

## OREGON.

### TRIANGULATION STATIONS.

Condon, Heppner, Twickenham, Spray, Round Mountain, Paulina, and Crook quadrangles.

GILLIAM, WHEELER, CROOK, MORROW, AND GRANT COUNTIES.

The following geodetic positions on approximate North American datum were determined by triangulation in 1913 by J. R. Ellis, topographer. Starting from the base Ione, Toby, John Day, described in Bulletin 551, the scheme was carried southward and connected with stations Snow and Field of Baker City base, described in appendix to Twentieth Annual Report.

#### BALDY, WHEELER COUNTY, OREG.

Situated on the highest point of a bluff on the west side of a flat-top mountain locally known as Bald Mountain or Baldy. It is about 12 miles northeast of Mitchell and 4 miles west of Waterman.

Station mark: An aluminum tablet set in solid rock.

Signal: A cairn 5 feet base by 5.5 feet in height centered over tablet.

[Latitude 44° 39' 32.31"; longitude 119° 58' 42.67".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Pisgah.....	42 24 30.09	222 13 42.63	4.4807326	18.797
Black Butte.....	64 44 38.0	244 32 11.3	4.41292	16.080
Wagner.....	114 02 22.01	293 43 33.68	4.5864176	23.877
Craggy.....	142 07 03.0	321 58 04.0	4.43610	16.961
Rancheria.....	154 55 45.04	334 49 04.48	4.4690274	18.296
Juniper.....	304 26 46.97	124 34 19.11	4.2361631	10.703
Spanish.....	329 41 02.60	149 49 39.08	4.5089666	20.059

#### BLACK BUTTE, WHEELER COUNTY, OREG. (Not occupied.)

Highest point of a dark-colored butte located about 6 miles west of Mitchell and locally known as Black Butte.

[Latitude 44° 33' 33.3"; longitude 120° 16' 23.1".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Wagner.....	155 56 04	335 49 42	4.46625	18.180
Rancheria.....	195 57 06	16 02 52	4.59398	24.396
Baldy.....	244 32 11	64 44 36	4.41292	16.080

**BUCKHORN, GILLIAM COUNTY, OREG. (Not occupied).**

An intersected point situated on a round-topped hill 0.5 mile north of the Gilliam-Wheeler County line and about 2 miles east of John Day River. Station is on the Buckhorn Ranch and about 3 miles southwest of ranch house. Elevation, 3,165 feet.

Signal: A tripod of 2 by 4 inch plank, boarded on three sides and covered with white cloth. Signal is centered over station mark.

Station mark: A stone with cross cut in top, projecting 4 inches above surface of ground.

[Latitude 45° 04' 35.90"; longitude 120° 27' 04.72".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Linville.....	213 52 44.4	33 59 18.7	4.33758	13.518
Squaw.....	279 41 41.0	99 58 20.1	4.49624	19.480
Clarno.....	329 59 05.7	150 02 24.2	4.08951	7.636

**CLARNO, WHEELER COUNTY, OREG.**

Situated on highest point of ridge 9 miles west of Fossil and 5 miles east of John Day River. It is located in center of small natural mound and about 200 feet north of lone juniper bush. Station can be reached by following Fossil-Mitchell wagon road south about 0.5 mile south of Fossil, then turning west on road up grade; at top of divide signal can be seen about 3 miles to the west.

Signal: A tripod of 2 by 4 inch plank, boarded on three sides, and covered with white cloth. Signal is centered over station mark.

Station mark: Iron bench mark post centered over a bottle set 38 inches below surface of ground; post projects 10 inches above surface.

[Latitude 44° 58' 51.07"; longitude 120° 22' 14.16".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Wagner.....	11 13 04.52	191 10 56.22	4.3125803	12.762
Buckhorn.....	150 02 24.2	329 59 05.7	4.08951	7.636
Linville.....	191 49 36.86	11 52 52.04	4.4671498	18.218
Rock Creek.....	225 08 14.87	45 25 40.12	4.6567299	28.189
Squaw.....	257 50 03.50	78 03 23.32	4.4036166	15.739
Fossil.....	278 24 06.32	98 32 19.01	4.1887935	9.597
Rancheria.....	295 53 31.26	116 03 33.66	4.3180539	12.924

**CRAGGY, WHEELER COUNTY, OREG. (Not occupied.)**

Highest point of a rock crag situated on the east side of the Fossil-Mitchell stage road and about 12 miles north of Twickenham post office. It is known locally as Craggy.

Station mark: Center of highest point.

[Latitude 44° 51' 09.51"; longitude 120° 11' 25.99".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Wagner.....	72 21 03.7	252 11 11.6	4.28720	12.038
Fossil.....	184 04 40	4 05 08	4.07930	7.460
Rancheria.....	219 43 24	39 45 42	3.82491	4.152
Baldy.....	321 58 04	142 07 03	4.43610	16.960

## DEVILS HILL, GILLIAM COUNTY, OREG.

Situated on highest part of short ridge known as Devils Hill. It is in cultivated field owned by Shelby Burris, 10 miles north by 10 miles west of Condon. It is about 0.25 mile east of quarter corner between secs. 23 and 24, T. 2 S., R. 19 E. The Condon-Moro wagon road passes over south end of hill. Elevation, 2,740 feet.

Signal: A tripod of 2 by 4 inch plank, boarded on the three sides, and covered with white cloth. Signal is centered over station mark.

Station mark: A standard bench-mark post centered over a bottle set 36 inches below the surface of ground; post projects about 12 inches above surface.

Reference marks: A stone with cross cut in top, set at corner of fence at elbow in public highway, bears  $254^{\circ} 13' 42''$  true; distance 1,527.9 feet; a cairn of stone built on a small natural mound bears  $359^{\circ} 33' 00''$  true; distance 1,690.3 feet.

[Latitude  $45^{\circ} 22' 52.02''$ ; longitude  $120^{\circ} 23' 35.05''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
John Day.....	127 27 57.96	307 21 34.26	4.1686539	9.162
Toby.....	231 09 43.27	51 20 24.57	4.3991881	15.579
Wester Butte.....	274 35 05.59	94 43 09.61	4.1716197	9.226
Rock Creek.....	290 18 35.31	110 36 54.59	4.5555116	22.329
Linville.....	334 25 23.20	154 29 29.45	4.2430360	10.874

## FIELDS, GRANT COUNTY, OREG.

On the highest bald summit at the head of Fields Creek; 8 miles southwest of Mount Vernon post office and 6 miles south of John Day River. Follow trail up Fields Creek 8 miles, thence up steep ridge to left, leading to station. Best approached from the southwest side, as the ridges on the north side are very steep and rocky.

Station mark: Copper bolt cemented in solid rock, above it a rock cairn 5 feet in height.

[Approximate North American datum: Latitude  $44^{\circ} 20' 20.95''$ ; longitude  $119^{\circ} 15' 26.27''$ . Baker City astronomic: Latitude  $44^{\circ} 20' 20.60''$ ; longitude  $119^{\circ} 15' 35.18''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Snow <sup>a</sup> .....	25 01 39.82	204 51 43.44	4.6542661	.....
Snow <sup>b</sup> .....	25 01 34.28	204 51 37.89	4.6542932	.....
Long <sup>b</sup> .....	204 59 59.38	25 08 58.54	4.6030953	.....
Greenhorn <sup>b</sup> .....	232 46 42.57	53 16 01.50	4.8409415	.....
Dixie <sup>b</sup> .....	241 24 35.94	61 51 09.39	4.7570659	.....
Strawberry <sup>b</sup> .....	273 43 31.37	94 06 15.10	4.6360569	.....
Soda <sup>b</sup> .....	318 13 49.6	138 26 36.9	4.5651789	.....
Baldy <sup>b</sup> .....	322 34 36.70	142 52 42.36	4.7576209	.....
Silvies <sup>b</sup> .....	336 10 56.3	156 20 14.4	4.6456061	.....

<sup>a</sup> North American datum.

<sup>b</sup> Baker City astronomic.

## FOSSIL, WHEELER COUNTY, OREG.

Situated on Ball Mountain on the highest point of a rocky ledge, 1 mile south and 2 miles east of Fossil village.

Signal: A rock cairn 5 feet base by 5 feet in height centered over tablet.

Station mark: An aluminum tablet cemented in solid rock.

[Latitude 44° 57' 37.37"; longitude 120° 10' 47.04".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Craggy.....	4 05 08.0	184 04 40.0	4.07930	7.458
Wagner.....	47 16 16.73	227 05 51.07	4.4199205	16.342
Clarno.....	98 32 19.01	278 24 06.32	4.1887935	9.597
Squaw.....	231 26 24.62	51 31 31.40	4.0844841	7.548
Rancheria.....	333 26 33.13	153 28 23.09	3.8831071	4.747

**HEADLAND, CROOK COUNTY, OREG. (Not occupied.)**

Highest point of a high bluff facing the south, 4 miles northeast of Barnes post office.

[Latitude 43° 59' 11.9"; longitude 120° 13' 38.7".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Spanish.....	217 35 34	37 54 32	4.77242	36.792
Fields.....	242 53 00	63 33 32	4.93902	53.997
Suplee.....	251 56 56	72 22 21	4.70988	31.859

**JUNIPER BUTTE, WHEELER COUNTY, OREG.**

Situating on the highest point of hill locally known as Juniper Butte, and about 6 miles southeast of Waterman.

Signal: A rock cairn 5 feet base by 6 feet in height centered over tablet.

Station mark: An aluminum tablet set in solid rock.

[Latitude 44° 34' 16.16"; longitude 110° 47' 58.91".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Pisgah.....	70 07 47.45	249 49 29.16	4.5661538	22.882
Baldy.....	124 34 19.11	304 26 46.97	4.2361631	10.703
Spanish.....	353 32 47.86	173 33 52.81	4.2611436	11.337

**LINVILLE, GILLIAM COUNTY, OREG.**

Situating on ridge 6.5 miles west of Condon, in field owned by T. J. Linville, and about 700 feet northeast of Linville schoolhouse.

Signal: A tripod of 2 by 4 inch plank, boarded on three sides and covered with white cloth.

Station mark: A standard iron bench-mark post centered over a bottle set 36 inches below surface of ground.

[Latitude 45° 14' 20.56"; longitude 120° 17' 48.66".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Clarno.....	11 52 52.04	191 49 36.86	4.4671498	18.218
Buckhorn.....	33 59 18.7	213 52 44.4	4.33758	13.518
Devils Hill.....	154 29 29.45	334 25 23.20	4.2430360	10.874
Wester Butte.....	206 27 33.52	26 31 30.72	4.2120989	10.126
Rock Creek (observed).....	262 50 59.60	83 05 11.52	4.4208512	16.376
Rock Creek (computed from north).....	262 50 54.17	83 05 06.09		
Squaw.....	321 17 55.39	141 28 01.75	4.4764520	18.612

**MAUPIN BUTTE, CROOK COUNTY, OREG.**

Situated on east point of Maupin Butte, a flat-top hill about 4 miles south of Paulina village. Hill is covered with juniper trees and is on Government land, and can be easily reached by horseback on the north and west sides.

Signal: A rock cairn 5 feet base by 6 feet in height covered with white cloth and centered over tablet.

Station mark: An aluminum tablet cemented in solid rock.

[Latitude 44° 04' 04.47"; longitude 119° 56' 20.43".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Pisgah.....	151 29 32.95	331 17 09.61	4.6931505	30.655
Spanish.....	199 10 39.33	19 17 33.87	4.6023220	24.870
Fields.....	240 48 42.36	61 17 13.15	4.7942331	38.690
Suplee.....	255 18 41.40	75 32 04.72	4.4237651	16.486
Snow.....	286 40 22.46	106 58 52.67	4.5702606	23.100

**PISGAH, WHEELER COUNTY, OREG.**

Situated on 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.

