grassy hill 6 feet west and 34 feet south of center of sec. 4, T. 13 N., R. 35 E., on land owned by Honus Harder, who lives at east end of Washtucna Lake.

Signal: Sawed-lumber tripod.

Station mark: Bench-mark post set 3 feet in ground.

[Latitude 46° 38' 29.86". Longitude 118° 25' 46.73".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Pleasantview School.....	24	08	12	204	04	36	4.19035	9.631
Erhart.....	80	24	09.10	260	16	08.47	4.1543255	8.865
Washtucna.....	171	44	54.70	351	44	08.70	3.9710179	5.813
Howard.....	268	16	42.28	88	24	21.52	4.1283412	8.350

LIND, ADAMS COUNTY, WASH.

About 7 miles southeast of Lind, in sec. 18, T. 16 N., R. 34 E., about 0.5 mile north-west of house rented by Mr. Fitzpatrick.

Station is 1,314 feet south of east and west wire fence and 1,013 feet east of north and south wire fence where road goes through.

Signal: Sawed lumber.

Station mark: Concrete block 20 by 8 by 8 inches set with top 14 inches below surface of ground.

[Latitude 46° 52' 46.27". Longitude 118° 35' 04.12".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
McNichols.....	16	23	39.93	196	20	43.99	4.2590993	11.284
Mobley.....	88	20	01.92	268	08	37.95	4.2978261	12.336
Schoolhouse.....	125	19	21	305	15	02	3.96344	5.712
Stark.....	283	08	04.85	103	19	01.45	4.2918245	12.167
Washtucna.....	328	34	47.95	148	40	48.20	4.3038500	12.508

McNICHOLS, FRANKLIN COUNTY, WASH. (Not occupied.)

In southeast corner of sec. 3, T. 14 N., R. 33 E., on land owned by Mr. McNichols. Signal is not on highest part of hill, as objection was made to building in wheat field.

Signal: Windmill tower.

Station mark: Center of well.

• [Latitude 46° 43' 22.04". Longitude 118° 39' 05.47".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Miller.....	46	08	47.78	225	59	58.22	4.3323796	13.358
Scooten.....	88	15	32.38	267	56	58.13	4.5122095	20.210
Mobley.....	138	48	06.80	318	39	39.64	4.3496434	13.899
Lind.....	196	20	43.99	16	23	39.93	4.2590993	11.284
Washtucna.....	269	03	43.41	89	12	38.91	4.1937170	9.707
Erhart.....	345	37	02.00	165	38	42.09	4.0713560	7.323

MILLER, FRANKLIN COUNTY, WASH.

Station is 1,050 feet south and 1,140 feet east of corner of secs. 24, 25, 19, and 30, T. 13 N., Rs. 31 and 32 E., on highest part of hill, in cultivated field owned by Mr. Miller, a banker from Connell.

Signal: Sawed-lumber tripod.

Station mark: Bench-mark post set 3.5 feet in ground.

[Latitude 46° 35' 19.07". Longitude 118° 51' 13.64".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Crab.....	120	22	54.63	300	02	34.63	4.6153005	25.624
Scooten.....	129	07	19.70	308	57	36.20	4.3417998	13.651
Church spire.....	155	55	29	335	51	41	4.21278	10.142
Mobley.....	181	14	24.16	1	14	47.78	4.5015236	19.718
McNichols.....	225	59	58.22	46	08	47.78	4.3323796	13.358
Erhart.....	259	10	05.65	79	20	34.74	4.2731073	11.654

MITCHELL, ADAMS COUNTY, WASH.

Station is two miles northwest of Benge, near center of sec. 4, T. 16 N., R. 7 E., on knoll in field owned by Mr. Mitchell and 0.3 mile east of his house.

Signal: Sawed lumber.

Station mark: Stone 26 by 10 by 12 inches, set 36 inches in the ground; cross on top. Top of stone is 10 inches below surface.

Reference mark: Station is 478.5 feet north of east-west wire fence; station is 1,122.0 feet west of north-south wire fence where it crosses the hill (south gate post).

[Latitude 46° 54' 57.70". Longitude 118° 08' 00.04".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Gray.....	27 03 25.30	207 00 32.53	4.0425949	6.854
Stark.....	60 57 57.62	240 49 09.00	4.2443479	10.907
Hooper.....	340 27 07.39	160 29 38.36	4.1176312	8.147

MOBLEY, ADAMS COUNTY, WASH.

Station is 50 feet south of the center of sec. 18, T. 16 N., R. 32 E., and 6 feet east of north-south wire fence through middle of sec. 18. On land owned by Mr. Mobley, who lives at northeast corner of sec. 18.

Signal: Sawed-lumber tripod with targets.

Station mark: Bench-mark post 3 feet in ground.

[Latitude 46° 52' 26.51". Longitude 118° 50' 41.21".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Miller.....	1 14 47.78	181 14 24.16	4.5015236	19.718
Scooten.....	44 47 22.02	224 37 13.51	4.4008747	15.640
Jackson.....	113 50 26.22	293 38 41.00	4.3487439	13.871
Schoolhouse.....	244 17 37	64 24 42	4.13604	8.500
Lind.....	268 08 37.95	88 20 01.92	4.2978261	12.336
McNichols.....	318 39 39.64	138 48 06.80	4.3496434	13.899

PLEASANTVIEW SCHOOLHOUSE, WALLA WALLA COUNTY, WASH. (Not occupied.)

In sec. 19 (?), T. 12 N., R. 35 E. A white schoolhouse on prominent hill, about 7 miles west and 1 mile north of Pleasantview.

Station mark and signal: Chimney of schoolhouse.

[Latitude 46° 30' 51.6". Longitude 118° 30' 44.0".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Kinney.....	204 04 36	24 08 12	4.19035	9.631
Howard.....	233 35 28	53 46 42	4.39000	15.253

SCOOTEN, FRANKLIN COUNTY, WASH.

On a prominent butte about 2.5 miles east of Scooten Springs. Take road from Scooten Springs past the corral to top of hill, then left-hand road, which passes to left of signal.

Signal: A tripod made of lumber.

Station mark: A bronze triangulation tablet cemented in a rock and placed in ground level with surface.

[Latitude 46° 42' 47.19". Longitude 119° 04' 36.04".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Crab.....	110 31 03.44	290 20 26.59	4.2968459	12.308
Jackson.....	174 07 33.28	354 05 57.90	4.4316730	16.789
Mobley.....	224 37 13.51	44 47 22.02	4.4008747	15.640
Church spire.....	264 06 51	84 12 47	4.01857	6.485
McNichols.....	267 56 53.13	88 15 32.33	4.5122095	20.210
Miller.....	308 57 36.20	129 07 19.70	4.3417998	13.651

STARK, ADAMS COUNTY, WASH.

Station is in sec. 30, T. 16 N., R. 36 E., on highest part of a hill, on farm owned by Mr. Stark, about 400 feet southeast of his house, and just south of small orchard.

Signal: Sawed lumber.

Station mark: Concrete block 18 by 10 by 10 inches, having bronze tablet in top and set with top 12 inches below surface.

Reference marks: Nail in apple tree north, 44 feet distant; nail in apple tree north-west, 67 feet distant.

[Latitude 46° 50' 21.19". Longitude 118° 20' 04.28".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Washtucna.....	34	08	46.29	214	03	50.65	4.1860371	9.536
Lind.....	103	19	01.45	283	08	04.85	4.2918245	12.167
Mitchell.....	240	49	09.00	60	57	57.62	4.2443479	10.907
Gray.....	277	03	00.18	97	08	55.75	4.0175146	6.469
Howard.....	344	05	24.71	164	08	55.30	4.3508818	13.939

WASHTUCNA, FRANKLIN COUNTY, WASH.

Station is about 7 miles west and 2 miles south of Washtucna, in sec. 5, T. 14 N., R. 35 E., on high cultivated hill 0.5 mile southwest of ranch house.

Signal: Sawed-lumber tripod.

Station mark: Bench-mark post set 2.5 feet in ground.

[Latitude 46° 43' 29.66". Longitude 118° 26' 49.95".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Erhart.....	47	32	42.91	227	25	27.95	4.2366091	10.714
McNichols.....	89	12	38.91	269	03	43.41	4.1937190	9.707
Lind.....	148	40	48.20	328	34	47.95	4.3038500	12.508
Stark.....	214	03	50.65	34	08	46.29	4.1860371	9.536
Gray.....	238	49	52.50	59	00	43.35	4.3448806	13.748
Howard.....	300	55	11.23	121	03	36.78	4.2361455	10.703
Kinney.....	351	44	08.70	171	44	54.70	3.9710179	5.813

WHITE CHURCH, FRANKLIN COUNTY, WASH. (Not occupied.)

(Sighted from two stations only; position doubtful.)

On big flat about 3 miles west and 2.5 miles north of Connell.

Station mark and signal: Spire of church.

[Latitude 46° 43' 21.6". Longitude 118° 56' 27.2".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Scooten.....	84	12	47	264	06	51	4.01857	6.485
Miller.....	335	51	41	155	55	29	4.21278	10.142

WHITE SCHOOLHOUSE, ADAMS COUNTY, WASH. (Not occupied.)

(Sighted from two stations; position doubtful.)

In sec. 4 (?), T. 16 N., R. 33 E., on high ground and at southwest corner of cross-roads 5 miles southwest of Lind.

Station mark and signal: Chimney on schoolhouse.

[Latitude 46° 55' 38.2". Longitude 118° 40' 58.6".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Mobley.....	64 24 42	244 17 37	4.13604	8.500
Lind.....	305 15 02	125 19 21	3.96344	5.712

PRIMARY TRAVERSE.

Chehalis, Eatonville, Mount St. Helens, Mount Rainier, and Tacoma quadrangles.

LEWIS AND PIERCE COUNTIES.

The following positions on North American datum were determined by Geo. T. Hawkins in 1916. They are based on Primary Traverse Station No. 6, of 1910, in the Tacoma quadrangle and on Primary Traverse Station No. 48, of 1912, in Chehalis quadrangle.

CHEHALIS QUADRANGLE.

West along highways in southeast part of quadrangle. (By G. T. Hawkins in 1916.)

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	<i>Feet.</i>
Mossy Rock, 1 mile west of, elbow in road east and north.....	46	31	46.3	122	30	19.6	.....
Mossy Rock, 1 mile west of, elbow in road west and south.....	46	31	59.2	122	30	18.8	1,310
Mossy Rock, 3 miles west of, on south side of east and west road, 60 feet north of house; iron post stamped "Prim. Trav. Sta. No. 2, 1912," also "E. 576".....	46	31	58.8	122	31	55.2	6,737
Mayfield, on south side of store building, 150 feet southeast of east end of new iron bridge; iron post stamped "Prim. Trav. Sta. No. 1, 1912".....	46	30	33.0	122	34	04.3	12,470
Silver Creek, at northeast corner of T road north; iron post stamped "Prim. Trav. Sta. No. 48, 1912" (Elev. 678).....	46	31	32.2	122	35	21.2	8,000
Silver Creek, 800 feet southeast of store and post office, 30 feet east by 25 feet south to center of crossroads, 5 feet north by 5 feet east to corner fence post; iron post stamped "Prim. Trav. Sta. No. 48, Wash. 1912".....	46	31	32.7	122	35	20.8	.....

EATONVILLE QUADRANGLE.

West along highways near south border of quadrangle. (By G. T. Hawkins in 1916.)

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	Feet.
Riffe, 1 mile east of road, opposite rock crusher.....	46	30	51.3	122	21	27.0	.....
Riffe, 30 feet northeast to blacksmith shop; iron post stamped "Prim. Trav. Sta. No. 5B".....	46	30	52.5	122	22	33.8	4,677
Riffe, 1.75 miles west of, opposite entrance to two-story frame house.....	46	31	20.2	122	24	26.0	8,328
Richland schoolhouse; iron post stamped "El. 793," also "Prim. Trav. Sta. No. 4B".....	46	30	55.1	122	26	00.7	7,100
Richland schoolhouse, 0.75 mile west of, T road south, 40 feet southwest to milk platform.....	46	31	03.8	122	26	56.9	4,026
Mossy Rock, 200 feet northeast to post office; iron post stamped "El. 668," also "Prim. Trav. Sta. No. 3B".....	46	31	47.6	122	28	55.6	9,414
Mossy Rock, 1 mile west of, elbow in road east and north (duplicated on Chehalis quadrangle).....	46	31	46.3	122	30	19.6	5,876
Kosmos, 2 miles northeast of, second-class road north.....	46	30	22.6	122	10	12.6	.....
Kosmos, 3.5 miles northeast of, forks at high school.....	46	31	06.5	122	09	19.0	5,817
Kosmos, 4.5 miles northeast of, opposite old store.....	46	31	22.8	122	08	31.1	4,280
Coleman & Harlson's store, road opposite.....	46	32	28.7	122	07	01.0	8,471
Coleman & Harlson's store, 1.5 miles east of, second-class road south in front of house.....	46	32	35.3	122	05	30.9	6,331
Two-story unpainted house, road opposite.....	46	32	52.2	122	04	41.0	3,889
New schoolhouse, road opposite, 60 feet north to flagpole.....	46	32	51.6	122	04	04.6	2,540
Second-class fork north to C. F. Burnett's house.....	46	32	38.0	122	02	52.7	5,213
Dead snag, at northeast corner of old field, blaze on side next to road with nail in center.....	46	32	27.8	122	02	24.1	2,251
Second-class fork to south.....	46	32	03.0	122	00	46.7	7,252
Wooden bridge over large creek, east end of (duplicated on Mount Rainier quadrangle).....	46	32	17.1	121	59	49.5	4,244

South along Chicago, Milwaukee & St. Paul Ry. to Morton.

