

DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY
GEORGE OTIS SMITH, DIRECTOR

BULLETIN 496

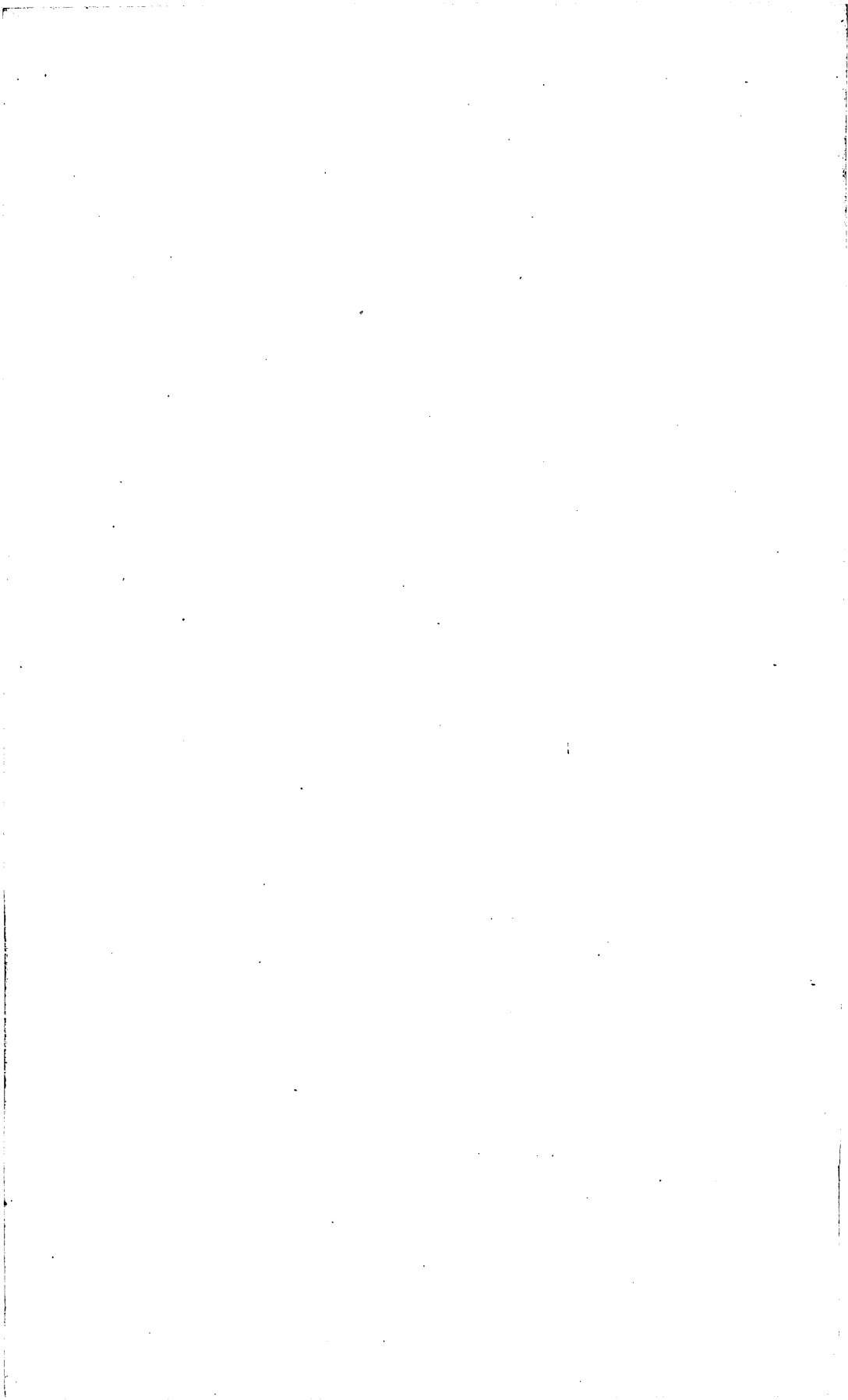
RESULTS OF TRIANGULATION AND PRIMARY TRAVERSE

FOR THE YEARS 1909 AND 1910

R. B. MARSHALL, CHIEF GEOGRAPHER



WASHINGTON
GOVERNMENT PRINTING OFFICE
1912



CONTENTS.

	Page.
Introduction.....	9
Personnel.....	9
Datum.....	9
Station marks.....	9
Summary.....	10
California.....	11
Triangulation stations.....	11
Biggs, Butte City, Butte Creek, Clear Creek, Dayton, French Crossing, Gilsizer Slough, Gridley, Grimes, Honcut, Keefers, Marysville Butte, Meridian, Nord, Ostrom, Palermo, Pennington, Sutter, Tis- dale Weir, and Yuba City 7½' quadrangles (Butte, Colusa, Glenn, Sutter, Tehama, and Yuba counties).....	11
Bonanza, Gonzales, Hollister, Salinas, and San Benito 15' quadran- gles; Paraiso Springs 30' quadrangle (Monterey County).....	29
California-Nevada.....	35
Triangulation stations.....	35
Ivanpah 1° quadrangle (Inyo and San Bernardino counties, Cal.; Clark County, Nev.).....	35
Colorado.....	39
Triangulation stations.....	39
Breckenridge special, Como, Georgetown, James Peak, Leadville, and Mount Powell quadrangles (Clear Creek and Summit counties)....	39
Hotchkiss and Montrose 30' quadrangles (Hinsdale, Montrose, and Ouray counties).....	41
Colorado-New Mexico.....	43
Triangulation stations.....	43
Cortez and Hesperus 30' quadrangles; Shiprock and Turley quadran- gles (La Plata and Montezuma counties, Colo.; San Juan County, N. Mex.).....	43
Delaware-Maryland.....	47
Primary traverse.....	47
Cedar Creek, Harrington, Pittsville, Rehoboth, Salisbury, Seaford, and Stockley quadrangles (Kent and Sussex counties, Del.; Caro- line, Chester, Dorchester, and Wicomico counties, Md.).....	47
District of Columbia-Maryland.....	52
Primary traverse.....	52
Washington quadrangle (Montgomery County, Md.).....	52

	Page.
Idaho-Wyoming.....	53
Triangulation stations.....	53
Soda Springs and Wayan quadrangles (Bannock, Bear Lake, and Bingham counties, Idaho; Uinta County, Wyo.).....	53
Illinois.....	57
Primary traverse.....	57
Mattoon, Moonshine, Newton, Rose Hill, Sailor Springs, Teutopolis, and Toledo quadrangles (Clark, Clay, Coles, Crawford, Cumberland, Effingham, Jasper, Moultrie, and Richland counties).....	57
Augusta, Avon, Canton, Carthage, Colchester, Galesburg, Glasford, Good Hope, Havana, Keokuk, La Harpe, Lomax, Macomb, Manilo, Maquon, Rushville, and Vermont quadrangles (Fulton, Hancock, McDonough, and Schuyler counties).....	63
Alexis, Davenport, Edgington, Keithsburg, Milan, and Orion quadrang- gles (Mercer and Rock Island counties).....	79
Campbellhill, Pinckneyville, and Sparta quadrangles (Jackson, Perry, Randolph, and Washington counties).....	84
Crystal City, Kimmswick, Renault, St. Louis, and Waterloo quadrang- gles (Monroe, Randolph, and St. Clair counties).....	86
Cornland, Kenney, Lincoln, McLean, Mason City, Minier, and Niantic quadrangles (Dewitt, Logan, McLean, Macon, Menard, Sangamon, and Tazewell counties).....	90
Illinois-Indiana.....	92
Primary traverse.....	92
Birds, Bridgeport, Hardinville, and Vincennes quadrangles (Lawrence County, Ill.; Knox County, Ind.).....	92
Iowa.....	95
Primary traverse.....	95
Des Moines, Madrid, Perry, and Slater quadrangles (Boone, Dallas, Madison, Polk, Story, and Warren counties).....	95
Keokuk quadrangle (Lee County).....	98
Kentucky.....	98
Triangulation stations.....	98
Crockettsville and Troublesome quadrangles (Breathitt, Knott, Leslie, and Perry counties).....	
Cranston, Ewing, Flemingsburg, and Stepstone quadrangles (Bath, Carter, Fleming, Lewis, Mason, Nicholas, and Rowan counties)....	98
Primary traverse.....	107
Berrys Lick, Glenmore, Falls of Rough, Horsebranch, Kirk, Leitch- field, Little Muddy, Russellville, and Salmon quadrangles (Butler, Grayson, Logan, Ohio, and Warren counties).....	107
Kentucky-Virginia-West Virginia.....	113
Triangulation stations.....	113
Bald Knob, Gilbert, Holden, Iaeger, Inez, Laynesville, Logan, Marshes, Matewan, Mullens, Pineville, Pocohontas special, War- field, Welch, and Williamson 15' quadrangles; Grundy, Hazard, Jonesville, and Whitesburg 30' quadrangles (Floyd, Harlan, John- son, Knott, Lawrence, Letcher, Leslie, Martin, Perry, and Pike counties, Ky.; Buchanan, Dickenson, and Tazewell counties, Va.; Boone, Fayette, Kanawha, McDowell, Mingo, Raleigh, and Wyo- ming counties, W. Va.).....	113

	Page.
Louisiana.....	129
Primary traverse.....	129
Ashtonbridge, Ashwood, Atherton, Baxter Bayou, Deltabridge, Delta Point, Dickard, Ferriday, Floyd, Frogmore, Glass, Gum Ridge, Kelloggs Landing, Lake Bruin, Lake Providence, Lamarque, Mable, Millikin, Millikens Bend, Mounds, Natchez, Newellton, Quebec, Stamboul, Sycamore Landing, Tallulah, Waddill, Waterproof, Wilsons Point, IX, X, and XVI 7½ quadrangles (Concordia, East Carroll, Madison, Tensas, and West Carroll parishes).....	129
Maine.....	153
Triangulation stations.....	153
Bryant Pond, Buckfield, Livermore, and Songo Pond quadrangles (Androscoggin, Franklin, Kennebec, and Oxford counties).....	153
Maryland.....	158
Triangulation stations.....	158
Hagerstown and Williamsport quadrangles (Washington County).....	158
Maryland-Pennsylvania.....	160
Primary traverse.....	160
Emmitsburg and Hagerstown quadrangles (Frederick and Washington counties, Md.; Franklin County, Pa.).....	160
Michigan.....	162
Primary traverse.....	162
Charlotte, Dewitt, Lansing, and Springport quadrangles (Clinton, Eaton, and Ingham counties).....	162
Minnesota.....	164
Triangulation stations.....	164
Ashby, Barrett, Chokio, Fergus Falls, Herman, Morris, Urness, Wendell, and Wheaton quadrangles (Douglas, Grant, Otter Tail, and Stevens counties).....	164
Primary traverse.....	192
Ashby, Axel, Barnesville, Battle Lake, Campbell, Dora, Fergus Falls, Henning, New York Mills, Pelican Rapids, Rothsay, Underwood, and Wendell quadrangles (Becker, Clay, Douglas, Grant, Otter Tail, Traverse, and Wilkin counties).....	192
Missouri.....	205
Primary traverse.....	205
Centerville, Edina, Green City, Kirksville, Moulton Queen City, Unionville, and Winigan quadrangles (Adair, Knox, Linn, Macon, Putnam, Schuyler, Scotland, and Sullivan counties).....	205
Aurora special quadrangle, Carthage and Greenfield 30' quadrangles, Elsey, Monett, and Ritchey 15' quadrangles (Jasper, Lawrence, and Newton counties).....	216
Montana.....	219
Triangulation stations.....	219
Brockton, Milk River, Poplar, and Wolf Point quadrangles (Valley County).....	219
New York.....	229
Primary traverse.....	229
Carthage, Lowville, and Number Four quadrangles (Herkimer and Lewis counties).....	229
North Carolina.....	232
Primary traverse.....	232
Lincolnton and Shelby quadrangles (Cleveland, Gaston, and Lincoln counties).....	232

	Page.
Ohio.....	234
Primary traverse.....	234
Brinkhaven quadrangle (Coshocton and Knox counties).....	234
Bainbridge, Batavia, Bethel, Bellefontaine, Blanchester, Chillicothe, Circleville, Covington, East Cincinnati, Era, Garrison, Georgetown, Greenfield, Greenup, Hillsboro, Jackson, Lebanon, Lima, Loramie, Maysville, Morning View, Mount Sterling, Oak Hill, Octa, Otway, Peebles, Piketon, Roxabel, Rectorville, Sabina, St. Henry, St. Paris, Sardinia, Scioto, Sidney, Spencerville, Springfield, Troy, Vanceburg, Waynesville, West Union, and Xenia quadrangles (Adams, Allen, Auglaize, Brown, Champaign, Clermont, Clinton, Fayette, Greene, Highland, Jackson, Lawrence, Logan, Mercer, Miami, Montgomery, Pickaway, Pike, Ross, Scioto, Shelby, Van Wert, and Warren counties).....	234
Alvordton, Berne, Bobo, Butler, Celina, Continental, Defiance, Delphos, Edon, Halls Corners, Mark Center, Montpelier, Paulding, Van Wert, and Wauseon quadrangles (Defiance, Fulton, Henry, Mercer, Paulding, Putnam, Van Wert, and Williams counties)....	262
Ohio-Indiana.....	275
Primary traverse.....	275
Greenville, Harrison, Lawrenceburg, Liberty, Lynn, Moores Hill, Portland, and Richmond quadrangles (Butler, Darke, Hamilton, Mercer, and Preble counties, Ohio; Dearborn, Harrison, and Ripley counties, Ind.).....	275
Oregon.....	281
Triangulation stations.....	281
Albany, Corvallis, Elmira, Eugene, Halsey, and Monroe quadrangles (Benton, Lane, Linn, Marion, and Polk counties).....	281
Primary traverse.....	289
Cazadero, Oregon City, Portland, and Troutdale quadrangles (Clackamas and Multnomah counties).....	289
Tennessee.....	293
Primary traverse.....	293
Crossville, Sparta, and Standing Stone quadrangles (Bledsoe, Cumberland, Van Buren, and White counties).....	293
Tennessee-Kentucky.....	295
Primary traverse.....	295
Bayouville, Cades, Dresden, Dyersburg, Hickman, Idlewild, Malesus, Martin, Maury City, Mayfield, Rives, Tiptonville, Trimble, and Water Valley quadrangles (Carroll, Crockett, Dyer, Gibson, Madison, Obion, and Weakley counties, Tenn.; Graves and Hickman counties, Ky.).....	295
Texas.....	308
Primary traverse.....	308
Barns Bridge and Rockwall 7½' quadrangles; Dallas, Farmersville, and McKinney 30' quadrangles (Collin, Dallas, Kaufman, and Rockwall counties).....	308
Bastrop, Brenham, Flatonia, Halsted, and Sealy 30' quadrangles (Austin, Bastrop, Colorado, Fayette, and Waller counties).....	312
Howth, Jones Bridge, Millican, Sandpit, and Washington special 7½' quadrangles; Gay Hill 15' quadrangle; Brenham and Bryan 30' quadrangles (Austin, Burleson, Grimes, Milam, Waller, and Washington counties).....	317

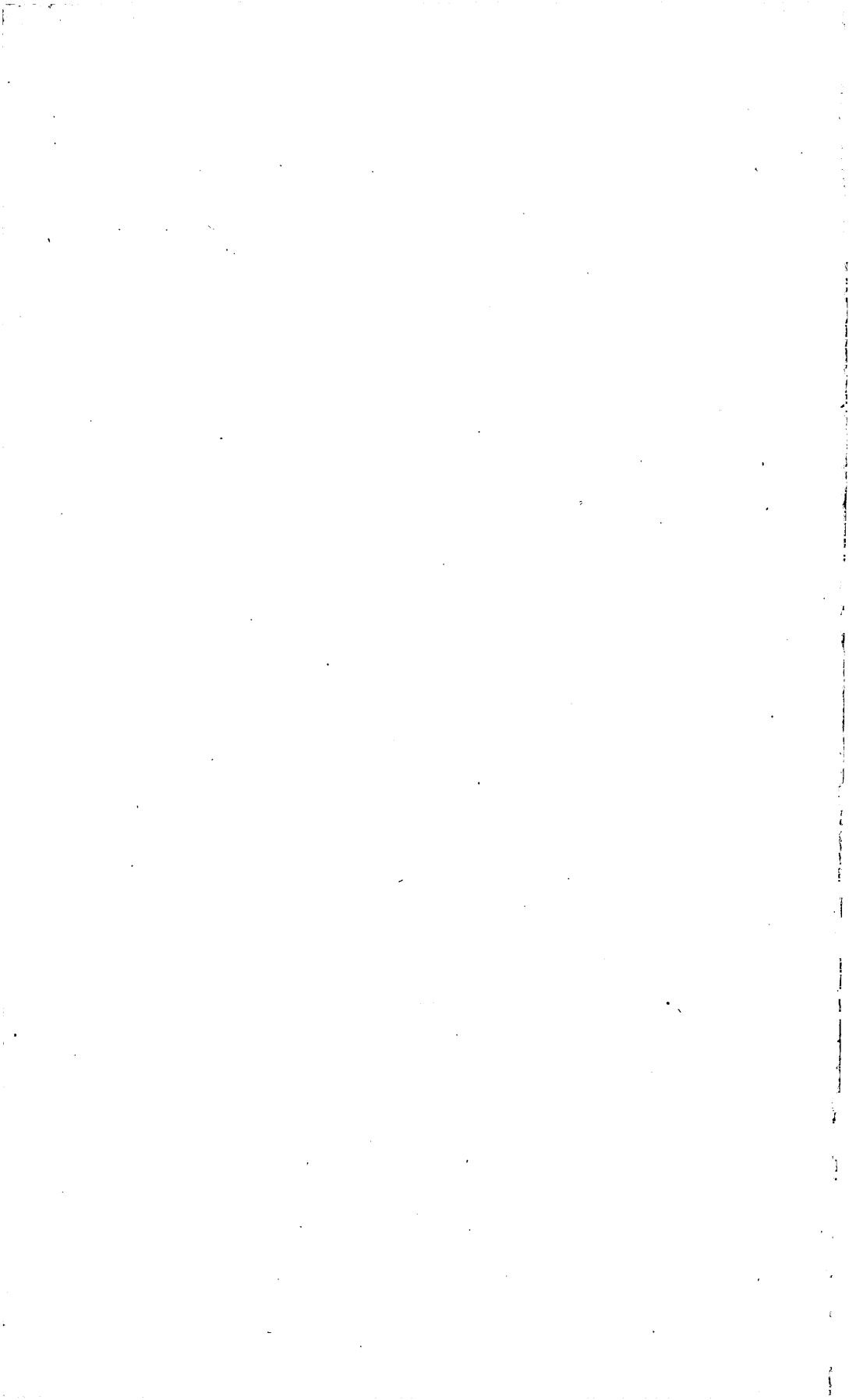
Texas—Continued.

Primary traverse—Continued.

	Page.
Marlin, Temple, and Waco 30' quadrangles (Coryell, Falls, McLennan, Milam, and Robertson counties).....	325
Hearne, Taylor, and Temple 30' quadrangles (Bell, Burleson, Milam, and Robertson counties).....	333
Utah.....	342
Triangulation stations.....	342
Castle Gate, Clear Creek, Kyune, Nine Mile, Poison Spring, Red Creek, Soldier Summit, Sunnyside, and Wellington quadrangles (Carbon, Emery, and Utah counties).....	342
Utah-Wyoming.....	352
Triangulation stations.....	352
Fossil, Montpelier, and Randolph quadrangles (Rich County, Utah; Uinta County, Wyo.).....	352
Virginia.....	356
Primary traverse.....	356
Charlottesville, Bybel, Culpeper, Fredericks Hall, Glenora, Massaponax, Rapidan, and Scottsville quadrangles (Albemarle, Fluvanna, Goochland, Louisa, Orange, and Spottsylvania counties).....	356
Washington.....	361
Primary traverse.....	361
Mount Vernon 30', Seattle 30', and Wickersham 15' quadrangles (Skagit and Snohomish counties).....	361
Cedar Lake, Mount Rainier, Seattle 15', Seattle 30', Sultan, and Tacoma quadrangles (King, Kittitas, Lewis, Pierce, and Snohomish counties).....	365
Wyoming.....	371
Triangulation stations.....	371
Cheyenne quadrangle (Laramie County).....	371
Index.....	375

ILLUSTRATIONS.

PLATE I. Map showing condition of astronomic location and primary control to January 1, 1911.....	9
PLATE II. Designs for station marks.....	10





MAP SHOWING CONDITION OF ASTRONOMIC LOCATION AND PRIMARY CONTROL
to January 1, 1911

RESULTS OF TRIANGULATION AND PRIMARY TRAVERSE FOR THE YEARS 1909 AND 1910.

R. B. MARSHALL, Chief Geographer.

INTRODUCTION.

PERSONNEL.

Field work.—The field work of primary control, the computed results of which are given in the following pages, was carried on in 1909 under R. B. Marshall, chief geographer, with Frank Sutton, W. H. Herron, E. C. Barnard, and T. G. Gerdine, geographers, in charge, respectively, of the Atlantic, Central, Rocky Mountain, and Pacific divisions, and in 1910 under the same division chiefs, except that Sledge Tatum was in charge of the Rocky Mountain division in place of E. C. Barnard.

Credit is given to the various topographers, assistant topographers, and aids directly in charge under the heading of each list.

Computation.—The office computation was under the supervision of E. M. Douglas, geographer. The results were computed by the following members of the topographic branch detailed from time to time to this work: T. M. Bannon, D. H. Baldwin, J. R. Ellis, George T. Hawkins, Oscar Jones, O. C. Kintner, C. B. Kendall, L. M. Larson, L. S. Leopold, S. G. Lunde, F. J. McMaugh, E. L. McNair, A. C. Roberts, R. C. Seitz, F. Tweedy, J. M. Whitman, and C. F. Urquhart, of whom the last named did most of his computing in the Sacramento office. The data were compiled for publication by S. S. Gannett, geographer.

DATUM.

Wherever practicable, and unless otherwise stated, positions have been computed on United States standard datum.

STATION MARKS.

Permanent marks are placed at all occupied triangulation stations and at certain of the primary traverse stations, from 3 to 8 miles apart.