A wagon road (sawmill road), southwest from Mitchell, passes over the ridge 1½ miles west of the station.

Signal: A rock cairn, 5 feet base by 6 feet in height, surmounted by a small pine tree and located 5 feet northwest of station mark.

Station mark: An aluminum tablet cemented in solid rock.

[Latitude 44° 27' 27.66"; longitude 120° 14' 05.46".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Wagner.....	158 31 08.81	338 23 10.75	4.6111267	25.380
Rancheria.....	189 00 15.48	9 04 24.47	4.6958656	30.848
Baldy.....	222 13 42.63	42 24 30.09	4.4807326	18.797
Juniper.....	249 49 29.16	70 07 47.45	4.5661538	22.882
Spanish.....	278 23 37.73	98 42 59.31	4.5695024	23.060
Suplee.....	306 27 06.77	126 52 56.66	4.7877728	38.117
Maupin Butte.....	331 17 09.61	151 29 32.95	4.6931505	30.655

**RANCHERIA, WHEELER COUNTY, OREG.**

Situated on highest part of high rocky butte, locally known as Rancheria. This butte is about 9 miles southeast of Fossil, on the divide between Butte and Rowe creeks. The Fossil-Rowe Creek wagon road passes within 0.5 mile of the station.

Signal: A rock cairn, 4.5 feet base by 5 feet in height, centered over tablet.

Station mark: An aluminum tablet cemented in solid rock.

[Latitude 44° 53' 55.96"; longitude 120° 08' 11.35".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Pisgah.....	9 04 24.47	189 00 15.48	4.6958656	30.848
Black Butte.....	16 02 51.60	195 57 05.52	4.59398	24.396
Craggy.....	39 45 41.65	219 43 24.33	3.82491	4.152
Wagner.....	64 11 23.72	243 59 14.07	4.4024218	15.695
Clarno.....	116 03 33.66	295 53 31.26	4.3180539	12.923
Fossil.....	153 28 23.09	333 26 33.13	3.8831071	4.747
Squaw.....	202 55 20.18	22 58 36.78	4.1941686	9.717
Baldy.....	334 49 04.48	154 55 45.04	4.4690274	18.296

## ROCK CREEK, MORROW COUNTY, OREG.

Situated on highest part of round hill on property of James Murtha, 10.5 miles east by 1.5 miles north of Condon. It is about 0.25 mile south of corner of secs. 28, 29, 32, and 33, T. 3 S., R. 23 E.

Signal: A tripod of 2 by 4 inch plank boarded on three sides and covered with white cloth. Signal is centered over station mark.

Station mark: A standard iron bench-mark post centered over a bottle set 38 inches below surface of ground.

[Latitude  $45^{\circ} 16' 05.09''$ ; longitude  $119^{\circ} 57' 49.16''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Squaw.....	15 47 31.02	195 43 27.16	4.4420126	17.193
Clarno.....	45 25 40.12	225 08 14.87	4.6567299	28.189
Linville (observee).....	83 05 11.52	262 50 59.60	4.4208512	16.376
Linville (computed from north).....	83 05 06.09	262 50 54.17		
Devils Hill.....	110 36 54.59	290 18 35.31	4.5555116	22.329
Westers Butte.....	121 08 47.16	300 58 31.53	4.3427110	13.679
Ione.....	207 53 00.53	28 04 32.51	4.4067223	15.849

## SECONDARY POINTS.

[Approximate North American datum.]

Station.	Latitude.	Longitude.
	° ' "	° ' "
T. 2 S., R. 21 E., corner of secs. 20, 21, 28, and 29.....	45 22 26.10	120 12 30.92
T. 2 S., R. 19 E., corner of secs. 23, 24, 25, and 26.....	45 22 29.85	120 23 55.86
T. 3 S., R. 23 E., corner of secs. 28, 29, 32, and 33.....	45 16 19.65	119 57 46.84
T. 4 S., R. 20 E., quarter corner between secs. 10 and 11.....	45 14 09.62	120 17 54.90
T. 6 S., R. 22 E., center of sec. 23.....	45 01 45.72	120 03 26.72

## SNOW, GRANT COUNTY, OREG.

Snow Mountain is in Grant County very near the Harney County line. Station is on the highest point of bald ridge and is well known locally as Snow Mountain, as there is generally a small bank of snow on north side. It is at the source of Emigrant Creek, South Fork of John Day River, Silver Creek, and the waters of Crooked River. It is the highest point for a long distance south of the Strawberry Range. Can be easily ascended from almost any direction on horseback.

Station mark: A bronze triangulation tablet cemented in solid rock under a cairn 7 feet in diameter at base and 9 feet high.

[Approximate North American datum: Latitude  $43^{\circ} 58' 15.79''$ ; longitude  $119^{\circ} 29' 42.79''$ . Baker City astronomic: Latitude  $43^{\circ} 58' 15.34''$ ; longitude,  $119^{\circ} 29' 51.30''$ .]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Fields <sup>a</sup> .....	204 51 43.44	25 01 39.82	4.6542661	.....
Fields <sup>b</sup> .....	204 51 37.89	25 01 34.28	4.6542932	.....
Strawberry <sup>b</sup> .....	238 25 45.71	58 58 21.19	4.8635558	.....
Baldy <sup>b</sup> .....	274 41 18.41	95 09 14.64	4.7328401	.....
Trout <sup>b</sup> .....	289 10 17.11	109 36 22.18	4.7276892	.....
Burns <sup>b</sup> .....	326 15 04.53	146 30 13.06	4.7246653	.....

<sup>a</sup> North American datum.

<sup>b</sup> Baker City astronomic.

**SPANISH PEAK, WHEELER COUNTY, OREG.**

Situated on the highest point of a bald mountain locally known as Spanish Peak or Bald Mountain. Station is about 3.5 miles south and 2 miles east of Antone store and post office. The north end of the mountain breaks off abruptly; the south end is sloping. Station is located at north end. To reach station from Antone follow up Rock Creek to sawmill, about 2 miles, thence east by road and trail to gap, thence south by trail.

Signal: A cairn 5 feet base by 6 feet in height centered over tablet.

Station mark: An aluminum tablet set in top of stone 10 by 8 by 26 inches which projects 8 inches above surface of ground.

[Latitude 44° 24' 28.81"; longitude 119° 46' 26.23".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Maupin Butte.....	19 17 33.87	199 10 39.33	4.6023220	24.870
Headland.....	37 54 33	217 35 35	4.77242	36.792
Pisgah.....	98 42 59.31	278 23 37.73	4.5695024	23.060
Baldy.....	149 49 39.08	329 41 02.60	4.5089666	20.060
Juniper.....	173 33 52.81	353 32 47.86	4.2611436	11.337
Fields.....	280 20 45.83	100 42 26.28	4.6219570	26.020
Snow.....	335 14 50.06	155 26 29.50	4.7277199	33.196
Suplee.....	338 10 33.69	158 17 04.72	4.5250645	20.817

**SQUAW, WHEELER COUNTY, OREG.**

Situated on highest point of high sharp butte locally known as Squaw Butte. It is near center of sec. 23, T. 6 S., R. 22 E., and 8 miles east by 2 miles north of Fossil. The foot of the butte can be reached by wagon road from both Fossil and Mayville.

Signal: Rock cairn 5 feet high located on highest point of Butte. Elevation, 4,579 feet.

Station mark: An aluminum tablet cemented in stone ledge 5.3 feet south of rock cairn.

[Latitude 45° 01' 42.43"; longitude 120° 03' 33.14".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Rancheria.....	22 58 36.78	202 55 20.18	4.1941686	9.717
Fossil.....	51 31 31.40	231 26 24.61	4.0844841	7.548
Clarno.....	78 03 23.32	257 50 03.50	4.4036166	15.739
Buckhorn.....	99 58 20.12	279 41 41.04	4.49624	19.480
Linville.....	141 28 01.75	321 17 55.39	4.4764520	18.612
Rock Creek.....	195 43 27.16	15 47 31.02	4.4420126	17.193

**SUPLEE, GRANT COUNTY, OREG.**

Situated on highest point of wooded hill about 4 miles north and 4 miles east of Suplee post office and 1½ miles east and ½ mile north of Bernard's ranch house. To reach station go north from Suplee post office on private road to Bernard's house, thence northeast on private road to divide, thence southeast through wood to station.

Lines to five stations were cut through timber.

Signal: A rock cairn 5 feet base by 7 feet in height covered with white cloth and centered over tablet.

Station mark: An aluminum tablet cemented in solid rock 8 inches below surface of ground, over which a flat circular stone is laid.

[Latitude 44° 07' 40.82"; longitude 119° 37' 06.03".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Headland.....	72 22 21	251 56 56	4.70988	31.858
Maupin Butte.....	75 32 04.72	255 18 41.40	4.4237651	16.486
Pisgah.....	126 52 56.66	306 27 06.77	4.7877728	38.117
Spanish.....	158 17 04.72	338 10 33.69	4.5250645	20.817
Fields.....	230 44 29.83	50 59 36.26	4.5702524	23.100
Snow.....	330 27 19.16	150 32 27.34	4.3018427	12.450

**WAGNER, JEFFERSON COUNTY, OREG.**

Situated on highest point of Wagner Butte, a double-topped butte on the west side of the 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 via Pine Creek. On reaching Pine Creek continue down same about 1.5 miles, leave public road and follow private road southwest over divide, thence down road canyon to John Day River. From this point a trail leads up the river to Wagner's ranch. This route can only be used when the river is low, as it must be forded several times.

Signal: A rock cairn 5 feet base by 6 feet in height centered over tablet and covered with white cloth.

Station mark: An aluminum tablet cemented in solid rock.

[Latitude 44° 47' 58.38"; longitude 120° 25' 25.96".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Clarno.....	191 10 56.22	11 13 04.52	4.3125803	12.762
Fossil.....	227 05 56.55	47 16 16.73	4.4199205	16.341
Rancheria.....	243 59 14.07	64 11 23.72	4.4024218	15.695
Craggy.....	252 11 11.57	72 21 03.69	4.28720	12.038
Baldy.....	293 43 33.68	114 02 22.01	4.5864176	23.977
Pisgah.....	338 23 10.75	158 31 08.81	4.6111267	25.380
Black Butte.....	335 49 41.20	155 56 02.89	4.46624	18.180

**WESTER BUTTE, GILLIAM COUNTY, OREG.**

Situated on highest point of sharp hill locally known as Wester Butte. It is 3 miles west by 1.5 miles north of Gwendolen station on land owned by Mr. Wester and is about 0.3 mile southeast of corner of secs. 20, 21, 28, and 29, T. 2 S., R. 21 E. Station can be reached by following main road north from Gwendolen 1 mile, thence turning west through gate and thence west along private road to station. Elevation, 2,729 feet.

Signal: A tripod of 2 by 4 inch plank, boarded on three sides and covered with black cloth. Signal is centered over station mark.

Station mark: Standard iron bench-mark post centered over a bottle set 40 inches below surface of ground; post projects about 8 inches above surface.

[Latitude 45° 22' 13.02"; longitude 120° 12' 14.98".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Linville.....	26 31 30.72	206 27 33.52	4.2120989	10.126
Devils Hill.....	94 43 09.61	274 35 05.59	4.1716197	9.226
John Day.....	111 06 08.02	290 51 40.00	4.4530396	17.636
Toby.....	195 45 45.65	15 48 22.26	4.2445000	10.911
Ione.....	249 56 20.06	70 13 09.05	4.5153273	20.355
Rock Creek.....	300 58 31.53	121 08 47.16	4.3427110	13.679



**PRIMARY TRAVERSE.****Albany and Salem quadrangles.****MARION AND POLK COUNTIES.**

The following geographic positions were determined by primary traverse and are based upon the Coast and Geodetic Survey position for the capitol dome at Salem, and United States Geological Survey primary traverse positions along the north border of the Albany quadrangle described in Bulletins 496 and 551, both on North American datum. The work was done by L. F. Biggs in 1913.