Tanwax Junction, railroad crossing 400 feet southeast of.....	46	59	56.6	122	14	21.9	.....
Kapowsin, crossroads 0.3 mile west of.....	46	59	07.6	122	14	02.3	5,137
Railroad, in front of station (no name).....	46	57	03.7	122	14	11.9	12,580
Holt station, railroad in front of.....	46	56	36.7	122	15	05.3	4,604
Railroad crossing near white schoolhouse.....	46	55	36.5	122	15	28.8	6,323
Clay City, headblock at.....	46	55	02.6	122	15	08.4	3,710
Ohop, railroad in front of station.....	46	54	26.6	122	15	35.8	4,115
Railroad, opposite sign "Station, 1 mile".....	46	53	55.9	122	16	19.7	4,355
Railroad crossing near saw mill, two-story house 200 feet west.....	46	53	00.1	122	15	47.5	6,080
Eatonville, 50 feet north of station, 15 feet south of tank; iron post stamped "El. 800," also "Prim. Trav. Sta. No. 1, 1916".....	46	51	57.4	122	15	38.7	6,390
Railroad, opposite milepost 67.....	46	51	12.9	122	17	06.6	7,593
Milepost 35 (marked on tie).....	46	50	59.3	122	18	08.6	4,520
Railroad, opposite sign "Station one mile".....	46	50	43.2	122	18	38.6	2,651
Legrande, automobile road crossing railroad.....	46	50	04.4	122	19	06.4	4,375
Milepost 38 (marked on tie).....	46	49	22.7	122	18	06.4	5,943
U. S. B. M.; marked on rock in place, "El. 1,007".....	46	49	10.6	122	18	08.0	1,230
Railroad, opposite milepost 39.....	46	48	34.0	122	18	02.9	3,723
Railroad, opposite station at headworks.....	46	47	52.5	122	18	22.4	4,416
Alder, 12 feet south of railroad, 70 feet southwest of station; iron post stamped "El. 1,148" and "Prim. Trav. Sta. No. 2, 1916".....	46	47	45.7	122	17	00.2	5,763
Railroad, opposite sign "Station one mile".....	46	47	08.8	122	16	12.3	5,009
Log siding, headblock.....	46	46	34.4	122	15	54.6	3,691
Reliance station sign, railroad opposite.....	46	46	25.9	122	15	37.1	1,497
Milepost 44 (marked on tie).....	46	46	44.5	122	14	53.7	3,560
Water tank, railroad opposite.....	46	46	50.6	122	14	00.7	3,740
Williamson, crossing 0.25 mile east of.....	46	46	10.9	122	12	15.9	8,327
Elbe, 2 feet north of crossing post near station; iron post stamped "El. 1,210, 1910" and "Prim. Trav. Sta. No. 3, 1916".....	46	45	54.8	122	11	35.9	3,230
Elbe, in east part of; crossing of automobile road and railroad.....	46	45	52.2	122	11	11.0	1,749
Elbe, 1 mile east of; crossing.....	46	45	48.0	122	10	02.8	4,771
Park Junction, 0.3 mile south of, crossing of automobile road and railroad.....	46	45	21.9	122	08	20.8	.....
Park Junction, 0.3 mile south of, crossing of automobile road and railroad; iron post 65 feet southeast of, stamped "Prim. Trav. Sta. No. 4, 1916" and "El. 1,336".....	46	45	21.4	122	08	20.2	64
Milepost 51 (marked on tie).....	46	44	32.8	122	08	28.3	4,850
Railroad, opposite old station (no name).....	46	44	04.9	122	08	41.7	2,987
Railroad, opposite loading platform.....	46	43	31.8	122	09	14.0	4,035
Mineral, 20 feet east of railroad, 50 feet northeast of station; iron post stamped "El. 1,439" and "Prim. Trav. Sta. No. 5, 1916".....	46	42	59.9	122	10	30.0	6,203
Mineral, 1.5 miles southwest of, second-class crossing.....	46	42	20.8	122	11	38.5	6,205
Watkins station, railroad opposite.....	46	41	25.7	122	11	38.5	5,581
Log siding, headblock.....	46	40	04.9	122	11	35.0	8,195

EATONVILLE QUADRANGLE—Continued.

South along Chicago, Milwaukee & St. Paul Ry. to Morton—Continued.

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	<i>Feet.</i>
Cowlitz Junction, 1,200 feet north of headblock, 8 feet west of railroad; iron post stamped "E. 1,636" and "Prim. Trav. Sta. No. 6, 1916".....	46	38	41.7	122	12	07.9	8,738
Cowlitz Junction, 1.5 miles southwest of, on west side of railroad; iron post stamped "E. 1,475".....	46	37	33.3	122	12	38.5	7,248
Milepost 62 (marked on tie).....	46	36	53.5	122	13	15.0	4,771
Inland, railroad opposite tank at.....	46	35	58.7	122	13	28.9	5,636
Luidberg post office, railroad opposite.....	46	35	17.9	122	14	30.6	5,970
Luidberg, 0.75 miles southwest of, crossing over railroad.....	46	34	46.2	122	14	59.6	3,800
Morton station, railroad opposite.....	46	33	40.1	122	16	27.2	9,069

Along highways south from Morton.

Morton, 1 mile southeast of, forks at sawmill.....	46	33	20.6	122	15	42.9	3,674
Morton, 3 miles southeast of forks, 100 feet east to two-story house.....	46	32	14.5	122	13	48.9	10,410
Forks at south end of straight road across valley.....	46	31	35.3	122	13	49.3	3,970
Forks on top of hill.....	46	30	58.2	122	12	48.6	5,669
Forks of plank road and gravel road.....	46	30	24.6	122	11	38.1	5,991

Along highways.

Automobile road opposite circular saw sign, "Mountain 5 Tacoma 50", 150 feet south to large log house.....	46	45	37.1	122	00	42.6	.....
Ashford, 100 feet west of post office, in southwest corner of forks; iron post stamped "E. 1, 771".....	46	45	33.7	122	01	51.0	4,770

Along Chicago, Milwaukee & St. Paul Ry.

Railroad, opposite north side of station, at log road junction....	46	45	51.8	122	03	21.8	6,583
National station, railroad opposite northwest corner of.....	46	45	31.2	122	04	13.9	4,192
Railroad, opposite station (no name).....	46	45	23.1	122	06	22.1	8,963

MOUNT RAINIER QUADRANGLE.

East along highways. (By G. T. Hawkins in 1916.)

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	<i>Feet.</i>
Randal, 2.5 miles west of, east end of wooden bridge.....	46	32	17.1	121	59	49.5	.....
Randal, 1 mile west of, second-class road southwest at edge of big bottom 180 feet southwest to house.....	46	32	13.0	121	58	28.1	5,709
Randal, T road south at, 400 feet south to iron bridge.....	46	32	11.1	121	57	21.9	4,630
Randal, east part of, 10 feet north of road, 50 feet north to house, 100 feet southeast to silo, in rock in place; tablet stamped "Prim. Trav. Sta. No. 8, 1916".....	46	32	10.5	121	57	16.9	354
Randal, 1.5 miles east of, second-class road south at house.....	46	32	16.4	121	55	37.2	7,000
Randal, 2 miles northeast of, east end of iron bridge.....	46	32	25.7	121	54	59.8	2,780
T road south, 300 feet southeast to house.....	46	32	30.5	121	54	24.8	2,488
Road, opposite yard gate with arch over top.....	46	32	33.2	121	52	54.3	6,336
Road, opposite blacksmith shop.....	46	32	03.0	121	50	21.2	11,130
Road, opposite long straight wire fence south.....	46	32	13.0	121	49	11.5	4,794
Hop dryhouse, forks 70 feet east of.....	46	31	56.9	121	48	35.5	3,002
Cora Ferry, 90 feet northeast of Wm. Mullen's house, in solid rock; tablet stamped "Prim. Trav. Sta. No. 9, 1916".....	46	32	12.1	121	47	32.3	4,682
Painted house on north side of road; road opposite.....	46	31	59.2	121	46	06.5	6,138
Large creek northwest; middle of bridge over.....	46	32	35.6	121	45	25.6	4,667
Road, opposite gate, 30 feet northeast to mail box.....	46	33	12.1	121	43	50.8	7,582
Road, opposite two-story house on west side of road.....	46	33	40.4	121	43	18.4	3,658
Vessel Ferry, road opposite.....	46	34	02.7	121	43	06.8	2,410
Large creek northwest, middle of bridge over.....	46	34	29.3	121	42	04.6	5,112
Road, opposite house on west side of, near junction of large creek with Cowlitz River.....	46	34	46.9	121	41	22.7	3,425

MOUNT RAINIER QUADRANGLE—Continued.

East along highways—Continued.

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	
Road, opposite D. W. Collin's house.....	46	35	47.9	121	40	46.9	6,675
Lewis, opposite post office road.....	46	36	25.4	121	40	12.2	4,504
Lewis, 0.5 mile northeast of, in top of large rock near road forks, tablet stamped "Prim. Trav. Sta. No. 10, 1916".....	46	36	47.3	121	40	00.7	2,366
Cowlitz River, government bridge over; south end of.....	46	37	17.4	121	39	42.6	3,302
Triangle cut on north side of fir tree, on south side of trail, 400 feet south to small clearing.....	46	37	45.4	121	41	30.2	8,027
Triangle cut on east side of fir tree, on west side of trail.....	46	38	05.5	121	42	18.9	3,965
Triangle cut on north side of fir tree, on south side of trail.....	46	38	35.4	121	42	42.6	3,460
Triangle cut on north side of fir tree, on west side of trail.....	46	39	26.4	121	43	18.5	5,741
Swingingsign, "Creek Claras".....	46	39	39.5	121	43	18.4	1,327
Triangle cut on west side of fir tree, on east side of trail.....	46	39	55.2	121	43	50.9	2,773
Triangle cut on south side of fir tree, on north side of trail.....	46	40	32.0	121	44	59.4	6,070
SkateCreek, foot bridge over.....	46	40	55.6	121	45	51.0	4,314
Triangle cut on south side of fir tree, on north side of trail.....	46	40	58.6	121	46	00.5	735
Triangle cut on north side of fir tree, on south side of trail.....	46	41	13.9	121	47	16.6	5,525
Triangle cut on north side of fir tree, on south side of trail.....	46	42	08.8	121	48	32.8	7,695
Ranger's cabin, trail opposite.....	46	42	43.6	121	48	57.3	3,926
Trail, fork leading to Lookout Mountain.....	46	43	11.8	121	49	21.4	3,311
Triangle cut on west side of alder tree, on east side of trail.....	46	43	32.9	121	49	31.9	2,265
Bear Prairie, point on automobile road in Rainier Park.....	46	43	56.5	121	50	13.0	3,738
Automobile road, opposite milepost 3.9.....	46	44	07.6	121	50	50.9	2,865
Automobile road, opposite Henry trail to north.....	46	44	12.5	121	51	23.0	2,300
Automobile road, opposite milepost 3.....	46	44	09.8	121	51	54.2	2,193
Bench-mark tablet, stamped "El. 2275," also "Prim. Trav. Sta. No. 13, 1916".....	46	44	04.9	121	52	21.5	1,965
Automobile road, opposite milepost 2.....	46	44	26.3	121	52	51.6	3,013
Automobile road, opposite milepost 1.....	46	44	33.7	121	53	53.0	4,342
Mount Rainier Park, at entrance, 1 foot south of flagpole; iron post stamped "E. 2,003".....	46	44	30.2	121	55	01.5	4,787
Automobile road, opposite schoolhouse No. 98.....	46	45	04.5	121	56	02.1	5,465
Automobile road, wooden bridge over creek south.....	46	45	20.5	121	57	38.7	6,925
Automobile road, fork to south, 20 feet southeast to sign on circularsaw "U. S. Forest Reserve".....	46	45	28.3	121	58	50.5	5,062

MOUNT ST. HELENS QUADRANGLE.

West along highways near north border of quadrangle. (By G. T. Hawkins in 1916.)

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	
Kosmos, 0.75 mile northeast of, T road north, 40 feet northwest to sign, reads "Morton 6.8 miles, Mineral 19.8 miles".....	46	29	53.8	122	11	14.9	.....
Kosmos, 130 feet southeast of; iron post stamped "752" also "Prim. Trav. Sta. No. 7, 1916".....	46	29	40.0	122	11	52.7	2,995
Kosmos, 1.5 miles southwest of, second-class road south leading to old house and camp ground.....	46	28	49.3	122	12	31.2	5,778
Cowlitz River, near old ferry on; iron post stamped "628.4".....	46	28	33.6	122	14	38.3	9,033
Cowlitz River, iron bridge over; north end of.....	46	28	52.8	122	16	31.7	8,171
Wooden bridge.....	46	28	28.6	122	17	23.8	4,393
Wooden bridge.....	46	28	31.6	122	17	43.5	1,421
Road, opposite painted elevation (633).....	46	28	51.9	122	18	17.8	3,151
Old sawmill, east end of bridge near.....	46	29	06.4	122	19	29.8	5,255
Riffe, 3 miles east of, in school yard; iron post stamped "E. 573".....	46	29	32.9	122	20	02.2	3,507

TACOMA QUADRANGLE.

From Primary Traverse station No. 6 along highways about 10 miles south, thence along railroad to Morton.

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	Feet.
Orting, 150 feet west of water tank, 34.2 feet from center of track, on south side, 3 feet west of telegraph pole, 53 feet west of center line of Bridge Street; iron post stamped "Prim. Trav. Sta. No. 6, 1910, Wash. 198T"	47	05	47.3	122	12	04.8	.....
Orting, about 2 miles southwest of, opposite cemetery gate; road	47	04	45.4	122	13	49.8	9, 598
Orting, about 3.5 miles southwest of; crossroads, 150 feet southwest to old house	47	04	05.5	122	15	04.0	6, 538
Orting, about 4 miles southwest of, road at quarter corner	47	03	37.7	122	15	08.4	2, 825
Orting, about 5 miles southwest of, T road west at quarter corner	47	02	46.0	122	15	07.4	5, 241
Orting, about 5.5 miles southwest of, section corner, 30 feet west to corner of fence	47	02	19.4	122	15	08.3	2, 690
Fence line east and west; road opposite	47	00	48.0	122	14	43.8	9, 416

Dungeness, Lake Crescent, Mount Olympus, Port Angeles, Port Crescent, and Pysht quadrangles.

CLALLAM COUNTY.

The following geographic positions, on North American datum, were determined in 1917 by C. F. Urquhart.

The traverse lines were tied to the following stations of the U. S. Coast and Geodetic Survey: Twin, Ediz Hook Lighthouse, Dungeness Lighthouse, Dode, Pillow Point, and Slip Point.

DUNGENESS QUADRANGLE.

Along highways and sand spit. (By C. F. Urquhart in 1917.)

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	Feet.
Station 88, on railroad, east of Reeve-ton	48	06	20.4	123	14	58.4	.....
Reeve-ton station, about 450 feet east of, 30 feet south of railroad crossing; iron post stamped "Prim. Trav. Sta. No. 14, 160, 1917"	48	06	20.0	123	14	56.5	132
McDonald Creek bridge; east end of	48	06	20.3	123	13	11.2	7, 146
Road south	48	06	20.6	123	11	57.6	5, 000
Opposite D. L. Stewart's residence	48	06	20.7	123	11	13.5	3, 000
Road turns north, 14-mile signpost	48	06	20.2	123	09	59.5	5, 010
Road turns east to Dungeness	48	07	51.6	123	09	55.3	9, 265
Dungeness Lighthouse, 5.80 miles west of, old Port Angeles-Dungeness road crossing, 10 feet south of road, 30 feet east of railroad; iron post stamped "Prim. Trav. Sta. No. 16, 121, 1917"	48	08	03.0	123	10	08.8	1, 475
U. S. Coast and Geodetic Survey triangulation station, not described and no position given	48	10	25.1	123	09	00.7	15, 116
Dungeness Lighthouse, U. S. Coast and Geodetic Survey triangulation station	48	10	55.9	123	06	33.6	10, 447
Opposite Mr. McHonheimer's residence	48	00	56.4	123	13	06.2	3, 705
McDonald Creek hill; summit	48	01	27.4	123	13	38.0	3, 816
McDonald Creek bridge; east end	48	01	26.3	123	13	44.1	429
Summit of hill	48	01	34.5	123	13	56.3	1, 170
Between gate on south and old barn on north side of road	48	01	43.4	123	14	15.3	1, 576
Point where trail leaves road to south	48	01	43.8	123	14	43.2	1, 898

DUNGENESS QUADRANGLE—Continued.