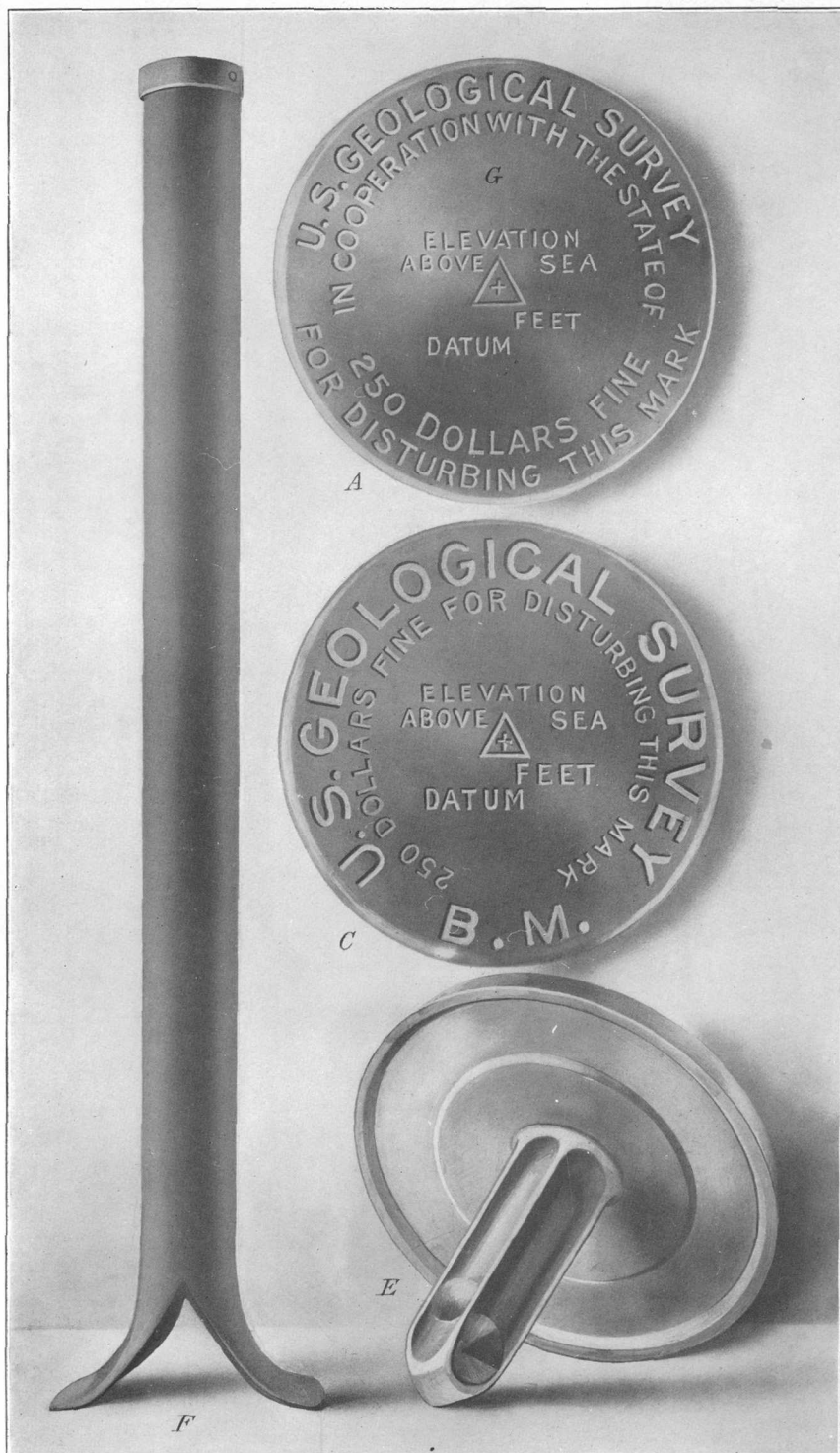
These marks are of the form adopted for leveling bench marks, and in many places the elevation as well as the latitude and longitude

of each permanent mark has been determined. The marks are of two forms. The first form is a circular bronze or aluminum tablet (*C* and *E*, Pl. II), $3\frac{1}{2}$ inches in diameter and $\frac{1}{4}$ inch thick, having a 3-inch stem, which is cemented in a drill hole in solid rock in the wall of some public building, bridge abutment, or other substantial masonry structure. The second form (*F*, Pl. II), set in the ground where no masonry or rock is available, consists of a hollow wrought iron post $3\frac{1}{2}$ inches in outside diameter and 4 feet long. The bottom is spread out to a width of 10 inches in order to give a firm bearing on the earth. A bronze or aluminum-bronze cap is riveted over the top of the post. The tablets as well as the caps on the iron posts are appropriately lettered, and where States have cooperated in the work the fact of such cooperation is indicated by the addition of the State name (*G*, Pl. II).

SUMMARY.

Summary of published results, 1909 and 1910: Triangulation and primary traverse.

Locality.	Triangulation stations.	Traverse stations.
California.....	82	.....
California-Nevada.....	13	.....
Colorado.....	16	.....
Colorado-New Mexico.....	11	.....
Delaware-Maryland.....	.....	129
District of Columbia-Maryland.....	.....	38
Idaho-Wyoming.....	13	.....
Illinois.....	.....	1,009
Indiana-Illinois.....	.....	54
Iowa.....	.....	66
Kentucky.....	24	127
Kentucky, Virginia, West Virginia.....	46	.....
Louisiana.....	.....	616
Maine.....	16	.....
Maryland.....	6	.....
Maryland-Pennsylvania.....	.....	73
Michigan.....	.....	60
Minnesota.....	91	302
Missouri.....	.....	412
Montana.....	39	.....
New York.....	.....	102
North Carolina.....	.....	54
Ohio.....	.....	1,738
Oregon.....	25	137
Tennessee.....	.....	54
Tennessee-Kentucky.....	.....	490
Texas.....	.....	971
Utah.....	33	.....
Utah-Wyoming.....	13	.....
Virginia.....	.....	112
Washington.....	.....	350
Wyoming.....	.....	9
	428	6,903



GEOLOGICAL SURVEY STATION MARKS.

A, Tablet used in cooperating States. The State name is inserted at G.
 A, C, and E, Tablets for stone or concrete structures.
 F, Iron post used where there is no rock.

CALIFORNIA.

TRIANGULATION STATIONS.

Biggs, Butte City, Butte Creek, Clear Creek, Dayton, French Crossing, Gilsizer Slough, Gridley, Grimes, Honcut, Keefers, Marysville Butte, Meridian, Nord, Ostrom, Palermo, Pennington, Sutter, Tisdale Weir, and Yuba City $7\frac{1}{2}$ quadrangles.

BUTTE, COLUSA, GLENN, SUTTER, TEHAMA, AND YUBA COUNTIES.

The triangulation for control of the above-named quadrangles was done by C. F. Urquhart in 1909, and was a continuation of that of previous years derived from the Yolo base of the Coast and Geodetic Survey. A check in position was obtained at Marysville Butte, but the discrepancy in latitude (0.07'') and in longitude (0.15'') has not been adjusted.

The State cooperated in the work.

BALD, TEHAMA COUNTY, CAL.

On a bald place on ridge forming foothills on south side of Deer Creek, about 15 miles from Vina, a town on Southern Pacific Railroad. Station can be reached by road from Vina to Stanford sheep ranch, thence north and east to foot of mountain, which is in plain view all the way; thence on foot or horseback to summit. Open country, but very rocky.

Signal: Cairn with tree in center.

Station mark: A triangulation tablet set in rock 6 feet 8 inches distant, azimuth 12° from signal.

[Latitude $40^{\circ} 00' 29.42''$. Longitude $121^{\circ} 55' 10.75''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Nord.....	6 42 37.80	186 41 17.83	4.4046452	15.776
Hamilton.....	14 07 12.08	194 03 48.73	4.4908012	19.238
Stanford.....	30 59 07.35	210 56 24.41	4.0683007	7.272
Vina.....	53 50 28.95	233 45 22.64	4.1468352	8.713
Spring.....	329 32 48.81	149 36 20.08	4.1882223	9.585
House.....	347 18 15.09	167 20 36.85	4.3788441	14.866
Chico.....	348 42 58.81	168 45 47.27	4.5049829	19.876
Poplar.....	358 46 53.76	178 47 02.77	4.1956786	9.751

BARN, SUTTER COUNTY, CAL. (Not occupied.)

North end of a large barn, about 4 miles south and 2 miles east of Meridian, a small town on Sacramento River.

[Latitude $39^{\circ} 04' 53.45''$. Longitude $121^{\circ} 52' 35.49''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Marysville Butte.....	199 27 20.48	19 29 29.13	4.1667473	9.122
Levee.....	245 01 47.16	65 03 51.39	3.7178771	3.245
Tule.....	279 28 55.52	99 33 54.26	4.0626793	7.178

BEAUTY PEAK, BUTTE COUNTY, CAL.

On small, round hill locally known as Beauty Peak, about 13 miles from Chico and 7 or 8 miles from Durham. It can be reached from Chico by Oroville road and first road to left after passing a substation on power line. This latter road should be followed for about 2 miles. Station is about 1 mile north of Mr. Johnson's residence.

Signal: A lumber structure; 4 by 4 inch pole with two targets on it in center. There are oak trees on the top of hill.

Station mark: A triangulation tablet set in large rock, 13.34 meters from signal, azimuth $340^{\circ} 32'$.

12 TRIANGULATION AND PRIMARY TRAVERSE FOR 1909 AND 1910.

[Latitude 39° 38' 55.17". Longitude 121° 40' 09.91".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Oasis.....	6 46 20.11	186 45 36.46	4.1421600	8.620
Marysville Butte.....	14 49 31.79	194 43 47.71	4.7058921	31.568
Professor.....	31 13 32.39	211 08 49.03	4.3118519	12.741
Nelson.....	37 22 14.00	217 18 32.43	4.1358876	8.496
Butte Creek Poplar.....	49 57 19.05	229 51 36.59	4.2241687	10.412
Esquon.....	61 55 29.63	241 51 44.25	3.9802089	5.937
Goodspeed.....	76 30 20.26	256 22 56.27	4.2323975	10.611
Hamilton.....	108 55 23.13	288 42 25.20	4.4865761	19.051
Diamond.....	117 48 02.20	297 41 53.63	4.1915560	9.658
Chico.....	119 23 36.01	299 16 48.56	4.2415574	10.837
New Tank.....	122 54 50.82	302 48 26.95	4.2317439	10.595
Iron.....	163 56 31.01	343 54 03.71	4.2969656	12.312
Sugar Loaf.....	340 31 36.93	160 33 40.28	4.1419536	8.616

BEE, SUTTER COUNTY, CAL. (Not occupied.)

On foothill of Marysville Buttes, about 3 miles a little north of west from the south butte or triangulation signal.

Station mark: Cairn about 5 feet high.

[Latitude 39° 13' 02.33". Longitude 121° 52' 39.58".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Green.....	9 43 38.52	189 43 01.46	3.9210567	5.181
Marysville Butte.....	283 53 10.39	103 55 21.82	3.7108082	3.193

BELL, SUTTER COUNTY, CAL.

Large oak tree with lower limbs cut off, on levee on the Bell estate about 16 miles southwest of Marysville. It is reached by road west from Marysville 4 miles, thence south to the old Murray schoolhouse via Harkey Corners, thence west and south about 1.5 miles to signal.

Station mark: An iron bench mark post set in ground, 1.57 meters north-northwest of signal.

[Latitude 38° 59' 20.53". Longitude 121° 43' 00.93".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Dead Willow.....	28 33 57.33	208 33 23.59	3.4315146	1.678
Levee.....	143 58 31.28	323 54 33.45	4.1882197	9.584
Marysville Butte.....	159 44 57.63	339 41 03.81	4.4099531	15.970
Tule.....	163 51 21.96	343 50 18.61	3.9394462	5.405
Marcuse.....	297 20 04.49	117 23 31.88	3.9512599	5.554

BERG, SUTTER COUNTY, CAL.

Windmill on water tank at the Berg ranch, at Berg, a siding on the Southern Pacific Railroad. It is about 5 miles up the railroad from Marysville.

Station mark: Water pipe extending into ground.

[Latitude 39° 10' 50.41". Longitude 121° 37' 41.68".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Yellow.....	58 10 41.93	238 08 53.73	3.6647099	2.871
Marysville Butte.....	99 46 13.86	279 38 57.81	4.2252976	10.439
Sanders.....	129 27 53.50	209 26 26.72	3.6048898	2.502
Bihlman.....	162 38 12.17	342 36 58.15	3.9732901	5.843
Yuba Tank.....	346 58 04.84	166 58 34.84	3.7047335	3.148

BIGGS, BUTTE COUNTY, CAL.

Water-tank house in Biggs, a town on the Southern Pacific Railroad.

Station mark: Center of tank house.

[Latitude 39° 24' 47.81''. Longitude 121° 42' 47.34'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Marysville Butte.....	21 51 40.47	201 47 36.98	4.3938611	15.389
Traynor.....	26 49 29.88	206 47 08.79	4.0721973	7.338
Oak.....	38 35 33.32	218 30 27.26	4.2682975	11.525
Moulton.....	72 20 44.69	252 10 20.69	4.3929722	15.358
Grant.....	76 29 34.78	256 24 51.56	4.0406620	6.824
Cottonwood.....	102 05 07.84	281 58 42.71	4.1711428	9.215
Professor.....	141 22 09.64	321 19 07.02	4.0414270	6.836
Sugar Loaf.....	212 41 19.22	32 45 02.34	4.1909082	9.644
Chism.....	221 33 58.37	41 36 49.85	3.9877859	6.041
Farnan.....	273 40 52.95	93 48 32.05	4.2390155	10.774
Dunlap.....	276 22 46.18	96 25 07.94	3.7304052	3.340
Gridley.....	345 06 18.73	165 06 56.12	3.7393148	3.409

BIHLMAN, SUTTER COUNTY, CAL.

Windmill on water tank at the Bihlman ranch, about 1 mile south of Live Oak, on the Southern Pacific Railroad and Northern Electric Railroad. The latter railroad passes a few feet west of tank.

Signal: Windmill.

Station mark: Pipe extending into ground.

[Latitude 39° 15' 41.43''. Longitude 121° 39' 38.73'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Sanders.....	2 40 26.62	182 40 16.33	3.8077317	3.991
Marysville Butte.....	65 58 16.50	245 52 14.11	4.1775874	9.353
North Butte.....	75 19 54.32	255 15 07.31	4.0473695	6.930
Gridley.....	164 57 02.68	344 55 40.51	4.0776550	7.430
Berg.....	342 36 58.15	162 38 12.17	3.9732901	5.843
Yuba Tank.....	344 07 56.93	164 09 40.98	4.1601954	8.986

BRICK, SUTTER COUNTY, CAL. (Not occupied.)

Cupola on large brick residence about 3 miles south of Meridian.

[Latitude 39° 06' 29.60''. Longitude 121° 53' 58.57'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Marysville Butte.....	212 19 17.03	32 22 18.18	4.1097044	7.999
Levee.....	276 25 53.68	96 28 50.35	3.8307980	4.209
Tule.....	289 57 51.05	110 03 42.26	4.1537642	8.853

BUTTE CREEK POPLAR, BUTTE COUNTY, CAL. (Not occupied.)

Tall poplar tree on east side of Butte Creek about 3.5 miles west of Nelson, a town on Southern Pacific Railroad.

Station mark: Center of tree.

[Latitude 39° 33' 05.26''. Longitude 121° 49' 07.17'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Beauty.....	229 51 36.59	49 57 19.05	4.2241687	10.412
Nelson.....	270 59 51.77	91 01 52.53	3.6559718	2.814
Sugar Loaf.....	277 23 20.63	97 31 05.89	4.2455066	10.936
Professor.....	341 52 49.91	161 53 48.73	3.8513919	4.413

14 TRIANGULATION AND PRIMARY TRAVERSE FOR 1909 AND 1910.

CABIN, GLENN COUNTY, CAL. (Not occupied.)

Chimney on small cabin 0.5 mile south of station Smith.

[Latitude 39° 31' 00.42". Longitude 121° 56' 28.28".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Colony.....	15 19 17.56	195 18 41.57	3.7091133	3.180
Parrot.....	185 06 59.92	5 07 18.14	3.8843473	4.761
McKnight.....	304 43 32.71	124 45 33.80	3.7431173	3.439

CHICKEN RANCH, GLENN COUNTY, CAL. (Not occupied.)

Tall poplar tree about 5 miles southeast of Butte City on the Sacramento River. There are several small buildings near the tree like those of a chicken ranch.

Station mark: Center of tree.

[Latitude 39° 25' 37.74". Longitude 121° 56' 12.42".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Colony.....	160 57 31.49	340 56 45.48	3.7247199	3.297
Leeper.....	232 17 43.19	52 18 21.36	3.2592093	1.129
Moulton.....		205 11 43.59	4.0010213	6.228
Oak.....		154 20 03.48	4.2505094	11.063

CHICO, BUTTE COUNTY, CAL.

Old water tank in town of Chico, located by the United States Geological Survey many years ago, a short distance up the Southern Pacific Railroad from Chico station. It is 85 feet high, and instrument can be set up on top of it.

Station mark: Center of tank.

[Latitude 39° 43' 32.23". Longitude 121° 50' 47.95".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Goodspeed.....	6 17 54.47	186 17 17.41	4.1011811	7.844
Hamilton.....	95 36 27.76	275 30 17.03	4.1422955	8.623
Nord.....	123 45 12.75	303 41 04.97	4.0449329	6.891
Bald.....	168 45 47.27	348 42 58.81	4.5049829	19.876
Spring.....	184 58 36.95	4 59 19.35	4.2586265	11.271
Iron.....	222 42 51.02	42 47 11.78	4.1550504	8.880
New Tank.....	231 13 24.79	51 13 48.42	3.0526476	.701
Beauty.....	299 16 48.56	119 23 36.01	4.2415574	10.837
Diamond.....	312 04 23.21	132 05 02.07	3.2902839	1.212
Sugar Loaf.....	317 23 38.35	137 32 28.74	4.4674307	18.230
Marysville Butte.....	357 42 23.65	177 43 24.84	4.7612782	35.861

CHICO, NEW TANK, BUTTE COUNTY, CAL. (Not occupied.)

Large black water tank in town of Chico; reservoir of town water supply.

[Latitude 39° 43' 55.16". Longitude 121° 50' 10.99".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Chico.....	51 13 48.12	231 13 24.79	3.0526476	0.701
Nord.....	118 22 39.79	298 18 03.35	4.0599250	7.133
House.....	165 39 00.96	345 38 10.58	3.8785015	4.697
Spring.....	182 17 38.60	2 17 57.34	4.2400001	10.798
Iron.....	221 59 39.38	42 03 36.51	4.1197574	8.187
Beauty.....	302 48 26.95	122 54 50.82	4.2317439	10.595

CHISM, BUTTE COUNTY, CAL.

On a summit of red hills 4 miles east and 5 miles north of Biggs, a town on the Southern Pacific Railroad. It is about 0.8 mile east of Northern Electric Railroad. There is a fig orchard on north side of hill and a small building on west side, on Chism's sheep ranch. Station can be reached from Biggs by Oroville road to old stage station, thence north 0.8 mile to hill.

Signal: A locust tree with lower limbs cut off, not quite on highest point of hill but conspicuous above everything else. There are two palms and two umbrella trees on hill, but they are lower and smaller than the locust. The tree leans northwest. The place where branches begin to spread out is used for signal.

Station mark: Iron post set under center of signal.

[Latitude 39° 28' 43.61". Longitude 121° 38' 17.44".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Dunlap.....	8 03 56.07	188 03 26.45	3.9003335	4.940
Biggs.....	41 36 49.85	221 33 58.37	3.9877859	6.041
Professor.....	95 42 17.43	275 36 23.06	4.1265811	8.316
Sugar Loaf.....	198 30 04.12	18 30 55.70	3.7854538	3.791

COLONY, GLENN COUNTY, CAL.

Windmill at Colony ranch, formerly the Brown place, about 2 miles east of Butte City.

Signal: Center of windmill.

Station mark: Pipe extending into ground.

[Latitude 39° 28' 20.36". Longitude 121° 57' 24.84".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Wescott.....	17 13 07.77	197 12 36.38	3.6010136	2.479
Cabin.....	195 18 41.57	15 19 17.56	3.7091133	3.180
McKnight.....	253 10 37.39	73 13 14.40	3.7899387	3.831
Leeper.....	320 55 50.67	140 57 14.87	3.7013806	3.124
Chicken Ranch.....	340 56 45.48	160 57 31.49	3.7247199	3.297

COLUSA, COLUSA COUNTY, CAL. (Not occupied.)

Top of what appears to be a large and high water tower in town of Colusa; square building with windows, above which is a round red tank.

[Latitude 39° 12' 55.137". Longitude 122° 00' 12.870".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Franklin.....	3 05 25.41	183 05 00.07	4.2529963	11.126
Footbill.....	28 34 02.06	208 26 55.03	4.5329373	21.198
Stovall.....	70 06 15.28	249 53 47.53	4.4806461	18.793
Oak.....	240 58 27.51	61 04 23.68	4.1883815	9.588
Marysville Butte.....	273 34 59.88	93 41 57.96	4.9013611	9.879

16 TRIANGULATION AND PRIMARY TRAVERSE FOR 1909 AND 1910.

COTTONWOOD, GLENN COUNTY, CAL. (Not occupied.)

West side of Butte Creek, about 1 mile south of bridge on road between Biggs and Butte City.

[Latitude 39° 26' 28.06". Longitude 121° 52' 53.75".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Moulton.....	40 22 56.39	220 18 57.06	4.1442133	8.661
Leeper.....	82 25 56.56	262 24 28.52	3.5241756	2.077
Smith.....	151 56 07.38	331 53 58.17	4.0135492	6.411
McKnight.....	173 43 19.45	353 43 04.10	3.7223753	3.279
Goodspeed.....	184 51 07.76	4 51 50.88	4.2811857	11.872
Professor.....	234 10 32.80	54 13 55.57	3.9732197	5.842
Sugar Loaf.....	246 22 39.06	66 32 47.86	4.3971780	15.507
Biggs.....	281 58 42.71	102 05 07.84	4.1711428	9.215

CUPOLA BARN, BUTTE COUNTY, CAL. (Not occupied.)

Cupola on red barn on west side of Butte Creek, about 5 miles south of station Goodspeed. Not very satisfactory station.

[Latitude 39° 33' 06.27". Longitude 121° 50' 57.09".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Smith.....	67 26 10.41	247 22 46.79	3.9170809	5.141
Parrot.....	117 28 20.27	297 25 07.56	3.9104686	5.056

DAHLENG, SUTTER COUNTY, CAL.

Signal: Windmill at the Fred Dahling ranch, about 5 miles west and south of Marysville.

Station mark: Water pipe extending into ground.

[Latitude 39° 06' 45.10". Longitude 121° 39' 50.69".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
O'Banion.....	3 27 22.73	183 27 07.54	3.9828982	5.974
Tule.....	52 34 29.36	232 31 25.98	3.9447266	5.471
Marysville Butte.....	127 43 00.83	307 37 06.57	4.2308609	10.573
Sutter.....	127 44 35.18	307 41 28.46	3.9533571	5.581
Yellow.....	170 49 15.26	350 48 53.48	3.7155263	3.228
Yuba.....	238 11 58.19	58 13 49.62	3.6981064	3.101
Marysville Church.....	244 41 23.23	64 44 15.98	3.8617025	4.519

DEAD TREE, BUTTE COUNTY, CAL.