**ALBANY QUADRANGLE.****Near northwest corner of quadrangle.**

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Suver, 1 mile west of; center of T road north.....	44 44 40.4	123 13 38.0	.....
Prim. Trav. Sta. No. 46, 1911.....	44 44 36.9	123 12 19.1	5,705

**SALEM QUADRANGLE.****Along highways near center of quadrangle.**

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Orville, 1.6 miles east of, at south edge of road, water trough.....	44 51 56.8	123 07 31.6	.....
Orville, 1.2 miles east of, center of road at Vitæ Springs.....	44 51 49.1	123 08 04.1	2,465
Orville, 0.5 mile east of, large boulder at corner of barn.....	44 51 13.8	123 08 17.0	3,685
Orville, center of track at road crossing south of.....	44 51 04.2	123 08 49.2	2,511

**Along highways from Independence to Monmouth.**

Independence, on sidewalk opposite south wall of Isis Theater, 1.6 feet from edge of curb; chiseled cross.....	44 51 05.8	123 11 00.9	.....
Independence, spire of Presbyterian Church.....	44 51 02.0	123 11 17.9	1,289
Independence, 1.1 miles west of, T road north.....	44 51 06.0	123 12 20.1	4,503
Independence, 1.8 miles west of, railroad crossing.....	44 50 59.6	123 13 07.7	3,489
Independence, 2.7 miles west of, flagpole on normal school at Monmouth.....	44 51 05.0	123 14 12.5	4,702

**Along highways near west border of quadrangle.**

Monmouth, 0.9 mile south of, center of small bridge.....	44 50 16.8	123 14 03.7	4,928
Monmouth, 1.6 miles south of, T road east.....	44 49 44.1	123 14 03.8	3,310
Monmouth, 2 miles south of, T road west at cemetery.....	44 49 22.3	123 14 03.8	2,210
Monmouth, 3 miles south of, west edge of road at T road east, 3 feet north to stone on township line; iron post stamped "Prim. Trav. Sta. No. 4, Oregon 1913".....	44 48 13.4	123 14 04.0	6,975
Monmouth, 4.1 miles south of, at end of long tangent, blazed tree inscribed "U. S.".....	44 47 02.2	123 14 03.8	7,205
Monmouth, 4.9 miles south of, center of T road west; iron stake.....	44 46 17.5	123 14 04.0	4,528
Monmouth, 5.9 miles south of, 200 feet north of summit of wooded hill, east edge of road; iron post stamped "Prim. Trav. Sta. No. 5, Oregon 1913".....	44 45 27.0	123 13 50.3	5,207

**Along highways near west side of Willamette River.**

Independence, 0.2 mile north of; center of bridge.....	44 51 14.3	123 11 01.5	.....
Independence, 1.2 miles north of; T road east.....	44 52 06.8	123 11 06.5	5,328

## SALEM QUADRANGLE—Continued.

Along Oregon Electric Railway, near east side of Willamette River.

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Fect.
Halls Ferry station, 1 mile southwest of; bridge over highway.....	44 52 15.1	123 08 36.9	.....
East Independence station, 15 feet east of, on fence line; iron post stamped "Prim. Trav. Sta. No. 11 Oregon 1913".....	44 51 49.7	123 08 43.1	2,606
Orville, center of track at power house.....	44 51 13.5	123 08 49.2	3,691
Orville, center of track at road crossing.....	44 51 04.2	123 08 49.2	935
Orville, 0.8 mile south of; center of bridge 50-4.....	44 50 31.1	123 08 31.4	3,587
Orville, 1.4 miles south of; west edge of right of way, at road crossing under track; iron post stamped "Prim. Trav. Sta. No. 12, Oregon 1913".....	44 50 05.5	123 08 07.8	3,102

## Along highways near south part of quadrangle.

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Fect.
Buena Vista, opposite old store, east side of road; iron post stamped "Prim. Trav. Sta. No. 28 Oregon 1911".....	44 46 07.7	123 08 59.5	.....
Buena Vista, 1 mile north of; mail box at T road east.....	44 46 58.8	123 09 03.7	5,188
Buena Vista, 1.6 miles north of; three mail boxes at T road.....	44 47 33.7	123 09 03.3	3,530
Buena Vista, 2 miles north of; fence post under large tree at L in road north.....	44 47 33.8	123 09 32.4	2,100
Buena Vista, 3.1 miles north of, at T west; signboard reads "Buena Vista 3 miles, Independence 5 miles".....	44 48 28.4	123 09 23.4	5,560
Buena Vista, 3.5 miles north of, on east abutment of culvert; chisel mark.....	44 48 48.9	123 09 28.4	2,111
Independence, 2.9 miles south of; L in road west.....	44 49 18.8	123 09 23.1	3,045
Independence, 1.4 miles south of, at road east; M. P. Leitch's mail box.....	44 49 52.9	123 10 59.0	7,729
Independence, 0.25 mile south of, at south edge of town, 500 feet southeast of station, east edge of road; iron post stamped "Prim. Trav. Sta. No. 14 Oregon 1913".....	44 50 53.0	123 11 01.0	6,085

Magnetic declination near east border of quadrangle, 22° 09' E.; near west border of, 22° 17' E.

## Along highways in northwest quarter of quadrangle.

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Fect.
Independence, 2 miles north of; second-class T road east.....	44 52 47.8	123 11 11.5	.....
Independence, 2.3 miles north of, at road west; signboard reads "Independence 2 miles, Salem 9 miles, Dallas 8 miles".....	44 53 01.9	123 11 04.7	1,505
Independence, 3.2 miles north of, at Y road north, east side of road; iron post stamped "Prim. Trav. Sta. No. 7, Oregon 1913".....	44 53 45.8	123 10 28.4	5,163
Independence, 4.1 miles north of; telephone pole 4/7 at angle in road.....	44 54 11.4	123 09 38.8	4,409
Independence, 5 miles north of; T road east.....	44 54 53.9	123 09 12.2	4,709
Independence, 5.8 miles north of, center of railroad crossing at McNary.....	44 55 34.8	123 08 48.4	4,480
McNary, 0.2 mile north of; center of bridge.....	44 55 42.2	123 08 43.8	820
McNary, 0.5 mile north of, north edge of road; iron post stamped "Prim. Trav. Sta. No. 6 Oregon 1913".....	44 56 00.5	123 08 48.6	1,882
McNary, 1.4 miles northeast of; T road south.....	44 55 57.6	123 07 42.4	4,774

## Along Oregon Electric Railway in northwest corner of quadrangle.

Station.	Latitude.	Longitude.	Distance between stations.
Halls Ferry station, 0.7 mile northeast of; center of bridge.....	44 53 32.6	123 07 39.1	.....
Halls Ferry station; center of track opposite.....	44 53 01.7	123 08 02.7	3,555

Magnetic declination on east border of south half of quadrangle, 22° 20' E.

## SALEM QUADRANGLE—Continued.

Along highways in northeast part of quadrangle.<sup>1</sup>

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Eola store, 150 feet west of; large boulder 2½ feet high and 2 feet in diameter.....	44 55 53.5	123 06 55.8	.....
Eola store, 0.4 mile east of, opposite signboard marked "Slow," 300 feet east of water trough; center of track.....	44 55 55.7	123 06 26.6	2,116
Ferry, 600 feet east of, R. J. Kinney's mail box.....	44 55 59.5	123 05 44.2	3,076
Salem, 3.4 miles west of, opposite signboard marked "Log Dump".....	44 55 51.0	123 05 15.8	2,217
Salem, 3 miles west of, 1,900 feet east of Log Dump station, north edge of road; iron post stamped "Prim. Trav. Sta. No. 8 Oregon 1913".....	44 55 46.8	123 04 51.0	1,830
Salem, 2.3 miles west of; railroad signboard marked "Log Dump 1 mile".....	44 56 10.8	123 04 09.9	3,833
Salem, 2 miles west of; T road west.....	44 56 16.2	123 03 49.4	1,567
Salem, 1.7 miles west of, west edge of Kingwood Street at entrance to Kingwood; brick and concrete column.....	44 56 25.1	123 03 34.4	1,407
Salem, 1 mile west of, at west end of bridge at T road north; hub.....	44 56 42.8	123 02 52.7	3,490
Salem, 0.4 mile west of; statue on courthouse.....	44 56 25.5	123 02 07.4	3,696
Salem, dome of State capitol (Coast and Geodetic Survey triangulation station).....	44 56 19.47	123 01 43.5	1,826
Salem, near south entrance and in south face of capitol building; aluminum tablet, "elevation 171".....	44 56 18.2	123 01 44.0	133

## Along Oregon Electric Railway from Salem to Finzer station.

Salem, 0.8 mile southwest of, west edge of South Commercial Street at intersection with Mission Street.....	44 56 01.4	123 02 35.3	4,060
Salem, 1.2 miles southwest of, east side of track, water tank.....	44 55 47.9	123 02 56.0	2,019
Salem, 2.2 miles southwest of, at northeast end of tangent center of bridge 52-9.....	44 55 05.5	123 03 43.1	5,470
Salem, 2.8 miles southwest of, second-class road crossing.....	44 54 48.6	123 04 13.8	2,790
Salem, 3.6 miles southwest of, center of bridge 54-2.....	44 54 33.6	123 05 06.9	4,111
Salem, 4.4 miles southwest of, 300 feet east of Livesley, west edge of wagon road at T road to Livesley station; iron post stamped "Prim. Trav. Sta. No. 10 Oregon 1913".....	44 54 11.5	123 05 56.4	4,213
Finzer station, 120 feet northeast of; center of bridge.....	44 53 47.1	123 07 10.0	5,836

Magnetic declination near Salem, 22° 21' E.

## Along highways near east border of quadrangle.

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Prim. Trav. Sta. No. 25, 1911.....	44 43 59.1	123 00 34.5	.....
Jefferson, 3 miles north of, 0.2 mile south of bridge; second-class road west.....	44 45 39.2	123 01 24.6	10,768
Jefferson, 4.2 miles north of, on Pacific highway at T road west, on west side of road; iron post stamped "Prim. Trav. Sta. No. 1 Oregon 1913".....	44 46 39.3	123 01 23.6	6,099
Jefferson, 5.6 miles north of; center of bridge.....	44 47 47.1	123 02 00.6	7,294
Jefferson, 6.6 miles north of, 725 feet northeast of telephone pole 15/35, opposite abandoned house; center of bridge.....	44 48 34.3	123 01 37.2	5,073
Jefferson, 7.7 miles north of, near pole 17/11; T road east.....	44 49 31.1	123 01 47.6	5,813
Jefferson, 8.5 miles north of, summit of Jackson Hill; center of road.....	44 50 14.5	123 01 47.6	4,398
Jefferson, 9.1 miles north of, at southwest corner of Sunnyside district school No. 96; iron post stamped "Prim. Trav. Sta. No. 2 Oregon 1913".....	44 50 43.6	123 01 38.9	3,015
Jefferson, 10.2 miles north of, 1.1 miles north of Sunnyside School; T road south.....	44 50 49.7	123 03 00.7	5,931
Jefferson, 11.4 miles north of, 2.3 miles north of Sunnyside School, 200 feet northwest of church, east edge of road at T road west; iron post stamped "Prim. Trav. Sta. No. 9 Oregon 1913".....	44 51 42.4	123 03 42.4	6,128
T. 8 S., R. 3 W., 1,320 feet east of west center of sec. 20; 1/16 corner.....	44 51 42.9	123 05 09.2	6,259
T. 8 S., R. 3 W., corner of secs. 17, 18, 19, and 20; stone.....	44 52 09.1	123 05 27.4	2,964
T. 8 S., R. 3 W., corner of secs. 17, 18, 19, and 20, 1.03 miles west of; T road south.....	44 52 02.4	123 06 41.9	5,410

<sup>1</sup> For other positions in Salem quadrangle see pp. 517-518.