From station 93 opposite L. D. Stewart's residence on Port Angeles and Dungeness Road along highway to Carlsborg, thence southwest and north to station 87 on east side of a gravel pit.

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	Feet.
Station 93, opposite L. D. Stewart's residence, in road	48	06	20.7	123	11	13.3	.....
Reeveton, 3.55 miles east of, 6.10 miles southwest of Dungeness, on north side of road, at T-road south to Carlsborg; iron post stamped "Prim. Trav. Sta. No. 15, 125, 1917"	48	06	20.6	123	10	19.2	3, 678
Railroad crossing	48	05	38.3	123	10	19.3	4, 278
Road crossing	48	05	14.8	123	10	19.2	2, 382
Crossing on logging railroad	48	04	44.1	123	10	17.0	3, 122
Opposite Lucos S. Kocilliah's mailbox	48	04	22.8	123	10	14.9	2, 164
Section line	48	04	09.7	123	10	25.0	1, 491
Road crossing	48	02	50.5	123	10	39.2	8, 083
Road crossing; Prim. Trav. Sta. No. 17	48	02	50.4	123	10	39.0	16
Opposite Bear Creek School, district 48	48	02	44.9	123	10	00.9	2, 652
Road east to Sequim	48	02	21.1	123	09	21.2	3, 619
District school, west of road, 430 feet, azimuth 200°, from bridge ..	48	01	21.6	123	09	52.6	6, 392
Bridge	48	01	07.5	123	10	00.2	1, 519
Slab camp and Deer Park trail leaves main road; tablet set in boulder, stamped "Prim. Trav. Sta. No. 18"	48	00	36.7	123	10	17.5	3, 340
Creek crossing	48	01	02.6	123	12	12.5	8, 252

Magnetic declination in southwest part of quadrangle, 24.3° E.

LAKE CRESCENT QUADRANGLE.

South along highways near east border of quadrangle. (By C. F. Urquhart in 1917.)

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	Feet.
Big Whiskey Creek, 1,314 feet west of Little Whiskey Creek ..	48	08	01.1	123	45	55.6	.....
New bridge, 115 feet long, east end	48	07	01.1	123	46	45.1	4, 601
Bridge	48	07	09.0	123	47	08.2	2, 649
Point not described, 170 feet north-northeast of Prim. Trav. Sta. No. 7	48	06	24.3	123	47	10.1	4, 529
Piedmont, 1.1 miles north of, east side of summit of road, opposite Sulphur Springs trail; iron post stamped (?) "Prim. Trav. Sta. No. 7, 910, 1917"	48	06	22.7	123	47	10.6	170
Piedmont ferries road fork to ferries and East Beach, 150 feet northwest of creek	48	05	45.8	123	47	25.9	3, 881

West along Seattle, Port Angeles & Western R. R. through center of quadrangle.

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	Feet.
Water tank, 300 feet east of center of bridge	48	08	22.5	123	45	34.4	.....
Hilda, at station, 275 feet west of west end of bridge P. A. 176, 260 feet long, 110 feet east of logging-road spur	48	08	26.0	123	47	11.9	6, 625
Railroad station (no name given), 2,370 feet west of a private-road crossing	48	08	30.1	123	48	34.9	5, 645
Railroad crossing, 1,385 feet west of center of bridge, P. A. 178 ..	48	08	35.8	123	49	15.0	2, 780
Joyce, 4.5 miles west of, about 75 feet south of Lyre School, near flagpole; iron post stamped "Prim. Trav. Sta. No. 48, 186, 1917"	48	08	38.7	123	49	43.2	1, 934
Lyre Creek, north side of, opposite section house	48	08	35.8	123	50	00.5	1, 206
Shadow station signboard	48	08	53.6	123	51	40.7	7, 034
Majestic station, signboard	48	09	13.2	123	52	16.1	3, 112
Majestic, 1.06 miles west of, P. T. b. m. No. 49 (not described and not recovered by levelman)	48	09	21.4	123	53	37.3	5, 569
Bridge No. 680, east end of	48	09	31.6	123	54	17.2	2, 897
Railroad span	48	09	33.3	123	55	18.4	4, 150
Junction of road north to Twin triangulation station	48	09	35.0	123	56	08.7	3, 415
Twin triangulation station, on sharp ridge east of Twin Rivers, 50 feet above water and about 80 meters from nearest stream, 3 meters back from edge of bluff, and 5 feet lower than top of ridge in front of it. Center marked by a 1/8-inch hole, drilled 2 inches deep in a stone buried 18 inches beneath surface. Ridge broken down in 1908, center found 15 inches below surface of ground and about 2 feet from perpendicular edge of cliff. Reference marks: Copper tack in top of 7-inch alder stump standing 4 feet high bearing S. 77° W. (mag.), and distant 14.042 meters; copper tack in a 5-inch alder stump standing 5 feet high, back at right angles from line of bluff, bearing S. 7° 45' W. (mag.) and 4.632 meters distant (U. S. C. & G. S. station)	48	09	58.78	123	56	39.82	3, 274

NOTE—Station mark has been washed out but two reference stumps remain.

LAKE CRESCENT QUADRANGLE—Continued.

West along Seattle, Port Angeles & Western R. R. through center of quadrangle—Continued.

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Twin Rivers, about 300 feet east of station, 50 feet east of Pool Hall, 30 feet north of track; iron post stamped "Prim. Trav. Sta. No. 50, 159, 1917"	48 09 34.1	123 56 42.5	3,115
West Twin Creek, east end of trestle 535 feet long over	48 09 03.7	123 56 49.6	7,013
Point 220 feet west southwest from Prim. Trav. Sta. No. 51	48 09 46.2	123 58 23.5	
Twin Rivers, 2.5 miles west of, 175 feet east of bridge, 270 feet west of west end of switch, 52 feet north of railroad, near telephone booth; iron post stamped "Prim. Trav. Sta. No. 51, 231, 1917"	48 09 47.1	123 58 26.5	220

Magnetic declination near east border of quadrangle, 24.6° E.; through center of quadrangle, 24.8° E.

Secondary triangulation on Crescent Lake based upon unchecked primary traverse position for station Mitchell. (By C. F. Urquhart in 1917.)

NOTE.—Nearly all stations are marked by triangulation tablets set in rock. Tablets are not stamped.

Station 331, adjusted position	48 05 45.81	123 47 25.91	972
Mitchell, iron post	48 05 36.22	123 47 26.24	
Saratoga, in rough rocks near Saratoga Point; tablet set in boulder	48 05 23.67	123 45 23.71	8,414.9
East Beach (not occupied); chimney on building, probably hotel	48 05 10.63	123 44 31.14	3,806.5
East Beach, on beach, at about the first point visible from East Beach; tablet set in rock	48 04 36.66	123 46 04.77	7,229.9
West Beach, on beach; cross on rock	48 04 34.30	123 46 09.64	407.8
East Sledge, at rocky point, 500 feet north of Sledge Hammer Point; tablet set in rock	48 04 26.44	123 46 21.35	1,125.6
Sledge, at point locally known as Sledge Hammer Point; tablet set in rock	48 04 21.25	123 46 24.18	560.2
Storm, on beach, 1,828 feet south of Sledge Hammer Point; tablet set in rock	48 04 04.17	123 46 32.83	1,828.2
Hatchery (not occupied); derrick	48 03 30.32	123 47 07.50	4,160.9
Barnes, at point locally known as Barnes Point; tablet set in rock. Not found 1918	48 03 41.49	123 47 42.55	2,636.2
Maple, at Maple Point; tablet set in rock	48 03 10.19	123 49 32.98	8,145.4
Pancake, on beach at point locally known as Pancake; tablet set in rock	48 03 12.70	123 52 02.50	10,161.8
Madrona, on beach at point locally known as Madrona Point; tablet set in rock	48 03 35.32	123 53 03.29	4,722.7
Eagle, at point locally known as Eagle Point; tablet set in rock	48 03 42.78	123 53 50.44	3,291.4
Boulder, on beach, at point 1,013 feet from West Base; tablet set in rock	48 04 00.35	123 54 44.28	4,067.5
Fairholm, West Base, in northeast corner of concrete wall of spring; nail	48 04 07.27	123 54 55.05	1,013.2
East Base, on rock set in ground; cross mark in triangle	48 04 14.84	123 54 38.69	1,350.1
Thompson, near east side of Mr. Thompson's lawn; tablet in rock	48 04 06.21	123 53 59.80	2,782.8
East Thompson, on beach, 502 feet east of Thompson; cross on rock placed in ground	48 04 04.80	123 53 52.71	502.0
Grubb, on beach west of Mr. Grubb's landing; tablet in rock	48 03 54.40	123 52 37.51	5,215.3
Cedar, on beach, between Grubbs landing and Maple Point; tablet set in rock	48 03 53.83	123 52 15.84	1,473.1
Neagle, on beach, at point locally known as Neagle's Point; tablet set in rock	48 03 54.23	123 50 40.44	6,480.2
Bluff E, at west side of bluff; tablet set in rock	48 03 50.44	123 48 20.81	9,492.4
Bluff D, 1,875 feet northeast of Bluff E; cross on rock	48 03 51.06	123 48 18.22	187.5
Bluff C, on beach, 2,202 feet from Bluff D; tablet in rock	48 04 00.93	123 47 49.34	2,201.9
Bluff B, on beach, 604 feet from Bluff C; tablet set in rock	48 04 04.24	123 47 41.94	603.8
Bluff A, on beach, 481 feet from Bluff B; cross on rock	48 04 07.38	123 47 36.65	480.8
Bluff, 284 feet northeast of Bluff A; tablet set in rock	48 04 09.60	123 47 34.09	284.0
Dead Tree, on beach, at small flat near a dead tree; tablet set in rock	48 04 21.28	123 47 26.95	1,278.6
Devil, at point locally known as Devil's Point; tablet set in rock	48 05 02.68	123 47 11.40	4,326.7
Harrigan, at point locally known as Harrigan's Point; tablet set in rock	48 05 16.06	123 47 18.22	1,432.0
Anderson, on wharf, near Anderson's farm; flag	48 05 34.96	123 47 58.55	3,341.9
Mitchell, on Mr. Mitchell's lawn; tablet set in rock	48 05 36.22	123 47 26.24	2,197.3

LAKE CRESCENT QUADRANGLE—Continued.

From west border east along highway to Crescent Lake. (By C. F. Urquhart in 1917.)

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Milepost 5 (Pysht quadrangle).....	48 04 17.8	124 01 01.1	.....
Milepost 4.....	48 04 21.1	123 59 44.3	5,230
Milepost 3.....	48 04 22.2	123 58 26.9	5,254
Fairholm, 2.3 miles west of, in southwest angle of road fork south to Solduc; iron post stamped "Prim. Trav. Sta. No. 42. Elev. 1,150, 1917.".....	48 04 29.0	123 57 28.8	3,909
Section line crossing road.....	48 04 22.5	123 56 42.6	3,208
Fairholm, 650 feet south of ferry landing, on north side of road, in top of large rock; bronze tablet stamped "Prim. Trav. Sta. No. 47. Elev. 619, 1917.".....	48 04 06.6	123 54 59.9	7,160
Point on wharf.....	48 04 06.0	123 54 54.7	358
West base of Crescent Lake triangulation.....	48 04 07.27	123 54 55.05	127

From point near Fairholm south along road to Solduc Hot Springs. (Single spur line.)

Milepost 3, (previous line).....	48 04 22.2	123 58 26.9	5,254
Milepost 3, on Solduc road.....	48 04 15.4	123 58 18.7	883
Signboard Solduc 10 miles and L. C. 4.....	48 04 05.0	123 59 33.4	5,180
Moore's place, at fork to; iron post stamped "Prim. Trav. Sta. No. 43, 1917 (?).....	48 03 02.3	123 58 53.4	6,911
Section line.....	48 02 56.2	123 57 58.7	3,771
Milepost 7.....	48 02 40.3	123 57 25.2	2,791
North Fork of Soleduck River.....	48 02 30.2	123 56 54.7	2,305
Section line.....	48 02 23.0	123 56 39.5	1,267
Section line.....	48 01 47.9	123 56 03.3	4,324
Milepost 9.....	48 01 35.1	123 55 36.1	2,259
Solduc Hot Springs, 4.74 miles north of, 0.44 mile south of milepost 9, on west edge of road; iron post stamped "Prim. Trav. Sta. No. 44. Elev. 300, 1917.".....	48 01 18.4	123 55 14.7	2,226
Milepost 10.....	48 00 12.7	123 54 14.4	7,819

MOUNT OLYMPUS QUADRANGLE.

From north border of quadrangle south to Solduc. (Single spur line. By C. F. Urquhart in 1917.)

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Solduc Hot Springs, 2.75 miles north of, on east edge of road in top of large rock; bronze tablet stamped "Prim. Trav. Sta. No. 45. Elev. 1,646, 1917.".....	47 59 54.1	123 53 52.4	2,406
Milepost 12.....	47 59 37.2	123 53 22.0	2,687
Signboard "Solduc Hot Springs 2 miles.".....	47 59 28.1	123 53 15.6	1,018
Milepost 14.....	47 58 22.6	123 51 55.7	8,587
Solduc, at northwest corner of bridge over Soleduck River; iron post stamped "Prim. Trav. Sta. No. 46. Elev. 1,641, 1917".....	47 58 14.2	123 51 40.5	1,336

PORT ANGELES QUADRANGLE.

From U. S. Coast and Geodetic Survey triangulation station Ediz Hook Lighthouse to U. S. Coast and Geodetic Survey triangulation station Dungeness Lighthouse along sand spits and highways. (By C. F. Urughart in 1917.)