On the Parrot ranch, about 1.5 miles north of Parrot triangulation station. Road from Chico is same as to Parrot station to point about 1 mile south of the old ranch house, where it turns west through another fence.

Signal: Dead oak tree.

Station mark: A triangle formed of copper bench-mark nails driven in tree. White cloth on trunk of tree.

[Latitude 39° 36' 23.97". Longitude 121° 56' 12.56".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Parrot.....	352 30 12.67	172 30 20.92	3.3742007	1.471
Diamond.....	217 38 12.28	37 42 18.29	4.1770821	9.342
Goodspeed.....	264 02 56.93	84 05 46.88	3.8057223	3.973

DEAD WILLOW, SUTTER COUNTY, CAL. (Not occupied.)

Willow tree about 2 miles south-southwest of station Bell. This tree is difficult of access during high water.

[Latitude 38° 58' 03.60''. Longitude 121° 43' 54.58'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Marysville Butte.....	163 58 13.99	343 54 54.04	4.4401966	17.122
Tule.....	173 59 33.76	353 59 04.19	4.0328893	6.702
Bell.....	208 33 23.59	28 33 57.33	3.4315146	1.678
Marcuse.....	280 37 04.45	100 41 05.52	3.9728024	15.836

DIAMOND, BUTTE COUNTY, CAL. (Not occupied.)

Tall chimney at Diamond Match & Lumber Co. plant on south side of town of Chico.

[Latitude 39° 42' 49.84''. Longitude 121° 49' 47.14'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Goodspeed.....	14 09 30.02	194 08 14.15	4.0641402	7.203
Parrot.....	31 58 11.99	211 54 14.30	4.2250021	10.432
Dead Tree.....	37 42 18.29	217 38 12.28	4.1770821	9.342
Nord.....	125 00 22.65	304 55 36.03	4.1147578	8.093
Chico.....	132 05 02.07	312 04 23.21	3.2902839	1.212
House.....	165 20 55.71	345 19 50.10	3.9846486	5.998
Iron.....	214 56 20.74	35 00 02.57	4.1584087	8.949
Beauty.....	297 41 53.63	117 48 02.20	4.1915560	9.658
Sugar Loaf.....	317 46 59.47	137 55 11.02	4.4376856	17.023
Professor.....	352 43 22.66	172 44 47.06	4.3975802	15.521

DUNLAP, BUTTE COUNTY, CAL.

Windmill on Mr. Dunlap's ranch, about 3 miles east of Biggs, a town on the Southern Pacific Railroad.

Station mark: Water pipe extending into ground.

[Latitude 39° 24' 28.39''. Longitude 121° 39' 04.06'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Gridley.....	39 55 20.21	219 53 35.91	3.7875732	3.810
Biggs.....	96 25 07.94	276 22 46.18	3.7304052	3.340
Chism.....	188 03 26.45	8 03 56.07	3.9003335	4.940

ESQUON, BUTTE COUNTY, CAL. (Not occupied.)

Center of water tank at Esquon, a station on the Northern Electric Railroad, about 2 miles south of Durham.

[Latitude 39° 36' 29.21''. Longitude 121° 46' 03.29'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Beauty.....	241 51 44.25	61 55 29.63	3.9802089	5.937
Sugar Loaf.....	303 14 39.74	123 20 28.14	4.1936286	9.705

FARNAN, BUTTE COUNTY, CAL.

On a low timbered hill 3 miles southeast of Palermo, a station on the Southern Pacific Railroad between Marysville and Oroville, on land owned by Mr. Farnan about half a mile east of his residence.

Signal: A trimmed oak tree on the highest point of hill. It is marked with a white cloth because other trees on the east side show more conspicuously.

Station mark: Triangulation tablet set in solid rock, 1.8 meters northwest of signal tree.

[Latitude 39° 24' 11.09". Longitude 121° 30' 44.17".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Marysville church.....	12 39 57.78	192 37 05.12	4.4752964	18.563
Honcut.....	12 53 04.50	192 52 13.52	3.9361973	5.365
Marysville Butte.....	50 37 07.86	230 25 26.31	4.5363001	21.362
Fawl.....	70 48 39.92	250 45 40.82	3.8544005	4.444
Biggs.....	93 48 32.05	273 40 52.95	4.2390155	10.774
Professor.....	112 00 29.10	291 49 47.02	4.4157585	16.185
Palermo.....	138 23 44.91	318 22 27.39	3.6431844	2.732
Sugar Loaf.....	147 56 44.87	327 52 48.29	4.2239871	10.407
I. O. O. F.....	155 29 24.84	335 26 57.32	4.1260198	8.306
Trainer.....	355 29 54.53	175 30 26.63	4.1894612	9.612

GOODSPEED, BUTTE COUNTY, CAL.

Windmill at water tank at the Goodspeed ranch, about 9 miles south of Chico. Instrument can be set up on the tank, which is a very high one.

Station mark: Iron pipe extending into ground.

[Latitude 39° 36' 45.38". Longitude 121° 51' 46.00".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Cottonwood.....	4 51 50.88	184 51 07.76	4.2811857	11.872
McKnight.....	9 02 48.17	189 01 49.65	4.1450810	8.678
Smith.....	33 05 11.87	213 02 19.27	4.0739186	7.367
Parrot.....	63 35 55.99	243 33 14.33	3.8297687	4.199
Dead Tree.....	84 05 46.88	264 02 56.93	3.8057223	3.973
Chico.....	186 17 17.41	6 17 54.47	4.1011811	7.844
Diamond.....	194 08 14.15	14 09 30.02	4.0641402	7.203
Beauty.....	256 22 56.27	76 30 20.26	4.2323975	10.611
Sugar Loaf.....	293 03 14.37	113 12 41.11	4.3634446	14.348
Marysville Butte.....	355 18 31.73	175 20 09.70	4.6558204	28.130

GRANT, BUTTE COUNTY, CAL.

Center of tank house at Mr. Grant's residence, about 8 miles west of Biggs, on Southern Pacific Railroad.

Station mark: Center of tank.

[Latitude 39° 23' 24.41". Longitude 121° 50' 13.53".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Oak.....	4 11 49.14	184 11 25.98	4.0779330	7.435
Moulton.....	68 57 52.27	248 52 11.44	4.1394321	8.566
Professor.....	198 46 23.01	18 48 03.89	4.0715549	7.327
Biggs.....	256 24 51.56	76 29 34.78	4.0406620	6.824
Gridley.....	282 40 53.21	102 46 13.67	4.0932187	7.701
Traynor.....	326 03 50.96	146 06 12.84	3.9823167	5.966
Marysville Butte.....	355 50 37.19	175 51 16.37	4.3111655	12.721

GREEN, SUTTER COUNTY, CAL.

Green water tank about 1 mile east of Meridian, a small town on Sacramento River. It is on land owned by the heirs of the late G. McArthur.

Signal and station mark: Center of tank.

[Latitude 39° 08' 35.83". Longitude 121° 53' 38.24".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Kent.....	142 39 10.16	322 37 30.47	3.7954951	3.880
Bee.....	189 43 01.46	9 43 38.52	3.9210567	5.181
Marysville Butte.....	222 28 23.54	42 31 11.92	3.9764142	5.885
Tule.....	304 10 00.93	124 15 39.45	4.1929887	9.690
Levee.....	306 41 37.31	126 44 21.22	3.8912534	4.837

GRIDLEY, BUTTE COUNTY, CAL. (Not occupied.)

Large black water tank in town of Gridley, on Southern Pacific Railroad.

Station mark: Center of tank.

[Latitude 39° 21' 55.87". Longitude 121° 41' 48.43".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Marysville Butte.....	31 01 40.17	210 56 59.51	4.3145682	12.821
Traynor.....	52 10 03.94	232 07 05.57	3.9311435	5.303
Grant.....	102 46 13.67	282 40 53.21	4.0932187	7.701
Biggs.....	165 06 56.12	345 06 18.73	3.7393148	3.409
Dunlap.....	219 53 35.91	39 55 20.21	3.7875732	3.810
Bihlman.....	344 55 40.51	164 57 02.68	4.0776550	7.430

HAMILTON, GLENN COUNTY, CAL. (Not occupied.)

Tall chimney at beet-sugar factory, in town of Hamilton, on west side of Sacramento River.

[Latitude 39° 44' 15.79". Longitude 122° 00' 27.94".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Bald.....	14 07 12.08	194 03 48.73	4.4908012	19.238
Spring.....	222 31 21.91	42 38 15.68	4.3563549	14.116
House.....	242 23 13.05	62 28 57.32	4.1598712	8.979
Iron.....	248 38 21.94	68 48 53.83	4.4017534	15.671
Chico.....	275 30 17.03	95 36 27.76	4.1422955	8.623
Beauty.....	288 42 25.20	108 55 23.13	4.4865761	19.051
Sugar Loaf.....	304 10 29.06	124 25 29.49	4.6101092	25.320

HOUSE, BUTTE COUNTY, CAL.

Abandoned house about 7 miles north of Chico by road. Route is by Vina road for about 5 miles to schoolhouse on east side of road, thence east along right-hand fork after crossing a bridge, where house is in plain view, through gate and direct to slaughterhouse, thence to station. There is a barn and another house on the place, but signal is on the residence, which lies south of the other buildings.

Signal: Two targets extending above north end of house.

Station mark: Bench-mark post set under targets.

20 TRIANGULATION AND PRIMARY TRAVERSE FOR 1909 AND 1910.

[Latitude 39° 47' 52.61". Longitude 121° 51' 29.74".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Hamilton.....	62 28 57.32	242 23 13.05	4.1598712	8.979
Nord.....	77 11 39.55	257 07 58.33	3.9261303	5.242
Bald.....	167 20 36.85	347 18 15.09	4.3788441	14.866
Spring.....	194 20 21.43	14 21 30.64	4.0155184	6.440
Iron.....	256 58 59.82	77 03 47.53	4.0401986	6.816
New Tank.....	345 38 10.58	165 39 00.96	3.8785015	4.697
Diamond.....	345 19 50.10	165 20 55.71	3.9846486	5.998

IRON, BUTTE COUNTY, CAL.

On a timbered ridge about 9 miles east-northeast of the town of Chico. It can be reached by road up Big Chico Creek through two locked gates on the Bidwell ranch, thence along first left-hand road to road turning left up ridge, and along this road until it ends; thence up the ridge along the bluff about 2 miles. The point overlooks Iron Canyon.

Signal: Pine tree about 40 feet high; all limbs cut off except at the top.

Station mark: Triangulation tablet set in rock, 3.14 meters from signal. Azimuth from signal to tablet 168°.

[Latitude 39° 49' 12.49". Longitude 121° 44' 00.35".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Diamond.....	35 00 02.57	214 56 20.74	4.1584087	8.949
New Tank.....	42 03 36.51	221 59 39.38	4.1197574	8.187
Chico.....	42 47 11.78	222 42 51.02	4.1550504	8.880
Hamilton.....	68 48 53.83	248 38 21.94	4.4017534	15.671
House.....	77 03 47.53	256 58 59.82	4.0401986	6.816
Nord.....	77 09 17.75	257 00 48.81	4.2879282	12.058
Stanford.....	116 21 26.70	296 11 35.74	4.3890396	15.219
Spring.....	133 04 06.96	313 00 28.20	4.0454120	6.899
Sugar Loaf.....	342 29 42.49	162 34 13.18	4.5271823	20.919
Beauty.....	343 54 03.71	163 56 31.01	4.2969656	12.312

KENT, SUTTER COUNTY, CAL. (Not occupied.)

Center of large water tank at Kent, on east side of Sacramento River about 4 miles up the river from Meridian.

[Latitude 39° 11' 16.78". Longitude 121° 56' 16.08".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Marysville Butte.....	258 44 34.40	78 49 02.62	4.0162997	6.451
Green.....	322 37 30.47	142 39 10.16	3.7954951	3.880

LEEPER, GLENN COUNTY, CAL.

Windmill at Leeper ranch, 3 miles east by 2 miles south of Butte City.

Signal: Windmill.

Station mark: Pipe extending into ground.

[Latitude 39° 26' 13.76". Longitude 121° 55' 12.33".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Moulton.....	29 17 51.75	209 15 20.37	4.0671681	7.253
Chicken Ranch.....	52 18 21.36	232 17 43.19	3.2592093	1.129
Wescott.....	91 14 05.82	271 12 10.27	3.6385938	2.704
Colony.....	140 57 14.87	320 55 50.67	3.7013806	3.124
McKnight.....	205 40 58.37	25 42 11.10	3.8000345	3.921
Cottonwood.....	262 24 28.52	82 25 56.56	3.5241756	2.077

LEVEE, SUTTER COUNTY, CAL.

Lumber tripod on levee a few steps south of the pumping plant on reclamation district 70. The land is owned by Nelson Bros. Route from Marysville is along the Meridian road to bridge over Butte Slough, turning there to left along levee, passing a ranch; thence south and a short distance east to the pumping plant.

Station mark: Iron post set in ground under center of tripod.

[Latitude 39° 06' 04.91". Longitude 121° 49' 18.46".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Barn.....	65 03 51.39	245 01 47.16	3.7178771	3.245
Brick.....	96 28 50.35	276 25 53.68	3.8307980	4.209
Breen.....	126 44 21.22	306 41 37.31	3.8912534	4.837
Marysville Butte.....	180 48 00.15	0 48 04.43	4.0659089	7.232
Sutter.....	224 06 11.49	44 09 03.12	3.9722777	5.829
Tule.....	301 41 55.48	121 44 50.07	3.8935015	4.862
Bell.....	323 54 33.45	143 58 31.28	4.1882197	9.584
Willow.....	336 45 02.83	156 46 22.37	3.8858772	4.778

McKNIGHT, GLENN COUNTY, CAL.

McKnight residence (abandoned) about 5 miles east and 2 miles north of Butte City.

Signal: Chimney in center of building.

Station mark: Same as signal.

[Latitude 39° 29' 18.14". Longitude 121° 53' 17.90".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Leeper.....	25 42 11.10	205 40 58.37	3.8000345	3.921
Colony.....	73 13 14.40	253 10 37.39	3.7899387	3.831
Cabin.....	124 45 33.80	304 43 32.71	3.7431173	3.439
Smith.....	132 03 12.70	312 01 18.79	3.7604329	3.579
West Chimney.....	154 46 34.20	324 44 53.39	3.9481060	5.514
Parrot.....	160 18 46.88	340 17 03.92	4.0590519	7.119
Goodspeed.....	189 01 49.65	9 02 48.17	4.1450810	8.678
Cottonwood.....	353 43 04.10	173 43 19.45	3.7223753	3.279

MARCUSE, SUTTER COUNTY, CAL.

Windmill on water tank at Marcuse, a station on Southern Pacific Railroad between Knights Landing and Marysville.

Signal: Windmill.

Station mark: Water pipe extending into ground.

[Latitude 38° 57' 07.30". Longitude 121° 37' 31.18".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Dead Willow.....	100 41 05.52	280 37 04.45	3.9728024	5.836
Bell.....	117 23 31.88	297 20 04.49	3.9512599	5.554
Marysville Butte.....	149 14 03.60	329 06 42.00	4.5166420	20.417

MARYSVILLE BUTTE, SUTTER COUNTY, CAL.

Station of the Coast and Geodetic Survey on the southern and highest butte of the Marysville Buttes, which rises abruptly from the plains about 15 miles west of Marysville; near edge of summit, 4 feet 6 inches from brow of hill on northeast side and 9 feet on the south side.

Station mark: Drill hole in the top of a fast rock.

Reference marks: A half-inch hole in rock in direction of Diablo, distant 8 feet 6 inches; another 8 feet distant, toward Downieville Buttes, and a third 9 feet 8 inches

22 TRIANGULATION AND PRIMARY TRAVERSE FOR 1909 AND 1910.

distant, toward Snow Mountain. Position of monument on highest point is latitude 39° 12' 24.14'', longitude 121° 49' 13.85''.

[Latitude 39° 12' 22.361''. Longitude 121° 49' 11.540''. C. & G. S.]

[Latitude 39° 12' 22.29''. Longitude 121° 49' 11.69''. U. S. G. S.]

To station—	Azimuth.	Back azimuth.	Distance.	
			Log. meters.	Miles.
Levee.....	0 48 04.43	180 48 00.15	4.0659089	7.232
Diablo.....	3 12 19.840	183 08 49.947	5.1679399	91.474
Yolo, northwest base.....	3 14 22.437	183 12 56.316	4.7679519	36.417
Vaca.....	14 03 37.004	193 53 41.545	4.9775702	59.009
Barn.....	19 29 29.13	199 27 20.48	4.1667473	9.122
Monticello.....	28 09 17.68	207 55 21.34	4.8337037	42.370
Brick.....	32 22 18.18	212 19 17.03	4.1097044	7.999
Green.....	42 31 11.92	222 28 23.54	3.9764142	5.885
Mount Helena.....	50 03 28.78	229 32 49.63	4.9650596	57.334
Kent.....	78 49 02.62	258 44 34.40	4.0162997	6.451
Colusa.....	93 41 57.96	273 34 59.88	4.2013611	9.879
Bee.....	103 55 21.82	283 53 10.39	3.7108082	3.193
Oak.....	164 28 14.36	344 27 12.11	3.9448227	5.472
Goodspeed.....	175 20 09.70	355 18 31.73	4.6588204	28.130
Grant.....	175 51 16.37	355 50 37.19	4.3111655	12.721
Chico.....	177 43 24.84	357 42 23.65	4.7612782	35.861
Professor.....	184 11 44.57	4 12 46.03	4.5006023	19.677
Nelson.....	186 54 43.14	6 56 46.37	4.5858529	23.944
Beauty.....	194 43 47.71	14 49 31.79	4.7058921	31.568
Traynor.....	197 18 01.33	17 19 43.78	4.1153477	8.104
Biggs.....	201 47 36.98	21 51 40.47	4.3938611	15.389
Sugar Loaf.....	205 57 41.04	26 05 27.46	4.6033248	24.927
Girdley.....	210 56 59.51	31 01 40.17	4.3145682	12.821
North Butte.....	221 43 55.47	41 45 13.31	3.6469599	2.756
Farnan.....	230 25 26.31	50 37 07.86	4.5363001	21.362
Bihlman.....	245 52 14.11	65 58 16.50	4.1775874	9.353
Trainer.....	256 51 04.36	77 03 16.90	4.4550447	17.717
Lola.....	258 10 48.681	79 06 09.074	5.1073057	79.553
Sanders.....	271 07 15.34	91 13 09.61	4.1287481	8.358
Walsh.....	274 56 23.46	95 15 58.27	4.6512675	27.837
Berg.....	279 38 57.81	99 46 13.86	4.2252976	10.439
Marysville Church.....	289 55 21.30	110 04 08.59	4.3288651	13.250
Round Top.....	290 18 36.528	111 27 13.322	5.2275239	104.924
Yellow.....	292 35 37.67	112 41 10.30	4.1364596	8.508
Yuba Tank.....	293 37 41.41	113 45 27.30	4.2863630	12.015
Excelsior.....	296 11 27.51	116 31 27.47	4.7077141	31.700
Wheatland.....	301 38 04.11	121 53 11.56	4.6090618	25.259
Sutter.....	307 35 21.17	127 38 08.71	3.9049571	4.992
Dahling.....	307 37 06.57	127 43 00.83	4.2308609	10.573
Peter.....	325 16 17.67	145 26 16.27	4.6040118	24.967
O'Banion.....	327 07 34.79	147 13 13.52	4.3764714	14.785
Marcuse.....	329 06 42.00	149 14 03.60	4.5166420	20.417
Tule.....	337 35 19.91	157 38 10.42	4.2313771	10.586
Bell.....	339 41 03.81	159 44 57.63	4.4099531	15.970
Dead Willow.....	343 54 54.04	163 58 13.99	4.4401966	17.122
Puffenberger.....	354 26 00.87	174 27 00.02	4.3667279	14.457
Yolo, southeast base.....	358 39 13.288	178 39 58.108	4.8766025	46.768

MARYSVILLE CHURCH, YUBA COUNTY, CAL. (Not occupied.)

Station mark: Spire on the Presbyterian Church in Marysville.

[Latitude 39° 08' 25.84''. Longitude 121° 35' 16.93''.]

To station—	Azimuth.	Back azimuth.	Distance.	
			Log. meters.	Miles.
Tule.....	58 06 03.23	238 00 07.13	4.2038160	9.935
Dahling.....	64 44 15.98	244 41 23.23	3.8617025	4.519
Marysville Butte.....	110 04 08.59	289 55 21.30	4.3288651	13.250
Sanders.....	136 50 37.78	316 47 37.87	3.9832778	5.979
Farnan.....	192 37 05.12	12 39 57.78	4.4752964	18.563
Trainer.....	209 26 53.43	29 30 17.84	4.1978294	9.799
Walsh.....	262 15 12.19	82 25 59.08	4.3948013	15.422
Old Mill.....	282 42 25.46	102 47 21.84	4.0631784	7.187
Excelsior.....	300 48 06.17	120 59 19.14	4.4758359	18.586
Knoll.....	303 09 48.21	123 14 35.24	4.1161471	8.119
Wheatland.....	314 07 49.38	134 14 09.99	4.3061794	12.576

MOULTON, COLUSA COUNTY, CAL.

Cupola on large residence locally known as the "old Moulton place," though it is at present owned by the Crocker estate. It is about 12 miles down the river from Butte City and about the same distance up the river from Colusa.

Station mark: Center of cupola.

[Latitude 39° 20' 43.60". Longitude 121° 59' 10.87".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Chicken Ranch.....	205 11 43.59	29 17 51.75	4.0010213	6.228
Leeper.....	209 15 20.37	40 22 56.39	4.0671681	7.253
Cottonwood.....	220 18 57.06	68 57 52.27	4.1442133	8.661
Grant.....	248 52 11.44	72 20 44.69	4.1394321	8.566
Biggs.....	252 10 20.69	99 26 19.33	4.3929722	15.358
Traynor.....	279 18 16.95	120 12 53.18	4.2665852	11.480
Oak.....	300 07 35.89		4.1423112	8.623

NELSON, BUTTE COUNTY, CAL. (Not occupied.)

Cupola on large school building in town of Nelson, on the Southern Pacific Railroad.

Station mark: Center of cupola.

[Latitude 39° 33' 02.66". Longitude 121° 45' 57.52".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Marysville Butte.....	6 56 46.37	186 54 43.14	4.5858529	23.944
Professor.....	19 12 12.79	199 11 10.93	3.8489753	4.389
Butte Creek Poplar.....	91 01 52.53	270 59 51.77	3.6559718	2.814
Beauty.....	217 18 32.43	37 22 14.00	4.1358876	8.496
Sugar Loaf.....	279 37 35.63	99 43 20.15	4.1175667	8.145

NORD, BUTTE COUNTY, CAL.

Center of cupola on schoolhouse at Nord, a small town on Southern Pacific Railroad about 8 or 9 miles north of Chico.