## SALEM QUADRANGLE—Continued.

Along Oregon Electric Railway from Orville to Talbot station.

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	<i>Feet.</i>
Orville, 2.3 miles south of; center of bridge 62.....	44 49 40.6	123 07 15.1	.....
Orville, 3.2 miles south of; center of bridge 62-8.....	44 49 28.0	123 06 11.5	4,701
Sidney, 1.1 miles northwest of, signboard "1 mile to Sidney"; center of track.....	44 49 17.2	123 05 49.0	1,953
Sidney, 375 feet north of station, west edge of right of way, north edge of road, at fence corner; iron post stamped "Prim. Trav. Sta. No. 13 Oregon 1913".....	44 48 22.2	123 05 21.0	5,924
Sidney, 2 miles south of; road crossing.....	44 46 36.7	123 05 28.2	10,690
Sidney, 2.6 miles south of; center of track at milepost 67.....	44 46 07.8	123 05 30.6	2,930
Talbot, road crossing at.....	44 45 39.1	123 05 32.9	2,910
Talbot, 0.6 mile southeast of; P. T. Sta. No. 27, 1911.....	44 45 33.9	123 04 49.2	3,197

Magnetic declination near north border of quadrangle, 22° 46' E.; near east border 22° 26' E.; near west border, 22° 28' E.

Aumsville, Corvallis, Dallas, Lebanon, Sheridan, McCoy, Mount Angel, Tualatin, Salem, and Hillsboro (15') quadrangles.

CLACKAMAS, LINN, MARION, POLK, WASHINGTON, AND YAMHILL COUNTIES.

The following geographic positions on North American datum were determined by primary traverse and are based upon positions previously located by primary traverse or triangulation stations as herein described, previously published in Bulletins 496 and 551. The work was done in 1913 by L. F. Biggs, in cooperation with the State of Oregon.

## AUMSVILLE QUADRANGLE.

Along Southern Pacific Railroad near west border of quadrangle.

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	<i>Feet.</i>
Road crossing, 714 C.....	44 53 37.8	122 59 34.0	.....
Road crossing.....	44 52 59.6	122 58 55.9	4,739
Stateschool station, center of track opposite south end station....	44 52 33.8	122 58 41.4	2,820
State school, chimney on machine building.....	44 52 32.6	122 58 22.2	1,382
Road crossing, 712 C-B.....	44 51 59.7	122 58 17.3	3,353
Turner, 1.4 miles north of, west side of road at fence line, 210 feet north of milepost; iron post stamped "Prim. Trav. No. 29 Ore. 1913, 261 B 1913".....	44 51 36.3	122 57 54.7	2,875
Second-class road crossing at end of tangent.....	44 51 07.4	122 57 25.6	3,600
Turner, center of track opposite semaphore.....	44 50 34.1	122 57 10.0	3,548
Road crossing, 709 A-B.....	44 49 26.0	122 56 54.4	6,990
Marion, 4.9 miles north of, west side of railroad at fence line, 110 feet north of milepost 710; iron post stamped "Prim. Trav. No. 30, Ore. 1913, 308 B 1903".....	44 49 14.1	122 56 52.1	1,209
Road crossing.....	44 48 39.8	122 56 43.8	3,532
Second-class road crossing, 708 A B.....	44 48 18.8	122 56 39.0	2,150
Road crossing, 706 B-C.....	44 47 19.7	122 56 25.5	6,060
Marion, 1.8 miles north of, west side of railroad at fence line oppo- site milepost 706; iron post stamped "Prim Trav. No. 31, Ore. 1913, 327 B 1903".....	44 46 34.5	122 56 15.6	4,633
Road crossing.....	44 46 07.3	122 56 10.4	2,778
Marion, road crossing, just north of station.....	44 45 00.9	122 56 25.9	6,815

From point near Salem east to Geer.

T road north.....	44 55 42.4	122 59 09.9	.....
Salem, 2 miles east of; center of cross roads.....	44 55 42.4	122 58 57.1	920
Salem, 3 miles east of, 100 feet west of slight jog in road, south edge of road; iron post stamped "Prim Trav. No. 32 Ore. 1913".....	44 55 42.7	122 57 29.4	6,310
Center of bridge.....	44 55 42.2	122 56 38.4	3,673
T road south.....	44 55 38.8	122 55 57.4	2,973
Schoolhouse flagpole.....	44 55 38.2	122 55 29.3	2,022
T road south.....	44 55 38.3	122 54 59.6	2,140
T road north.....	44 55 48.2	122 54 01.1	4,325

Magnetic declination, 22° 30' E.

**AUMSVILLE QUADRANGLE—Continued.**

Near northwest corner of quadrangle.

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Fect.
Center Southern Pacific R. R. at road crossing 722 A-B.....	44 59 07.2	122 59 59.1	.....

**From Turner east to Aumsville.**

Turner, center of track, opposite semaphore.....	44 50 34.1	122 57 10.0	.....
Large oak tree in center of road at T road south.....	44 50 21.6	122 56 12.2	4,355
T road south near bridge.....	44 50 21.5	122 55 02.5	5,020
Turner, 2.4 miles east of, north edge of road at T road, north, iron post stamped "Prim. Trav. No. 40 Ore. 1913".....	44 50 21.3	122 54 21.2	2,977
Center of road at T road north.....	44 50 28.9	122 52 30.5	8,019
Aumsville, 200 feet north of station, northwest intersection of T road, north; iron post stamped "Prim. Trav. No. 39 Ore. 1913".....	44 50 28.6	122 51 55.1	2,552

Magnetic declination, 22° 48' E.

**From point near Shelburn via Stayton to Aumsville.**

Center of track at road crossing.....	44 45 07.2	122 50 45.7	.....
Culvert, 201.....	44 45 29.5	122 50 02.8	3,830
Shelburn, 3 miles northeast of, 500 feet northeast of milepost 100, north edge of right of way, east edge of road at road crossing; iron post stamped "Prim. Trav. No. 36, Ore. 1913".....	44 45 48.9	122 49 26.0	3,304
Telephone pole inscribed "U. S." at angle in road east.....	44 46 18.6	122 49 26.6	3,000
Center of T road west, 100 feet north of railroad crossing.....	44 46 26.3	122 48 13.4	5,335
Angle in road north at second-class road east.....	44 46 44.8	122 47 36.9	3,232
North Santiam River, center of bridge over south pier.....	44 47 29.3	122 47 35.8	4,498
Stayton, northwest corner of Water and First streets; iron post stamped "Prim. Trav. No. 37 Ore. 1913".....	44 47 47.0	122 47 37.3	1,800
T. 9 S., R. 1 W., center sec. 10, T road west.....	44 48 11.3	122 47 36.8	2,460
T. 9 S., R. 1 W., quarter corner between secs. 9 and 10, T road east.....	44 48 11.2	122 48 13.6	2,660
T. 9 S., R. 1 W., corner secs. 3, 4, 9, and 10, T road south.....	44 48 37.2	122 48 13.3	2,630
T road north.....	44 48 37.1	122 48 50.1	2,650
T road south.....	44 48 36.5	122 50 21.5	6,590
T road north, near corner secs. 5, 6, 7, and 8, T. 9 S., R. 1 W.; iron post stamped "Prim. Trav. No. 38 Ore. 1913".....	44 48 36.6	122 50 44.3	1,646
Angle in road west.....	44 49 11.6	122 50 44.0	3,540
Large fence post at angle in road north.....	44 49 16.5	122 51 38.0	3,924
Railroad crossing, 710 F-G.....	44 49 22.5	122 51 53.1	1,247
Aumsville, east rail at railroad water tank.....	44 50 28.8	122 51 52.3	6,505
Aumsville, 200 feet west of station; iron post stamped "Prim. Trav. No. 39 Ore. 1913".....	44 50 28.6	122 51 55.1	275

**From Aumsville north along Southern Pacific Railroad.**

South end of bridge 713 A.....	44 51 21.6	122 52 07.0	5,443
Road crossing, 714 B-C.....	44 52 00.6	122 52 03.6	3,951
Shaw, 100 feet southeast of station, east edge of right of way, north edge of road; iron post stamped "Prim. Trav. No. 41, 1913".....	44 52 24.8	122 52 08.5	2,473
Road crossing at milepost 716.....	44 53 16.7	122 52 43.0	5,818
Second-class road crossing, 716 C.....	44 53 52.3	122 53 06.7	3,978
Macleay, center of track, opposite station window.....	44 54 22.9	122 53 27.1	3,431
Macleay, 230 feet east of road crossing, in front of town hall; iron post stamped "Prim. Trav. No. 42—Ore. 1913".....	44 54 29.4	122 53 25.1	660
"Macleay One Mile" center of track opposite.....	44 55 11.6	122 53 36.9	4,371
Geer, 600 feet south of station, east side of track at road crossing; iron post stamped "Prim. Trav. No. 33, Ore. 1913".....	44 55 47.5	122 53 33.3	3,641
Road crossing.....	44 56 32.9	122 53 10.7	4,878
Pratum, road crossing, 400 feet south of station.....	44 57 31.8	122 52 40.8	6,340
Pratum, 0.8 mile north of, east side of track at road crossing; iron post stamped "Prim. Trav. No. 43, Ore. 1913".....	44 58 17.0	122 52 17.6	4,868
Switzerland, center of track opposite station.....	44 58 49.6	122 51 42.8	4,146
Selah, center of track at road crossing.....	44 59 14.0	122 50 21.1	6,370
Road crossing, 725 A, south edge right of way, east edge of road; iron post stamped "Prim. Trav. No. 53, Ore. 1913".....	44 59 34.4	122 49 27.2	4,390
Road crossing.....	44 59 47.6	122 48 59.9	2,376

Magnetic declination, 22° 30' E.

**Along highway near Pratum.**

Center of north and south road at road crossing.....	44 59 31.2	122 52 46.0	.....
T road east, rock center road.....	44 58 52.3	122 52 46.6	3,939
T road east.....	44 58 17.1	122 52 35.7	3,653

## CORVALLIS QUADRANGLE.

Along north border of quadrangle near Airlie.

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	<i>Feet.</i>
Second-class road south in Albany quadrangle.....	44 44 40.3	123 14 32.9	.....
Angle in road south, end of tangent.....	44 44 40.2	123 15 31.6	4,240
Flagpole in front of schoolhouse.....	44 44 35.5	123 15 53.7	1,662
Fir Lawn farm, road opposite entrance to.....	44 44 36.3	123 17 07.3	5,310
Airlie, three mail boxes at Y road 1.5 miles east of.....	44 44 08.2	123 18 27.3	6,433
T road north.....	44 44 48.6	123 19 21.0	5,631
Airlie public school, north edge of road; iron post stamped "Prim. Trav. No. 15, Ore. 1913".....	44 44 58.8	123 19 38.4	1,626

Magnetic declination, 22° 12' E.

## DALLAS QUADRANGLE.

From culvert 78 C north along Southern Pacific Railroad and highways to Dallas.