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	Feet.
Ediz Hook Lighthouse, U. S. Coast and Geodetic Survey triangulation station.	48	08	27.62	123	24	10.29	.....
Angeles, U. S. Coast and Geodetic Survey triangulation station on Ediz Hook, near the base of spit, 23 paces from the high water mark of Port Angeles, 14 paces back from high water mark of strait, 98 paces from signal in line to Ediz Hook Lighthouse, west gable of an old hut, only one on spit beyond Bradshaw Wharf and warehouse; center is marked by a 8-inch hole drilled 1.5 inches deep in a large stone, buried 18 inches beneath surface of ground.	48	08	21.21	123	27	24.08	13,164
Station 17, on road.	48	07	55.2	123	27	53.3	3,300
Ediz Lighthouse, 3.13 miles west of, 2 miles west of Port Angeles, at northwest corner of P. S. M. & T. Lumber Co.'s yard, 15 feet east of railroad, 20 feet south of highway crossing; iron post stamped "5, 1917, Prim. Trav. Sta. No. 2"	48	07	55.8	123	27	52.7	72
Port Angeles	48	07	25.7	123	26	57.3	4,839
Port Angeles, corner of First and Valley streets.	48	07	18.9	123	26	19.2	2,675
Port Angeles, intersection of First and Race streets.	48	06	48.6	123	25	05.0	5,900
Port Angeles, intersection of First and Race streets; iron post stamped "Prim. Trav. Sta. No. 27, 1081, 1917"	48	06	48.5	123	25	05.6	38
White Creek bridge; west end of.	48	06	36.4	123	24	24.3	3,057
Ennis Creek bridge; west end of.	48	06	24.9	123	23	43.0	3,033
Lee Creek bridge; west end of.	48	06	18.5	123	22	56.5	3,220
Mount Pleasant road; east junction.	48	06	19.9	123	22	10.3	3,137
Road north.	48	06	39.5	123	21	32.1	3,265
Morse Creek bridge; center of.	48	06	14.4	123	21	22.0	2,636
Port Angeles, 5.50 miles east of, on north side of road, at top of grade on east side of Morse Creek; iron post stamped "Prim. Trav. Sta. No. 12, 212, 1917"	48	06	30.3	123	20	51.0	2,652
Bagley Creek; crossing.	48	05	56.9	123	19	43.0	5,723
Road south.	48	05	48.6	123	18	23.4	5,466
Port Angeles, 8.41 miles east of, 0.54 mile east of Fairview School, on north side of road, at bend; iron post stamped "Prim. Trav. Sta. No. 13, 332, 1917"	48	05	48.2	123	17	26.7	3,850
Slebert Creek bridge; west end of.	48	06	11.93	123	16	34.96	4,257

From Primary Traverse Station No. 12, summit of hill on east side of Morse Creek, along Port Angeles and Dungeness Road, along highway to Mr. Danz's ranch, thence by trail and highway to Primary Traverse Station No. 19.

Prim. Trav. Sta. No. 12 (Station 69)	48	06	30.3	123	20	51.0	.....
T on old highway	48	06	13.6	123	20	47.5	1,709
Sign "1 mile to Dungeness road"	48	05	20.4	123	20	57.3	5,433
New road running south.	48	05	00.5	123	20	57.6	2,023
Port Angeles, 5.80 miles east by 1.85 miles south of, at point where road turns south; iron post stamped "Prim. Trav. Sta. No. 21, 492, 1917"	48	05	00.2	123	20	34.8	1,548
Sign "2 miles to Dungeness road"	48	04	47.6	123	20	20.8	1,598
Hub opposite Homestead gate.	48	04	29.8	123	20	16.1	1,831
New road to the west.	48	04	07.4	123	20	14.0	2,266
Sign "3 miles to Dungeness road"	48	04	02.9	123	20	14.6	473
North end of cut, in road, opposite house.	48	03	25.8	123	20	12.7	3,757
Sign "4 miles to Dungeness road"	48	03	11.2	123	20	15.1	1,485
Port Angeles, 5.80 miles east and 4.95 miles south of, in front of Earl Coolidge's house, 10 feet west of road; iron post stamped "Prim. Trav. Sta. No. 22, 936, 1917"	48	02	38.3	123	20	20.7	3,349
Sign "Dungeness road 5 miles"	48	02	21.2	123	20	20.8	1,739
Bridge south of shingle mill.	48	02	00.0	123	20	22.2	2,150
Bridge.	48	01	49.0	123	20	17.3	1,165
Sign "6 miles to Dungeness road"	48	01	37.3	123	20	23.6	1,260
Morse Creek trail.	48	01	12.4	123	20	30.7	2,565
Sign "7 miles to Dungeness road"	48	01	09.7	123	20	02.7	1,919
Road fork.	48	01	06.9	123	19	45.2	1,227
Bridge.	48	00	58.3	123	19	18.4	2,020
Port Angeles, 5.80 miles east and 8.65 miles south of, 55 feet northwest of Fred Danz's ranch house, near chicken-yard fence; iron post stamped "Prim. Trav. Sta. No. 23, 1789, 1917"	48	00	25.5	123	18	46.9	3,952
North side of cabin above creek.	48	00	14.9	123	18	23.1	1,945
Canyon, east side of, "U. S. B. M." painted on tree.	48	00	48.3	123	16	31.1	8,335
Section line.	48	01	07.9	123	16	29.0	1,996
Sign "6 miles to Dungeness road"	48	01	25.2	123	16	28.5	1,752
Port Angeles, 9.50 miles east and 5.00 miles south of, on west side of road, at T road east to Sequim; iron post stamped "Prim. Trav. Sta. No. 19, 1128, 1917"	48	02	12.2	123	16	28.2	4,757

PORT ANGELES QUADRANGLE—Continued.

From east end of Third Street bridge, Port Angeles, along railroad to Joyce.

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	Feet.
Port Angeles, station 20, approximately at east end of Third Street bridge.....	48	07	25.7	123	26	57.3	.....
Road crossing.....	48	07	56.8	123	28	48.8	8,194
Road crossing.....	48	07	44.0	123	29	59.5	4,970
Prim. Trav. Sta. No. 3, road crossing Lower Elwah road, previously described in Port Crescent quadrangle list.....	48	07	25.4	123	31	28.5	6,320
Tumwater schoolhouse (district No. 49), northwest corner of; iron post stamped "Prim. Trav. Sta. No. 10".....	48	03	31.5	123	30	00.8	.....
Center of crossing on logging railroad.....	48	03	46.4	123	28	27.2	2,732
Road west.....	48	03	31.2	123	29	00.0	4,906
Summit of hill.....	48	05	14.2	123	28	07.2	5,639
Port Angeles, 3.25 miles southwest of, just south of Christ Baker's house, on outer edge of road at sharp bend, opposite old stone quarry; iron post stamped "Prim. Trav. Sta. No. 11, 565, 1917".....	48	05	31.3	123	27	59.7	1,806
Port Angeles, city limits.....	48	06	04.4	123	27	09.2	7,257
Port Angeles, intersection of Eighth and Pine streets.....	48	06	59.9	123	26	46.0	3,030
Port Angeles, intersection of Eighth and Lincoln streets.....	48	06	45.5	123	26	10.8	2,800
Port Angeles, intersection of Eighth and Francis streets.....	48	06	29.5	123	25	31.5	3,120
Port Angeles, intersection of First and Race streets.....	48	06	48.6	123	25	05.0	2,645

From intersection of First and Race streets, Port Angeles, south to Primary Traverse Station No. 28, at end of road near Fisher's ranch. (Spur line.)

Port Angeles, station 26, First and Race streets.....	48	06	48.6	123	25	05.0	.....
Port Angeles, 2 miles south of, at milepost.....	48	05	55.9	123	25	26.2	5,529
Creek.....	48	04	44.3	123	25	08.3	7,355
Port Angeles, 4 miles south of, at milepost.....	48	04	20.7	123	25	10.4	2,397
Port Angeles, 4.16 miles south of, 300 feet south of Jones's house, on east edge of road; iron post stamped "Prim. Trav. Sta. No. 27, 1081, 1917".....	48	04	13.5	123	25	11.9	734
Road west.....	48	04	05.2	123	25	17.9	940
White Creek, bridge over.....	48	03	53.8	123	25	22.4	1,195
Creek.....	48	03	24.5	123	25	10.4	3,075
Creek.....	48	03	17.8	123	25	08.4	686
On bridge over small creek.....	48	03	03.3	123	25	07.8	1,477
Morse Creek trail and ranger station.....	48	02	44.6	123	25	02.5	1,830
Section line.....	48	02	38.4	123	25	05.6	660
Trail to ranger station.....	48	02	35.0	123	25	13.0	605
Bridge at Fisher's ranch.....	48	02	28.1	123	25	43.1	2,164
Trail east to clearing.....	48	02	22.3	123	25	49.5	727
Ennis Creek, ranger station, 1 mile south of, at junction of Mount Angeles and Little River trails; iron post stamped "Prim. Trav. Sta. No. 28, 1957, 1917".....	48	02	25.9	123	26	03.7	1,028

North along highways.

Section corner, road turns west.....	48	02	11.4	123	15	09.7	.....
Port Angeles, 9.50 miles east and 5.00 miles south of, on west side of road, at T road east to Sequim; iron post stamped "Prim. Trav. Sta. No. 19, 1128, 1917".....	48	02	12.2	123	16	28.2	5,334
Opposite Blue Mountain School (district No. 41).....	48	03	02.7	123	16	27.4	5,116
Port Angeles, 9.50 miles east and 2.25 miles south of, on east side of road, 25 feet north of bridge; iron post stamped "Prim. Trav. Sta. No. 20, 477, 1917".....	48	04	51.3	123	16	27.4	11,003
Sign "1 mile to Dungeness road".....	48	05	30.7	123	16	26.4	3,996
Station 87, at gravel pit, 1,120 feet east of Siebert Creek bridge, on Port Angeles and Dungeness road.....	48	06	20.3	123	16	14.7	5,087

Magnetic declination for quadrangle, 24° 15' E.

PORT CRESCENT QUADRANGLE.

West along Seattle, Port Angeles & Western R. R. and county road. (By C. F. Urquhart in 1917.)

Station.	Latitude.	Longitude.	Distance between stations.
Port Angeles, 3.7 miles west of, at Lower Elwha River road crossing on railroad, 15 feet east of road and 25 feet south of track, 15 feet south of electric bell; iron post stamped "Prim. Trav. Sta. No. 3, Elev. 227, 1917".....	° ' "	° ' "	Feet.
Elwha River, east end of trestle over.....	48 07 25.4	123 31 28.5	7,225
Elwha station, 2 feet southwest of station sign, at end of switch.....	48 07 53.5	123 33 58.4	7,270
Ranger railroad station, crossing at.....	48 07 47.6	123 35 16.6	5,333
Covill, 0.7 mile east and on second curve east of station, at farm crossing, 17.6 feet south of center of track; iron post stamped "Prim. Trav. Sta. No. 4, 22, 1917".....	48 07 33.9	123 36 46.6	6,262
Covill, road crossing at station.....	48 07 30.1	123 37 41.8	3,767
Salt Creek.....	48 07 29.3	123 40 05.9	9,770
Rampao, about 600 feet west of station, on bank at right of way line, 20 feet south of railroad, between two large cedar stumps, 170 feet from store; iron post stamped "Prim. Trav. Sta. No. 5, 247, 1917".....	48 07 22.2	123 40 54.3	3,363
Road crossing.....	48 07 41.2	123 41 51.8	4,465
Joyce, 410 feet east of station, at northeast corner of railroad crossing; hub.....	48 08 11.0	123 43 52.7	8,737
Joyce, 0.53 mile west of, at road crossing.....	48 08 16.3	123 44 39.3	3,200
Joyce, 0.55 mile west of, 100 feet south of railroad, 10 feet east of road, southeast side of road fork to Twin; iron post stamped "Prim. Trav. Sta. No. 6".....	48 08 15.7	123 44 40.6	107

Northeast along highways near west border to Tongue Point, Crescent Bay.

Creek.....	48 08 41.6	123 44 10.3	-----
Logging railroad; crossing on.....	48 09 17.5	123 43 54.1	3,891
Port Crescent, at foot of hill, fork of road.....	48 09 33.4	123 44 29.9	2,300
Tongue Point, at northeast corner of Crescent Bay, concrete International Boundary Monument 6 by 2 by 2 feet, marked on north face "Canada Treaty 1908" and on south face "U. S. Reference mark".....	48 10 02.18	123 42 13.72	5,932

East along highways through south half of quadrangle.

Creek.....	48 05 26.9	123 44 56.8	-----
Station 368, not described.....	48 05 15.9	123 44 36.6	1,770
East Beach, 60 feet northwest of road fork, on north side of road along lake, on projecting rock; bronze tablet stamped "Prim. Trav. Sta. No. 8, 663, 1917".....	48 05 14.6	123 44 33.4	255
Turn in road from southeast to northeast at old grade.....	48 05 16.4	123 43 51.9	2,826
Maple Grove camp, at fork of road to; bench mark.....	48 04 49.7	123 42 09.0	7,492
Eden Valley, on old road to, at fork leading up mountain.....	48 04 44.2	123 41 57.4	791
Elwha post office, 4.8 miles west of, 17 miles southwest of Port Angeles, exactly opposite county milepost 17, on south side of road, near east end of Lake Sutherland; iron post stamped "Prim. Trav. Sta. No. 9, 571, 1917".....	48 04 38.4	123 41 19.9	2,612
Indian Creek; bridge over.....	48 04 32.9	123 40 03.8	5,197
Port Angeles, 15 miles southwest of, at signpost.....	48 04 22.0	123 38 57.1	4,664
Elwha, 1.6 miles west of, 0.5 mile west of Culverwell's ranch, on north side of East Beach road, 7 feet from center; iron post stamped "Prim. Trav. Sta. No. 26, 427, 1917".....	48 04 05.6	123 37 32.5	5,983
Culverwell's farm, opposite road to.....	48 03 50.5	123 36 50.5	3,236
Schoolhouse, 470 feet west of fork of road and trail to Olympic Hot Springs, 23 feet, true azimuth 13° 51', from southeast corner post; bench mark.....	48 03 41.0	123 35 40.6	4,848
Fork at trail to Olympic Hot Springs, 40 feet east of.....	48 03 40.0	123 35 33.3	510
Upper Elwha bridge, 155 foot bridge, west end of.....	48 03 20.7	123 34 56.0	3,201
Road up Little River.....	48 03 50.9	123 34 18.8	3,969
Port Angeles, 10.0 miles southwest of, in northeast angle at junction of roads, 75 feet north of Little River bridge; iron post stamped "Prim. Trav. Sta. No. 24, 222, 1917".....	48 03 51.1	123 34 19.0	23
Bridge over Spring Branch.....	48 03 50.4	123 33 27.6	3,493
North and south section line.....	48 03 50.0	123 32 55.6	2,183
Port Angeles, 6.4 miles southwest of, at summit of road, 4.2 feet from northwest corner of Little River or Tumwater schoolhouse (district No. 49); iron post stamped "Prim. Trav. Sta. No. 10, 1022, 1917".....	48 03 31.5	123 30 00.8	5,687

PORT CRESCENT QUADRANGLE—Continued.

From Primary Traverse Station No. 24, northeast to point near center of east border of quadrangle.

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	Feet.
Olympic Forest, north boundary.....	48	04	19.0	123	34	16.5	2,833
Bridge, 110 feet long, southwest end of.....	48	04	25.3	123	34	11.8	714
Bridge, 75 feet long, southwest end of.....	48	04	34.6	123	33	58.3	1,315
Bridge, 75 feet long, southwest end of.....	48	04	56.4	123	33	31.6	2,863
Bridge, about 200 feet long, south end of.....	48	05	33.0	123	33	12.4	3,926
Olympic Power Plant, at fork to, on East Beach road, 114° azimuth 93.5 feet from northwest corner of house, 285° azimuth 50.2 feet from power-line pole; iron post stamped "Prim. Trav. Sta. No. 25".....	48	06	05.0	123	32	08.6	5,412
Road fork, road to Piedmont.....	48	06	31.7	123	32	08.7	2,700
Road fork, at old Lake Crescent road.....	48	06	45.6	123	32	08.7	1,410
Lower Elwha road, T road fork.....	48	06	45.0	123	31	28.4	2,737
Prim. Trav. Sta. No. 3, (previously described).....	48	07	25.4	123	31	28.5	4,102

Magnetic declination through center of quadrangle, 24.1° E.; for west border of quadrangle, 24.40° E.; through south half of quadrangle, of 24.3° E.; near the east border of quadrangle, 24.3° E.