Station mark: Center of cupola. Instrument can be set up on top of building 8.80 meters east of cupola.

[Latitude 39° 46' 51.84". Longitude 121° 57' 15.42".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Bald.....	186 41 17.83	6 42 37.80	4.4046452	15.776
Spring.....	222 07 10.55	42 12 01.18	4.2061032	9.987
Iron.....	257 00 48.81	77 09 17.75	4.2879282	12.058
House.....	257 07 58.33	77 11 39.55	3.9261303	5.242
New Tank.....	298 18 08.35	118 22 39.79	4.0599250	7.133
Chico.....	303 41 04.97	123 45 12.75	4.0449329	6.891
Diamond.....	304 55 36.03	125 00 22.65	4.1147578	8.093

NORTH BUTTE, SUTTER COUNTY, CAL. (Not occupied.)

Highest point on the high northeastern peak of the Marysville Buttes; not the conspicuous sharp rock on east side of peak.

[Latitude 39° 14' 09.61". Longitude 121° 47' 08.58".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Marysville Butte.....	41 45 13.31	221 43 55.47	3.6469599	2.756
Oak.....	134 16 54.18	314 14 36.40	3.8701206	4.608
Traynor.....	185 48 13.73	5 48 40.67	3.9632526	5.710
Bihlman.....	255 15 07.31	75 19 54.32	4.0473695	6.930
Sanders.....	288 49 23.47	108 54 00.01	4.0448233	6.889

OAK, BUTTE COUNTY, CAL.

Near the north end of foothills extending north from the Marysville Buttes, on land owned by Mr. Charles Madison, about 0.5 mile southwest of his residence and about 4 miles west of Pennington, a post office at the foot of the buttes.

Signal: Small cairn.

Station mark: Triangulation tablet set in rock forming base of cairn.

[Latitude $39^{\circ} 16' 57.44''$. Longitude $121^{\circ} 50' 50.07''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Colusa.....	61 04 23.68	240 58 27.51	4.1883815	9.588
Moulton.....	120 12 53.18	300 07 35.89	4.1423112	8.623
Chicken Ranch.....	154 20 03.48	.....	4.2505094	11.063
Grant.....	184 11 25.98	4 11 49.14	4.0779330	7.435
Biggs.....	218 30 27.26	38 35 33.32	4.2682975	11.525
Traynor.....	237 31 26.32	57 34 11.18	3.8687028	4.593
North Butte.....	314 14 36.40	134 16 54.18	3.8701206	4.608
Marysville Butte.....	344 27 12.11	164 28 14.36	3.9448227	5.472

OASIS, BUTTE COUNTY, CAL. (Not occupied.)

Windmill at ranch 4 miles west of Sugar Loaf Peak, about 8 miles from Biggs on main road to Chico.

[Latitude $39^{\circ} 31' 28.48''$. Longitude $121^{\circ} 41' 18.40''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Beauty.....	186 45 36.46	6 46 20.11	4.1421600	8.620
Sugar Loaf.....	263 34 44.72	83 37 31.50	3.7991825	3.913

O'BANION, SUTTER COUNTY, CAL.

Spire on church at O'Banion's Corners, about 5 miles west and 7 miles south of Marysville.

[Latitude $39^{\circ} 01' 33.91''$. Longitude $121^{\circ} 40' 14.78''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Marysville Butte.....	147 13 13.52	327 07 34.79	4.3764714	14.785
Dahling.....	183 27 07.54	3 27 22.73	3.9828982	5.974

PARROT, BUTTE COUNTY, CAL.

Southeast corner of a long, rather flat barn on the Parrot Grant about 14 miles by road from Chico. Route from Chico is along road to Butte City for about 8 miles, to point where road turns south and signboard reads "To Butte City"; thence along road going about west, to gate entering the Parrot Grant, through gate, which is generally locked, past old south ranch house and through pasture about 3 miles to barn.

Signal: On southeast corner of barn.

Station mark: Southeast concrete pier serving as foundation of barn.

[Latitude $39^{\circ} 35' 07.88''$. Longitude $121^{\circ} 55' 59.62''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Smith.....	3 25 12.13	183 25 01.09	3.8414297	4.313
Cabin.....	5 07 18.14	185 06 59.92	3.8843473	4.761
Dead Tree.....	172 30 20.92	352 30 12.67	3.3742007	1.471
Diamond.....	211 54 14.30	31 58 11.99	4.2250021	10.432
Goodspeed.....	243 33 14.33	63 35 55.99	3.8297687	4.199
Cupola Barn.....	297 25 07.56	117 28 20.27	3.9104686	5.056
McKnight.....	340 17 03.92	160 18 46.88	4.0590519	7.119

POPLAR, BUTTE COUNTY, CAL. (Not occupied.)

Tall poplar tree 5 miles southeast of the Stanford sheep ranch.

Station mark: Center of tree.

[Latitude 39° 52' 00.75". Longitude 121° 54' 56.71".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Stanford.....	131 39 09.27	311 36 17.57	3.9299173	5.288
Bald.....	178 47 02.77	358 46 53.76	4.1956786	9.751
Spring.....	252 16 53.76	72 20 15.72	3.8952560	4.882

PROFESSOR, BUTTE COUNTY, CAL.

Windmill at ranch formerly owned by Prof. Harvey, of Biggs, but now owned by Mr. McKnight. It is about 6 miles south and west from Merom on Southern Pacific Railroad and 8 or 9 miles north and west of Biggs, on same railroad.

Station mark: Center of iron pipe extending into ground.

[Latitude 39° 29' 26.38". Longitude 121° 47' 34.74".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Marysville Butte.....	4 12 46.03	134 11 44.57	4.5006023	19.677
Grant.....	18 48 03.89	198 46 23.01	4.0715549	7.327
Cottonwood.....	54 13 55.57	234 10 32.80	3.9732197	5.842
Butte Creek Poplar.....	161 53 48.73	341 52 49.91	3.8513919	4.413
Diamond.....	172 44 47.06	352 43 22.66	4.3975802	15.521
Nelson.....	199 11 10.93	19 12 12.79	3.8489753	4.389
Beauty.....	211 08 49.03	31 13 32.39	4.3118519	12.741
Sugar Loaf.....	253 37 02.10	73 43 48.25	4.2011598	9.874
Chism.....	275 36 23.06	95 42 17.43	4.1265811	8.316
Farnan.....	291 49 47.02	112 00 29.10	4.4157585	16.185
Biggs.....	321 19 07.02	141 22 09.64	4.0414270	6.836

PUFFENBERGER, SUTTER COUNTY, CAL.

Windmill at Puffenberger's ranch, on east side of Sacramento River, about 14 miles below Meridian.

Signal: Windmill.

Station mark: Pipe extending into ground.

[Latitude 38° 59' 51.36". Longitude 121° 47' 37.91".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Marysville Butte.....	174 27 00.02	354 26 00.87	4.3667279	14.457
Tule.....	209 47 41.18	29 49 32.25	3.9311436	5.303

SANDERS, SUTTER COUNTY, CAL.

Windmill on tank house at the Sanders ranch, about 0.2 mile west of Sanders station, on the Northern Electric Railroad. It is about 8 miles west and north of Marysville.

Signal: Windmill.

Station mark: Water pipe extending into ground.

[Latitude 39° 12' 13.38". Longitude 121° 39' 51.22".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Yellow.....	9 16 29.87	189 16 08.40	3.7043191	3.145
Sutter.....	56 52 39.44	236 49 37.50	3.9276262	5.260
Marysville Butte.....	91 13 09.61	271 07 15.34	4.1287481	8.358
North Butte.....	108 54 00.01	288 49 23.47	4.0448233	6.889
Bihlman.....	182 40 16.33	2 40 26.62	3.8077317	3.991
Berg.....	309 26 26.72	129 27 53.50	3.6048898	2.502
Marysville Church.....	316 47 37.87	136 50 37.78	3.9832778	5.979
Yuba Tank.....	330 25 06.83	150 27 01.09	3.9353531	5.354

SMITH, GLENN COUNTY, CAL.

Windmill at the old Smith ranch, at present occupied by Mr. Berney. It is about 7.5 miles by road northeast of Butte City, on the Sacramento River.

Signal: Center of windmill.

Station mark: Pipe extending into ground.

[Latitude 39° 31' 23.21". Longitude 121° 56' 16.96".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Parrot.....	183 25 01.09	3 25 12.13	3.8414297	4.313
West Chimney.....	186 44 41.29	6 44 54.44	3.6231111	2.609
Cupola Barn.....	247 22 46.79	67 26 10.41	3.9176809	5.141
Goodspeed.....	213 02 19.27	33 05 11.87	4.0739186	7.367
McKnight.....	312 01 18.79	132 03 12.70	3.7604329	3.579
Cottonwood.....	331 53 58.17	151 56 07.38	4.0135492	6.411

SPRING, BUTTE COUNTY, CAL.

In the foothills about 13 miles, air line, from Chico. Route from Chico is along the Richardson Springs road to the point where it starts up creek containing running water, thence across creek at first bridge and up hill past school house, thence west to road leading north and along this road until a small cabin in timber is in sight, thence east up a dry creek passing two cabins and an old sheep-dip place where there are several very small springs, and as far up creek as possible (only a short distance can be covered along the creek). The station, which is not on highest point of ridge, is across the creek and up the ridge.

Signal: Pine tree about 25 feet high, trimmed and marked with white cloth. It will be necessary to keep a white cloth on this signal, as there is a dark background behind it as it is seen from all valley points.

Station mark: Triangulation tablet set in large rock at base of tree.

[Latitude 39° 53' 18.16". Longitude 121° 49' 41.71".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
New Tank.....	2 17 57.34	182 17 38.60	4.2400001	10.798
Chico.....	4 59 19.35	184 58 36.95	4.2586265	11.271
House.....	14 21 30.64	194 20 21.43	4.0155184	6.440
Nord.....	42 12 01.18	222 07 10.55	4.2061032	9.987
Hamilton.....	42 38 15.68	222 31 21.91	4.3563549	14.116
Poplar.....	72 20 15.72	252 16 53.76	3.8952560	4.882
Stanford.....	103 19 32.42	283 13 18.61	4.1529729	8.837
Bald.....	149 36 20.08	329 32 48.81	4.1882223	9.585
Iron.....	313 00 28.20	133 04 06.96	4.0454120	6.899

STANFORD, TEHAMA COUNTY, CAL.

Poplar tree on the Stanford sheep ranch, about 4 miles southeast of the town of Vina on Southern Pacific Railroad. There are several houses at the ranch, including the residence, but the top of tree shows above them all.

Station mark: Iron post, distant 5 feet and azimuth 165° from tree.

[Latitude 39° 55' 04.04". Longitude 121° 59' 24.44".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Vina.....	108 19 40.07	288 17 16.86	3.7467406	3.468
Bald.....	210 56 24.41	30 59 07.35	4.0683007	7.272
Spring.....	283 13 18.61	103 19 32.42	4.1529729	8.837
Iron.....	296 11 35.74	116 21 26.70	4.3890396	15.219
Poplar.....	311 36 17.57	131 39 09.27	3.9299173	5.288

SUGAR LOAF (2), BUTTE COUNTY, CAL.

On a prominent round bald hill about 4 miles west by 1 mile north of Oroville, well known locally as "Sugar Loaf."

Signal: Lumber structure 12 feet high, with two targets at right angles to each other extending above it.

Station mark: Triangulation tablet set in rock, 2.15 meters west of northwest from signal.

[Latitude 39° 31' 51.23". Longitude 121° 36' 56.36".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Chism.....	18 30 55.70	198 30 04.12	3.7854538	3.791
Marysville Butte.....	26 05 27.46	205 57 41.04	4.6033248	24.927
Biggs.....	32 45 02.34	212 41 19.22	4.1909082	9.644
Cottonwood.....	66 32 47.86	246 22 39.06	4.3971780	15.507
Professor.....	73 43 48.25	253 37 02.10	4.2011598	9.874
Oasis.....	83 37 31.50	263 34 44.72	3.7991825	3.913
Butte Creek Poplar.....	97 31 05.89	277 23 20.63	4.2455066	10.936
Nelson.....	99 43 20.15	279 37 35.63	4.1175667	8.145
Goodspeed.....	113 12 41.11	293 03 14.37	4.3634446	14.348
Esquon.....	123 20 28.14	303 14 39.74	4.1936286	9.705
Hamilton.....	124 25 29.49	304 10 29.06	4.6101092	25.320
Chico.....	137 32 28.74	317 23 38.35	4.4674307	18.230
Diamond.....	137 55 11.02	317 46 59.47	4.4376856	17.023
Beauty.....	160 33 40.28	340 31 36.93	4.1419536	8.616
Iron.....	162 34 13.18	342 29 42.49	4.5271823	20.919
I. O. O. F.....	301 15 39.23	121 17 08.35	3.5926166	24.320
Farnan.....	327 52 48.29	147 56 44.87	4.2239871	10.407
Palmero.....	331 14 57.65	151 17 36.59	4.0946495	7.727
Fawl.....	352 35 06.27	172 36 03.44	4.2223185	10.367

SUTTER, SUTTER COUNTY, CAL. (Not occupied.)

East cupola on school building in Sutter, a small town about 10 miles west of Marysville.

[Latitude 39° 09' 43.28". Longitude 121° 44' 46.51".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Tule.....	359 22 03.04	179 22 06.18	4.0354064	6.742
Levee.....	44 09 03.12	224 06 11.49	3.9722777	5.829
Marysville Butte.....	127 38 08.71	307 35 21.17	3.9049571	4.992
Sanders.....	236 49 37.50	56 52 39.44	3.9276292	5.260
Dahling.....	307 41 28.46	127 44 35.18	3.9533571	5.581

TRAYNOR, BUTTE COUNTY, CAL.

Windmill at the old Traynor ranch about 8 miles west and north of Gridley, a station on Southern Pacific Railroad.

Station mark: Pipe extending into ground.

[Latitude 39° 19' 06.05" Longitude 121° 46' 29.79".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
North Butte.....	5 48 40.67	185 48 13.73	3.9632526	5.710
Marysville Butte.....	17 19 43.78	197 18 01.33	4.1153477	8.104
Oak.....	57 34 11.18	237 31 26.32	3.8687028	4.593
Moulton.....	99 26 19.33	279 18 16.95	4.2665852	11.480
Grant.....	146 06 12.84	326 03 50.96	3.9823167	5.966
Biggs.....	206 47 08.79	26 49 29.88	4.0721973	7.338
Gridley.....	232 07 05.57	52 10 03.94	3.9311435	5.303

TULE, SUTTER COUNTY, CAL.

Windmill on tank house at the Tule Hunting Club. Route from Marysville west and south to Harkey Corners, thence west to the club. Station is about 12 miles from Marysville.

Station mark: Pipe extending into ground.

[Latitude $39^{\circ} 03' 51.48''$. Longitude $121^{\circ} 44' 41.53''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Puffenberger.....	29 49 32.25	209 47 41.18	3.9311436	5.303
Willow.....	50 51 55.34	230 50 20.38	3.6696706	2.904
Barn.....	99 33 54.26	279 28 55.52	4.0626793	7.178
Brick.....	110 03 42.26	289.57 51.05	4.1537642	8.853
Levee.....	121 44 50.07	301 41 55.48	3.8935015	4.862
Green.....	124 15 39.45	304 10 00.93	4.1929887	9.690
Marysville Butte.....	157 38 10.42	337 35 19.91	4.2313771	10.586
Sutter.....	179 22 06.18	359 22 03.04	4.0354064	6.742
Dahling.....	232 31 25.98	52 34 29.36	3.9447266	5.471
Yuba Tank.....	234 33 28.52	54 38 23.32	4.1392387	8.562
Marysville Church.....	238 00 07.13	58 06 03.23	4.2038160	9.935
Bell.....	343 50 18.61	163 51 21.96	3.9394462	5.405
Dead Willow.....	353 59 04.19	173 59 33.76	4.0328893	6.703

VINA, TEHAMA COUNTY, CAL. (Not occupied.)

Church spire in town of Vina, on Southern Pacific Railroad.

Signal and station mark: Center of spire.

[Latitude $39^{\circ} 56' 00.89''$. Longitude $122^{\circ} 03' 07.58''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Bald.....	233 45 22.64	53 50 28.95	4.1468352	8.713
Stanford.....	288 17 16.86	108 19 40.07	3.7567406	3.468

WEST CHIMNEY, BUTTE COUNTY, CAL. (Not occupied.)

West chimney on the two-story residence on Parrot estate, about 3 miles north of station Smith.

[Latitude $39^{\circ} 33' 38.41''$. Longitude $121^{\circ} 55' 56.31''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
McKnight.....	334 44 53.39	154 46 34.20	3.9481060	5.514
Smith.....	6 44 54.44	186 44 41.29	3.6231111	2.609

WESTCOTT, GLENN COUNTY, CAL.

Center of tank house at Westcott ranch, 1 mile east and 2 miles south of Butte City.

[Latitude $39^{\circ} 26' 16.76''$. Longitude $121^{\circ} 58' 14.23''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Colony.....	197 12 36.38	17 13 07.77	3.6010136	2.479
Leeper.....	271 12 10.27	91 14 05.82	3.6385938	2.704

WILLOW, SUTTER COUNTY, CAL. (Not occupied.)

Lone willow bush about 3.5 miles southwest of station Tule. During high water there is water all the way between the two points, and the station can be reached only from reclamation district No. 70.

[Latitude 39° 02' 15.80". Longitude 121° 47' 12.26".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Levee.....	156 46 22.37	336 45 02.83	3.8858772	4.778
Tule.....	230 50 20.38	50 51 55.34	3.696706	2.904

YELLOW, SUTTER COUNTY, CAL. (Not occupied.)

Windmill on tank house 2 miles north and 4.5 miles west of Marysville.

[Latitude 39° 09' 31.38". Longitude 121° 40' 25.20".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Marysville Butte.....	112 41 10.30	292 35 37.67	4.1364596	8.508
Sanders.....	189 16 08.40	9 16 29.87	3.7043191	3.145
Berg.....	238 08 53.73	58 10 41.93	3.6647099	2.871
Dahling.....	350 48 53.48	170 49 15.26	3.7155263	3.228

YUBA TANK, SUTTER COUNTY, CAL. (Not occupied.)

Center of large black water tank in Yuba City, the county seat of Sutter County.

[Latitude 39° 08' 10.36". Longitude 121° 36' 54.10".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Tule.....	54 38 23.32	234 33 28.52	4.1392387	8.562
Dahling.....	58 13 49.62	238 11 58.19	3.6981064	3.101
Marysville Butte.....	113 45 27.30	293 37 41.41	4.2863630	12.015
Sanders.....	150 27 01.09	330 25 06.83	3.9353531	5.354
Bihlman.....	164 09 40.98	344 07 56.93	4.1601954	8.986
Berg.....	166 58 34.84	346 58 04.84	3.7047335	3.148

Bonanza, Gonzales, Hollister, San Benito, and Salinas 15' quadrangles; Paraiso Springs 30' quadrangle.

MONTEREY COUNTY.

Control for an area of 1,000 square miles in Monterey County was obtained in 1909 by C. F. Urquhart, who extended triangulation southeastward from stations Bardin, Salinas, and Mount Toro; 15 new stations were located.

The State cooperated in the work.

BARDIN, MONTEREY COUNTY, CAL.

On the summit of a brushy ridge in foothills about 8 miles east of Salinas, it is on land owned by the Bardin Bros., of Salinas. Route from Salinas is east by road until road near foothills is reached, thence south to the gate entering Bardin ranch, through the gate, across small flat, and up ridge to station. A team can not be driven up the ridge, but saddle animals can be taken all the way.

30 TRIANGULATION AND PRIMARY TRAVERSE FOR 1909 AND 1910.

Signal and station mark: Live oak tree, on which are cut the letters "U.S.G.S." and a triangle.

[Latitude 36° 40' 06.669". Longitude 121° 31' 10.729".]

To station—	Azimuth.	Back azimuth.	Distance.	
			Log. meters.	Miles.
Mount Toro.....	26 53 19.91	206 50 08.21	4.2476897	10.991
Chalk.....	57 42 56.21	237 34 31.84	4.3958912	15.461
Spreckels.....	66 51 29.22	246 47 02.67	4.0815897	7.498
Blanco.....	85 05 40.90	264 56 42.64	4.3517023	13.965
Salinas.....	92 49 32.45	272 44 35.30	4.0923727	7.686
Castroville.....	117 23 50.78	297 15 21.02	4.3769032	14.800
Gavilan.....	179 54 36.93	359 54 36.57	3.9862352	6.020
Armstrong.....	288 59 29.20	109 06 51.06	4.2891121	12.091
Henry.....	316 26 36.09	136 34 03.76	4.4341412	16.885
Jacks.....	319 57 30.53	140 00 43.62	4.0971588	7.772
Gonzales.....	337 51 09.02	157 53 59.86	4.2768582	11.755
Chualar.....	357 53 08.22	177 53 17.82	4.0353072	6.740

BISHOFF, MONTEREY COUNTY, CAL.

On a sharp peak 3 or 4 miles west-southwest of King City. It is the highest point in the foothills overlooking valley from west. Route from King City is west across the long bridge over Salinas River, thence through gate to Allan Dillon's residence, thence up canyon, past Fred Hansen's residence, to its head, which is foot of peak. From this point the summit may be reached on foot or horseback.

Signal: Greasewood bush about 11 feet high.

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

[Latitude 36° 11' 25.38". Longitude 121° 12' 00.61".]

To station—	Azimuth.	Back azimuth.	Distance.	
			Log. meters.	Miles.
Wiley.....	141 44 49.87	321 42 12.45	4.0309625	6.673
Hanley.....	176 05 44.53	356 05 10.34	4.3252187	13.139
Pinalito.....	218 15 59.06	38 20 19.54	4.2490167	11.025
King City.....	245 21 57.81	65 24 35.54	3.8655621	4.559
Eade.....	259 17 50.12	79 26 01.25	4.3249351	13.131

CHALONE, MONTEREY COUNTY, CAL.

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

Signal: Cairn 7 feet high.

Station mark: Triangulation tablet in rock under center of cairn.

[Latitude 36° 26' 53.04". Longitude 121° 11' 41.93".]

To station—	Azimuth.	Back azimuth.	Distance.	
			Log. meters.	Miles.
Hanley.....	14 15 40.93	194 14 55.55	3.8884515	4.806
Wiley.....	19 26 24.76	199 23 35.79	4.3299724	13.284
Spadoni.....	74 09 52.49	254 02 13.78	4.3012792	12.435
Soledad.....	78 29 53.67	258 25 07.13	4.0886495	7.621
Mount Toro.....	103 17 48.75	283 03 02.53	4.5809152	23.674
Henry.....	114 38 45.60	294 34 38.03	4.0571365	7.087
Jacks.....	125 21 35.71	305 13 12.83	4.4110000	16.008

CHUALAR, MONTEREY COUNTY, CAL. (Not occupied.)