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	<i>Feet.</i>
Culvert 78 C.....	44 45 21.8	123 19 37.7	.....
Road crossing 77 B C.....	44 46 25.4	123 19 00.2	6,989
Simpson, 15 feet north of track at road crossing; iron post stamped "Prim. Trav. T No. 16 Ore. 1913".....	44 46 49.7	123 18 04.1	4,732
Signboard at T road south, "Airlie 4 miles, Corvallis 20 miles".....	44 47 44.0	123 18 03.7	5,504
T road north, near cemetery.....	44 47 44.1	123 18 42.6	2,800
Telephone pole, north edge of road, opposite wagon shed.....	44 48 12.3	123 19 21.6	4,014
T road north.....	44 48 43.6	123 19 42.4	3,507
T road east, at signboard "Monmouth 6 miles, Calvary Church 6 miles, Dallas 7 miles".....	44 49 48.7	123 20 36.7	7,666
Luckiamute River bridge, 500 feet east of, at crossroads; iron post stamped "Prim. Trav. No. 17, Ore. 1913".....	44 50 26.2	123 21 44.2	6,175
T road west at signboard "Falls City 4 miles, Dallas 5 miles".....	44 51 14.3	123 21 23.6	5,088
T road east.....	44 51 39.3	123 21 04.8	2,877
Schoolhouse, 500 feet northeast of, east edge of road; iron post stamped "Prim. Trav. No. 18, Ore. 1913".....	44 52 21.5	123 20 10.2	5,812
Guthries's mail box, center of road, opposite.....	44 52 57.6	123 19 54.4	3,831
Summit.....	44 53 44.2	123 19 50.7	4,724
Cemetery gate, east entrance.....	44 54 32.4	123 19 47.9	4,884
Dallas, west end of north curb of Washington Avenue at inter- section of Fairview Avenue.....	44 55 11.8	123 19 23.4	4,368
Dallas, in coping of steps at northwest corner of Polk County courthouse; bronze tablet stamped "Prim. Trav. 18, Ore. 1913".....	44 55 17.6	123 18 54.6	2,156
Dallas, railroad crossing.....	44 55 41.1	123 18 42.6	2,534
Summit of hill opposite south end of gate.....	44 56 17.9	123 18 37.2	3,744
T road north.....	44 56 53.9	123 18 34.1	3,659
T road east.....	44 57 37.3	123 18 03.6	4,907
Dallas 3.5 miles north of, at T road south, east side of road at fence corner; iron post stamped "Prim. Trav. No. 19, Ore. 1913".....	44 58 10.2	123 17 54.5	3,402
T road east.....	44 58 33.7	123 17 36.7	2,698
Large cottonwood tree, east side of road.....	44 59 32.1	123 17 11.6	6,184

Along highways east of Dallas.

Bowersville railroad crossing.....	44 54 59.9	123 15 25.2	.....
Chamberlain's mail box.....	44 55 06.5	123 16 23.2	4,223
T road south.....	44 55 05.9	123 17 38.2	5,402
Dallas, east end of north curb on Washington Street.....	44 55 11.8	123 18 30.0	3,777
Dallas, Polk County courthouse; flagpole.....	44 55 17.5	123 18 54.2	1,885

Magnetic declination, 22° 12' E.

**LEBANON QUADRANGLE.**

Near bridge 197.

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Center of track at road crossing.....	44 44 21.6	122 51 54.7	.....
Bridge 197, center of.....	44 44 43.3	122 51 23.8	3,130

**McCOY QUADRANGLE.**

Near Fairfield.

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Center of road at T road east.....	45 08 35.7	123 00 12.6	.....
Fairfield, 60 feet north of store; iron post stamped "Prim. Trav. No. 83 Ore. 1913".....	45 08 10.2	123 00.24.9	2,721

Magnetic declination, 22° 47' E.

**Along highways near southwest corner of quadrangle.**

T road north.....	45 02 35.3	123 14 18.3	.....
Center of bridge.....	45 02 35.4	123 13 33.3	3,230
McCoy, north side of road, edge of railroad right of way, 500 feet north of station; iron post stamped "Prim. Trav. No. 21—Ore. 1913".....	45 02 35.5	123 12 56.6	2,640
McCoy, church spire.....	45 02 31.2	123 13 00.7	523
Road crossing.....	45 02 36.7	123 12 22.3	2,814
T road west.....	45 01 49.6	123 12 23.1	4,773
Do.....	45 00 50.9	123 12 25.7	5,950

Magnetic declination, 21° 47' E.

**Along highway near south border of quadrangle.**

White tank house on top of hill, west edge of road.....	45 00 23.7	123 04 40.4	.....
Salem, 6 miles north of, at northwest corner of school yard; iron post stamped "Prim. Trav. No. 25, 1913. Ore.".....	45 01 11.9	123 05 08.2	5,264
Angle in road, opposite gate leading south to field.....	45 00 55.4	123 06 36.8	6,579
Oak tree, south edge of road at T road north; tree has two sign boards, "Oak Grove, 5 miles"; "McCoy, 4.3 miles," etc.....	45 00 55.4	123 07 37.7	4,375
T road east.....	45 00 32.6	123 07 44.3	2,358
McKinley's orchard, T road south.....	45 00 20.5	123 08 09.8	2,203
Salem, about 8 miles northwest of, 0.3 mile north of John Smith's residence at top of hill, south edge of road; iron post stamped "Prim. Trav. No. 26, Ore. 1913".....	45 00 08.1	123 09 00.9	3,872
Large gate post at south edge of road, northeast corner of field, 60 feet west of small drain.....	45 00 04.6	123 09 47.4	3,362

Magnetic declination, 21° 55' E.

**SHERIDAN QUADRANGLE.**

Along east boarder of quadrangle near Perrydale.

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
T road east.....	45 00 15.8	123 16 46.2	.....
T road west.....	45 00 37.5	123 16 35.7	2,320
H. A. Lee's mail box.....	45 01 24.9	123 16 09.8	5,145
T road west.....	45 01 42.8	123 15 57.6	2,019
Perrydale, southeast intersection of crossroads; iron post stamped "Prim. Trav. No. 20, Ore. 1913".....	45 02 33.9	123 15 18.6	5,880
Perrydale, Methodist Church spire.....	45 02 36.8	123 15 26.9	605

Magnetic declination, 21° 47' E.

## MOUNT ANGEL QUADRANGLE.

From Chemawa along Southern Pacific Railroad to Aurora, thence north.

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Chemawa, mail crane.....	45 00 07.7	122 59 30.1	.....
Tank, Chemawa, U. S. C. & G. S. station.....	45 00 11.4	122 59 37.0	618
Road crossing.....	45 01 13.5	122 58 59.2	6,836
Do.....	45 01 43.3	122 58 37.3	3,407
Do.....	45 02 07.7	122 58 16.3	2,900
Brooks, 215 feet north of station, 11 feet east of track; iron post stamped "Prim. Trav. No. 35, Ore. 1913-183-13-1903".....	45 02 55.9	122 57 34.6	5,732
Road crossing, 727 E-F.....	45 03 28.6	122 57 06.8	3,863
Road crossing, 728 C-D.....	45 04 24.8	122 56 18.3	6,680
Road crossing at end of tangent.....	45 04 52.6	122 55 54.3	3,305
Milepost 731, second post north of, iron post stamped "Prim. Trav. No. 47—Ore. 1913—182 B 1903".....	45 05 53.6	122 54 39.6	8,176
Gervais, center of track opposite semaphore.....	45 06 33.1	122 53 51.1	5,306
Milepost 733, first post south of; iron post stamped "Prim. Trav. No. 48 1913, Ore. 1903-B".....	45 07 08.4	122 53 06.8	4,779
Road crossing.....	45 08 07.4	122 51 54.1	7,922
Switch head.....	45 08 22.5	122 51 35.5	2,020
Woodburn, 210 feet south of station; iron post stamped "Prim. Trav. No. 49 Ore. 1913-181 B 1903".....	45 08 34.4	122 51 20.0	1,636
Hofer station, switch head.....	45 09 14.0	122 50 31.6	5,302
Culvert, 737 A.....	45 09 50.6	122 49 46.1	4,934
Road crossing, 738 B-C.....	45 10 47.0	122 48 36.0	7,596
Hubbard, 240 feet north of station; iron post stamped "Prim. Trav. No. 56—Ore. 1913, 183-B-1903".....	45 10 58.8	122 48 21.2	1,598
Switch head.....	45 11 12.6	122 48 04.1	1,862
Road crossing.....	45 12 06.6	122 46 57.0	7,270
Switch head.....	45 12 28.8	122 46 29.3	2,999
Hubbard, 3.2 miles northeast of, 15 feet east of track; iron post stamped "Prim. Trav. 57 Ore. 1913".....	45 13 06.0	122 45 56.7	4,424
Track, opposite semaphore No. 7424.....	45 13 29.7	122 45 40.9	2,657
Aurora, water tank.....	45 13 48.2	122 45 16.8	2,537
Aurora, State Bank, in sidewalk near northwest corner; bronze tablet stamped "Prim. Trav. No. 58—Ore. 1913".....	45 13 58.4	122 45 18.2	1,033
Aurora, schoolhouse flagpole.....	45 14 15.6	122 45 30.4	1,950
T road west.....	45 14 31.1	122 45 37.4	1,648

Magnetic declination, 22° 32' E.

From Chemawa east along highways, thence north to Gervais.

Chemawa, 0.8 mile east of, northeast corner road crossing; iron post stamped "Prim. Trav. No. 44—Ore. 1913".....	45 00 18.4	122 58 31.2	.....
Seven mail boxes at T road, north.....	45 00 19.1	122 56 51.4	7,170
T road, north.....	45 00 36.9	122 55 55.1	4,430
Hazel Green schoolhouse, 200 feet east of, north edge of road; iron post stamped "Prim. Trav. No. 45 Ore. 1913".....	45 00 39.9	122 55 33.6	1,574
T road, south.....	45 00 36.8	122 54 19.0	5,372
Second-class cross roads.....	45 00 41.8	122 53 46.9	2,364
T road, south.....	45 00 38.1	122 52 59.2	3,448
Silverton, 4 miles west of, at southwest corner of crossroads, near church; iron post stamped "Prim. Trav. No. 46, Ore. 1913".....	45 00 34.3	122 52 37.1	1,637
Second-class road west to white house.....	45 01 20.3	122 52 29.1	4,700
Signboard at road crossing, "Salem 12 miles, Mount Angel 4 miles, Selah Springs 4 miles".....	45 01 54.2	122 52 22.6	3,463
Schoolhouse, 200 feet northeast of, north edge of road at T road south; iron post stamped "Prim. Trav. No. 54—Ore. 1913".....	45 02 47.6	122 52 01.9	5,610
T road.....	45 03 03.7	122 51 57.3	1,663
Second-class road east, at top of short grade.....	45 04 05.2	122 51 14.5	6,939
West end of bridge, 500 feet east of old sawmill.....	45 04 17.0	122 51 24.1	1,382
Schoolhouse, 200 feet east of, north edge of road at T road north; iron post stamped "Prim. Trav. 55—Ore. 1913".....	45 04 29.3	122 51 56.9	2,659
Center of road in front of double iron gate.....	45 04 51.0	122 52 59.6	5,010
Crossroads.....	45 04 50.1	122 53 18.3	1,341
Crossroads, Pacific highway, near large fir tree.....	45 05 39.7	122 54 14.8	6,451

Magnetic declination, 22° 30' E.



## MOUNT ANGEL QUADRANGLE—Continued.

From point near St. Paul south along highway to Gervais.