From point near center of southeast quarter of quadrangle south along highway to south border of quadrangle. (Single spur line, Azimuths checked by needle only.)

Station 466 (previously described).....	48	03	40.0	123	35	33.3	.....
North end of trail.....	48	02	47.9	123	36	05.8	5,722
East end of trail.....	48	02	26.6	123	36	05.4	2,164
Milepost 2 miles to road.....	48	02	20.3	123	36	00.2	726
Boulder 8 feet in diameter by 6 feet high, 10 feet west of trail.....	48	01	39.5	123	35	47.2	4,225
Hughes Creek, 15 feet wide.....	48	01	33.7	123	35	47.4	590
Elwha, 3 miles south of, 304 feet south of Hughes Creek, 6 feet east of center of trail; iron post stamped "Prim. Trav. Sta. No. 29, 364, 1917." (True elevation is 342.6 feet.).....	48	01	30.9	123	35	48.0	293
Milepost 4 miles to road.....	48	00	53.3	123	36	02.6	3,834
Creek 2 feet wide.....	48	00	44.2	123	36	15.0	1,252
Trail running to Elwha ranger station cable crossing on river.....	48	00	40.4	123	36	14.9	384
Opposite milepost 5 miles to Port Angeles road.....	48	00	14.3	123	36	29.7	2,823
Creek 3 feet wide.....	48	00	04.0	123	36	38.0	1,192

Magnetic declination for south border of quadrangle, 23.0° E.

PYSHT QUADRANGLE.

Along Seattle, Port Angeles & Western R. R. and highways in northeast part of quadrangle. (By C. F. Urquhart in 1917.)

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	Feet.
Dode, U. S. Coast and Geodetic Survey triangulation station, on highest part of a gravel spit, 4 or 5 miles west of Twin Rivers, about 4 miles east of Pillar Point. Outlet of a small stream is on west side of spit. In line to Pillar Point, the station is 11 paces from edge of grass and 40 paces from high-water mark. In line to Twin Rivers, 30 paces from high-water mark. In line to point of spit, 26 paces to edge of grass, 52 paces to high-water mark. About 80 paces back of station is corner of rail fence. Center is marked by a $\frac{3}{4}$ -inch hole drilled 2 inches deep in a large stone, buried 16 inches beneath surface of ground. Station mark: 3 stubs, north, south, and east. Each marked by a copper tack, 6 feet from center of station. Station recovered in 1908. 18 inches west of station spit has been eroded by storm waters making a declivity of from 2 to 3 feet, although high-water mark is apparently little changed.....	48	10	31.21	124	01	25.54	.....
Point not described.....	48	10	47.6	124	03	07.4	7,107
Pysht, 3.4 miles east of, in bed at mouth of Joe Creek, in granite rock; bronze tablet stamped "Prim. Trav. Sta. No. 52, 5, 1917".....	48	10	47.3	124	03	09.1	106
Pysht, at northwest corner of Weather Bureau yard; iron post stamped "Prim. Trav. Sta. No. 38, 10, 1917".....	48	12	03.8	124	06	35.8	15,973

PYSHT QUADRANGLE—Continued.

Along Seattle, Port Angeles & Western R. R. and highways in northeast part of quadrangle—Con.

Station.	Latitude.			Longitude.			Distance between stations.
Pysht, 0.6 mile west of, 990 feet southwest of southwest end of bridge, at bend in road.....	48	11	49.5	124	07	13.7	Feet. 2,949
South end of bridge.....	48	11	55.8	124	07	02.6	990
Pillar Point, about 60 feet west of, U. S. Coast and Geodetic Survey triangulation station, on a rock 20 feet above high-water mark and 25 feet square at top; brush cleared off top and hole dug 3 feet to solid rock. Hole was drilled 2 inches deep in this rock.....	48	13	02.16	124	06	06.2	7,727

Magnetic declination in northeast part of quadrangle, 24.7° E.

From Shiprock south and east along highways and along Seattle, Port Angeles & Western R. R to point near Pillar. (By C. F. Urquhart in 1917.)

Slip Point, land on east shore of Clallam Bay, weather permitting, otherwise on west shore; Clallam Creek must be forded if walking from west end of bay, and walking is bad at high tide. Concrete pier built at station; well sunk about halfway up from creek; distance from landing to station 1.5 miles; station is 450 feet above water; recovered in 1892 and 1908; signal erected for hydrographic use.....	48	15	41.45	124	14	22.06	.....
East Clallam, in front of hotel, 3 feet southeast of approach to bridge leading to wharf in Clallam; iron post stamped "Prim. Trav. Sta. No. 31, Elev. 15, 1917".....	48	15	19.8	124	15	33.1	5,279
Creek.....	48	14	16.0	124	15	40.4	6,473
Clallam River, on bridge over.....	48	13	28.5	124	15	11.2	5,192
Railroad crossing.....	48	13	21.6	124	15	11.8	697
East Clallam, 3.6 miles south of, north of small bridge, east side of road, 30 feet south of 3 notches in spruce tree, 25 feet north of bench mark on hemlock tree; iron post stamped "Prim. Trav. Sta. No. 32, Elev. 234, 1917".....	48	12	10.1	124	14	14.8	8,202
Bridge.....	48	11	31.5	124	13	26.9	5,079
Creek.....	48	11	07.0	124	12	59.6	3,090
East Clallam, 5.73 miles southeast of T road east to Pysht, 10 feet west of road; iron post stamped "Prim. Trav. Sta. No. 33, Elev. 171, 1917".....	48	10	38.5	124	12	48.3	2,978
Bridge.....	48	10	45.9	124	12	16.8	2,771
Bridge.....	48	11	18.6	124	10	15.7	8,847
Pysht, 2.61 miles west of, 35 feet east of east end of Pysht River bridge, on south edge of road; iron post stamped "Prim. Trav. Sta. No. 34, Elev. 37, 1917".....	48	11	24.2	124	09	20.8	3,770
Bridge.....	48	11	24.6	124	08	09.3	4,843
Railroad crossing.....	48	11	27.5	124	08	03.4	501
Bend in road, 990 feet southwest of south end of bridge over Pysht River at Merrill and Ring camp.....	48	11	49.5	124	07	13.7	4,046

From point south of East Clallam along highways south and east to Fairholm.

Previous line.....	48	10	38.5	124	12	48.3	.....
Bridge over Pysht River, center of.....	48	10	19.8	124	12	38.9	1,098
Bridge, 240 feet long, fourth board from concrete end of, 450 feet northeast of north end of another bridge.....	48	09	32.6	124	12	55.3	4,920
South end of bridge.....	48	08	55.0	124	13	04.0	3,849
North end of south twin bridge.....	48	08	44.2	124	08	44.2	1,102
Sapho, 6.37 miles north of, 1,000 feet south of twin bridges, 20 feet west of road; iron post stamped "Prim. Trav. Sta. No. 35, Elev. 761, 1917".....	48	08	36.3	124	13	13.1	960
On bridge.....	48	08	29.0	124	12	56.2	1,367
Bridge.....	48	07	46.2	124	13	01.4	4,363
Sign "Sapho 4 miles".....	48	07	07.9	124	13	53.7	5,258
Sapho, 2.75 miles north of, on west edge of road, 75 feet north of bridge; iron post stamped "Prim. Trav. Sta. No. 36, 574, 1917".....	48	06	41.6	124	15	13.0	6,002
Opposite falls on Beaver Creek.....	48	05	41.4	124	15	57.6	6,809
Beaver Creek, bridge over.....	48	05	34.6	124	15	52.7	772
Sapho, 0.74 miles south of, in northwest angle at junction of road; iron post stamped "Prim. Trav. Sta. No. 37, Elev. 458, 1917".....	48	04	14.3	124	16	48.4	8,970
Milepost 16 miles to Crescent Lake.....	48	04	03.6	124	14	36.0	9,061
Bridge 43 feet long over Bear Creek, west end of.....	48	03	59.7	124	14	03.7	2,230
Fairholm, 15.0 miles west of, 0.6 mile east of Bear Creek, 275 feet east of 15-mile post, near hemlock tree on north edge of road, tree blazed and marked "U. S. B. M."; iron post stamped "Prim. Trav. Sta. No. 38, 618, 1917".....	48	03	54.4	124	13	16.3	3,260
Milepost 14.....	48	03	49.9	124	12	05.6	4,825
Milepost 13.....	48	03	44.8	124	10	46.2	5,420

PYSHT QUADRANGLE—Continued.

From point south of East Clallam along highways south and east to Fairholm—Continued.

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Fairholm, 12.1 miles west of, 60 feet west of milepost 12, on south side of road; iron post stamped "Prim. Trav. Sta. No. 39, 734, 1917"	48 03 42.7	124 09 31.6	5,075
Bridge, center of.....	48 03 41.3	124 08 38.4	3,620
Bridge.....	48 03 41.6	124 07 45.6	3,583
Milepost 10.....	48 03 54.3	124 07 02.4	3,203
Fairholm, 9.13 miles west of, 15 feet south of southwest corner of small bridge; iron post stamped "Prim. Trav. Sta. No. 40, 1917, 767"			
On bridge.....	48 04 10.6	124 06 13.8	3,693
Milepost 8.....	48 04 11.6	124 05 48.7	1,709
Milepost 7.....	48 04 07.8	124 04 50.5	3,969
Fairholm, 6.23 miles west of, 1,930 feet west of bridge, 15 feet north of road, 845 feet west of milepost 6; iron post stamped "Prim. Trav. Sta. No. 41, Elev. 935, 1917"	48 04 11.4	124 03 30.8	5,425
Milepost 5.....	48 04 14.2	124 02 31.3	4,053
	48 04 17.8	124 01 01.1	6,140

Samish Lake, Sumas, Van Zandt, and Wickersham quadrangles.

SKAGIT AND WHATCOM COUNTIES.

The following geographic positions on approximate North American datum were determined in 1917 by F. J. McMaugh and L. F. Biggs.

They are based on Town triangulation station, boundary post 31, and on a primary traverse point at Sedro Wooley.

SAMISH LAKE QUADRANGLE.

From point near Burlington north and northwest along Great Northern Ry. to Bellingham.
(By F. J. McMaugh in 1917.)

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Road crossing, 35 feet north of bridge 39.3, signboard east of track reads "Seattle 82, Vancouver 83, Bellingham 23 miles"	48 30 06.6	122 20 02.7	.....
Road crossing.....	48 30 29.0	122 20 07.4	2,296
Belleville, at switch just south of station, semaphore 744-745.....	48 30 37.7	122 20 03.2	883
Belleville, 85 feet north of railroad crossing, north of station, 20 feet west of public road, 80 feet south of center of road opposite J. S. Elmore's house; iron post stamped "Prim. Trav. Sta. No. 1, 1917. Elev. 29"			
Public-road crossing, old railroad grade.....	48 30 45.9	122 20 13.5	881
Farm-road crossing, about 1,000 feet northwest of large red barn, first crossing north of trestle over ditch.....	48 30 56.2	122 20 13.0	1,039
Road crossing, about 200 feet west of intersection with main road.....	48 31 39.9	122 20 22.1	4,471
Samish River, 738 feet southwest of north end of trestle over, at fence corner, 50 feet northeast of A. L. Wiles's house, 30 feet southeast of door of small house, 45 feet west of old railroad grade; iron post stamped "Prim. Trav. Sta. No. 2, 1917".....	48 32 00.5	122 20 20.6	2,089
Samish River, north end of trestle over.....	48 32 42.5	122 20 15.9	4,261
Main-road crossing, 300 feet northeast of public school.....	48 32 49.4	122 20 12.4	738
Belfast, 1.8 miles north of, about 0.2 mile north of fish hatchery, 28 feet east of center of railroad grade, west of west bank of Friday Creek; iron post stamped "Prim. Trav. Sta. No. 3, 1917, 123 B" (old b. m. see Bull. 557, p. 104).....	48 33 18.9	122 19 59.2	3,125
North end of 60-foot trestle over creek.....	48 34 01.1	122 20 00.8	4,268
South end of 200-foot trestle.....	48 34 15.6	122 20 14.2	1,726
Road fork west uphill.....	48 34 18.8	122 20 15.7	341
Trestle, 3 feet north of north end, 45 feet west of north end of highway bridge; stake.....	48 34 31.7	122 20 12.9	1,316
Trestle over large creek, south end.....	48 35 03.4	122 20 04.7	3,267
Post with sign marked "1 mile S".....	48 35 48.6	122 19 40.4	4,865
	48 36 12.7	122 19 58.8	2,736

SAMISH LAKE QUADRANGLE—Continued.

From point near Burlington north and northwest along Great Northern Ry. to Bellingham—Con.