Spire on church in Chualar, a small town on Southern Pacific Railroad (Coast Line).
Signal and station mark: Center of spire.

[Latitude 36° 34' 15.01". Longitude 121° 30' 54.63'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Bardin.....	177 53 17.82	357 53 08.22	4.0353072	6.740
Jacks.....	260 36 48.57	80 39 51.85	3.8893029	4.816
Henry.....	295 47 19.71	115 54 37.31	4.3085751	12.645

EADE, MONTEREY COUNTY, CAL.

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

Signal: Trimmed oak tree.

Station mark: Triangulation tablet in rock 1.7 meters from tree, azimuth signal to tablet 149°.

[Latitude 36° 13' 31.91". Longitude 120° 58' 09.20'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Bishoff.....	79 26 01.25	259 17 50.12	4.3249351	13.131
King City.....	86 37 14.23	266 31 40.74	4.1498586	8.774
Pinalito.....	135 48 10.90	315 44 19.63	4.1457788	8.192

GONZALES, MONTEREY COUNTY, CAL. (Not occupied.)

Cupola on large schoolhouse on west side of town of Gonzales, on Southern Pacific Railroad (Coast Line).

Signal and station mark: Center of cupola.

[Latitude 36° 30' 38.14". Longitude 121° 26' 24.13'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Mount Toro.....	96 37 38.44	276 31 36.54	4.1827506	9.465
Bardin.....	157 53 59.86	337 51 09.02	4.2768582	11.755
Jacks.....	186 36 50.93	6 37 13.00	3.9030213	4.970
Henry.....	280 39 12.72	100 43 49.72	4.0716664	7.329
Spadoni.....	347 35 42.67	167 36 47.81	4.1043813	7.902

HANLEY, MONTEREY COUNTY, CAL.

On a bald hill about 2 miles a little west of north from Metz, a station on Southern Pacific Railroad (Coast Line). Point can be reached with team.

Signal: Cairn 5 feet high.

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

32 TRIANGULATION AND PRIMARY TRAVERSE FOR 1909 AND 1910.

[Latitude 36° 22' 49.83". Longitude 121° 12' 58.38".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Wiley.....	22 21 01.18	202 18 57.62	4.1364925	8.508
Spadoni.....	96 40 51.92	276 33 58.92	4.2421846	10.853
Soledad.....	116 31 40.18	296 27 39.23	4.0532313	7.024
Henry.....	145 21 33.80	325 18 11.82	4.1729144	9.253
Chalone.....	194 14 55.55	14 15 40.93	3.8884515	4.806
Pinalito.....	299 57 29.56	120 02 24.87	4.1567331	8.914
King City.....	335 46 55.73	155.50 08.02	4.2961634	12.289
Bishoff.....	356 05 10.34	176 05 44.53	4.3252187	13.139
Metz.....	357 18 31.43	177 18 34.40	3.4244524	1.651

HENRY, MONTEREY COUNTY, CAL.

On a high hill covered with low brush, about 6 miles a little east of north from Soledad.

Signal: Cairn 5 feet high.

Station mark: Triangulation tablet.

[Latitude 36° 29' 27.15". Longitude 121° 18' 38.44".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Soledad.....	12 50 39.44	192 50 00.26	3.8685757	4.591
Spadoni.....	40 56 32.32	220 53 00.80	4.1316197	8.413
Pole.....	59 44 49.15	239 38 22.80	4.2732093	11.656
Mount Toro.....	98 27 40.36	278 17 01.49	4.4315167	16.783
Gonzales.....	100 43 49.72	280 39 12.72	4.0716664	7.329
Chualar.....	115 54 37.31	295 47 19.71	4.3085751	12.645
Jacks.....	133 34 45.93	313 30 30.76	4.1676008	9.140
Bardin.....	136 34 03.78	316 26 36.09	4.4341412	16.885
Chalone.....	294 34 38.03	114 38 45.60	4.0571365	7.087
Hanley.....	325 18 11.82	145 21 33.80	4.1729144	9.253

JACKS, MONTEREY COUNTY, CAL.

On a brushy hill about 6 miles north of Gonzales, a town on Southern Pacific Railroad (Coast Line).

Signal: Small cairn.

Station mark: Triangulation tablet in center of cairn. There is a large rock 25.40 meters north-northeast of signal.

[Latitude 36° 34' 55.91". Longitude 121° 25' 47.07".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Gonzales.....	6 37 13.00	186 36 50.93	3.9030213	4.970
Mount Toro.....	68 55 30.53	248 49 06.25	4.2355948	10.689
Chualar.....	80 39 51.85	260 36 48.57	3.8893029	4.816
Salinas.....	116 35 00.19	296 26 50.24	4.3579821	14.169
Bardin.....	140 00 43.62	319 57 30.53	4.0971588	7.772
Chalone.....	305 13 12.83	125 21 35.71	4.4110000	16.008
Henry.....	313 30 30.76	133 34 45.93	4.1676008	9.140
Spadoni.....	354 55 33.12	174 56 16.26	4.3106048	12.704

KING CITY, MONTEREY COUNTY, CAL. (Not occupied.)

Center of high water tank in King City, a town on Southern Pacific Railroad (Coast Line).

[Latitude 36° 13' 04.53". Longitude 121° 07' 33.57".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Bishoff.....	65 24 35.54	245 21 57.81	3.8655621	4.559
Hanley.....	155 50 08.02	335 46 55.73	4.2961634	12.289
Pinalito.....	201 42 25.77	21 44 08.37	4.0681168	7.269
Eade.....	266 31 40.74	86 37 14.23	4.1498586	8.774

METZ, MONTEREY COUNTY, CAL. (Not occupied.)

North end of long warehouse in town of Metz, on Southern Pacific Railroad (Coast Line).

[Latitude 36° 21' 23.71". Longitude 121° 12' 53.37".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Wiley.....	28 02 34.93	208 00 28.44	4.0546567	7.047
Spadoni.....	105 00 56.71	284 54 00.87	4.2374244	11.240
Hanley.....	177 18 34.40	357 18 31.43	3.4244524	1.651

MOUNT TORO, MONTEREY COUNTY, CAL.

Coast and Geodetic Survey station on a smooth, grassy hill of the untimbered range of mountains bordering Salinas Valley on the west, about 500 yards south of Mr. A. B. Parson's house and upon his land.

Station mark: Copper bolt set in a flat-topped rock 2 feet beneath surface of ground and in center of a concrete pier; a cross on a copper bolt in the top of the pier, 1.498 meters above the subsurface mark, constitute the surface mark. Northwest of the station were the vertical pier, distant 10.18 meters; the zenith telescope pier (concrete), distant 19.81 meters, azimuth 135° 55'; and the transit pier (concrete), distant 20.85 meters, azimuth 132° 25'.

[Latitude 36° 31' 34.742". Longitude 121° 36' 32.283".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Chalk.....	100 44 34.51	280 39 22.41	4.1228971	8.246
Castroville.....	153 45 44.99	333 40 28.00	4.4741210	18.513
Loma Prieta.....	162 12 31.32	342 04 05.43	4.8338624	42.385
Salinas.....	165 03 43.38	345 01 58.44	4.2292924	10.535
Mocho.....	182 34 42.13	2 36 38.58	5.0240270	65.672
Gavilan.....	197 21 22.65	17 24 34.19	4.4262930	16.582
Bardin.....	206 50 08.21	26 53 19.91	4.2476897	10.991
Santa Ana.....	218 31 06.92	38 44 36.72	4.7311612	33.459
Jacks.....	248 49 06.25	68 55 30.53	4.2355948	10.689
Armstrong.....	250 15 48.18	70 26 20.87	4.4477396	17.422
Gonzales.....	276 31 36.54	96 37 38.44	4.1827506	9.465
Henry.....	278 17 01.49	98 27 40.36	4.4315167	16.783
Chalone.....	283 03 02.53	103 17 48.75	4.5809152	23.674
Pole.....	321 45 48.39	141 50 00.10	4.2317425	10.595

PINALITO, MONTEREY COUNTY, CAL.

On a prominent hill locally known as Pinalito. It is on John M. Matthew's cattle ranch 7 or 8 miles north-northeast of King City, a station on Southern Pacific Railroad (Coast Line). A team may be driven within 1.5 miles of the station by road from King City through Mr. Matthew's ranch. There are several pine trees standing on the hill.

Signal: Small pine tree braced with pine poles.

Station mark: Triangulation tablet set in base rock at foot of the tree; a small cover of rock over tablet.

[Latitude 36° 18' 57.11". Longitude 121° 04' 40.12".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
King City.....	21 44 08.37	201 42 25.77	4.0681168	7.269
Bishoff.....	38 20 19.54	218 15 29.06	4.2490167	11.025
Wiley.....	72 45 39.39	252 38 41.02	4.2665609	11.479
Hanley.....	120 02 24.87	299 57 29.56	4.1567331	8.914
Eade.....	315 44 19.63	135 48 10.90	4.1457788	8.692

POLE, MONTEREY COUNTY, CAL. (Not occupied.)

[Latitude 36° 24' 20.04". Longitude 121° 29' 28.77'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Mount Toro.....	141 50 00.10	321 45 48.39	4.2317425	10.595
Henry.....	239 38 22.80	59 44 49.15	4.2732093	11.656

SOLEDAD, MONTEREY COUNTY, CAL.

Railroad water tank in town of Soledad on Southern Pacific Railroad (Coast Line).

Signal: Water tank.

Station mark: Center of tank.

[Latitude 36° 25' 33.43". Longitude 121° 19' 44.38'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Spadoni.....	67 17 37.18	247 14 44.96	3.8941523	4.870
Henry.....	192 50 00.26	12 50 39.44	3.8685757	4.591
Chalone.....	258 25 07.13	78 29 53.67	4.0886495	7.621
Hanley.....	296 27 39.23	116 31 40.18	4.0532313	7.024
Wiley.....	344 26 56.48	164 28 53.48	4.2643450	11.421

SPADONI, MONTEREY COUNTY, CAL.

On a bald foothill about 5 miles west-southwest of Soledad, a town on Southern Pacific Railroad (Coast Line). The point is on the south side of a deep gulch about 0.5 mile from Mr. Spadoni's residence.

Signal: Lumber tripod.

Station mark: To be set later.

[Latitude 36° 23' 55.19". Longitude 121° 24' 34.50'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Gonzales.....	167 36 47.81	347 35 42.67	4.1043813	7.902
Jacks.....	174 56 16.26	354 55 32.12	4.3106048	12.704
Henry.....	220 53 00.80	40 56 32.32	4.1316197	8.413
Soledad.....	247 14 44.96	67 17 37.18	3.8941523	4.870
Chalone.....	254 02 13.78	74 09 52.49	4.3012792	12.435
Hanley.....	276 33 58.92	96 40 51.92	4.2421846	10.853
Metz.....	284 54 00.87	105 00 56.71	4.2574244	11.240
Wiley.....	320 19 34.21	140 24 23.07	4.2801675	11.845

WILEY, MONTEREY COUNTY, CAL.

On a bald ridge about 12 miles south-southeast of Soledad and about the same distance northwest of King City, on land owned by Wheeler Wiley. Station can be reached by driving to foot of hill from Soledad or King City; thence on horseback to highest point of hill.

Signal: Redwood pole 4 by 4 inches and 13 feet high, set 3.5 feet in ground, bearing two targets at right angles to each other.

Station mark: Triangulation tablet set in ground at foot of pole.

[Latitude 36° 15' 58.91". Longitude 121° 16' 26.98'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Spadoni.....	140 24 23.07	320 19 34.21	4.2801675	11.845
Soledad.....	164 28 53.48	344 26 56.48	4.2643450	11.421
Chalone.....	199 23 35.79	19 26 24.76	4.3299724	13.284
Hanley.....	202 18 57.62	22 21 01.18	4.1364925	8.508
Metz.....	208 00 28.44	28 02 34.93	4.0546567	7.047
Pinalito.....	252 38 41.02	72 45 39.39	4.2665609	11.479
Bischoff.....	321 42 12.45	141 44 49.87	4.0309625	6.673

CALIFORNIA-NEVADA.

TRIANGULATION STATIONS.

Ivanpah 1° quadrangle.

INYO AND SAN BERNARDINO COUNTIES, CAL.; CLARK COUNTY, NEV.

In the fall of 1909 C. F. Urquhart extended triangulation over an area of 1,000 square miles from stations Nopah and Olcott, approximate United States standard datum.

This triangulation is dependent on a weak base (Nopah and Olcott), and it should be connected with stations whose coordinates are well determined before the positions can be finally computed.

CLARK, SAN BERNARDINO COUNTY, CAL.

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

Signal: Cairn 6 feet high.

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

[Latitude 35° 31' 31.93". Longitude 115° 35' 18.04".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Kelso.....	14 52 40.49	194 47 57.35	4.6840579	30.020
Rocky.....	34 09 16.64	214 03 07.50	4.4572781	17.809
Kingston.....	127 06 18.76	306 54 53.01	4.5693575	23.052
Nopah.....	140 19 21.30	320 02 05.87	4.8419161	43.178
Olcott.....	189 09 32.54	9 12 36.11	4.6942983	30.736
Ivanpah.....	212 36 23.04	32 41 05.96	4.3554376	14.086
Black.....	227 27 09.99	47 46 15.60	4.8244761	41.479
McCollough.....	256 50 33.87	77 04 50.12	4.5804172	23.646
Crescent.....	277 18 51.11	97 34 52.00	4.6238382	26.133
Palisade.....	285 27 07.02	105 39 35.27	4.5280023	20.958
Hart.....	293 31 51.35	113 49 34.04	4.7031533	31.369
New York.....	319 28 40.83	139 38 16.45	4.5873242	24.026

KELSO, SAN BERNARDINO COUNTY, CAL.

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

Signal: Cairn 6 feet high.

Station mark: Triangulation tablet 1.3 meters north of signal.

[Latitude 35° 06' 16.57". Longitude 115° 43' 27.83".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Kingston.....	165 57 05.76	345 50 27.38	4.8523483	44.228
Rocky.....	170 48 25.96	350 47 01.12	4.3667854	14.459
Clark.....	194 47 57.35	14 52 40.49	4.6840579	30.020
McCollough.....	221 42 12.68	42 01 07.95	4.8705980	46.126
New York.....	245 10 16.30	65 24 31.15	4.6161919	25.677

KINGSTON, SAN BERNARDINO COUNTY, CAL.

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

36 TRIANGULATION AND PRIMARY TRAVERSE FOR 1909 AND 1910.

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

Station mark: Triangulation tablet under center of cairn.

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

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Nopah.....	154	23	33.23	334	17	45.05	4.5369904	21.396
Olcott.....	234	34	49.68	54	49	23.12	4.6614279	28.496
Ivanpah.....	274	18	06.35	94	34	17.15	4.6225419	26.055
McCollough.....	281	26	27.24	101	52	12.00	4.8327703	42.279
Clark.....	306	54	53.01	127	06	18.76	4.5693575	23.052
New York.....	313	13	46.85	133	34	47.43	4.8769283	46.803
Kelso.....	345	50	27.38	165	57	05.76	4.8523483	44.228
Rocky.....	343	29	26.85	163	34	40.75	4.6815389	29.846

NEW YORK, SAN BERNARDINO COUNTY, CAL.

Station is about 0.2 mile northwest of the highest peak on New York Mountain, a well-known mountain about 6 miles south of Leastalk. The highest point is a sharp, rocky peak on which there was no material available to build a signal. It is probably 100 feet higher than point used, which is the next highest on mountain.

Signal: Cairn 6 feet high, surrounding a tree.

Station mark: Triangulation tablet set under center of cairn.

[Latitude 35° 15' 37.11". Longitude 115° 18' 44.18".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Kelso.....	65	24	31.15	245	10	16.30	4.6161919	25.677
Rocky.....	97	59	58.81	277	44	16.76	4.6191132	25.850
Kingston.....	133	34	47.43	313	13	46.85	4.8769283	46.803
Clark.....	139	38	16.45	319	28	40.83	4.5873242	24.026
McCollough.....	197	34	19.02	17	38	56.33	4.6007709	24.781
Palisade.....	200	03	40.99	20	06	31.77	4.3364873	13.485
Crescent.....	214	46	34.09	34	52	56.59	4.4654993	18.149
Hart.....	246	34	55.93	66	43	00.83	4.3634431	14.348

NOPAH, INYO COUNTY, CAL.

On highest point of the range west of Pahump Valley; about 3 miles a little south of east of Twelvemile Spring, about 10 miles northeast of Resting Spring, and about 20 miles southwest of Pahump and Manse ranches. Station was reached by ascending from Twelvemile Spring, and horses were taken to peak from the south.

Station mark: Aluminum tablet set in solid rock under a cairn 5 feet high.

[Latitude 36° 00' 23.68". Longitude 116° 04' 49.56".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Telescope.....	101	36	01	281	00	42	4.96683	57.568
Funeral.....	102	32	32	282	13	21	4.70009	31.149
Furnace.....	131	59	36	311	41	46	4.80710	39.852
Cane.....	174	19	03	354	15	40	4.93362	53.330
Charleston.....	229	34	19	49	47	53	4.65786	28.262
Olcott.....	274	47	46.00	95	08	11.56	4.7197100	32.588
Clark.....	329	02	05.87	140	19	21.30	4.8419161	43.178
Kingston.....	334	17	45.05	154	23	33.23	4.5369904	21.396

PALISADE, SAN BERNARDINO COUNTY, CAL.

State-line point on the California-Nevada boundary, about 10 miles north-northeast from Leastalk and 3 miles from Nipton.

[Latitude 35° 26' 38.47". Longitude 115° 13' 49.02".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
New York.....	20 06 31.77	200 03 40.99	4.3364873	13.485
Clark.....	105 39 35.27	285 27 07.02	4.5280023	20.958

ROCKY, SAN BERNARDINO COUNTY, CAL. (Not occupied.)

Highest point on a low mountain about 20 miles north of Kelso, on San Pedro, Los Angeles & Salt Lake Railroad.

[Latitude 35° 18' 41.93". Longitude 115° 45' 54.98".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Kingston.....	163 34 40.75	343 29 26.85	4.6815389	29.846
Clark.....	214 03 07.50	34 09 16.64	4.4572781	17.809
New York.....	277 44 16.76	97 59 58.81	4.6191132	25.850
Kelso.....	350 47 01.12	170 48 25.96	4.3667894	14.459

BLACK, CLARK COUNTY, NEV. (Not occupied.)

Highest point on a long, flat mountain, in northeast corner of Ivanpah 1° quadrangle.

[Latitude 35° 55' 52.15". Longitude 115° 02' 36.21".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
McCollough.....	18 42 05.66	198 37 19.47	4.5847593	23.884
Clark.....	47 46 15.60	227 27 09.99	4.8244761	41.479
Olcott.....	95 25 52.75	275 09 45.51	4.6177325	25.768

CRESCENT, CLARK COUNTY, NEV. (Not occupied.)

On conspicuous peak about 10 miles east of Nipton, a station on the San Pedro, Los Angeles & Salt Lake Railroad.

Station mark: Small cairn on summit.

[Latitude 35° 28' 35.09". Longitude 115° 07' 43.38".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
New York.....	34 52 56.59	214 46 34.09	4.4654993	18.149
Clark.....	97 34 52.00	277 18 51.11	4.6238382	26.133
McCollough.....	161 53 00.11	341 51 14.05	4.1693911	9.178

HART, CLARK COUNTY, NEV. (Not occupied.)

On highest point of range north of Hart mining camp.

[Latitude 35° 20' 34.09". Longitude 115° 04' 45.09".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
New York.....	66 43 00.83	246 34 55.93	4.3634431	14.348
Clark.....	113 49 34.04	293 31 51.35	4.7031533	31.369
McCollough.....	162 32 12.37	342 28 43.01	4.4808615	18.802

IVANPAH, CLARK COUNTY, NEV. (Not occupied.)

Highest point on the highest peak in range west of Ivanpah Valley. The road from Leastalk, Cal., to Sandy, Nev., passes south of the station where it crosses the divide.

[Latitude 35° 41' 51.33". Longitude 115° 27' 12.16".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Clark.....	32 41 05.96	212 36 23.04	4.3554376	14.086
Kingston.....	94 34 17.15	274 18 06.35	4.6225419	26.055
Olcott.....	171 46 18.37	351 44 37.89	4.4778915	18.674
McCollough.....	292 51 44.96	113 01 19.82	4.4304481	16.742

MCCOLLOUGH, CLARK COUNTY, NEV.

On about the highest point of the McCollough Range, about 15 miles northeast of Nipton, a station on the San Pedro, Los Angeles & Salt Lake Railroad. Two other peaks about 4 miles southeast of this point and a sharp rocky peak about the same distance northwest are almost as high as the point used.

Animals can be taken to the summit of peak, but the last part of climb is rather rough. There is supposed to be water in the vicinity of peak, but none was found in 1909.

Signal: Juniper tree, about 10 feet high, very near the highest point of peak. All other high trees were cut down.

Station mark: Aluminum tablet set in rock, 1.8 meters from tree, azimuth from tablet to signal 110°.

[Latitude 35° 36' 10.55". Longitude 115° 10' 45.84".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
New York.....	17 38 56.33	197 34 19.02	4.6007709	24.781
Kelso.....	42 01 07.95	221 42 12.68	4.8705980	46.126
Clark.....	77 04 50.12	256 50 33.87	4.5804172	23.646
Kingston.....	101 52 12.00	281 26 27.24	4.8327703	42.279
Ivanpah.....	113 01 19.82	292 51 44.96	4.4304481	16.742
Olcott.....	144 14 31.57	324 03 14.46	4.6959442	30.853
Black.....	198 37 19.47	18 42 05.66	4.5847593	23.884
Crescent.....	341 51 14.05	161 53 00.11	4.1693911	9.178
Hart.....	342 28 43.01	162 32 12.37	4.4808615	18.802

OLCOTT, CLARK COUNTY, NEV.

Highest point on Mount Olcott. It is about 36 miles southwest of Las Vegas, 40 miles southeast of Manse post office, and 3 miles east of the Potosi mine. The station can be reached from Mountain Spring by going 2.25 miles southeast to forks of road, thence southwest to Hussey mine via Potosi mine, and eastward on south slope of mountain to peak.

Station mark: Tablet cemented in rock.

[Latitude 35° 57' 56.37". Longitude 115° 30' 03.81".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Clark.....	9 12 36.11	189 09 32.54	4.6942983	30.736
Kingston.....	54 49 23.12	234 34 49.68	4.6014279	28.496
Nopah.....	95 08 11.56	274 47 46.00	4.7197100	32.588
Furnace.....	115 40 31	295 01 06	5.04353	68.688
Charleston.....	152 50 41	332 43 49	4.58203	23.735
Sheep.....	198 16 08	18 25 06	4.85839	44.848
Black.....	275 09 45.51	95 25 52.75	4.6177325	25.768
McCollough.....	324 03 14.46	144 14 31.57	4.6959442	30.853
Ivanpah.....	351 44 37.89	171 46 18.37	4.4778915	18.674

COLORADO.