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	<i>Fect.</i>
T road north.....	45 14 43.1	122 56 26.5	.....
Y road east.....	45 14 07.2	122 57 40.2	6,399
T road west.....	45 12 55.8	122 58 23.0	7,856
St. Paul, northeast corner of curb, in front of bank; bronze tablet stamped "Prim. Trav. No. 82—Ore. 1913".....	45 12 41.8	122 58 33.5	1,598
St. Paul Church, cross on.....	45 12 43.8	122 58 38.6	423
Center of culvert near T road, east.....	45 11 52.7	122 59 00.0	5,397
Oak tree, west edge of road at T road, east.....	45 11 11.4	122 59 08.8	4,225
Oak tree, center of road.....	45 10 01.4	122 59 37.3	7,372
Second-class T road west, at slight angle in road.....	45 09 22.0	122 59 57.0	4,233
Mail box at small grove of fir trees.....	45 07 40.8	122 59 37.9	.....
T road west.....	45 06 57.8	122 58 11.9	7,543
T road east.....	45 07 25.8	122 57 52.6	3,162
St. Louis, white church spire, U. S. Coast and Geodetic Survey triangulation station.....	45 07 25.83	122 56 31.26	5,836
St. Louis Church, 100 feet east of iron post stamped "Prim. Trav. No. 84, Ore. 1913".....	45 07 25.4	122 56 30.0	106
St. Louis Oregon Electric R. R. crossing at station.....	45 07 17.9	122 55 49.8	2,971
T road south.....	45 07 13.5	122 55 02.4	3,414
Gervais, center of track opposite semaphor.....	45 06 33.1	122 53 51.1	6,549

Magnetic declination, 22° 36' E.

## Near Champoeeg.

Center of road, T road south.....	45 14 48.6	122 52 32.4	.....
Champoeeg farm windmill.....	45 14 45.4	122 53 07.6	2,535
Old Champoeeg store, at T road east; iron post stamped "Prim. Trav. No. 61 Ore. 1913".....	45 14 57.4	122 53 43.7	3,183

Magnetic declination, 22° 50' E.

## From Woodburn to Silverton via Southern Pacific Railroad.

Woodburn, 210 feet south of station; iron post stamped "Prim. Trav. No. 49—Ore. 1913, 181 B 1903".....	45 08 34.4	122 51 20.0	.....
Woodburn, large steel water tank.....	45 08 29.1	122 51 22.5	562
Road crossing.....	45 08 10.8	122 50 39.6	3,587
Second-class road crossing, end of tangent.....	45 07 57.9	122 50 06.9	2,087
North end of bridge 735 E.....	45 07 37.2	122 49 16.5	4,179
Townsend, 20 feet west of track at station signboard; iron post stamped "Prim. Trav. No. 50, Ore. 1913".....	45 07 15.5	122 48 43.0	3,253
Road crossing.....	45 06 16.7	122 48 28.6	6,040
McKee, road crossing, 70 feet south of station.....	45 06 02.8	122 48 25.2	1,436
Switch head.....	45 05 07.7	122 48 12.1	5,655
Mount Angel, 900 feet north of station, west edge of right of way, at road crossing; iron post stamped "Prim. Trav. No. 51, Ore. 1913".....	45 04 18.5	122 48 00.6	5,047
Mount Angel Church, cross on.....	45 04 04.6	122 47 37.2	2,190
Road crossing, 730 A-B.....	45 02 57.0	122 47 40.6	6,844
Road crossing.....	45 02 33.7	122 47 34.9	2,400
Downs, in north pier of railroad bridge; bronze tablet stamped "Prim. Trav. No. 52, Ore. 1913".....	45 01 56.1	122 47 25.8	3,860
Road crossing.....	45 01 20.6	122 47 17.3	3,649
Switch head, south end.....	45 00 49.4	122 47 09.8	3,200
Silverton, center of track opposite semaphore.....	45 00 36.0	122 47 09.6	1,365
Road crossing, 726 D-E.....	45 00 16.1	122 47 58.9	4,078

Magnetic declination, 22° 30' E.

## TUALATIN QUADRANGLE.

## Along highway near south border of quadrangle.

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Aurora, 2 miles north of, northwest intersection of crossroads; iron post stamped "Prim. Trav. No. 11 Ore. 1913, 190".....	45 15 36.5	122 45 48.9	.....
Center of road at crossroads.....	45 15 36.5	122 46 43.8	3,937
Geo. Gooding's farmhouse, end cement walk.....	45 15 36.4	122 47 30.0	3,300
Butteville, Oregon Electric Ry. station, 100 feet south of, east edge of right of way, south side of road; iron post stamped "Prim. Trav. No. 59, 1913".....	45 15 36.4	122 48 12.5	3,043
Center of road at crossroads.....	45 15 36.8	122 49 45.8	6,668
Butteville, northeast intersection of street, 15 feet southwest of Masonic Hall; iron post stamped "Prim. Trav. No. 60, Ore. 1913".....	45 15 46.1	122 50 30.5	3,335
Hite & Owens mail box at T road west.....	45 15 23.0	122 50 29.2	2,338
G. W. Stephens mail box.....	45 15 01.7	122 51 34.8	5,167
Telephone pole, at east corner of school yard at Y road south (telephone pole is also t. b. m.).....	45 15 03.4	122 54 03.2	.....
Culvert at angle in road.....	45 15 20.5	122 55 13.8	5,344
T road south.....	45 15 29.9	122 56 29.5	5,478
Newberg, 4 miles south of, Champoege 2.5 miles west of, at T road north to Kearns Ferry; iron post stamped "Prim. Trav. No. 62, Ore. 1913".....	45 15 29.9	122 56 44.6	1,080

Magnetic declination, 22° 50' E.

## Along highway near Newberg.

T road west.....	45 15 57.8	122 56 50.3	.....
Kearns Ferry, stump south edge road, 150 feet south of landing.....	45 16 09.2	122 57 05.8	1,603
Angle in road, northwest at top of hill.....	45 16 28.2	122 56 56.8	2,028
Y road on bridge.....	45 17 06.1	122 57 23.1	4,268
Newberg, intersection of Washington and Seventh streets.....	45 17 43.4	122 57 45.7	4,117
Newberg, intersection of River and First streets.....	45 18 03.2	122 58 04.4	2,401
Newberg, north entrance to city hall; bronze tablet stamped "Prim. Trav. No. 64, Ore. 1913".....	45 18 03.0	122 58 28.6	1,729
Newberg, 150 feet east of station, west edge of sidewalk on Main street; iron post stamped "Prim. Trav. 63, Ore. 1913".....	45 18 12.2	122 58 42.5	1,368

Magnetic declination, 22° 50' E.

## From Newberg via Southern Pacific Railroad to Tualatin.

Road crossing.....	45 18 26.4	122 58 11.3	.....
Road crossing, 24 F-G.....	45 18 56.9	122 57 04.0	5,710
Springbrook, in east foundation of railroad water tank; aluminum tablet stamped "Prim. Trav. 65 Ore. 1913".....	45 19 06.4	122 56 43.3	1,759
Webb, center of track, opposite switch.....	45 19 27.4	122 55 39.8	5,013
West end bridge 22 F.....	45 19 13.7	122 55 18.8	2,038
Rex, northwest corner school yard; iron post stamped "Prim. Trav. No. 66, Ore. 1913".....	45 19 01.2	122 54 29.2	3,766
Washington-Yamhill county line post.....	45 19 05.0	122 54 17.1	946
Cheahlem depot, center track.....	45 19 39.2	122 53 19.1	5,396
Road crossing.....	45 20 18.6	122 52 27.0	5,448
Middleton, center of track, opposite station.....	45 20 41.0	122 51 49.2	3,523
Road crossing.....	45 21 01.1	122 51 06.9	3,646
Sherwood, 115 feet west of station at southwest corner of Carlson & Sherks general merchandise store; iron post stamped "Prim. Trav. No. 67, Ore. 1913".....	45 21 22.0	122 50 27.7	3,507
Ford, opposite signboard.....	45 22 09.1	122 49 13.2	7,147
Cipole, road crossing.....	45 22 31.1	122 48 39.3	3,289
Herrman, north edge of right of way at fence corner; iron post stamped "Prim. Trav. No. 68, Ore. 1913".....	45 22 54.7	122 47 40.2	4,850
Galbraith, "One Mile" post, end tangent.....	45 23 13.9	122 46 34.2	5,093
Tualatin, opposite east window.....	45 23 16.1	122 45 53.6	2,903
Tualatin River bridge, east pier.....	45 23 16.4	122 45 40.3	950
Galbraith, road crossing.....	45 23 16.9	122 45 22.1	1,300

Magnetic declination, 22° 50' E.

## TUALATIN QUADRANGLE—Continued.

## Along Southern Pacific Railroad near east border of quadrangle.

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Road crossing.....	45 24 22.6	122 44 48.6	.....
Bonita, center of Southern Pacific R. R. track at road crossing.....	45 24 50.6	122 45 04.5	3,634
Trece, center of Southern Pacific R. R. track at road crossing.....	45 25 40.7	122 45 55.0	5,725
Tigard, center of Southern Pacific R. R. track at road crossing.....	45 25 53.0	122 46 11.5	1,715
Tigard, 0.5 mile northwest of; Oregon Electric Ry. and Southern Pacific R. R. crossing.....	45 26 15.8	122 46 47.0	3,430
Robinson, east edge of right of way, north edge of road, 150 feet north of station; iron post stamped "Prim. Trav. No. 69 Ore. 1913".....	45 26 59.6	122 47 09.3	4,710
Road crossing.....	45 28 11.6	122 47 09.5	7,298
Switch head at junction of roads.....	45 29 14.6	122 48 04.6	7,491
Beaverton, 300 feet west of station, west edge of road crossing, 20 feet north of track; iron post stamped "Prim. Trav. No. 70, Ore. 1913".....	45 29 16.4	122 48 19.2	1,061

Magnetic declination, 22° 40' E.

## Along Southern Pacific Railroad near north border of quadrangle.

Road crossing.....	45 29 22.3	122 49 18.0	.....
St. Mary's, center of track.....	45 29 24.6	122 49 40.1	1,585
Huber, road crossing.....	45 29 33.4	122 51 04.1	6,050
Aloha, south edge right of way, west edge of road; iron post stamped "Prim. Trav. No. 71, Ore. 1913".....	45 29 38.9	122 51 59.6	3,991
Road crossing.....	45 29 44.5	122 52 49.5	3,600
Reedville, east of; road crossing, 15 B.....	45 29 48.4	122 53 27.8	2,755
Road crossing.....	45 29 51.7	122 53 59.2	2,261
Do.....	45 29 58.0	122 55 00.0	4,380
Witch Hazel, 150 feet east of station, north edge of right of way; iron post stamped "Prim. Trav. No. 72, Ore. 1913".....	45 30 00.3	122 55 19.2	1,390

## Along highways near west border of quadrangle.

South end of trestle.....	45 29 52.6	122 59 29.0	.....
Hillsboro, 2.5 miles south of, at T road north; iron post stamped "Prim. Trav. 74, Ore. 1913".....	45 28 50.9	122 59 25.1	6,254
Crossroads.....	45 27 56.1	122 59 30.9	5,559
T road west.....	45 26 49.9	122 59 14.6	6,809
Laurel, 2 miles north of, north edge of Y road; iron post stamped "Prim. Trav. No. 75, Ore. 1913".....	45 26 38.3	122 59 00.6	1,540
Tps. 1 and 2 S., Rs. 2 and 3 W., center of road, corner townships, near A. L. Grebs residence.....	45 26 01.5	122 59 26.0	4,144
Laurel, 25 feet north and 25 feet east of, corner secs. 6, 7, 1 and 12, T. 2 S., Rs. 1 and 2 W.; iron post stamped "Prim. Trav. No. 76, Ore. 1913".....	45 25 09.9	122 59 25.8	5,230
T. 2 S., R. 2 W., corner secs. 5, 6, 7, and 8, T road south.....	45 25 09.4	122 58 11.5	5,300
T. 2 S., R. 2 W., quarter corner, north side sec. 8, T road.....	45 25 09.0	122 57 34.8	2,625
Center sec. 8, iron pin.....	45 24 43.1	122 57 34.6	2,631
Telephone pole at angle in road.....	45 24 42.2	122 56 57.4	2,651
Scholl's store, 60 feet south of, east edge of road at T road; iron post stamped "Prim. Trav. 77, Ore. 1913".....	45 24 00.5	122 55 46.3	6,599
Crossroads.....	45 23 36.6	122 56 31.8	4,055
T road west.....	45 23 11.5	122 56 56.3	3,082
Do.....	45 22 26.0	122 57 15.6	4,820
T. 2 S., R. 2 W., stone quarter corner south side sec. 29 (corner is north end of clearing, 40 feet east of road at top of steep grade).....	45 21 40.8	122 57 34.0	4,758
Newberg, 3 miles north of, top of hill at T road north, iron post stamped "Prim. Trav. No. 81, Ore. 1913".....	45 20 59.4	122 58 11.1	4,968
M. M. Down's mail box at T road south.....	45 20 49.7	122 57 43.7	2,213
Large fir tree at center of road.....	45 20 31.0	122 57 59.9	2,240
T road south.....	45 19 50.8	122 58 21.4	4,357
T road east.....	45 18 51.5	122 58 21.4	6,000

Magnetic declination, 22° 40' E.