Station.	Latitude.			Longitude.			Distance between stations.
Alger, 110 feet north of railroad crossing, 10 feet west of road, 12 feet east of fence; iron post stamped, "Prim. Trav. Sta. No. 4, 1917"	48	37	08.6	122	20	18.0	<i>Fect.</i> 5,812
Alger, railroad crossing, public road north of	48	37	27.7	122	20	35.6	2,494
Milepost 10, east rail opposite	48	38	38.7	122	21	14.2	7,435
Road crossing, 180 feet east of main road, at signpost marked "Bell. 11 mi. Park 6 mi.", 260 feet east of switch; center of track	48	39	01.9	122	21	35.4	2,746
Manley's Mill, 1,450 feet east of, on southeast shore of Samish Lake, 1.1 miles southeast of A. C. Milne house, 440 feet south of dark brown bungalow, north side of road, 14 feet south of west corner of wooden bridge on Pacific Highway; iron post stamped "Prim. Trav. Sta. No. 5, 1917. Elev. 343 B"	48	39	19.7	122	22	01.2	2,501
Bridge	48	39	38.7	122	22	12.5	2,071
South end of bridge	48	39	59.2	122	22	18.9	2,117
South end of bridge	48	40	23.0	122	23	09.8	2,175
East end of bridge	48	40	28.0	122	23	23.5	1,056
Signpost marked "Seattle 97 mi., Vancouver 69 mi., Mt. Vernon 231 mi., Bellingham 9 mi."	48	40	31.2	122	23	41.2	1,280
Concrete bridge	48	40	50.8	122	23	41.0	1,830
Concrete culvert	48	41	07.1	122	23	34.0	1,712
A. C. Milne's house, 2.3 miles northwest of, 625 feet east of road to American Lumber and Shingle Co.'s mill, 1,610 feet east of bridge over Chuckanut Creek, south of road; iron post stamped "554 B. Prim. Trav. Sta. No. 6, 1917"	48	41	21.8	122	24	06.20	2,622
NOTE.—This is an old bench-mark post relocated. Post is near its old position and 40 feet south of a cedar tree on north side of road, on root of which the old elevation of post 554.789 is transferred. No new description nor elevation was supplied by traverseman.							
Road fork	48	41	24.0	122	24	14.4	596
East end of bridge	48	41	25.6	122	24	28.6	963
Road forks	48	41	24.4	122	25	40.5	4,830
Concrete culvert, center of road at	48	41	32.9	122	26	39.0	4,037
Road forks near bulletin boards on post	48	41	38.7	122	27	21.3	2,873
City-limit post	48	41	45.3	122	27	45.3	1,743
East end of bridge	48	41	49.7	122	27	48.0	485
T road north, 180 feet southwest of wooden garage, on north side of old railroad track	48	42	08.4	122	28	23.2	3,022
Center of road, under interurban electric railroad trestle	48	42	09.8	122	29	07.3	2,960
Road forks south and southeast, about 200 feet northwest of sign "4 miles from Hotel Leopold"	48	42	14.6	122	29	21.6	1,071
Fairhaven Park, just north of, at intersection of interurban electric railroad track and wooden viaduct	48	42	57.3	122	29	56.8	4,936
Bellingham, Fourteenth and Knox streets, in roadway, 1 foot west of planking, 1.5 feet north of end of concrete roadway; nail	48	43	22.6	122	29	56.8	2,560
Bellingham, Fourteenth Street and Ferry Avenue	48	43	48.3	122	29	56.8	2,600
Bellingham, east side of High Street, opposite center line of Cedar Street, near Normal School, 1 foot east of west edge of cement sidewalk; cross mark	48	44	19.6	122	29	06.6	4,627
Town triangulation station, on highest point of Selhome Hill on land belonging to City of Bellingham. Can be reached by taking trail to waterworks a short distance, thence trail to left, over first point into hollow, and up to station. Station mark: A bronze triangulation tablet cemented in stone and placed in ground level with surface	48	44	12.3	122	28	49.7	1,358

From Park southwest along railroad and highway to Lookout.

Railroad crossing, 160 feet northeast of north end of trestle	48	40	08.9	122	16	29.3	.....
Sharp bend in road, in line with south rail of track	48	39	59.6	122	16	55.5	1,993
Danger sign; west rail at	48	39	21.2	122	17	54.4	4,687
Road east	48	39	11.2	122	17	47.2	1,323
Road, opposite sign "Go Slow"	48	38	44.7	122	18	34.1	4,144
Crossroads at signpost marked "Park 4 mi., Bellingham 14 mi., South Bay 2 mi., Alger 3 mi."	48	38	49.2	122	19	23.4	3,340
Water tank	48	38	10.1	122	18	32.7	5,223
Switch at north end of siding	48	37	26.6	122	19	11.2	5,108
Trestle, north end, north of coal bunker	48	37	10.1	122	19	31.3	2,147
Prim. Trav. Sta. No. 4, 1917 (see previous list)	48	37	08.6	122	20	18.0	3,147

SAMISH LAKE QUADRANGLE—Continued.

From Belfast east and northeast along highways to Prairie.

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	Feet.
Bridge over creek.....*	48	33	32.4	122	19	41.0	5,581
T road east, signboard 30 feet northeast reads "Bellingham 18 mi., Prairie 6 mi." and another reads "Vancouver 78 mi., Bellingham 18 mi., Seattle 88 mi., Belfast 0.5 mi.".....	48	33	38.9	122	19	35.4	755
Road fork.....	48	33	18.8	122	17	33.7	8,441
Samish River, south end of bridge over.....	48	33	26.8	122	17	24.4	1,025
Samish River (probably), east end of bridge over.....	48	34	10.4	122	17	52.4	4,795
Moody's Old Camp (probably), no description supplied by traverseman; probably iron post stamped "Prim. Trav. Sta. No. 14".....	48	34	52.3	122	17	25.6	4,623
West end of bridge.....	48	35	02.0	122	16	29.1	3,918
Road intersection.....	48	34	58.3	122	15	19.6	4,693

Southeast along Northern Pacific Ry. in northeast part of quadrangle.

Railroad crossing, 60 feet southeast to landing.....	48	44	57.8	122	20	35.2	-----
Trestle, in west end of south rail.....	48	44	44.8	122	20	02.5	2,550
Towanda station, front of.....	48	43	57.5	122	18	53.4	6,666
Trestle No. 8, north end of.....	46	43	49.1	122	18	49.7	890
Water tank.....	48	43	08.6	122	17	56.2	5,448
Small stream near post 7A.....	48	42	25.6	122	17	50.5	4,370
Post No. 6.....	48	41	55.0	122	17	47.9	3,110
Blue Canyon, 800 feet east of coal bunker, 30 feet south of track, 1,200 feet east of milepost 5, in sandstone rock; aluminum tablet stamped "Prim. Trav. Sta. No. 10, 1917, 318B".....	48	41	05.5	122	16	48.6	6,398
Trestle, west end of.....	48	40	49.3	122	16	22.8	2,382
Junction point 422-520.....	48	40	38.6	122	16	09.5	1,399
Park station, switch stand at. 80 feet southeast of I. O. O. F Hall (junction road to Alger).....	48	40	34.2	122	16	01.7	686
Park station, road crossing.....	48	40	31.9	122	15	57.9	347

South along Northern Pacific Ry. near southeast corner of quadrangle.

Switch stand, at north end of siding.....	48	33	37.4	122	15	21.3	-----
Hogdall station, opposite north end of west rail.....	48	33	31.8	122	15	31.8	906
Trestle, north end of.....	48	32	40.0	122	15	55.1	5,475
Delvan railroad station.....	48	31	43.4	122	16	00.7	5,743
Switchstand.....	48	31	23.8	122	15	07.9	4,079

Magnetic declination for southwest part of quadrangle, 24.0° E.; for east and northeast parts of quadrangle, 24.8° E.

SUMAS QUADRANGLE.

East along Northern Pacific Ry. in south part of quadrangle. (By F. J. McMaugh in 1917.)

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	Feet.
Bellingham, Northern Pacific Ry. crossing.....	48	45	05.2	122	28	25.0	-----
Bellingham steam and electric street railroad crossing, office window opposite.....	48	45	29.7	122	28	06.6	2,780
Street crossing (asphalt road).....	48	45	57.9	122	27	24.8	4,001
Railroad trestle, south rail under.....	48	46	20.8	122	26	21.5	4,834
Trestle over road.....	48	45	49.0	122	25	54.9	3,781
Steam and electric railroad crossing.....	48	45	48.8	122	25	12.0	2,865
Silver Beach station, 2 feet east of northeast corner of, 30 feet north of track; iron post stamped "Prim. Trav. Sta. No. 8, 1917, Elev. 313".....	48	45	59.4	122	24	36.7	2,608
Southeast end of trestle.....	48	45	56.2	122	24	11.7	1,700
Road crossing, 150 feet south of whistling post, at inclined wooden road to lake.....	48	45	06.8	122	23	00.0	6,939
Trestle, track at west end of.....	48	45	06.0	122	22	20.7	2,637
Agate Bay, 72 feet east of track, 40 feet north of gate in fence, 50 feet southeast of grass triangle at road forks; iron post stamped "Prim. Trav. Sta. No. 9, 1917".....	48	45	27.1	122	21	16.0	4,835
Bridge 11, south end of.....	48	45	06.1	122	21	09.9	2,168

SUMAS QUADRANGLE—Continued.

Along Bellingham & Northern R. R. near northeast corner of quadrangle.

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	Feet.
Lamberton, 50 feet northeast of road crossing, 1 foot west of fence; iron post stamped "Prim. Trav. Sta. No. 21".....	48	58	38.7	122	15	14.3	.....
Intersection of Northern Pacific and B. & N. railroads.....	48	59	24.9	122	15	55.4	5,422
Sumas River, south end of trestle over.....	48	59	44.2	122	15	54.6	1,953
Sumas boundary monument M 31.....	49	00	10.41	122	16	07.58	2,798

VAN ZANDT QUADRANGLE.

North along highways near center of quadrangle. (By F. J. McMaugh in 1917.)

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	Feet.
Clipper, railroad crossing at.....	48	45	38.3	122	11	44.1	.....
Railroad crossing, 400 feet north of switch.....	48	46	16.6	122	11	31.9	3,965
Milepost 108.....	48	46	52.9	122	11	20.8	3,759
Van Zandt, at southeast corner of schoolhouse yard; iron post stamped "Prim. Trav. Sta. No. 17, 1917. Elev. 239B".....	48	47	22.3	122	11	29.1	3,022
Milepost 109.....	48	47	44.0	122	11	34.8	2,236
Wood-road crossing.....	48	48	11.7	122	11	45.7	2,900
Milepost 110.....	48	48	32.3	122	11	57.5	2,232
Milepost 111.....	48	49	18.4	122	12	36.7	5,354
Deming railroad station; south rail opposite.....	48	49	26.5	122	13	01.6	1,863
Deming, 200 feet west of livery stable, 500 feet northwest of railroad station, 20 feet north of highway, 70 feet southwest of entrance to school; iron post stamped "Prim. Trav. Sta. No. 18, 1917. Elev. 202B".....	48	49	29.2	122	13	07.0	2,451
Railroad crossing near Deming.....	48	49	17.1	122	12	32.0	2,644
Bridge, 5 feet north of west end of.....	48	49	22.3	122	11	36.5	3,754
Junction with T road east, 10 feet north of.....	48	49	41.4	122	10	35.5	4,519
T road east to Welcome.....	48	50	18.3	122	09	57.7	4,516
Bell Creek School, center of road.....	48	50	39.8	122	09	47.0	2,298
South end of bridge.....	48	50	55.9	122	09	33.5	1,863
Bell Creek School, 1.36 miles north of, 10 feet east of road, 10 feet south of corner fences; iron post stamped "Prim. Trav. Sta. No. 19, 1917. Elev. 232B".....	48	51	42.4	122	09	08.6	5,008
Small bridge.....	48	52	28.7	122	09	21.0	4,766
Plank bridge over dry creek.....	48	52	53.4	122	09	22.5	2,505
Plank bridge, north end of, 50 feet north of road forks.....	48	53	22.3	122	09	06.4	3,114
T road east to Kendall Fish Hatchery.....	48	53	53.7	122	08	40.1	3,641
Center of bridge, just east of gateway.....	48	54	19.9	122	08	32.1	2,706
Schoolhouse (district 35), center of road opposite.....	49	54	38.1	122	08	12.5	2,267
T road south, at signpost "Deming 9 M. Sumas 10.5 M. Maple Falls 3 M.".....	48	55	03.5	122	08	11.9	2,573
Kendall, 300 feet east of railroad station, 155 feet north of track, 60 feet northwest of post office; iron post stamped "Prim. Trav. Sta. No. 20, 1917." Elev. 446B.....	48	55	16.6	122	07	51.4	1,910
Trestle, south end of.....	48	56	00.1	122	08	37.6	5,375
Private-road crossing.....	48	56	19.3	122	08	47.9	2,064
Limestone Junction station; west rail opposite.....	48	57	29.3	122	09	25.5	7,533
Road crossing, private.....	48	57	54.2	122	09	38.9	2,678
Trestle 68.....	48	58	18.1	122	10	08.9	3,138
Switch stand, south end of.....	48	58	14.9	122	10	37.0	1,903
Road crossing, 150 feet northeast of lumber shed.....	48	58	00.5	122	11	10.3	2,657
Trestle B. & N. 66.....	48	58	13.2	122	11	48.6	2,860
Trestle 56; east end of, 60 feet west of milepost 28.....	48	58	03.9	122	12	41.3	3,639
Trestle 50, west end of.....	48	57	41.2	122	13	14.9	3,212
High trestle 40, west end of.....	48	58	01.4	122	13	53.8	3,303

VAN ZANDT QUADRANGLE—Continued.

Southeast along highways through center of south half of quadrangle.

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
T road east.....	48 50 18.3	122 09 54.7	.....
Bridge, south end of.....	48 50 17.5	122 09 12.9	2,997
T road north, 73 feet east of, 46 feet north of northwest corner of store, on south side of road, 37 feet west of nail in cedar stump; iron post stamped "Prim. Trav. Sta. No. 22, 1917".....	48 50 22.7	122 08 52.2	1,480
Canyon Creek, west end of trestle over.....	48 50 46.5	122 08 06.1	4,790
Railroad crossing.....	48 49 31.0	122 07 51.2	1,863
Trestle over creek, south end of.....	48 48 53.9	122 07 38.6	3,848
Water tank.....	48 47 50.8	122 07 12.3	6,026
Road crossing, 20 feet west of, south rail.....	48 47 39.2	122 06 54.2	1,682
Road fork, 5 feet west of, on east side of road, opposite mail boxes; stake.....	48 47 10.2	122 06 38.5	3,134

North along highways near center of quadrangle.

Bridge, south end of.....	48 47 06.8	122 06 39.3	343
Tall tree with flag on top, 73 feet N. 440° E. of.....	48 46 52.3	122 06 45.4	1,526
Road, center of, opposite gate.....	48 46 10.9	122 06 45.2	4,195
Railroad crossing.....	48 46 01.3	122 06 51.9	1,070
T road north to Mosquito Lake.....	48 45 30.7	122 07 18.4	3,576
T road, 5 feet east of.....	48 45 16.0	122 07 30.4	1,694

Spur line.

Blazed tree, 2 feet north and 2 feet east of, "U. S. 12".....	48 46 51.5	122 06 00.7	3,163
Prim. Trav. Sta. No. 23, 1917.....	48 46 44.3	122 05 22.6	2,657
Tree, 3 feet north, Elev. 996.85, N. 62° E. of bench mark on stump.....	48 46 42.8	122 05 04.1	1,248
Stake, on east side of ravine, 7 feet north of blazed tree, marked "U. S. P. T. S. 1065".....	48 46 39.6	122 04 43.6	1,398

Magnetic declination for center of quadrangle, 24.5° E.

WICKERSHAM QUADRANGLE.

South along Northern Pacific Ry. in west part of quadrangle. (By F. J. McMaugh in 1917.)