TRIANGULATION STATIONS.

Breckenridge special, Como, Georgetown, James Peak, Leadville, and Mount Powell quadrangles.

CLEAR CREEK AND SUMMIT COUNTIES.

Descriptions and preliminary positions, on approximate United States standard datum, of primary triangulation stations Democrat and Grindal, located in 1903 by H. L. Baldwin, jr., and of stations located by primary triangulation from them in 1908 by D. F. C. Moor.

BALD, SUMMIT COUNTY, COLO. (Not occupied.)

[Latitude 39° 26' 44.2". Longitude 105° 58' 15.2".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Independence.....	19 11 05	4.20492	9.960
Glacier.....	59 52 01	3.93582	5.360

DEMOCRAT, CLEAR CREEK COUNTY, COLO.

On Republican Mountain, 2 miles west of Georgetown. Point is best reached by following trail up first prominent gulch north of Georgetown, just at city limits. Follow this to summit of mountain, thence south along ridge to highest point. Elevation, 12,393 feet.

Station mark: Rock monument, 4 feet in diameter at base and 4 feet high.

Reference mark: Bronze triangulation tablet cemented in solid rock nearly at highest point of mountain; true azimuth from station 32° 52'; distance 6 feet.

[Latitude 39° 42' 52.29". Longitude 105° 44' 05.81".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
South Argentine.....	17 33 54	197 32 16	4.07537	7.391
Gray.....	38 19 35	218 16 26	4.05612	7.071
Kingston.....	206 04 56.09	26 08 11.11	4.2169623	10.240
Chief.....	283 09 57.48	103 18 06.18	4.2724927	11.637
Grindal.....	332 16 42.52	152 18 23.64	3.9093666	5.043

GIBSON, SUMMIT COUNTY, COLO.

On summit of Gibson Hill, 1 mile northeast of Breckenridge.

Signal: Target signal of sawed lumber over tablet.

Station mark: Aluminum tablet cemented in rock 18 by 24 inches.

[Latitude 39° 29' 47.1". Longitude 106° 01' 44.8".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Swan.....	.....	.....	4.23569	10.692
Independence.....	227 11 28	47 16 02	4.14565	8.690
Glacier.....	.....	96 01 39	4.09801	7.787
Guyot.....	297 46 34	.....	3.94966	5.534

GLACIER, SUMMIT COUNTY, COLO.

On summit of Continental Divide, 1 mile west of Whale Peak and about 3 miles northeast of Mount Guyot. It is best reached from Breckenridge or Swan City by wagon road to Georgia Pass, then following summit of divide about 1 mile northeast to station.

Signal: Rock monument, 4 feet at base and 6 feet high.

Station mark: Aluminum tablet at base of monument.

[Latitude 39° 29' 04.8". Longitude 105° 53' 03.3".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Bald.....	59 52 01	.....	3.93582	5.360
Gibson.....	96 01 39	.....	4.09801	7.787
Swan.....	128 05 55	.....	4.17161	9.225
Independence.....	168 33 05	348 32 07	4.04226	6.849
Gray.....	.....	19 11 26	4.24464	10.914
South Argentine.....	213 03 10	33 07 17	4.22851	10.516

GRAY, SUMMIT COUNTY, COLO.

On summit of Grays Peak, which is best reached from Argentine or Montezuma by trail up Chihuahua Gulch about 1 mile, thence along trail up creek which heads directly south of peak. Animals can be taken to top.

Station mark: Center of top of northwest corner of old stone hut. Height 10 feet. This corner is the highest by 5 feet. Aluminum tablet cemented in rock 12 by 12 by 19 inches. Instrument over tablet. Tablet is south of monument, distance 11 feet.

[Latitude 39° 38' 02.7". Longitude 105° 49' 01.7".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Glacier.....	19 11 26	.....	4.24464	10.914
Independence.....	.....	233 54 24	3.99270	6.110
Democrat.....	218 16 26	38 19 35	4.05672	7.071
Grindal.....	260 48 45	80 53 35	4.03985	6.811
South Argentine.....	304 47 29	124 49 01	3.62578	2.625

GRINDAL, CLEAR CREEK COUNTY, COLO.

On the first high point above timber line on Sugarloaf Mountain, about 5 miles south of Georgetown.

Station mark: Rock monument, 4 feet in diameter at base and 4 feet high.

Reference mark: A bronze triangulation tablet cemented in solid rock; true azimuth 281° 17'; distance, 7.6 feet from station mark.

[Latitude 39° 38' 59.23". Longitude 105° 41' 27.89".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
South Argentine.....	60 34 20	240 31 03	3.92669	5.249
Gray.....	80 53 35	260 48 45	4.03985	6.811
Democrat.....	152 18 23.64	332 16 42.52	3.9093666	5.043
Kingston.....	189 01 21.28	9 02 55.18	4.3475797	13.833
Chief.....	258 36 51.74	78 43 19.32	4.1691625	9.173

GUYOT, SUMMIT COUNTY, COLO. (Not occupied).

[Latitude 39° 27' 32.4". Longitude 105° 56' 15.3".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Gibson.....	297 46 34	3.94966	5.534
Independence.....	9 58 43	4.14169	8.611

INDEPENDENCE, SUMMIT COUNTY, COLO.

On most northerly point of St. Johns Mountain, locally known as Independence Mountain. Best reached from Montezuma by road and trail up St. Johns Gulch to summit of ridge.

Station mark: Rock monument, 4 feet in diameter at base and $5\frac{1}{2}$ feet high, over aluminum tablet.

[Latitude $39^{\circ} 44' 55.0''$. Longitude $105^{\circ} 54' 34.9''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Guyot.....	9 58 43	.....	4.14169	8.611
Gibson.....	47 16 02	227 11 28	4.14565	8.690
Swan.....	80 10 15	.....	3.98391	5.988
Gray.....	233 54 24	53 57 55	3.99270	6.110
South Argentine.....	253 28 55	73 34 00	4.07588	7.400
Bald.....	19 11 05	.....	4.20492	9.960
Glacier.....	348 32 07	168 33 05	4.04226	6.849

SOUTH ARGENTINE, SUMMIT COUNTY, COLO.

On first summit, 0.5 mile south of Argentine Pass, at head of Leavenworth Gulch.

Station mark: Rock monument 5 feet high, with 4-foot base.

Reference mark: Aluminum tablet. Distance from monument, 6.1 feet northwest.

[Latitude $39^{\circ} 36' 44.6''$. Longitude $105^{\circ} 46' 36.3''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Glacier.....	33 07 17	213 03 10	4.22851	10.516
Independence.....	73 34 00	253 28 55	4.07588	7.400
Gray.....	124 49 01	304 47 29	3.62578	2.625
Democrat.....	197 32 18	17 33 54	4.07537	7.391
Grindal.....	240 31 03	60 34 20	3.92669	5.249

SWAN, SUMMIT COUNTY, COLO.

On summit of timbered ridge about 2 miles east of Dickey.

Signal: Target signal over tablet.

Station mark: Tablet in rock 8 by 12 by 14 inches. Instrument over point.

[Latitude $39^{\circ} 34' 01.5''$. Longitude $106^{\circ} 01' 12.7''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Independence.....	80 10 15	3.98391	5.988
Glacier.....	128 05 55	4.17161	9.225

Hotchkiss and Montrose 30' quadrangles.

HINSDALE, MONTROSE, AND OURAY COUNTIES.

Primary triangulation was extended in 1909 by Gilbert Young from Coast and Geodetic Survey stations Uncompahgre and Sneffels, for the control of the Montrose 30' quadrangle. The results of the work on United States standard datum are given in the following list:

CASTLE ROCK, OURAY COUNTY, COLO.

On north end of Cimarron Ridge (elevation 11,400 feet), between Cimarron Creek and Uncompahgre Valley. It is on a bare, rocky point on west side about 10 miles east of Colona.

42 TRIANGULATION AND PRIMARY TRAVERSE FOR 1909 AND 1910.

Station mark: Bronze tablet.

Signal: Tripod.

[Latitude 38° 18' 58.14". Longitude 107° 38' 14.98".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Sneffels.....	21 22 16.95	201 16 33.67	4.5705205	23.114
Horsefly.....	62 13 32.19	242 02 37.66	4.4635032	18.066
Table Mount.....	140 19 30.07	320 11 37.43	4.4603630	17.935
Signal Hill.....	168 53 11.17	348 51 10.71	4.3866362	15.135
Uncompahgre.....	330 20 45.12	150 27 16.65	4.4940878	19.384

HORSEFLY, OURAY COUNTY, COLO.

On the highest point of the mountain known as Horsefly Peak, about 9 miles west of Colona.

Signal: Rock cairn 6 feet high.

Station mark: Aluminum tablet.

[Latitude 38° 11' 37.42". Longitude 107° 55' 52.10".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Table Mount.....	191 20 54.78	11 23 58.75	4.5623060	22.681
Signal Hill.....	209 08 02.33	29 16 58.13	4.6329581	26.688
Castle Rock.....	242 02 37.66	62 13 32.19	4.4635032	18.066
Uncompahgre.....	288 03 18.17	108 20 41.92	4.6368392	26.927
Sneffels.....	329 50 10.15	149 55 19.59	4.3865102	15.131

SIGNAL HILL, MONTROSE COUNTY, COLO.

On a round top on ridge between Gunnison River canyon and Cedar Creek, about 0.5 mile west of Government road to east portal of Gunnison tunnel. Station can be reached by road from Cedar Creek station, which is about 6 miles south of the point.

Signal: A tripod.

Station mark: Iron post filled with cement; nail set in top. The post is covered over with a loose plate of cement.

[Latitude 38° 31' 53.24". Longitude 107° 41' 28.82".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Horsefly.....	29 16 58.13	209 08 02.33	4.6329581	26.688
Table Mount.....	82 58 23.85	262 52 30.82	4.1410051	8.597
Castle Rock.....	348 51 10.71	168 53 11.17	4.3866362	15.135

SNEFFELS, OURAY COUNTY, COLO.

About 1 mile west of the town of Ouray.

Station mark: A rock monument about 4 feet high on summit of peak.

[Latitude 38° 00' 14.28". Longitude 107° 47' 30.59".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Horsefly.....	149 55 19.59	329 50 10.15	4.3865102	15.131
Mesa.....	161 21 47.8	341 07 21.2	5.0215579	65.299
Uncompahgre.....	255 20 34.1	75 32 46.6	4.4764215	18.611
Castle Rock.....	201 16 33.67	21 22 16.95	4.5705205	23.114
Sherman.....	285 28 47.5	105 42 19.2	4.5245510	20.792

TABLE MOUNT, MONTROSE COUNTY, COLO.

On extreme east end of an adobe hill about 2 miles north of Montrose.

Station mark: Iron post.

Signal: Pole and flag.

[Latitude 38° 30' 57.97". Longitude 107° 50' 55.63'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Horsefly.....	11 23 58.75	191 20 54.78	4.5623060	22.681
Signal Hill.....	262 52 30.82	82 58 23.85	4.1410051	8.597
Castle Rock.....	320 11 37.43	140 19 30.07	4.4603630	17.935

UNCOMPAGHRE, HINSDALE COUNTY, COLO.

Station of the Coast and Geodetic Survey, on summit of Uncompahgre Peak, on north side, about 10 feet from edge of perpendicular cliff of which this side of mountain consists. The summit is inaccessible except from south side. Lake City, at the terminus of a branch of the Denver & Rio Grande Railroad, which leaves the main road at Sapinero, is distant about 8 miles by air line southeast of peak, and is the nearest and most convenient railroad town.

Station mark: A cross cut in top of a half-inch copper bolt leaded into solid rock. The surface mark is a half-inch hole in a brick cemented into top of masonry foundation pier for theodolite, built around and over station bolt. Top of brick is 4 inches above bolt. The usual circular stone ring wall, inner diameter 11 feet, concentric with station bolt, was left standing.

Reference marks: Consist of 4 drill holes in solid rock, filled with lead; one south 89° 58' west, distant 9.35 feet; one north 0° 11' west, distant 8.71 feet; one north 89° 56' west, distant 9.4 feet, and one south 3° 37' west, distant 8.12 feet, from the geodetic point. The brick latitude pier, bearing south 54° 05' east, distant 50.11 feet, and the stone pendulum house, bearing south 28° 26' east, distant 134.15 feet, were also left standing.

[Latitude 38° 04' 18.42". Longitude 107° 27' 41.78'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Sneffels.....	75 32 46.60	255 20 34.1	4.4764217	18.611
Treasury Mountain.....	196 43 01.82	16 56 36.24	5.0387020	67.929
Horsefly.....	108 20 41.92	288 03 18.17	4.6368392	26.927
Castle Rock.....	150 27 16.65	330 20 45.12	4.4940878	19.384
Mount Ouray.....	249 49 54.38	70 35 52.02	5.0611148	71.526
Lake.....	282 30 36.9	102 38 39.2	4.2813527	11.877
Sherman.....	348 59 42.2	169 01 03.2	4.2261074	10.458
South River.....	322 24 10.27	142 41 50.92	4.8424016	43.227
Pyramid.....	351 57 49.33	172 00 23.20	4.6427600	27.297
San Luis.....	281 16 05.02	101 35 42.15	4.6770430	29.539
Bristol.....	310 41 43.10	130 56 43.65	4.6746191	29.374
La Garita.....	287 11 57.80	107 34 53.28	4.7568771	35.500
Sapinero.....	192 30 48	12 35 11	4.67699	29.474
Cebolla.....	206 29 35	26 38 28	4.67002	29.065
Agency.....			4.75408	35.272

COLORADO-NEW MEXICO.**TRIANGULATION STATIONS.**

Mesa Verde Park special quadrangle, Cortez, Hesperus, and Ignacio 30' quadrangles, Colo., Shiprock and Turley quadrangles, N. Mex.

LA PLATA AND MONTEZUMA COUNTIES, COLO., SAN JUAN COUNTY, N. MEX.

The following geodetic positions on United States standard datum were located by C. F. Urquhart in 1910, and are based on positions of Basin and Cox, located in 1906.

BALD, MONTEZUMA COUNTY, COLO. (Not occupied.)

Highest point of a bald peak about 10 miles south-southwest of Pinon station.

[Latitude 37° 08' 45.33". Longitude 108° 37' 26.07".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Pinon.....	198 53 09.22	18 54 59.77	4.1434817	8.646
Park.....	223 56 44.77	44 02 39.48	4.3184608	12.936
Menefee.....	238 51 54.44	59 05 32.47	4.5897774	24.162
Basin.....	266 51 35.36	87 14 13.26	4.7446360	34.513

BASIN, LA PLATA COUNTY, COLO.

On the highest point of the large ridge 0.5 mile northwest of pine forest. The station is about 12 miles south of Durango, 1.5 miles east of the east road down La Plata River, and about 3 miles west of Brown's sawmill, which is reached by going south on the Las Animas River road from Durango 10 miles, thence west 3 miles. The ascent of the ridge is very steep, and the Brown's mill route, though longer, is somewhat easier.

Station mark: Aluminum tablet set in boulder 6 feet east of a small rock monument.

[Latitude 37° 10' 18.11". Longitude 107° 59' 57.99".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Shiprock.....	54 28 54.01	233 58 44.54	4.9631207	57.078
Bald.....	87 14 13.26	266 51 35.36	4.7446360	34.513
Pinon.....	101 36 49.24	281 16 00.07	4.7156038	32.282
Park.....	106 37 05.81	286 20 20.62	4.6306018	26.543
Morfield.....	107 58 22.36	287 43 51.31	4.5716572	23.174
Lookout.....	113 27 42.98	293 12 30.34	4.6072150	25.152
Menefee.....	127 57 05.66	307 48 03.21	4.4468684	17.387
Crevasse.....	224 58 27.88	178 31 27.85	4.6975133	30.964
Bench mark 8169.....	232 18 20.07	52 24 41.52	4.2929427	12.198
Piedra.....	280 33 12.98	100 52 54.44	4.6917007	30.553
Cox.....	358 31 14.37	178 31 27.85	4.3510582	13.317

CORTEZ, MONTEZUMA COUNTY, COLO. (Not occupied.)

Cupola on schoolhouse in Cortez, the county seat of Montezuma County.

Station mark: Center of cupola.

[Latitude 37° 20' 52.55". Longitude 108° 34' 59.05".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Menefee.....	274 29 03.23	94 41 13.99	4.4735573	18.489
Park.....	304 28 36.43	124 33 02.83	4.1183609	8.160
Pinon.....	354 33 30.26	174 33 51.95	3.9682780	5.776

LOOKOUT, MONTEZUMA COUNTY, COLO.

On the highest point of Lookout Mountain, a well-known point in Mesa Verde Park. The Government road ascends the hill leading into the park west of and just below the station.

Signal: Pinon tree fastened in top of another tree.

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

[Latitude 37° 18' 58.22". Longitude 108° 25' 05.96".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Park.....	44 01 25.63	223 59 52.55	3.7360442	3.384
Pinon.....	67 23 38.57	247 18 00.93	4.1724600	9.243
Mancos.....	252 01 06.20	72 05 28.29	4.0485969	6.949
Menefee.....	265 35 55.60	85 42 06.51	4.1791647	9.387
Basin.....	293 12 30.34	113 27 42.98	4.6072150	25.152
Cox.....	314 38 13.28	134 53 37.40	4.7258465	33.052
Morfield.....	339 58 59.78	159 59 41.00	3.6898360	3.042

MANCOS, MONTEZUMA COUNTY, COLO. (Not occupied.)

Smokestack on flour mill at Mancos.

[Latitude 37° 20' 49.99". Longitude 108° 17' 53.76".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Lookout.....	72 05 28.29	252 01 06.20	4.0485969	6.949
Menefee.....	297 28 23.10	117 30 12.02	3.6975193	3.096

MENEFEE, MONTEZUMA COUNTY, COLO.

On the highest point of Menefee Mountain, a well-known mountain about 4 miles west-southwest of Mancos, a town on the Denver & Rio Grande Railroad. It can be reached by road and trail from Mancos.

Signal: Cairn 6 feet high with tree in center.

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

[Latitude 37° 19' 35.33". Longitude 108° 14' 54.18".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Shiprock.....	36 36 04.73	216 14 51.46	4.9448839	54.731
Bald.....	59 05 32.47	238 51 54.44	4.5897774	24.162
Morfield.....	66 49 22.47	246 43 52.96	4.1635362	9.055
Park.....	75 01 55.17	254 54 11.32	4.2904299	12.128
Pinon.....	76 40 12.99	256 28 24.63	4.4713522	18.395
Lookout.....	85 42 06.51	265 35 55.60	4.1791647	9.387
Cortez.....	94 41 13.99	274 29 03.23	4.4735573	18.489
Mancos.....	117 30 12.02	297 28 23.10	3.6975193	3.096
Basin.....	307 48 03.21	127 57 05.66	4.4468684	17.387
Cox.....	329 30 10.53	149 39 25.29	4.6509550	27.817

MORFIELD, MONTEZUMA COUNTY, COLO. (Not occupied.)

On a prominent point on east side of Morfield Creek (dry) about 4 miles south-southeast of Lookout Mountain.

Signal: Cairn 6 feet high built around tree.

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

[Latitude 37° 16' 28.99". Longitude 108° 23' 57.93".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Park.....	97 09 25.60	277 07 11.36	3.7406026	3.419
Lookout.....	159 59 41.00	339 58 59.78	3.6898360	3.042
Menefee.....	246 43 52.96	66 49 22.47	4.1635362	9.055
Basin.....	287 43 51.31	107 58 22.36	4.5716572	23.174
Cox.....	312 11 15.47	132 25 58.09	4.6885300	30.331

PARK, MONTEZUMA COUNTY, COLO.

On the highest point in Mesa Verde Park. It can be reached via the Government road to summit of ridge, thence west along ridge to highest point.

Signal: Cairn 6 feet high built around tree.

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

[Latitude 37° 16' 51.17". Longitude 108° 27' 39.58".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Bald.....	44	02	39.48	223	56	44.77	4.3184608	12.936
Pinon.....	79	42	19.58	259	38	15.11	4.0047402	6.282
Cortez.....	124	33	02.83	304	28	36.43	4.1183609	8.160
Lookout.....	223	59	52.55	44	01	25.63	3.7360442	3.384
Menefee.....	254	54	11.32	75	01	55.17	4.2904299	12.128
Morfield.....	277	07	11.36	97	09	25.60	3.7406026	3.419
Basin.....	286	20	20.62	106	37	05.81	4.6306018	26.543
Cox.....	308	45	35.74	129	02	32.20	4.7276390	33.189

PINON, MONTEZUMA COUNTY, COLO.

On high ridge on west side of Mesa Verde Park. Route is to summit of ridge via Mancos and "Spruce Tree Ruins" trail, thence west along ridge.

Signal: Piñon tree with lower limbs cut off.

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

[Latitude 37° 15' 52.37". Longitude 108° 34' 23.27".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Bald.....	18	54	59.77	198	53	09.22	4.1434817	8.646
Shiprock.....	20	09	59.06	200	00	29.88	4.8334331	42.343
Cortez.....	174	33	51.95	354	33	30.26	3.9682780	5.776
Lookout.....	247	18	00.93	67	23	38.57	4.1724600	9.243
Menefee.....	256	28	24.63	76	40	12.99	4.4713522	18.395
Park.....	259	38	15.11	79	42	19.58	4.0047402	6.282
Basin.....	281	16	00.07	101	36	49.24	4.7156038	32.282
Cox.....	301	26	36.97	121	47	36.86	4.7819063	37.606

COX, SAN JUAN COUNTY, N. MEX.

High, pointed hill at the head of Cox Canyon, about 7 miles west of Cedar Hill station and post office. From Cedar Hill route is along main road up Cox Canyon to point near summit of divide, which the road crosses just after the State line is passed; thence along divide south 2 miles.

Station mark: Aluminum triangulation tablet set in rock on summit of gravel and boulder hill.

Reference mark: Lone cedar tree on east end of top of mesa, true bearing from station 241° 25', distant 127 feet.

[Latitude 36° 58' 43.12". Longitude 107° 59' 35.62".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Farmington.....	36	47	22.46	216	40	44.96	4.4381423	17.041
Shiprock.....	67	01	18.92	246	31	00.12	4.9128218	50.836
Pinon.....	121	47	36.86	301	26	36.97	4.7819063	37.606
Park.....	129	02	32.20	308	45	35.74	4.7276390	33.189
Morfield.....	132	25	58.09	312	11	15.47	4.6885300	30.331
Lookout.....	134	53	37.40	314	38	13.28	4.7258465	33.052
Menefee.....	149	39	25.29	329	30	10.53	4.6509550	27.817
Basin.....	178	31	27.85	358	31	14.37	4.3310582	13.317
Piedra.....	255	26	09.12	75	45	34.47	4.6934836	30.678
Largo.....	313	54	23.15	134	06	30.12	4.6207259	25.946
Juanimas.....	316	52	44.58	136	58	20.73	4.3072210	12.606
Huerfanita.....	338	59	57.21	159	07	29.96	4.7202673	32.636

SHIPROCK, SAN JUAN COUNTY, N. MEX. (Not occupied.)