## TUALATIN QUADRANGLE—Continued.

## From Scholls east along highways to Robinson.

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
T road east at store.....	45 24 31.6	122 55 17.6	.....
Tualatin River bridge, center.....	45 24 56.4	122 55 12.7	2,536
Fred Groner's mail box at T road south.....	45 25 25.4	122 54 59.7	3,079
Scholls, 2.5 miles northeast of, at T road north; iron post stamped "Prim. Trav. No. 78, Ore. 1913".....	45 25 15.2	122 54 22.0	2,881
T road north.....	45 25 09.4	122 53 15.7	4,765
T road south.....	45 25 26.1	122 52 38.1	3,168
Center of crossroads on north and south township line.....	45 25 35.2	122 52 00.6	2,824
Robinson, 3.5 miles west of, at angle in road, northeast-east side of road; iron post stamped "Prim. Trav. No. 79, Ore. 1913".....	45 25 35.1	122 50 50.3	5,016
Large fir tree at T road north.....	45 26 03.2	122 50 08.5	4,123
Second-class road north on apparent section line, between secs. 32 and 33.....	45 26 19.9	122 49 31.1	3,158
T road south on quarter-section line, in center of sec. 33.....	45 26 31.2	122 48 54.5	2,850
Olson's and G. F. West's mail boxes, on line between secs. 33 and 34.....	45 26 39.1	122 48 17.4	2,762

## From Butteville north along highway to Sherwood.

T road east.....	45 15 57.9	122 50 53.4	.....
T. 3 S., R. 1 W., stone quarter corner, between secs. 29 and 32, center of road.....	45 16 28.8	122 51 21.3	3,710
Butteville, 2 miles north of, west edge of road, top of hill; iron post stamped "Prim. Trav. No. 85, Ore. 1913".....	45 17 14.4	122 51 14.2	4,648
T road south.....	45 17 38.2	122 51 12.8	2,418
Center of bridge near angle in road, north.....	45 18 13.5	122 50 27.2	4,830
Crossroads, northwest intersection of; iron post stamped "Prim. Trav. No. 87, Ore. 1913" (county line and corner section stone, common to secs. 7, 8, 17, and 18, T. 3 S., R. 1 W., is 15 feet south of and 55 feet east).....	45 19 04.4	122 50 45.4	5,318
T. 3 S., R. 1 W., stone, corner secs. 5, 6, 7, and 8.....	45 19 56.1	122 50 44.6	5,246
T road east.....	45 20 15.0	122 50 33.6	2,068
Crossroads.....	45 21 01.3	122 50 26.2	4,719

Magnetic declination, 22° 53' E.

## HILLSBORO QUADRANGLE.

[See also p. 520.]

## Near Hillsboro.

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Witch Hazel, 150 feet east of station, north edge of right of way, south edge of road; iron post stamped "Prim. Trav. No. 72, Ore. 1913".....	45 30 00.3	122 55 19.2	.....
West end of bridge, near west end of tangent.....	45 30 09.5	122 56 50.6	6,570
Newton, center of track.....	45 30 22.9	122 57 30.2	3,132
Road crossing.....	45 30 37.6	122 58 05.6	2,929
Hillsboro, 400 feet west of station, south edge of right of way, northeast corner of Pacific Coast Condensed Milk Co. tank; iron post stamped "Prim. Trav. No. 73, Ore. 1913".....	45 30 59.2	122 59 21.2	5,811
South end of highway trestle.....	45 30 14.4	122 59 24.8	4,537

## Along highways near southeast corner of quadrangle.

Crossroads.....	45 30 07.1	122 48 18.3	.....
Gate to field at angle in road north.....	45 30 21.5	122 47 46.0	2,719
Center of road at northwest apex of triangle.....	45 30 56.6	122 47 40.6	3,577
Base line, stake at angle in road, northwest.....	45 31 12.6	122 47 58.9	2,078
Cedar mill, north edge of road at T road, 1 foot east of small gate leading to house; iron post stamped "Prim. Trav. No. 80, Ore. 1913".....	45 31 31.9	122 48 27.7	2,841
Center of bridge.....	45 31 38.2	122 47 52.8	2,567
Multnomah-Washington county line, post.....	45 31 48.5	122 45 49.0	8,873
S. J. Osborn's mail box, at top of hill.....	45 31 57.6	122 45 13.6	2,680
Barnes, U. S. Coast and Geodetic Survey triangulation station.....	45 31 36.53	122 45 00.03	2,337

## SALEM QUADRANGLE.

[See also pp. 505-508.]

## From Salem southeast via Southern Pacific Railroad.

Station..	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Salem, dome State capitol.....	44 56 19.5	123 01 43.5	.....
Salem, road crossing 717 I.....	44 55 38.1	123 01 37.5	4,210
Salem, road crossing 717 A.....	44 55 02.1	123 01 33.5	3,658
Salem, second-class road crossing, near Home for Feeble-Minded..	44 54 21.6	123 00 46.2	5,334
Turner, 4.8 miles north of, 6 feet south of railroad crossing, 17 feet east of rail; iron post stamped "Prim. Trav. No. 28-Ore. 1913-207-1903".....	44 54 02.1	123 00 14.8	3,011

Magnetic declination, 22° 30' E.

## From Salem east along highway.

Salem, intersection of State and Twenty-first streets, south center of track.....	44 56 04.8	123 00 55.3	.....
Salem, center of bridge.....	44 55 45.1	123 00 05.6	4,090
Salem, tall steel tank near State prison.....	44 56 21.2	123 00 03.6	3,657

Magnetic declination, 22° 30' E.

## From Salem via Southern Pacific Railroad to Chemawa.

Salem, center of track, intersection of Twelfth and Marion streets..	44 56 30.4	123 01 26.6	.....
Salem, tile works, center of track, opposite signboard.....	44 57 23.4	123 00 55.8	5,807
Road crossing.....	44 57 40.9	123 00 45.7	1,920
Milepost 721, near east side of track; iron post stamped "Prim. Trav. No. 34, Ore., 1913-162 B 1903".....	44 58 14.1	123 00 26.2	3,638

## Along highways near northwest corner of quadrangle.

Railroad crossing.....	44 59 58.6	123 12 29.9	.....
Schoolhouse flagpole.....	44 59 24.5	123 12 54.1	3,874
Crowley station, 0.5 mile west of, at T road east, iron post stamped "Prim. Trav. No. 22, Ore., 1913".....	44 58 39.8	123 13 06.4	4,611
T road east.....	44 58 09.2	123 13 14.9	3,159
Angle in road west.....	44 57 16.0	123 13 24.4	5,430
T road east.....	44 57 15.2	123 13 39.4	1,080
Second-class road east.....	44 56 16.0	123 13 39.2	6,000
Rickreall, east edge of road, and T road west; iron post stamped "Prim. Trav. 23, Ore., 1913".....	44 55 49.2	123 13 38.8	2,704

Magnetic declination, 21° 51' E.

## Along highways north from Monmouth via Rickreall.

Monmouth Normal School, south side of step at east entrance; bronze tablet stamped "Prim. Trav. A 1913, Ore.".....	44 51 05.0	123 14 12.4	.....
Railroad crossing.....	44 51 56.1	123 14 14.8	5,181
Angle in road east.....	44 52 35.9	123 14 16.3	4,029
Angle in road north.....	44 53 07.2	123 14 11.2	3,186
Monmouth, 3.5 miles north of, at crossroads; iron post stamped "Prim. Trav. No. 3, Ore., 1913".....	44 53 52.4	123 14 03.4	4,616
T road south.....	44 54 39.3	123 14 02.8	4,749
Rickreall station, railroad crossing.....	44 55 07.3	123 13 39.3	3,303
Rickreall, telephone pole 60 feet west of F. H. Begun's store.....	44 55 40.8	123 13 39.8	4,001
Derry, railroad crossing.....	44 55 46.4	123 12 46.2	3,851
T road south.....	44 55 47.9	123 11 46.9	4,269
Signboard at crossroads, "Independence 6 miles, Bethel 8 miles".....	44 55 47.6	123 10 36.8	5,046
Large gate at angle in road north.....	44 55 53.4	123 09 54.1	3,126

Magnetic declination, 21° 57' E.

## SALEM QUADRANGLE—Continued.

From Salem along highway on west side of river.

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
T road west.....	44 57 13.5	123 03 06.0	.....
T road east.....	44 58 06.4	123 03 32.7	5,691
North side of road at west, one of two patent gates leading to pear orchard; iron post stamped "No. 24, Ore. 1913".....	44 58 33.5	123 04 08.5	3,762
T road west.....	44 59 03.6	123 04 34.5	3,574
Wm. Calder's residence, large oak tree in front of.....	44 59 32.2	123 04 38.4	2,910

## Along highway near Oak Grove Church.

Oak Grove Church, 1 mile north of, 60 feet east of gate leading to farmhouse, in north abutment of culvert; bronze tablet stamped "Prim. Travs. No. 27, Ore. 1913".....	44 59 15.3	123 10 16.5	.....
Oak Grove, T road west, 600 feet north of church.....	44 58 30.1	123 10 16.5	4,572
Oak Grove, church spire.....	44 58 23.7	123 10 18.3	664
Summit of hill, center of second-class road.....	44 58 33.0	123 11 38.5	5,836
Iron pin, at angle in road, near old hop drier.....	44 58 32.8	123 12 13.8	2,540
Crowley station, railroad crossing.....	44 58 39.9	123 12 26.6	1,157

Magnetic declination 21° 55' E.

## Hillsboro and St. Helens quadrangles.

## COLUMBIA, MULTNOMAH, AND WASHINGTON COUNTIES.

The geographic positions in the following lists were determined by L. F. Biggs in 1914 and are based on the North American datum positions of the United States Coast and Geodetic Survey station Linnton and are also tied to primary traverse stations at Hillsboro and Cedar Mill, described below and on page 520. The State cooperated in the work.

## HILLSBORO QUADRANGLE.

From Hillsboro north via highways near west edge of quadrangle.