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Wickersham, 2.0 miles northwest of, 185 feet west of shingle-mill switch stand, 2,400 feet east of milepost 3; iron post stamped "Prim. Trav. Sta. No. 11, 1917, Wash. Elev. 356B".....	48 40 07.9	122 14 30.8	.....
Milepost 2, 10 feet south of.....	48 40 00.9	122 13 45.3	3,136
Switch stand, 12 feet south of.....	48 39 42.8	122 13 04.8	3,282
Overhead bridge, center of track under.....	48 39 37.8	122 12 43.1	1,543
Railroad crossing.....	48 39 22.4	122 12 42.0	1,563
Wickersham Ave., 33 feet north of railroad crossing at 2.5 feet north of telephone post, 17 feet east of track; iron post stamped "312 B".....	48 39 12.5	122 12 42.4	1,005
County line between Whatcom and Skagit counties.....	48 38 46.0	122 12 33.7	2,754
Farm-road crossing.....	48 37 29.5	122 12 46.6	7,795
Trestle over small stream.....	48 37 00.2	122 13 09.2	3,338
Jenkins Creek, trestle over.....	48 36 34.4	122 13 23.0	2,766
Prairie station, 75 feet south of; point on east rail.....	48 36 04.7	122 34 37.3	3,159
Prairie station, 0.75 mile northeast of; 100 feet northwest of small brook crossing old right of way, 40 feet west of right of way, 10 feet southeast of northeast corner of mill office; iron post stamped "Prim. Trav. Sta. No. 13, 1917".....	48 36 36.2	122 13 06.2	3,816
Trestle at Thornwood station.....	48 35 14.6	122 13 43.8	5,096
Switch stand, south end of.....	48 34 43.2	122 13 45.7	3,177
Switch stand, south end of.....	48 34 13.2	122 14 13.9	3,588
Trestle, north end of most northerly of two.....	48 30 58.9	122 14 12.8	.....
Sedro Wooley, intersection of Great Northern and Northern Pacific railroads at.....	48 30 23.9	122 14 21.4	3,590

WICKERSHAM QUADRANGLE—Continued.

From Wickersham north along Northern Pacific Ry. to north border of quadrangle.

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	<i>Fet.</i>
County line.....	48	38	46.0	122	12	33.7	.....
Wickersham railroad station.....	48	39	00.8	122	12	34.0	1,510
Trestle, south end of.....	48	40	03.5	122	12	14.3	6,485
Doran, railroad crossing at.....	48	40	44.0	122	11	46.1	4,520
Saxon station, south of.....	48	41	10.1	122	11	28.0	2,908
Saxon station, 1,720 feet north of, 48 feet southeast of road crossing, 18 feet west of north and south fence line, 0.5 foot south of east and west fence; iron post stamped "Prim. Trav. Sta. No. 15, 1917." Elevation 319B.....	48	41	35.7	122	11	23.2	2,623
Farm-road crossing.....	48	42	13.4	122	11	45.6	4,104
Railroad crossing, 874 feet south of Acme station.....	48	42	54.0	122	12	09.3	4,409
Station 742=1299.....	48	42	54.1	122	12	09.3	10
Bridge over Nooksack River, south end of approach to.....	48	43	46.8	122	12	19.5	5,291
Milepost 105, 0.25 mile north of, 50 feet west of track at railroad crossing, 35 feet north of corner of rail fence, 6 feet south of telephone pole; iron post stamped "Prim. Trav. Sta. No. 16, 1917." Elev. 268B.....	48	44	32.1	122	12	05.7	4,776
Standard postoffice, road crossing at.....	48	44	47.2	122	12	00.2	1,574

Along highways.

West end of bridge.....	48	44	39.9	122	07	23.7	.....
Welcome School; iron post stamped "Prim. Trav. Sta. No. 24, 1917." Azimuth from station 1198 to front door of Welcome School is N. 27° E., distance 219 feet.....	48	44	35.5	122	07	15.4	713
Blazed fir tree, marked "U. S. G. S. station 1225".....	48	43	39.8	122	08	02.3	6,466
Bridge.....	48	43	36.1	122	08	14.8	921
Road fork at shingle mill, small building stands 80 feet north-west.....	48	43	40.6	122	08	36.6	1,532
Road fork north and northeast, at end of old railroad.....	48	43	40.4	122	08	50.4	918
East end of bridge.....	48	43	35.7	122	09	06.7	1,197
On small bridge.....	48	43	33.5	122	09	23.6	1,152
Nail on root of old stump, marked "Sta. 1261 U. S. G. S.".....	48	43	35.3	122	09	49.3	1,737
Intersection of old right of way, just east of water tank.....	48	43	28.8	122	10	22.5	2,323
Intersection of right of way and highway.....	48	43	13.5	122	10	39.4	1,921
Railroad crossing near trestle.....	48	43	05.3	122	10	51.8	1,101
West end of bridge, 300 feet west of white house.....	48	43	06.4	122	11	13.0	1,423
Fork in roads.....	48	43	07.4	122	11	41.2	1,890
Nooksack River, south end of bridge over.....	48	43	11.9	122	12	09.3	1,940
Station 1298=742, junction.....	48	42	54.1	122	12	09.3	1,800

Near Prairie.

Road forks, sign post 35 feet northeast reads "Sedro Wooley 7 mi.".....	48	35	14.7	122	14	21.9	.....
Prairie, 75 feet south of station, point on east rail (previously listed).....	48	36	04.7	122	13	37.3	5,896

Magnetic declination for quadrangle, 24.6° E.

WICKERSHAM QUADRANGLE—Continued.

Easterly up Nooksack River. (Checked spur line. By L. F. Biggs in 1917.)

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	Feet.
Road crossing, 1,000 feet south of Saxon station.....	48	41	10.1	122	11	28.0	.....
Nooksack River, 50 feet north of north end of bridge over, 6 feet south of fence line, north side of road; iron post stamped "Prim. Trav. Sta. No. 1, 1917." Reference point, copper nail in top of stump 37.2 feet distant.....	48	40	45.0	122	09	46.5	7,265
Center of road, opposite temporary bench mark.....	48	40	14.6	122	08	53.8	4,693
Skookum Creek, center of bridge over.....	48	40	18.6	122	08	26.4	1,884
Center of small bridge over creek.....	48	39	39.1	122	07	24.2	5,782
Road fork to old sawmill.....	48	39	15.2	122	07	11.4	2,572
Center of bridge over creek.....	48	39	00.1	122	07	12.1	1,531
Nooksack River, 100 feet east of, near northwest corner of fence at house; iron post.....	48	38	35.9	122	07	01.6	2,553
Fork of trail to west.....	48	38	05.5	122	07	10.1	3,129
Trail fork to west, 100 feet south of bridge, 130 feet north of school.....	48	37	41.1	122	06	45.1	2,990
Plumbago Creek, center of bridge over.....	48	37	22.6	122	06	43.5	1,880
Large cherry tree at abandoned houses, 80 feet west of river bank.....	48	37	08.7	122	06	18.4	2,191
Large log across the river.....	48	36	41.3	122	05	19.5	4,837
Large rock in center of river.....	48	36	25.2	122	04	29.3	3,744
Tree with triangle, on south bank of river, at old trail to cabin. Cross on boulder, on north bank of river, 40 feet north of water, 1,500 feet east of perpendicular bluff; chiseled cross under rock cairn, marked "U. S. G. S.".....	48	36	02.3	122	03	12.7	5,648
	48	35	51.4	122	02	45.7	2,119

Magnetic declination for quadrangle, 24.6° E.

Cedar Lake, Mount Vernon, Snohomish, and Sultan quadrangles.

KING AND SNOHOMISH COUNTIES.

The following geographic positions, on North American datum, were determined by C. F. Urquhart in 1919.

They are based on points previously located in this area.

CEDAR LAKE QUADRANGLE.

From North Bend southeast to Garcia. (By C. F. Urquhart in 1919.)

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	Feet.
North Bend, at crossing of North Bend Branch of Northern Pacific, at railroad station; iron post stamped "Prim. Trav. Sta. No. 12, 1919. Elev. 443 feet".....	47	29	44.29	121	47	12.42	.....
Crossing of Sunset Highway and Northern Pacific Ry.....	47	28	54.48	121	45	27.67	8,789
Crossing of Sunset Highway and Northern Pacific Ry.....	47	28	34.47	121	44	44.91	3,570
Crossroads at sign "Edwich, 1 mile".....	47	27	58.60	121	42	55.35	8,359
Junction of Y road.....	47	27	51.45	121	42	33.64	1,660
Road, opposite signpost marked "Easton 39 miles, North Bend 5 miles".....	47	27	13.03	121	42	06.26	4,323
Snoqualmie River, center of steel bridge over.....	47	26	42.28	121	41	28.41	4,059
Road, opposite sign "Anabie Falls".....	47	26	41.16	121	40	35.16	3,664
Road to Pines goat farm.....	47	26	27.32	121	40	02.23	2,663
Center of bridge over Hall Creek.....	47	26	11.32	121	39	24.07	3,085
T road north.....	47	25	49.84	121	38	15.35	5,202
Trail to Garcia railroad station.....	47	25	40.92	121	37	30.60	3,208
Garcia, opposite telegraph station window, on main line of Chicago, Milwaukee & St. Paul Ry. (see Bull. 496).....	47	25	27.7	121	37	01.4	2,413

Magnetic declination for quadrangle, 23° 36' E.

MOUNT VERNON QUADRANGLE.

From Hartford along highways in southeast corner of quadrangle. (By C. F. Urquhart in 1919.)

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	Feet.
Hartford, 10 feet north of station; iron post stamped "Prim. Trav. Sta. No. 5, 1909".....	48	01	25.00	122	03	12.30	.....
T road.....	48	00	57.41	122	03	12.87	2,796
Crossroads to Granite Falls and Snohomish.....	48	00	57.19	122	03	02.30	720
Crossroads east to railroad.....	48	00	30.75	122	02	34.27	3,289

From Hartford to Monroe via Lake Roesiger.

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	Feet.
Hartford, 10 feet north of station; iron post stamped "Prim. Trav. Sta. No. 5, 1909".....	48	01	25.00	122	03	12.30	.....
T road east and west.....	48	00	57.41	122	03	12.05	2,796
Crossing on Northern Pacific Ry.....	48	00	57.17	122	03	03.16	668
Center of bridge.....	48	00	46.33	122	02	48.44	1,487
Road, opposite Lutheran Church.....	48	00	40.06	122	02	40.75	823

Magnetic declination for quadrangle, 23° 36' E.

SNOHOMISH QUADRANGLE.

In northeast part of quadrangle. (By C. F. Urquhart in 1919.)

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	Feet.
Center of bridge.....	47	59	38.45	122	02	21.73	.....
Railroad crossing.....	47	59	15.75	122	02	13.02	2,375
T road east to Lake Roesiger.....	47	59	13.91	122	02	12.02	199
T road north to Machias.....	47	58	52.64	122	02	39.18	2,838
Crossing under Northern Pacific Ry.....	47	58	43.48	122	03	17.31	2,754
T road east to gravel pit, on Northern Pacific Ry. from Prim. Trav. Sta. No. 20 to Snohomish.....	47	58	31.76	122	03	37.48	1,814
Snohomish, 4 miles north of, on west side of road, on line of fence and in line with T road east across Northern Pacific Ry. track, 12 feet north of telephone pole; iron post stamped "Prim. Trav. Sta. No. 20, 1919".....	47	57	50.54	122	04	02.54	4,511
Private-road crossing.....	47	57	17.49	122	04	12.72	3,420
Private-road crossing.....	47	56	26.25	122	04	28.37	5,301
Public-road crossing.....	47	55	29.00	122	04	51.86	6,018
Center of road, 100 feet north of Northern Pacific Ry. track.....	47	54	58.56	122	05	12.65	3,393
Snohomish, northwest corner of First and Cedar streets, 1 foot from curb line, 8 feet north of telephone pole; iron post stamped "Prim. Trav. Sta. No. 21, 1919".....	47	54	41.52	122	05	29.45	2,071
Overhead crossing on Great Northern Ry.....	47	54	14.22	122	05	11.12	3,035
Pilchuck Creek, center of steel bridge over.....	47	54	08.39	122	05	10.31	594
Center line of road, opposite district No. 12 schoolhouse.....	47	53	17.00	122	04	20.14	6,230
Snohomish, 2.7 miles east of, at southeast corner of concrete wall around Pleasant Hill farm, opposite T road south up-hill; iron post stamped "Prim. Trav. Sta. No. 22, 1919".....	47	53	04.41	122	03	34.93	3,335
Logging road.....	47	52	13.98	122	02	18.33	7,306
T road south.....	47	50	57.20	122	00	49.52	9,860
T road north.....	47	50	59.02	122	00	01.69	3,269

Near northeast corner of quadrangle.

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	Feet.
Center of bridge.....	47	59	43.22	122	02	20.71	.....
T road, Snohomish and Lake Roesiger.....	47	59	13.94	122	02	12.19	3,023
Pilchuck Creek bridge, north end of.....	47	59	15.61	122	02	03.80	596
Southwest corner, at road fork to steel bridge.....	47	59	26.50	122	01	51.69	1,379
At road forks, Granite Falls-Lake Roesiger; iron post stamped "Prim. Trav. Sta. No. 1, 1919. Elev. 294 feet".....	47	59	57.10	122	00	33.46	6,160

Magnetic declination for quadrangle, 23° 36' E.

SULTAN QUADRANGLE.

In west part of quadrangle. (By C. F. Urquhart in 1919.)