Station is on the highest point of high bald peak about 50 miles south-southeast of Mesa Verde Park.

[Latitude 36° 41' 16.24". Longitude 108° 50' 09.53".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Pinon.....	200	00	29.88	20	09	59.06	4.8334331	42.343
Menefee.....	216	14	51.46	36	36	04.73	4.9448839	54.731
Basin.....	233	58	44.54	54	28	54.01	4.9631207	57.078
Cox.....	246	31	00.12	67	01	18.92	4.9128218	50.836

DELAWARE-MARYLAND.**PRIMARY TRAVERSE.**

Cedar Creek, Denton, Harrington, Pittsville, Rehoboth, Salisbury, Seaford, and Stockley quadrangles.

KENT AND SUSSEX COUNTIES, DEL., CAROLINE, CHESTER, DORCHESTER, AND WICOMICO COUNTIES, MD.

The following geographic positions were determined by primary traverse run in November, 1910, by E. L. McNair. The positions are based on values determined by primary traverse run by G. T. Hawkins in 1900 and on the primary traverse run by C. B. Kendall in 1903 in the Denton, Md., quadrangle.

STOCKLEY QUADRANGLE (DEL.).

Positions from Georgetown west along public road to Seaford via Tindyle's crossroads.

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
Georgetown, 0.5 mile south of station, south end of Y.....	38	41	20.2	75	22	42.3
Georgetown, at station, 28 feet west of center of track, in north end of building; aluminum tablet stamped "Prim. Trav. Sta. No. 1, elev. 57".....	38	41	36.4	75	23	10.2
Georgetown, center of courthouse square, intersection of crosswalks.....	38	41	24.7	75	23	10.4
Georgetown, 1.25 miles southwest of; crossroads.....	38	40	37.2	75	24	09.2
Georgetown, 3 miles southwest of, on north side of road, near private road to south, in south face of brick foundation of house owned by Wm. P. Pepper; aluminum tablet stamped "Prim. Trav. Sta. No. 2, elev. 50".....	38	39	32.3	75	25	24.2
Georgetown, 3.8 miles southwest of; crossroads.....	38	39	01.4	75	25	58.1
Georgetown, 5.7 miles southwest of, 780 feet west of John A. Tindyle's place, at northwest corner of intersection of crossroads; iron post stamped "Prim. Trav. Sta. No. 3, 1910".....	38	38	01.5	75	27	38.7
Forks of road just southwest of camp-meeting grounds.....	38	37	57.4	75	28	15.0
Bridge over creek.....	38	37	55.6	75	29	30.8

Tindyle's crossroads south to Lowe's crossroads.

	Latitude.			Longitude.		
	°	'	"	°	'	"
Jones's crossroads.....	38	36	17.6	75	26	49.6
T road corners, north, south, and west.....	38	35	28.8	75	26	33.8
T road corners, east, west, and north.....	38	34	49.2	75	26	37.1
Hutchinson's store, T road east.....	38	34	31.2	75	26	22.3
T road corners, east, west, and north.....	38	33	21.0	75	25	53.5
T road corners, east, west, and north.....	38	32	31.8	75	26	08.2
T road corners, southwest, northeast, and northwest.....	38	32	05.9	75	25	03.6
Lowe's crossroads, 1 mile west of, in triangle at forks of road; iron post stamped "Prim. Trav. Sta. No. 4, 1910".....	38	31	43.2	75	25	21.1
Lowe's crossroads, 370 feet west of, in east face of foundation of porch of house owned by W. A. Cannon; aluminum tablet stamped "Prim. Trav. Sta. No. 5, 51, 1908".....	38	31	27.2	75	24	27.6
Lowe's crossroads, 4 corners at.....	38	31	24.4	75	24	23.5
Lowe's crossroads, 1.9 miles southwest of, near Catholic Church; 4 corners.....	38	30	15.7	75	25	59.9
Lowe's crossroads, 0.7 mile southwest of; 4 corners.....	38	30	57.0	75	25	09.6

STOCKLEY QUADRANGLE (DEL.)—Continued.**Lowe's crossroads to Frankford.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Lowe's crossroads, 0.8 mile southeast of; 4 corners.....	38 30 45.8	75 24 05.9
T road corners, north, south, and east, 0.25 mile west of creek crossing.....	38 30 54.0	75 22 22.0
T road corners, north, south, and east, 1,060 feet east of creek crossing.....	38 31 29.8	75 21 26.5
Frankford, 5 miles west of; 4 corners.....	38 31 16.6	75 19 00.8
Frankford, 2 miles west of; T road northwest.....	38 31 15.0	75 15 58.3
Frankford, 1.8 miles west of; 45 feet west of northwest corner of A. O. Hudson's house, at fence corner; iron post stamped "Prim. Trav. Sta. No. 6, 1910".....	38 31 17.4	75 15 51.8
Frankford, 1.25 miles northwest of station; 4 corners.....	38 31 36.1	75 15 18.9

Georgetown to Redden along Pennsylvania R. R.

Georgetown, 1.4 miles north of; road crossing.....	38 42 41.8	75 23 57.0
Georgetown, 1.8 miles north of; road crossing.....	38 43 00.4	75 24 08.9
Redden, 25 feet from northeast corner of station, 57 feet east of center of railroad track, 12 feet south of center of public road; iron post stamped "Prim. Trav. Sta. No. 8, 1910".....	38 44 30.6	75 25 05.5

Geographic positions along highways near north border of quadrangle.

Redden, 2.25 miles east of; T road north.....	38 44 57.6	75 23 08.9
Harbeson, 0.25 mile north of; 4 corners at church.....	38 43 30.1	75 17 09.5

Geographic positions along highways near east border of quadrangle.

Hollyville, 1 mile southwest of; 4 corners.....	38 39 24.0	75 15 13.6
Hollyville, 2 miles southwest of; 4 corners.....	38 38 11.4	75 16 07.1
Millsboro, 3 miles northeast of; 4 corners.....	38 37 42.0	75 16 35.9
Millsboro, 1 mile northeast of; forks of road.....	38 36 03.9	75 16 56.2
Millsboro, Trust & Safe Deposit Co.'s brick building, in front face, right of door, 1 foot above ground; aluminum tablet stamped "Prim. Trav. Sta. No. 11, 1910, 27".....	38 35 25.6	75 17 32.0
Millsboro, 650 feet northeast of station, street crossing Pennsylvania R. R.....	38 35 20.4	75 17 36.9

Millsboro to Dagsboro via Pennsylvania R. R.

Millsboro, center of track opposite station.....	38 35 16.0	75 17 30.9
Millsboro, 1.8 miles south of; road crossing.....	38 34 11.8	75 16 04.0
Dagsboro, 1 mile north of; road crossing.....	38 33 39.2	75 15 19.9

Redden west along public road 4.2 miles.

Redden, 0.6 mile west of; 4 corners.....	38 44 18.2	75 25 39.3
Redden, 2.5 miles west of; 4 corners.....	38 43 57.4	75 27 51.2
Redden, 4.25 miles west of; T road corners, east, west, and north.....	38 44 17.3	75 29 18.8

Magnetic declination of central-west portion of quadrangle, 6° 00' W.; of south border of quadrangle, 6° 14' W.; of north border of quadrangle, 6° 38' W.; of east border of quadrangle, 6° 30' W.

CEDAR CREEK QUADRANGLE (DEL.).**Geographic positions along highways near south border of quadrangle.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Redden, 1 mile northeast of; 400 feet east of creek crossing, at road north.....	38 45 05.5	75 24 20.1
Redden, 3.5 miles east of; crossroads, north, south, east, and west.....	38 45 10.0	75 21 54.0
Georgetown-Milton road, T road corners, north, south, and west.....	38 45 53.5	75 20 52.1
Milton, 1.5 miles west of; 4 corners, north, south, east, and west.....	38 46 15.9	75 20 27.9
Milton, 0.5 mile south of; 4 corners.....	38 45 55.5	75 18 57.0
Milton, 1.8 miles southeast of; T road southwest.....	38 45 12.8	75 18 07.1

REHOBOTH QUADRANGLE (DEL.).**Geographic positions at Cool Spring.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Cool Spring, road crossing at Pennsylvania R. R. flag station.....	38 43 56.7	75 14 55.9
Cool Spring, 90 feet north of road crossing, 15 feet east of center of north-south road; iron post stamped "Prim. Trav. Sta. No. 9, 1910".....	38 43 57.6	75 14 56.1

Geographic positions along highways, Cool Spring to Millsboro.

Cool Spring, 0.5 mile south of; 4 corners.....	38 43 32.4	75 14 53.7
Cool Spring, 2.8 miles south of; 4 corners.....	38 41 38.1	75 14 30.3
Hollyville, 0.5 mile north of; 4 corners.....	38 40 40.5	75 14 48.0
Hollyville, 45 feet northwest of post office and store building owned by Harry Burtiman, in triangle at forks of road; iron post stamped "Prim. Trav. Sta. No. 10, 1910".....	38 40 14.7	75 14 49.6

Geographic positions along Pennsylvania R. R. near southwest corner of quadrangle.

Dagsboro, 75 feet north of station, street crossing.....	38 32 51.4	75 14 58.2
Dagsboro, center of track at station.....	38 32 50.6	75 14 57.9
Dagsboro, southwest corner of First National Bank Building, 1 foot above ground; aluminum tablet stamped "Prim. Trav. Sta. No. 12, 1910, 29".....	38 32 57.0	75 14 44.3
Dagsboro, 0.7 mile south of, road crossing.....	38 32 16.5	75 14 44.2
Frankford, 1,600 feet north of station, road crossing.....	38 31 18.0	75 14 19.9
Frankford, center of track at station.....	38 31 03.3	75 14 11.3
Frankford, southwest corner of, First National Bank Building, just above sidewalk; aluminum tablet stamped "Prim. Trav. Sta. No. 7, 1910, 37, 1908".....	38 31 03.7	75 14 07.4

SEAFORD QUADRANGLE (DEL.).**Geographic positions along highways near north border of quadrangle.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Chaplin's Chapel, 4 corners at.....	38 44 33.3	75 30 35.7
Bridgeville, 4.4 miles east of, near house of J. W. Conaway, 25 feet east of 4 corners of road; iron post stamped "Prim. Trav. Sta. No. 13, 1910".....	38 44 54.5	75 32 14.2
Bridgeville, intersection of Main and Broad streets.....	38 44 35.5	75 35 56.8
Bridgeville, in doorstep of ladies' waiting room of station; copper bolt (Pennsylvania R. R. bench mark).....	38 44 31.3	75 36 23.6
Smithville, 3.3 miles southeast of; 4 corners.....	38 44 34.9	75 41 13.6

Geographic positions along highways between Bridgeville and Seaford.¹

Bridgeville, 1 mile south of; at T roads north, south, and southeast, 50 feet south of southwest corner of house of James Chaffinch; iron post stamped "Prim. Trav. Sta. No. 14, 1910".....	38 43 48.0	75 35 29.8
Bridgeville, 3 miles south of; 4 corners.....	38 42 05.2	75 35 05.3
Seaford, 3.25 miles north of; 4 corners at church.....	38 41 04.4	75 35 28.1
Seaford, 1.5 miles north of; T road, north, south, and east.....	38 39 43.3	75 35 58.6

¹ These four positions are subject to correction of about 280 feet in latitude and 50 feet in longitude, the closure at Seaford being that much south and east of the correct position. The distance will probably be found 300 feet too long on a course which bears 10° to 15° east of south.

SEAFORD QUADRANGLE (DEL.)—Continued.

Seaford, south along Pennsylvania R. R. to Bacon's siding, near south border of quadrangle.

Stations.	Latitude.	Longitude.
Seaford, Sussex National Bank Building, corner of High and Cornwell streets, in doorstep at left of entrance; aluminum tablet stamped "Prim. Trav. Sta. No. 15, 29".....	38 38 26.1	75 36 50.4
Seaford, center of track at station.....	38 38 19.2	75 36 53.2
Seaford, 0.5 mile south of; road crossing.....	38 37 53.8	75 36 41.4
Seaford, 1.6 miles south of; road crossing.....	38 36 59.6	75 36 15.0
Seaford, 3 miles south of; road crossing.....	38 36 01.3	75 35 46.8
Broad Creek, flag station, 500 feet north of road crossing.....	38 35 08.7	75 35 10.6
Broad Creek, flag station, about 600 feet east of railroad track, 360 feet south of crossroads, in foundation at northwest corner of J. B. Hall's house; aluminum tablet stamped "Prim. Trav. Sta. No. 16, 41".....	38 35 06.1	75 35 01.6
Laurel, 1 mile north of; at public road crossing, 35 feet west of center of track, 8 feet south of center of roadway; iron post stamped "Prim. Trav. Sta. No. 17, 1910".....	38 34 01.6	75 34 43.0
Laurel, at station, in doorsill of ladies' waiting room; copper bolt (Pennsylvania R. R. bench mark).....	38 33 12.0	75 34 21.5
Laurel, 2.5 miles south of; road crossing.....	38 30 58.0	75 34 21.6
Bacon's siding, 35 feet east of center of east track of Pennsylvania R. R., 15 feet north of public road at edge of experimental farm; iron post stamped "Prim. Trav. Sta. No. 18, 1910".....	38 30 24.8	75 34 23.4
Bacon's siding, 2 miles east of; T road corners, north, south, and west.....	38 30 06.4	75 32 20.1

Geographic positions along highways from point 3 miles east of Concord to Seaford.

Concord, 3.1 miles east of; T road corners.....	38 37 52.4	75 30 12.5
Concord, 2.5 miles east of; 4 corners.....	38 38 12.9	75 30 55.1
Concord, 2 miles east of; at T road corners, east, west, and north, on north side of road; iron post stamped "Prim. Trav. Sta. No. 20, 1910".....	38 38 18.2	75 31 26.0
Concord, 4 corners, center of crossroads.....	38 38 32.0	75 33 19.5
Concord, 0.8 mile west of; 4 corners, T road south.....	38 38 27.9	75 34 03.1
Blades, 0.8 mile east of; at T road corners, north, south, and east, on south side of road, 3 feet north of t. b. m. in telephone pole painted "14.893"; iron post stamped "Prim. Trav. Sta. No. 21, 1910".....	38 38 21.3	75 35 44.7
Blades, T roads at; north, south, and east.....	38 38 09.7	75 36 37.8
Seaford, at station, center of track.....	38 38 19.2	75 36 53.2

Seaford along public roads to Oak Grove.

Seaford, 1 mile northwest of; T road corners, east, west, and south.....	38 38 47.1	75 37 28.0
T road corners, east, west, and north.....	38 38 44.1	75 37 48.0
Seaford, 2 miles west of; 4 corners.....	38 38 29.6	75 38 39.6
T roads east, west, and north.....	38 38 30.9	75 39 14.4
T roads east, west, and south.....	38 38 22.4	75 40 48.6
Oak Grove, 1.8 miles southeast of; 4 corners.....	38 38 20.0	75 41 29.8
Oak Grove, about 100 feet east of station; road crossing.....	38 39 40.7	75 42 24.7

Oak Grove north to point near Maryland-Delaware State line.

Oak Grove, 0.5 mile north of; in triangle at forks of road, T road east; iron post stamped "Prim. Trav. Sta. No. 22, 1910".....	38 40 05.2	75 42 28.4
Oak Grove, 1.25 miles north of; close to road; Maryland-Delaware State line post.....	38 40 39.5	75 42 40.4
Oak Grove, 2 miles north of; 4 corners.....	38 41 13.2	75 42 59.4
T road corners northeast, northwest, and southwest.....	38 42 15.3	75 43 06.9
T road corners north, south, and east.....	38 42 29.9	75 43 13.6
T road corners northeast, southeast, and southwest.....	38 43 29.9	75 44 03.7
T road northwest, 750 feet east of creek.....	38 44 03.4	75 43 40.8
T road corners northeast, southeast, and southwest.....	38 44 32.7	75 43 10.6

Magnetic declination of northeast quarter of quadrangle, 6° 18' W.; of northwest quarter of quadrangle, 6° 20' W.; of southeast quarter of quadrangle, 6° 16' W.

HARRINGTON QUADRANGLE (DEL.).**Geographic positions along highways near south border of quadrangle.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Bridgeville, 3.2 miles east of, at schoolhouse; T road corners east, west, and north.	38 45 12.0	75 33 22.0
Bridgeville, 1.5 miles northeast of; T road corners north, south, and east.	38 45 36.5	75 35 03.0
Bridgeville, 1.5 miles west of; T road corners.	38 45 13.9	75 37 41.8
Bridgeville, 3 miles west of; 4 corners.	38 45 12.6	75 39 14.3
Bridgeville, 4.4 miles west of; forks of road, 400 feet west of church.	38 45 10.6	75 40 45.9
Smithville, 1.5 miles southeast of; 0.25 mile southeast of Maryland-Delaware State line at intersection of roads; iron post stamped "Prim. Trav. Sta. No. 23, 1910".	38 45 27.5	75 42 47.2
Smithville, 1.25 miles southeast of; Maryland-Delaware State line.	38 45 34.6	75 43 03.4

SALISBURY QUADRANGLE (DEL.).**Geographic positions near northeast corner of quadrangle.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Bacon's siding, 3.4 miles east of; T road corners east, west, and north.	38 29 47.1	75 31 07.9
Smith's Mill Baptist Church, 0.5 mile south of; T road corners north, south, and east.	38 29 25.1	75 30 05.4

PITTSVILLE QUADRANGLE (DEL.).**Geographic positions along highways near north border of quadrangle.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Ward's store, 0.5 mile west of; 50 feet southeast of T. B. Ward's mail box, forks of road.	38 29 21.7	75 29 02.0
Ward's crossroads, 35 feet southeast of southeast corner of Wm. Ward's store, 18 feet northeast of center of crossroads; iron post stamped "Prim. Trav. Sta. No. 19, 1910".	38 29 03.4	75 28 44.7
Ward's crossroads, 1.5 miles northeast of; 4 corners.	38 29 46.8	75 27 27.0
Pepper Box corners, center of crossroads.	38 29 56.0	75 26 28.6

HARRINGTON QUADRANGLE (MD.).**Geographic positions near Smithville.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Smithville, 0.5 mile southeast of; 4 corners.	38 46 00.1	75 43 34.6
Smithville, T roads at.	38 46 26.0	75 43 45.3
Smithville, 1 mile northwest of; 4 corners.	38 46 44.2	75 44 46.0

DENTON QUADRANGLE (MD.).**Geographic positions along highways between Smithville and American Corners.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Smithville, 1.5 miles west of; T road east.	38 46 19.7	75 45 13.5
Smithville, 2.8 miles west of; forks of road, 10 feet south of H. F. True's mail box.	38 45 53.7	75 46 14.9
American Corners, 2 miles east of; near schoolhouse, crossing of creek.	38 45 22.1	75 47 16.7
American Corners, 1.2 miles southeast of; T roads north, south, and east.	38 45 15.3	75 47 55.4
American Corners, at southwest corner of intersection of roads, at fence corner; iron post stamped "Prim. Trav. Sta. No. 24, 1910, ADJ 55, 1903".	38 46 03.3	75 49 10.4

DISTRICT OF COLUMBIA-MARYLAND.

PRIMARY TRAVERSE.

Washington quadrangle.

MONTGOMERY COUNTY, MD.

The following geographic positions were determined by J. R. Ellis during the season of 1910 and are based on Coast and Geodetic Survey triangulation stations. The work was done as a base for a topographic map of the territory in the vicinity of Great Falls, Md.

WASHINGTON QUADRANGLE AND VICINITY.

Geographic positions along the Chesapeake & Ohio Canal between Georgetown, D. C., and Great Falls, Md.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Georgetown College, east lightning rod.....	38 54 26.13	77 04 22.70
Georgetown College Observatory dome.....	38 54 29.94	77 04 39.05
Chain Bridge, flag pole on hotel at west end of.....	38 55 47.95	77 07 02.85
Station 252.....	38 55 51.01	77 06 46.63
District line monument No. 4.....	38 56 15.28	77 06 57.38
Lock No. 7, cross cut on south end of east wall.....	38 57 51.80	77 08 20.81
Lock No. 8, south hinge of lower wing.....	38 58 15.00	09 77 39.10
Lock No. 8, bronze tablet in top of wall, east end, north side; stamped "Prim. Trav. Sta. No. 3, 1910, elev. 69".....	38 58 15.27	77 09 38.84
Lock No. 9, cross in center of painted triangle on south part of top of east wall; painted "elev. 77".....	38 58 20.04	77 10 00.92
Lock No. 10, cross in center of painted triangle on south part of top of east wall; painted "elev. 85".....	38 58 20.13	77 10 06.74
Lock No. 11, cross cut on top of stone wall; elevation 93 feet.....	38 58 20.31	77 10 18.89
Milestone No. 9.....	38 58 20.25	77 10 10.88
Lock No. 12, on top of southeast corner of wall; center of cross cut; elevation 102 feet.....	38 58 20.75	77 10 39.63
Lock No. 12, south end of west gate.....	38 58 20.66	77 10 41.20
Lock No. 13, on top of southeast wall; center of square cut; elevation 109 feet.....	38 58 20.08	77 10 45.20
Lock No. 14, in top of east part of wall, at lower gate; bronze tablet; elevation stamped "117".....	38 58 19.80	77 10 50.85
Lock No. 14, south hinge to west gate.....	38 58 19.39	77 10 52.23
Lock No. 14, spillway about 1,000 feet west of; towpath at.....	38 58 17.82	77 11 04.81
Milestone No. 10, hole drilled in center of paint ring on top of.....	38 58 15.21	77 11 27.38
Copper nail and washer in notch in root of water oak on south side of towpath; elevation 120 feet.....	38 58 16.79	77 11 44.02
Crossing of road through culvert under towpath.....	38 58 23.03	77 11 56.30
Milestone 11, painted point on highest part; elevation 119 feet.....	38 58 38.74	77 12 25.06
Towpath over branch.....	38 58 38.38	77 13 15.72
Milestone 12.....	38 58 42.42	77 13 26.76
Triangle (Δ) on ledge on west side of towpath, painted "118" 650 feet above rock crusher.....	38 58 57.06	77 13 52.23
Davis's triangulation station on ledge of rock, west side of towpath; elevation 119 feet.....	38 59 00.46	77 14 13.20
Lock No. 15, 380 feet south of, square cut in rock on west side of towpath; marked "120".....	38 59 17.64	77 14 40.55
Lock No. 15, cross cut on southwest wing; elevation 126 feet.....	38 59 21.32	77 14 39.68
Lock No. 16, cross cut on south end of west wall; elevation 134 feet.....	38 59 30.50	77 14 40.62
Cross cut on top of west wall of gateway between locks 16 and 17; elevation 135 feet.....	38 59 35.83	77 14 43.37
Lock No. 17, □ cut on southwest corner of, south end of west wall; elevation 142 feet.....	38 59 45.90	77 14 52.92
Lock No. 18, top of bolt in south wall; elevation 150 feet.....	38 59 50.61	77 14 55.35
Great Falls, in southeast corner of stone gatehouse; bronze tablet stamped "Prim. Trav. Sta. No. 1".....	39 00 01.86	77 14 53.10
L cut in stone wall at gate of dam.....	39 00 03.29	77 14 55.93
Towpath at branch.....	39 00 46.15	77 14 28.41
Towpath at branch.....	39 01 15.78	77 14 15.61
Grimes Lock (No. 21), at southwest part of, in top of stone wing; aluminum tablet stamped "Prim. Trav. Sta. No. 179 1907".....	39 01 51.96	77 14 36.82

IDAHO-WYOMING.