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Township corner, Willamette base line and Rs. 2 and 3 W.....	45 31 14.0	122 59 24.6	1,515
Hillsboro, intersection of First and Main streets (small manhole).....	45 31 23.8	122 59 20.3	1,046
Hillsboro, near northeast corner of high-school yard, U. S. Coast and Geodetic Survey azimuth pier.....	45 31 43.8	122 59 01.4	2,425
Hillsboro, 0.7 mile northeast of; oak tree at T road east.....	45 32 14.0	122 58 43.5	3,314
Hillsboro, 1.5 miles northeast of; oak tree at T road north.....	45 33 02.4	122 58 21.7	5,145
Hillsboro, 2.5 miles northeast of; picket gate, leading to house at north end of tangent.....	45 33 55.1	122 58 18.5	5,340
Hillsboro, 3 miles northeast of; west edge of road at T road east; iron bench-mark post stamped "Prim. Trav. No. 1, 1914, Ore.".....	45 34 22.0	122 58 10.6	2,846
Angle in road north.....	45 34 56.8	122 57 54.3	3,708
North Plains, center of crossroads, 1 mile east of.....	45 35 44.2	122 58 05.6	4,872
North Plains, at crossroads at northeast corner of town; iron bench-mark post stamped "Prim. Trav. No. 2, 1914, Ore. B.".....	45 36 02.2	122 59 28.3	6,158
Center of road at range line crossing.....	45 35 57.2	122 59 24.0	592
Geo. Bantz's mail box (No. 65).....	45 36 51.9	122 58 49.7	6,057
McKay Creek, center of bridge near angle in road north.....	45 37 32.6	122 58 27.8	4,415
North Plains, 2.6 miles north of; Shady Brook schoolhouse, 300 feet north of; west edge of road at T road east; iron bench mark post stamped "Prim. Trav. No. 3, 1914, Ore. B.".....	45 37 56.3	122 58 10.1	2,711
T. 2 N., R. 2 W., quarter corner south side sec. 19 (witness tree south edge of road).....	45 38 11.2	122 58 46.4	2,989
Y road at south end of new grade.....	45 38 37.5	122 59 04.6	2,970
Center of bridge.....	45 39 16.4	122 58 34.7	4,478
Fir tree, west edge of road, blazed with triangle.....	45 39 18.8	122 58 12.0	1,624
Water wheel, second-class roads at.....	45 39 51.6	122 58 14.3	3,335
T. 2 N., R. 2 W., in NW $\frac{1}{4}$ sec. 8, 75 feet south of road leading to John Zimmerman's ranch house, east edge of road; iron bench-mark post stamped "Prim. Trav. No. 18, 1914, Ore. B.".....	45 40 27.0	122 57 52.7	3,897

**HILLSBORO QUADRANGLE—Continued.****From Hillsboro north via highways near west end of quadrangle—Continued.**

Station.	Latitude.	Longitude.	Distance between stations.
North end of lane on $\frac{1}{4}$ section line near John Zimmerman's residence.....	° ' " 45 40 42.6	° ' " 122 57 50.1	<i>Fect.</i> 1,590
T. 2 N., R. 2 W., $\frac{1}{4}$ corner on line between secs. 5 and 6, 0.25 mile south of township line near road forks.....	45 41 24.7	122 58 09.0	4,469
Wallace schoolhouse, 50 feet south of, on township line, 670 feet east of corner section north side of secs. 5 and 6, T. 2 N., R. 2 W., west side of road at T road east; iron bench-mark post stamped "Prim. Trav. No. 19, 1914, Ore. B".....	45 41 37.5	122 57 59.6	1,461
Milepost No. 1, north edge of road at small ravine.....	45 42 17.5	122 58 02.1	4,062
Road forks, 20 feet west of; small fir tree blazed triangle.....	45 42 50.9	122 58 09.0	3,418
Summit of hill, north edge of road; fir tree blazed triangle.....	45 43 26.7	122 58 45.3	4,448
Hub tie.....	45 43 40.1	122 59 09.8	2,211
Top of hill at junction of roads to Pumpkin Ridge and North Plains; iron bench-mark post stamped "Prim. Trav. No. 20, 1914, Ore. B".....	45 43 51.3	122 59 31.8	1,929
Y road, down hill.....	45 44 22.4	122 58 43.8	4,634
Road forks.....	45 44 13.9	122 57 49.3	3,957
Nine-foot fir tree, south edge of road, about 500 feet east of road junction, leading up hill; blazed triangle.....	45 44 42.0	122 57 23.4	3,388

Magnetic declination along west border, 23° 40' E.

**Along north border of quadrangle.**

Scappoose, 1 mile south of, east side of road at Smiths Corners; iron bench-mark post stamped "Prim. Trav. No. 12, 1914, Ore. B".....	45 44 25.1	122 52 42.5	.....
Y road west.....	45 44 35.8	122 54 09.9	6,286
Canyon schoolhouse at southeast corner of yard, north edge of road; iron bench-mark post stamped "Prim. Trav. No. 14, Ore. B".....	45 44 58.1	122 55 44.9	7,108

Magnetic declination along north border, 23° 30' E.

**From Cornelius Pass to Shady Brook schoolhouse.**

Rail gate, west side of road, 500 feet north of house.....	45 37 00.4	122 52 16.9	.....
Center road, opposite large gate, east edge of road, about 500 feet south of schoolhouse.....	45 37 23.6	122 52 42.5	2,971
Angle in road at northwest corner of young orchard.....	45 37 52.4	122 52 55.2	3,053
Center road opposite southwest corner of picket fence 200 feet south of house.....	45 38 36.1	122 53 04.6	4,483
Triangle at T road.....	45 38 50.9	122 53 29.8	2,338
T. 2 N., R. 2 W., in NW $\frac{1}{4}$ of sec. 14, at second-class road to A. Danielson's ranch house, north edge of road; iron bench-mark post stamped "Prim. Trav. No. 16, 1914, Ore. B".....	45 39 28.5	122 54 05.9	4,590
Second-class Y road.....	45 39 15.7	122 54 58.9	3,978
Mason Hill schoolhouse, 350 feet northeast of south edge of road; bench-mark post stamped "Prim. Trav. No. 17, 1914, Ore. B".....	45 38 38.0	122 55 28.9	4,373
T road west at fence corner.....	45 38 20.3	122 56 41.5	5,455

Magnetic declination in hills in center of quadrangle, 22° 51' E.

**From Linnton to Scappoose along granite highway.**

Warning bell at railroad crossing.....	45 36 39.7	122 47 42.8	.....
Ban station, center of highway opposite.....	45 37 42.1	122 49 10.9	8,898
West end metal culvert, near top of hill.....	45 38 19.7	122 49 55.1	4,035
Burlington, granite highway milepost No. 13.....	45 38 50.9	122 50 33.8	4,189
Holbrook, 150 feet west of south end of switch 70 feet east of center of highway; iron bench mark (post) stamped "Prim. Trav. No. 10, 1914, Ore. B".....	45 39 23.4	122 51 20.3	4,660
Granite highway milepost No. 15.....	45 40 06.6	122 52 02.5	5,309
Granite highway milepost No. 16.....	45 40 56.3	122 52 25.5	5,287
Rocky Point, 500 feet north of water tank, east side of road Y at road west; iron bench-mark post stamped "Prim. Trav. No. 11, Ore. 1914, B" 35-A.....	45 41 52.6	122 52 11.5	5,792
Granite highway milepost No. 18.....	45 42 37.0	122 52 24.1	4,579
Multnomah-Columbia county line, north edge sec. 25.....	45 43 18.2	122 52 28.3	4,183

Magnetic declination on east edge of hills, 22° 50' E.

## HILLSBORO QUADRANGLE—Continued.

From point near North Plains east and south via United Railways and highway to Cedar Mill.

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Lincoln, center of road crossing.....	45 36 05.1	122 58 01.7	.....
Connell, road crossing, 500 feet west of station.....	45 35 56.3	122 56 52.9	4,970
Helvetia, 110 feet north of railroad, 175 feet northwest of station, east edge of wagon road; iron bench-mark post stamped "Prim. Trav. No. 4, 1914, Ore. B".....	45 35 46.7	112 54 57.5	8,266
Bowers Junction, 1,500 feet southwest of, under track crossing.....	45 35 33.1	122 54 27.3	2,548
Road crossing.....	45 34 59.4	122 53 59.1	3,959
Do.....	45 33 33.9	122 53 53.9	8,674
Orengo, 1 mile north of; west edge of railroad right of way, south side of road at road crossing; iron bench-mark post stamped "Prim. Trav. No. 5, 1914, Ore. B".....	45 32 17.9	122 53 57.0	7,694
Milk rack at Y road east.....	45 32 04.7	122 52 57.6	4,434
T. 1 N., Rs. 1 and 2 W., stone corner secs. 30, 31, 25 and 36, center of crossroads.....	45 32 04.6	122 51 59.8	4,111
Cedar Mill, 2 miles west of; south edge of road opposite Congrega- tional Church; iron bench-mark post stamped "Prim. Trav. No. 6, 1914, Ore. B".....	45 31 58.0	122 50 32.0	6,285
T road north, second-class road south.....	45 31 51.9	122 49 24.6	4,841

Magnetic declination, 23° 05' E.

From point near Cedar Mill to Linnton.

T road north.....	45 32 35.2	122 49 39.8	.....
Triangle at Y roads.....	45 33 22.8	122 49 41.7	4,823
Cedar Mill, 3.5 miles northwest of, 100 feet east of church at north- west intersection of crossroads; iron bench-mark post stamped "Prim. Trav. No. 7, 1914, Ore. B".....	45 34 01.5	122 50 06.3	4,298
Washington-Multnomah county line post, north side of sec. 17.....	45 34 40.5	122 50 16.5	4,012
Germantown road at cross roads.....	45 34 53.7	122 50 23.2	1,417
Sharp angle in road at J. E. Sharp's residence.....	45 35 12.1	122 49 36.8	3,792
Water trough, north edge of road.....	45 35 07.4	122 48 41.8	3,949
Cross roads at top of hill; iron bench-mark post stamped "Prim. Trav. No. 8, 1914, Ore. B".....	45 35 00.6	122 47 55.0	3,398
Horseshoe bend, farthest point north.....	45 35 27.2	122 47 24.8	3,437
Water tank at junction of Linnton and Germantown roads at foot of hill.....	45 35 08.9	122 46 12.2	5,489
Linnton, 100 feet south of depot, east edge of railroad right of way; iron post stamped "Prim. Trav. No. 9, 1914, Ore. B".....	45 35 58.2	122 47 02.5	6,140
Linnton, U. S. Coast and Geodetic Survey triangulation station on side of hill, 1,200 feet northwest of depot.....	45 36 02.3	122 47 19.81	1,300

From Bowers Junction via United Railways and highways to Burlington.

Undertrack crossing.....	45 35 55.4	122 53 26.2	.....
West end of trestle U 17 O over Rock Creek.....	45 36 14.1	122 52 47.3	3,350
Cornelius Pass, summit of hill at Y road north, iron bench-mark post stamped "Prim. Trav. No. 15, 1914, Ore. B".....	45 36 34.4	122 51 44.0	4,952
West end of trestle U 15 7, 1,000 feet north of tunnel.....	45 36 58.9	122 51 31.5	2,633
Falkenburg station, center of track.....	45 37 49.7	122 51 38.9	5,176
West end of trestle, 13-8.....	45 38 48.3	122 51 11.5	6,256
Burlington, granite highway milepost 13.....	45 38 50.9	122 50 33.8	2,690

## ST. HELENS QUADRANGLE.

[See also p. 516.]

Station.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Scappoose, east side of track, south of depot; iron bench-mark post stamped "Prim. Trav. No. 12, 1914, Ore. B".....	45 45 28.9	122 52 35.5	.....