Station.	Latitude.			Longitude.			Distance between stations. Feet.
	°	'	"	°	'	"	
Road to State Reformatory.....	47	51	03.42	121	59	31.84	.....
Monroe, at corner of Main and Madison streets, in park in center of street, at foot of tall flagpole; iron post stamped "Prim. Trav. Sta. No. 5, 1919"	47	51	18.86	121	58	22.84	4,960
Monroe, intersection of Main and Lewis streets.....	47	51	22.36	121	58	11.68	840
Skykomish River, center of bridge over.....	47	50	48.95	121	58	09.91	3,387
Crossroads.....	47	50	29.87	121	58	06.24	1,949
T road.....	47	50	16.50	121	58	06.41	1,355
T road south at Tuako Farmers' Grange Hall.....	47	49	48.87	121	58	54.46	4,310
Center line of road, opposite district No. 7 schoolhouse.....	47	49	31.67	121	59	02.16	1,820
T road east.....	47	49	24.98	121	59	03.60	684
T road west.....	47	49	03.52	121	59	20.52	2,461
T road at Stevens's dairy ranch.....	47	48	50.42	121	59	19.83	1,328
Crossing on Chicago, Milwaukee & St. Paul Ry.....	47	48	46.55	121	58	56.38	1,649
High Rock siding, on Everett Branch of Chicago, Milwaukee & St. Paul Ry., 214 feet south of, 4 feet east of concrete high- way; iron post stamped "Prim. Trav. Sta. No. 6, 1919. Elev. 45 feet"	47	48	45.42	121	58	53.75	215
Center of logging railroad.....	47	48	36.74	121	58	50.97	900
Dim road to Snoqualmie River.....	47	47	18.62	121	58	21.19	8,173
T road east, uphill.....	47	46	59.31	121	57	59.23	2,466
Lewis-Snohomish county line, end of concrete road.....	47	46	36.56	121	57	34.67	2,852
T road uphill, at H. L. Allen's mail box.....	47	46	05.60	121	57	15.95	3,388
Center of overhead railroad crossing, Chicago, Milwaukee & St. Paul Ry.....	47	46	03.87	121	57	22.47	478
Center of wooden bridge.....	47	45	59.90	121	57	34.93	940
At William McNutt's mail box, old barn opposite.....	47	45	45.38	121	58	04.85	2,518
Center of wooden bridge.....	47	45	18.07	121	58	46.95	3,991
Duval, 0.25 mile north of, at covered bridge over Chicago, Milwaukee & St. Paul Ry., on east side of road, at east end of bridge; iron post stamped "Prim. Trav. Sta. No. 7, 1919. Elev. 87 feet"	47	44	47.31	121	59	04.20	3,331
Culvert under road.....	47	44	14.09	121	59	11.18	3,400
Private T road.....	47	43	34.08	121	59	09.38	4,056
Intersection of Corduroy road uphill.....	47	43	16.32	121	59	04.79	1,827
Novelty, crossroads on Chicago, Milwaukee & St. Paul Ry., point on highway in line from door of store to railroad crossing.	47	42	34.56	121	58	59.56	4,246
Crossroads.....	47	42	17.88	121	58	57.66	1,695
T road.....	47	42	07.03	121	58	48.13	1,278
T road to farm west.....	47	41	43.78	121	58	18.64	3,102
Road to Carnation ranch.....	47	41	29.85	121	56	43.03	6,692
Opposite Stillwater School.....	47	41	06.94	121	55	35.25	5,187
Stillwater, 0.25 mile west-northwest of, at crossing of logging railroad; iron post stamped "Prim. Trav. Sta. No. 8, 1919. Elev. 80 feet"	47	41	04.33	121	55	22.98	882
Stillwater, center of bridge over creek at.....	47	41	00.34	121	55	10.59	940
Bridge over Harris Creek.....	47	40	43.09	121	54	23.70	3,654
Small bridge.....	47	40	27.33	121	54	22.07	1,601
Small bridge.....	47	40	18.49	121	54	23.11	986
Crossing on Chicago, Milwaukee & St. Paul Ry.....	47	40	03.99	121	54	25.42	1,481
Small bridge.....	47	39	53.24	121	54	30.29	1,139
Crossroads.....	47	39	33.63	121	54	34.31	2,006
Crossroads.....	47	39	20.55	121	54	37.63	1,345
Tolt, on Chicago, Milwaukee & St. Paul Ry., on right of way of spur line, 30 feet northeast of northeast corner of Tolt Hotel, 20 feet southeast of town hall; iron post stamped "Prim. Trav. Sta. No. 9, 1919. Elev. 77 feet"	47	38	45.66	121	54	53.71	3,703
Opposite high-school gate.....	47	38	34.79	121	54	52.47	1,105
T road west to Seattle, at south end of bridge over Tolt River..	47	38	15.25	121	54	56.47	1,999
T road east.....	47	37	49.32	121	54	40.35	2,850
Griffith Creek, bridge over.....	47	37	02.77	121	54	31.63	4,755
Crossroads at school and gymnasium, district No. 39.....	47	36	57.13	121	54	34.19	597
Road to Pleasant Hill farm of M. V. L. Co.....	47	36	19.41	121	54	47.90	3,935
Bridge over dry creek.....	47	35	24.80	121	54	49.22	5,534
At gate on west side of road, near turn of road, about 200 feet from Snoqualmie River.....	47	34	35.33	121	53	44.40	6,700
Bridge over small creek.....	47	34	31.42	121	53	24.83	1,400
Fall City, 0.5 mile north of, on north side of Snoqualmie River, 115 feet north of north end of concrete bridge; iron post stamped "Prim. Trav. Sta. No. 10, 1919. Elev. 92 feet"	47	34	10.51	121	53	12.35	2,285
T road east.....	47	33	42.91	121	51	52.84	6,129
T road west.....	47	33	42.80	121	51	39.17	938
T road west.....	47	33	20.13	121	50	34.45	4,999
Tokul Creek, center of bridge over.....	47	33	16.46	121	50	06.66	1,944
Snoqualmie Falls, road forks at signboard "National Park Highway"	47	32	33.39	121	50	06.20	4,364
T road, at north end of bridge over Snoqualmie River.....	47	32	26.50	121	49	57.94	900
Snoqualmie River, south end of bridge over.....	47	32	23.41	121	50	00.23	350

SULTAN QUADRANGLE—Continued.

In west part of quadrangle—Continued.

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	<i>Feet.</i>
Snoqualmie, 0.5 mile north of, at crossing of spur line of Chicago, Milwaukee & St. Paul Ry. to the falls; iron post stamped "Prim. Trav. Sta. No. 11, 1919. Elev. 420 feet".....	47	32	05.06	121	49	43.24	2,195
T road west.....	47	31	51.50	121	49	33.11	1,540
T road at Meadowbrook farm.....	47	31	34.19	121	48	45.01	3,739
Center of small bridge, 99N.....	47	30	50.93	121	47	53.70	5,623
Center of small bridge over creek.....	47	30	31.55	121	47	49.01	1,990
T road, 500 feet west of Snoqualmie bridge, at north bend.....	47	30	00.99	121	47	24.09	3,538

Along highways in northwest part of quadrangle.

Center line of private road over curved wooden bridge.....	47	59	31.94	121	59	40.58	.....
T road.....	47	59	12.51	121	59	15.43	2,610
T road south.....	47	58	56.96	121	58	20.65	4,047
Railroad crossing (switch).....	47	58	52.82	121	58	18.85	438
Center line of skid road.....	47	58	23.51	121	58	06.19	3,093
T road; iron post stamped "Prim. Trav. Sta. No. 2, 1919. Elev. 293 feet".....	47	57	46.63	121	58	12.58	3,762
Center line of road, opposite district No. 54 schoolhouse.....	47	57	28.97	121	57	01.45	5,163
Center line of skid road.....	47	57	26.13	121	56	42.47	1,325
Center line of road, opposite flagpole at Mr. Sargenfrei's residence.....	47	57	49.03	121	56	15.56	3,029
Top of hill, opposite old road.....	47	57	48.11	121	55	49.23	1,802
At forks of road to Lake Roesiger, 14 feet north of east and west road, 30 feet east of road north, about 1 mile south of Lake Roesiger; iron post stamped "Prim. Trav. Sta. No. 3, 1919. Elev. 570 feet".....	47	57	59.89	121	55	18.66	2,407
Center of bridge.....	47	57	55.10	121	55	04.46	1,084
Center of bridge over Woods Creek.....	47	57	03.97	121	53	16.20	9,009
Opposite trail to Lake Chaplain.....	47	56	54.37	121	53	25.54	1,162
Center of bridge over creek.....	47	56	40.52	121	53	37.80	1,632
Opposite flagpole at schoolhouse.....	47	55	44.71	121	53	53.16	5,751
T road to farm.....	47	55	21.74	121	53	57.62	2,348
Center of bridge over gully.....	47	54	35.90	121	54	27.18	5,062
Crossing on abandoned logging railroad; iron post stamped "Prim. Trav. Sta. No. 4, 1919. Elev. 195 feet".....	47	54	13.01	121	54	20.13	2,368
Junction of two roads from Monroe.....	47	52	54.40	121	54	56.33	8,339
Center of bridge.....	47	52	35.74	121	54	54.99	1,893
Center of bridge.....	47	52	19.73	121	55	10.69	1,943
T road to farm.....	47	52	09.26	121	55	33.93	1,907
Center of triangle at intersection of Woods Creek, Lake Roesiger, and Wagner Wilson roads, 2 miles north of Monroe.....	47	52	11.89	121	56	19.73	3,132
Bridge over small creek.....	47	52	09.26	121	56	39.52	1,374
Monroe, crossing of Chicago, Milwaukee & St. Paul Ry.....	47	51	31.89	121	57	53.00	6,280
Monroe, corner of Main and Ann streets.....	47	51	28.14	121	57	53.19	380
Monroe, "Prim. Trav. Sta. No. 5, 1919" (described solsewhere).....	47	51	18.86	121	58	22.84	2,230

From Monroe to Index along Great Northern Ry.

Monroe, corner of Main and Ann streets.....	47	51	28.14	121	57	53.19	.....
Monroe, overhead crossing of Chicago, Milwaukee & St. Paul Ry.....	47	51	24.23	121	57	24.54	1,994
Monroe, 1-mile post from.....	47	51	24.77	121	56	37.24	3,229
Road crossing.....	47	51	21.52	121	55	34.77	4,273
Monroe, 3 miles east of, 100 feet west of road crossing, 18 feet west of semaphore 17658-10, 10 feet south of south rail of Great Northern Ry.; iron post stamped "Prim Trav. Sta. No. 13, 1919. Elev. 86 feet".....	47	51	17.69	121	54	24.70	4,795
Semaphore 17639-40.....	47	51	08.10	121	52	06.71	9,461
Road crossing.....	47	51	04.36	121	51	33.57	2,292
Sultan, junction with logging railroad.....	47	51	08.73	121	51	06.03	1,930
Road crossing.....	47	51	29.47	121	49	48.34	5,700
Center of large highway bridge over Sultan River.....	47	51	40.12	121	49	12.49	2,673
Sultan, corner of Sixth and Main streets, 20 feet east of electric light pole, 1 foot from edge of curb; iron post stamped "Prim. Trav. Sta. No. 14, 1919. Elev. 111 feet".....	47	51	46.03	121	48	44.93	1,972
T road south.....	47	51	48.06	121	48	13.09	2,181
T road north.....	47	51	52.25	121	47	56.37	1,217
T road south, down hill.....	47	51	52.27	121	47	45.37	750
Great Northern Ry., 60 feet east of road crossing.....	47	51	44.18	121	47	45.17	820
Skykomish River, temporary wooden bridge over, center of pier.....	47	51	44.59	121	47	18.55	1,816
Road crossing.....	47	51	44.92	121	46	56.28	1,519
Skykomish Slough, center of bridge over.....	47	51	49.86	121	45	46.41	4,791
Road crossing.....	47	51	58.07	121	44	40.06	4,600

SULTAN QUADRANGLE—Continued.

From Monroe to Index along Great Northern Ry.—Continued.

Station.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	<i>Feet.</i>
Startup, west end of station platform, 4 feet north of north rail of Great Northern Ry. main line; iron post stamped "Prim. Trav. Sta. No. 15, 1919. Elev. 154 feet"	47	52	00.64	121	44	19.97	1,394
Crossroads.....	47	52	00.90	121	44	17.70	157
Center of bridge 440, over Wallace River.....	47	51	59.47	121	43	38.24	2,695
Culvert at milepost 175.....	47	51	45.25	121	42	43.64	3,993
Gold Bar station, west corner.....	47	51	25.28	121	42	04.85	3,330
Gold Bar, 0.5 mile east of, 70 feet east of road crossing, 7 feet south of south rail of Great Northern Ry., 16 feet east of semaphore; iron post stamped "Prim. Trav. Sta. No. 16, 1919. Elev. 203 feet"	47	51	02.28	121	41	20.39	3,824
Reiter flag station, between posts supporting sign, 13 feet south of south rail of Great Northern Ry.; iron post stamped "Prim. Trav. Sta. No. 17, 1919"	47	50	23.72	121	37	20.92	16,797
Center of trestle 430.....	47	50	15.83	121	36	35.26	3,216
Trestle 438/3, over dry creek bed.....	47	50	09.41	121	36	33.59	660
Trestle 438/2.....	47	50	01.39	121	36	36.00	830
Trestle 438/1.....	47	49	56.68	121	36	40.15	555
Trail leading to settlers' suspension bridge over Skykomish River.....	47	49	05.63	121	36	05.70	5,681
Railroad track trestle, 42-inch pipe culvert under.....	47	49	07.33	121	35	33.73	2,189
Trestle.....	47	49	08.64	121	35	24.02	676
Trestle 438, under overhead crossing at highway.....	47	48	58.66	121	34	57.83	2,053
Index, at station, 40 feet southwest of agent's window, 26 feet southwest of track; iron post stamped "532T, Prim. Trav. Sta. No. 18, 1919"	47	49	15.28	121	33	20.86	6,829

From Index along highway checking at Primary Traverse stations Nos. 16, 15, and 14.

Prim. Trav. Sta. No. 18 (described elsewhere).....	47	49	15.28	121	33	20.86	.....
East end of long wooden bridge.....	47	48	56.62	121	34	48.50	6,274
Center of highway bridge over Great Northern Ry. trestle 438.....	47	48	58.48	121	34	57.93	671
Center of small bridge over creek.....	47	49	09.30	121	35	24.10	2,095
Trail to lookout point.....	47	49	53.36	121	36	30.42	6,357
Center of creek, 50 feet north of bridge at sharp curve in road.....	47	50	01.83	121	36	09.94	1,640
Devils Elbow.....	47	50	15.96	121	36	11.13	1,434
Private road to copper smelter.....	47	50	43.37	121	37	36.18	6,432
Private-road crossing.....	47	50	37.47	121	40	32.26	12,025
Prim. Trav. Sta. No. 16 (described elsewhere).....	47	51	02.28	121	41	20.39	4,140
Gold Bar station, west end of.....	47	51	25.38	121	42	05.31	3,850
Center of bridge.....	47	51	50.84	121	42	52.85	4,143
Mays Creek, center of steel bridge over.....	47	52	01.08	121	43	28.70	2,656
Prim. Trav. Sta. No. 15 (described elsewhere).....	47	52	00.64	121	44	19.97	3,509
Road crossing.....	47	51	58.09	121	44	40.20	1,390
T road north.....	47	52	23.22	121	45	16.02	3,524
T road north.....	47	52	05.19	121	46	09.84	4,100
T road north.....	47	52	01.99	121	46	36.25	1,830
T road south, down hill.....	47	51	52.26	121	47	45.45	4,820
Prim. Trav. Sta. No. 14 (described elsewhere).....	47	51	46.03	121	48	44.93	4,113
Sultan River, center of steel bridge over.....	47	51	39.99	121	49	12.81	1,989
T road south across railroad track.....	47	51	30.34	121	49	48.25	2,607
Logging road north.....	47	51	50.70	121	50	07.13	2,432
Crossing of logging railroad.....	47	51	49.86	121	51	08.55	4,189
T road south.....	47	51	50.52	121	52	58.82	7,520
T road north to logging camp.....	47	51	50.60	121	54	18.85	5,457
T road south.....	47	51	50.01	121	56	31.42	9,040
Monroe, southwest corner of Main and Ann streets.....	47	51	28.14	121	57	53.19	6,011

From Fall City to Preston.

Prim. Trav. Sta. No. 10, 1919 (described elsewhere).....	47	34	10.51	121	53	12.35	.....
T road east to Fall City station.....	47	33	48.53	121	53	23.11	2,351
T road west over bridge over Raging River.....	47	33	19.27	121	53	55.76	3,718
Overhead crossing of Northern Pacific Ry.....	47	32	40.77	121	54	11.74	4,057
Center of bridge over Raging River.....	47	32	25.91	121	54	28.65	1,620
T road west to railroad station.....	47	31	25.74	121	55	38.98	7,778
Center of Northern Pacific Ry. crossing, 250 feet east of school-house, check on line run in 1910.....	47	31	22.6	121	55	55.1	1,145
Preston, south end of loading platform, 25 feet east of railroad; iron post stamped "Prim. Trav. Sta. No. 19, 1919. Elev. 503, Wash. 1915"	47	31	27.56	121	55	44.0	911

Magnetic declination for quadrangle, 23° 36' E.