TRIANGULATION STATIONS.

Soda Springs and Wayan quadrangles.

BANNOCK, BEAR LAKE, AND BINGHAM COUNTIES, IDAHO, AND UINTA COUNTY, WYO.

The positions in the following list on United States standard datum were determined by G. T. Hawkins in 1910 and are based upon triangulation stations Preuss, Paris, and Sublette, the positions of which were determined by him in 1907:

CARIBOU, BINGHAM COUNTY, IDAHO. (Not occupied.)

Highest peak on Caribou Mountain, which is a high, isolated mountain 7 or 8 miles east of John Gray Lake.

Station mark and signal: Cairn.

[Latitude 43° 05' 38.86". Longitude 111° 18' 39.44".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Henry.....	21 28 42	201 24 55	4.31438	12.815
Stump.....	334 59 41	155 04 40	4.37189	14.630
Schmid.....	353 36 54	173 39 15	4.63025	26.522

DEAD TREE, BANNOCK COUNTY, IDAHO. (Not occupied.)

On top of a bald knob on divide between Blackfoot River and Slug Creek. The station was not visited.

Station mark: Lone dead tree.

[Latitude 42° 47' 42.12". Longitude 111° 11' 02.33".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Schmid.....	31 37 28	211 34 40	4.03224	6.693
Woodall.....	80 23 39	260 10 02	4.44346	17.251
Henry.....	128 06 25	307 57 32	4.35742	14.150

DEER CREEK, BANNOCK COUNTY, IDAHO. (Not occupied.)

Station is in unsurveyed sec. 31, T. 9 S., R. 45 E., and is on sharp, rocky point on divide between Bear, Blackfoot, and Salt rivers, near the head of Georgetown Canyon. It is reached easily from Georgetown, distant 12 miles, by main road to Star Valley, which crosses mountain at a point 0.8 mile south of station. The elevation is 8,777 feet.

Station mark: Rock cairn 4 feet high.

[Latitude 42° 35' 54.95". Longitude 111° 14' 25.52".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Preuss.....	3 13 12	183 13 15	4.05814	7.104
Woodall.....	127 02 33	306 51 15	4.45494	17.713
Schmid.....	175 22 26	355 21 56	4.10342	7.884

HAMLIN, BANNOCK COUNTY, IDAHO. (Not occupied.)

On a prominent knob on ridge between Salt River and Blackfoot River, about 10 miles east of Schmid's ranch on Slug Creek. The knob is bald on top and on all sides except for a group of pine trees at the north.

Station mark: Small rock cairn with white flag set in center.

[Latitude 42° 44' 25.66". Longitude 111° 09' 33.14".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Preuss.....	15 05 36	195 01 57	4.44940	17.488
Schmid.....	67 58 26	247 54 37	3.91813	5.146
Woodall.....	92 48 06	272 33 28	4.46888	18.291

HARRINGTON, BEAR LAKE COUNTY, IDAHO. (Not occupied.)

Station is in unsurveyed sec. 5, T. 10 S., R. 44 E., on sharp, rocky point on main divide between Bear and Blackfoot rivers, near the head of Slug Creek and the dry fork of Johnson Creek. It is about 7 miles due north of Georgetown, Idaho. Station can be very nearly reached by wagon road from Georgetown to Blackfoot River, which passes 2 miles north of divide on the Slug Creek side and is about 2 miles west of station. The point can be seen from the road.

Station mark: Rock cairn 4 feet high. A tablet stamped "8554" is set about 3 feet north of center of cairn.

[Latitude 42° 34' 59.18". Longitude 111° 20' 16.56".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Woodall.....	141 56 55	321 49 47	4.37955	14.890
Schmid.....	205 51 10	25 54 37	4.20333	9.924
Preuss.....	322 44 44	142 48 22	4.08560	7.568

HENRY, BANNOCK COUNTY, IDAHO.

About 6.5 miles nearly east of Henry post office, probably 1 mile north. It can be reached by road running toward south end of Grays Lake, thence to north of canyon. From here travel is by horseback to top of hill, which is bald on top and all sides except the north, which is covered with pine trees. The top is covered with small rock. Station is on highest part of peak.

Signal: Cairn 6 feet at base and 7 feet high with small pine in middle with tuft on top.

Station mark: Aluminum tablet set under signal cairn.

[Latitude 42° 55' 16.79". Longitude 111° 24' 12.40".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Woodall.....	26 41 22.34	206 36 41.12	4.3210078	13.012
Caribou.....	201 24 55	21 28 42	4.31438	12.815
Stump.....	276 55 30.79	97 04 16.17	4.2463682	10.958
Dead Tree.....	307 57 32	128 06 25	4.35742	14.150
Schmid.....	332 00 01.55	152 06 09.84	4.4194065	16.321

PREUSS, BEAR LAKE COUNTY, IDAHO.

On the highest and sharpest peak of the Preuss Range, about 7 miles nearly east of Georgetown, Idaho, 1 mile east of Power Reservoir, and 12 miles nearly north of Montpelier. It can be reached from Montpelier by following road toward Georgetown, then turning east and following creek 4 miles to point near its head, where good camp ground can be found. From this point route is along creek to top of saddle, and then along sheep trail on ridge to station.

Signal: Cairn 6 feet high and 5 feet in diameter.

Station mark: Aluminum tablet cemented in solid rock 17 feet south of cairn

[Latitude 42° 29' 44.91". Longitude 111° 14' 53.70".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Paris school tower.....	23 39 45	203 33 17	4.51261	20.228
Paris.....	37 22 44.60	217 10 36.52	4.6111118	25.378
Soda.....	82 22 05.87	262 09 56.31	4.3962122	15.473
Sulphur.....	137 43 20	317 36 19	4.33913	13.567
Woodall.....	142 16 46.35	322 05 47.91	4.5580049	22.457
Harrington.....	142 48 22	322 44 44	4.08560	7.568
Schmid.....	179 05 21.34	359 05 09.96	4.3814619	14.956
Deer Creek.....	183 13 15	3 13 12	4.05814	7.104
Stirrup.....	186 06 39.70	6 09 04.10	4.6568686	28.198
Hamlin.....	195 01 57	15 05 36	4.44940	17.488
No. 3.....	228 34 33	48 52 44	4.68777	30.278
Wyoming Peak.....	256 32 29	76 57 50	4.72212	32.770
Sublette.....	322 49 38.63	142 59 33.49	4.5248298	20.806
Lakeview.....	358 35 20.66	178 36 03.36	4.7741109	36.937

SCHMID, BANNOCK COUNTY, IDAHO.

On top of bald knob of Preuss Range, about 20 miles northeast of Georgetown, Idaho. It can be reached from Georgetown by wagon road to Schmid's ranch, thence by horseback about 4 miles east and 1 mile north to ridge. Horses can be taken to signal. Station is in unsurveyed sec. 24, T. 8 S., R. 44 E. Hills to south, 0.2 mile distant, are somewhat higher, but have scattering trees on top.

Signal: Cairn 7 feet high and 6 feet in diameter at base with small spruce in center.

Station mark: Aluminum tablet 6 inches below surface and under center of cairn.

Reference marks: Small pile of rock 250 feet north by 20° west.

[Latitude 42° 42' 44.84". Longitude 111° 15' 10.52".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Harrington.....	25 54 37	205 51 10	4.20333	9.924
Soda.....	41 35 26.67	221 23 26.99	4.5634969	22.743
Sulphur.....	61 03 28	240 56 22	4.21346	10.158
Woodall.....	101 45 09.62	281 34 21.25	4.3462462	13.791
Henry.....	152 06 09.84	332 00 01.55	4.4194065	16.321
Caribou.....	173 39 15	353 36 54	4.63025	26.522
Stump.....	193 54 12.63	13 56 48.76	4.3363038	13.479
Dead Tree.....	211 34 40	31 37 28	4.03224	6.693
Hamlin.....	247 54 37	67 58 26	3.91813	5.146
No. 3.....	257 30 57	77 49 21	4.57776	23.502
Deer Creek.....	355 21 56	175 22 26	4.10342	7.884
Preuss.....	359 05 09.96	179 05 21.34	4.3814619	14.956

SODA (SHERMAN PEAK), BEAR LAKE COUNTY, IDAHO.

Highest of three peaks which lie about 10 miles south of Soda Springs and about 9 miles west of Georgetown. It is locally known as Sherman Peak. The station can be best reached from Georgetown by wagon road to Minnick's sawmill, on west side of Nounan Valley, thence on horseback west on trail up canyon to divide, then along divide south to peak, which is bald on top.

Signal: Cairn 7 feet at base and $7\frac{1}{2}$ feet high.

Station mark: Aluminum tablet set under cairn.

[Latitude $42^{\circ} 27' 56.32''$. Longitude $111^{\circ} 32' 53.97''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
			Log. meters.	Miles.
Paris.....	0 01 23.27	180 01 22.93	4.4646106	18.112
Woodall.....	184 24 04.09	4 25 17.19	4.5051248	19.883
Schmid.....	221 23 26.99	41 35 26.67	4.5634969	22.743
Preuss.....	262 09 56.31	82 22 05.87	4.3962122	15.473
Sublette.....	297 17 29.23	117 39 31.80	4.7044036	31.460

STUMP, BANNOCK COUNTY, IDAHO.

On a bald peak near head of Stump Creek, which flows into Salt River, and head of Lane Creek, which flows into Blackfoot River. It is about 50 miles northeast of Georgetown and 5 miles from upper dairy ranch (Williamsburg post office). Station can be reached by road to upper dairy ranch, then 2 miles up canyon by road, then by trail to divide between Stump and Lane creeks to a double sheep corral, then by short climb to top, which is about south of corral. The station is near the southeast end of highest part of peak.

Signal: Lone pine 12 inches in diameter, 50 feet distant, south 10° west of station mark.

Station mark: Tablet 8 inches below surface, over which was built a cairn 4 feet at base and 7 feet high.

[Latitude $42^{\circ} 54' 07.16''$. Longitude $111^{\circ} 11' 20.76''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
			Log. meters.	Miles.
Schmid.....	13 56 48.76	193 54 12.63	4.3363038	13.479
Woodall.....	58 30 11.70	238 16 45.98	4.4998448	19.642
Henry.....	97 04 16.17	276 55 30.79	4.2463682	10.958
Caribou.....	155 04 40	334 59 41	4.37189	14.630
No. 3.....	292 08 43	112 24 32	4.53444	21.271

SULPHUR, BANNOCK COUNTY, IDAHO. (Not occupied.)

Flag signal on high cleared hill at head of Sulphur Canyon, in unsurveyed sec. 15, T. 9 S., R. 43 E. The elevation is 8,316 feet.

No permanent mark was set.

[Latitude $42^{\circ} 38' 27.98''$. Longitude $111^{\circ} 25' 38.47''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
			Log. meters.	Miles.
Woodall.....	149 02 25	328 58 43	4.16075	8.997
Schmid.....	240 56 22	61 03 28	4.21346	10.158
Preuss.....	317 36 19	137 43 20	4.33913	13.567

WOODALL, BANNOCK COUNTY, IDAHO.

About 10 miles northeast of Soda Springs on high bald peak, in sec. 2, T. 8 S., R. 42 E. It is about 0.8 mile east of Woodall's ranch, and can be reached by wagon road from Soda Springs to Woodall's ranch, thence on horseback to top.

Signal: Cairn 4 feet at base and 6 feet high; small pine tree set in center of cairn.

Station mark: Aluminum tablet set in rock under cairn.

[Latitude 42° 45' 10.24". Longitude 111° 31' 06.00'.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Soda.....	4 25 17.19	184 24 04.09	4.5051248	19.883
Henry.....	206 36 41.12	26 41 22.34	4.3210078	13.012
Stump.....	238 16 45.98	58 30 11.70	4.4998448	19.642
Dead Tree.....	260 10 02	80 23 39	4.44346	17.251
Hamlin.....	272 33 28	92 48 06	4.46888	18.291
Schmid.....	281 34 21.25	101 45 09.62	4.3462462	13.791
Deer Creek.....	306 51 15	127 02 33	4.45494	17.713
Harrington.....	321 49 47	141 56 55	4.37955	14.890
Preuss.....	322 05 47.91	142 16 46.35	4.5580049	22.457
Sulphur.....	328 58 43	149 02 25	4.16075	8.997

No. 3, UINTA COUNTY, WYO. (Not occupied.)

On a sharp peak of the Grays River Mountains, east of Star Valley.

Station mark and signal: Rock cairn.

[Latitude 42° 47' 06.60". Longitude 110° 48' 05.80'.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Preuss.....	48 52 44	228 34 33	4.68777	30.278
Schmid.....	77 49 21	257 30 57	4.57776	23.502
Stump.....	112 24 32	292 08 43	4.53444	21.271

ILLINOIS.**PRIMARY TRAVERSE.**

Mattoon, Moonshine, Newton, Rose Hill, Sailor Springs, Teutopolis, and Toledo
quadrangles.

CLARK, CLAY, COLES, CRAWFORD, CUMBERLAND, EFFINGHAM, JASPER, MOULTRIE,
AND RICHLAND COUNTIES.

Geographic positions determined by C. B. Kendall in 1910, based on stations of the United States Lake Survey.

The work was done in cooperation with the State.

ROSE HILL QUADRANGLE.

Geographic positions along highways near east border of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
T. 7 N., R. 14 W., corner of secs. 29, 30, 31, and 32, center of intersection of crossroads.....	39 00 36.9	88 00 08.2
T. 7 N., R. 14 W., stone at corner of secs. 19, 20, 29, and 30, center of crossroads at schoolhouse No. 6.....	39 01 29.7	88 00 09.4
T. 7 N., R. 14 W., stone at corner of secs. 17, 18, 19, and 20, 30 feet east of road and 200 feet south of north end of bridge over Hickory Branch.....	39 02 22.3	88 00 10.8
T. 7 N., R. 14 W., quarter corner between secs. 17 and 18, center of intersection at crossroads.....	39 02 48.7	88 00 11.4
T. 7 N., R. 14 W., corner stone at corner of secs. 7, 8, 17, and 18, center of north-south road at wire fence east and rail fence west, 400 feet south of white house.....	39 03 15.0	88 00 12.1
T. 7 N., R. 14 W., stone at corner of secs. 5, 6, 7, and 8, 4 feet north of center of intersection of crossroads, 10 feet north to bridge.....	39 04 07.7	88 00 13.6
T. 7 N., R. 14 W., north corner of secs. 5 and 6, center of east-west road at T road south.....	39 05 00.8	88 00 14.9
T. 8 N., R. 14 W., south corner of secs. 31 and 32, center of east-west road at T road north.....	39 05 00.8	88 00 15.5
T. 8 N., R. 14 W., corner stone at corner of secs. 29, 30, 31, and 32, center of crossroads.....	39 05 54.5	88 00 17.4
T. 8 N., R. 14 W., 30 feet south of corner of secs. 19, 20, 29, and 30, in northwest corner of front yard to dwelling of Roscoe Meeker, situated in northwest corner of sec. 29, 25 feet east of center of north-south road and 25 feet south of center of east-west road; iron post stamped "Prim. Trav. Sta. No. 4 1910 ILL.".....	39 06 48.1	88 00 18.9
T. 8 N., R. 14 W., corner of secs. 19, 20, 29, and 30, center of north-south road at T road east.....	39 06 48.3	88 00 19.1
T. 8 N., R. 14 W., quarter corner between secs. 19 and 20, center of north-south road at T road west to Yale.....	39 07 15.2	88 00 19.9
Yale, quarter corner between secs. 19 and 19; T. 8 N., Rs. 11 E. and 14 W., stone in north-south street at T street west, 40 feet east of bandstand.....	39 07 12.2	88 01 29.5
T. 8 N., R. 11 E., stone at east corner of secs. 18 and 19, in center of north-south road, at T road west, 0.5 mile north of Yale.....	39 07 39.8	88 01 30.4
T. 8 N., R. 14 W., stone at west corner of secs. 18 and 19, in center of north-south road at T road east, 0.5 mile north of Yale.....	39 07 40.0	88 01 30.4
T. 8 N., R. 11 E., east corner of secs. 7 and 18, center of north-south road at T road west.....	39 08 33.7	88 01 31.9
T. 8 N., R. 14 W., west corner of secs. 7 and 18, center of north-south road at T road east.....	39 08 34.0	88 01 31.9
T. 8 N., R. 11 E., east corner of secs. 6 and 7, center of north-south road at T road west.....	39 09 23.9	88 01 33.4
T. 8 N., R. 14 W., west corner of secs. 6 and 7, center of north-south road at T road east.....	39 09 26.3	88 01 33.4
T. 8 N., Rs. 11 E and 14 W., north corner of secs. 6 and 6, center of east-west road (line between Jasper and Cumberland counties) at T road south; stone.....	39 10 24.7	88 01 35.1
T. 9 N., Rs. 10 and 11 E., south corner of secs. 31 and 36, center of east-west road at T road north, on line between Cumberland and Jasper counties.....	39 10 24.9	88 01 22.0
T. 9 N., Rs. 10 and 11 E., corner of secs. 25, 30, 31, and 36, center of 4 corners.....	39 11 18.0	88 01 22.6
T. 9 N., Rs. 10 and 11 E., corner of secs. 19, 24, 25, and 30, 15 feet north of intersection of crossroads; stone.....	39 12 11.2	88 01 24.1
T. 9 N., Rs. 10 and 11 E., corner of secs. 13, 18, 19, and 24, center of east-west road at T road south, 10 feet southeast to mail box in triangle.....	39 13 03.8	88 01 25.1
T. 9 N., R. 11 E., quarter corner between secs. 7 and 18, center of north-south road at crossroads.....	39 13 57.0	88 01 06.0

Geographic positions along highways near north border of quadrangle.

T. 9 N., R. 11 E., 350 feet east of quarter corner between secs. 6 and 7, 30 feet southeast of small grass triangle at southeast corner of junction of the park and Greenup road with T road south; iron post stamped "Prim. Trav. Sta. No. 5 1910 ILLINOIS".....	39 14 49.9	88 01 02.9
T. 9 N., Rs. 10 and 11 E., corner of secs. 1, 6, 7, and 12, center of east-west road at T road north, near church in northwest corner of road intersection; point 10 feet north of fence post.....	39 14 49.8	88 01 27.6
T. 9 N., R. 10 E., corner of secs. 1, 2, 11, and 12, center of intersection of crossroads.....	39 14 48.0	88 02 35.3
T. 9 N., R. 10 E., corner of secs. 2, 3, 10, and 11, center of intersection of crossroads.....	39 14 47.4	88 03 44.4
T. 9 N., R. 10 E., corner of secs. 3, 4, 9, and 10, center of intersection of crossroads, 100 feet northeast of Delno schoolhouse (district 76); stone.....	39 14 45.8	88 04 51.5
Range Creek, center of bridge over.....	39 14 44.3	88 05 45.1
T. 9 N., R. 10 E., corner of secs. 4, 5, 8, and 9, center of intersection of crossroads; stone.....	39 14 44.0	88 05 59.8
T. 9 N., R. 10 E., corner of secs. 5, 6, 7, and 8, center of intersection of crossroads 125 feet southwest of brick schoolhouse.....	39 14 42.5	88 07 07.0
T. 9 N., Rs. 9 and 10 E., corner of secs. 1, 6, 7, and 12, supposed to be corner post of wire fence.....	39 14 41.5	88 08 14.9
Vandalia R. R. crossing.....	39 14 41.9	88 08 49.3
Greenup, 4 corners, about 500 feet southeast of Greenup high-school building, 20 feet northwest to center of sidewalk, 30 feet west to sidewalk.....	39 14 41.9	88 09 36.9

ROSE HILL QUADRANGLE—Continued.

Geographic positions along highways north-south through center of quadrangle.

Stations.	Latitude.	Longitude.
T road east, center of north-south road.....	39 14 15.8	88 09 17.3
T. 9 N., R. 10 E., corner of secs. 11, 12, 13, and 14, center of north-south road, at east-west wire fence.....	39 13 49.2	88 09 16.8
T. 9 N., R. 10 E., quarter corner between secs. 13 and 14, center of intersection, of crossroads.....	39 13 22.6	88 09 16.5
T. 9 N., R. 10 E., corner of secs. 13, 14, 23, and 24, center of north-south road, at wire fence west and rail fence east, 500 feet north of Markwell's residence.....	39 12 56.0	88 09 16.2
T. 9 N., R. 10 E., corner of secs. 23, 24, 25, and 26, stone at center of intersection of crossroads, 100 feet southwest to schoolhouse.....	39 12 03.3	88 09 15.9
T. 9 N., R. 10 E., corner of secs. 25, 26, 35, and 36, 560 feet north of bridge over Range Creek, center of north-south road, opposite fence to west.....	39 11 10.1	88 09 15.4
Range Creek, center of iron bridge over.....	39 11 04.6	88 09 15.3
Tps. 8 and 9 N., R. 10 E., 130 feet north of Illinois Central Railroad crossing, 50 feet east of railroad and 80 feet southeast of whistle post, 5 feet east of a small forked sycamore tree, 40 feet west of the county line road between Cumberland and Jasper counties; large bowlder.....	39 10 18.1	88 09 14.9
Hidalgo, north of Illinois Central R. R. crossing.....	39 10 18.0	88 09 14.8
Hidalgo, west edge of town, corner of secs. 1, 6, 7, and 12, T. 8 N., Rs. 9 and 10 E., center of intersection of crossroads.....	39 09 23.0	88 09 16.6
T. 8 N., Rs. 9 and 10 E., corner of secs. 7, 12, 13, and 18, center of intersection of crossroads.....	39 08 30.2	88 09 15.1
T. 8 N., Rs. 9 and 10 E., corner of secs. 13, 18, 19, and 24, center of intersection of crossroads.....	39 07 37.1	88 09 13.8
T. 8 N., Rs. 9 and 10 E., corner of secs. 19, 24, 25, and 30, center of north-south road, opposite rail fence to west and 40 feet north of bridge.....	39 06 47.0	88 09 12.7
Rose Hill, west edge of village, 35 feet southeast of quarter corner between secs. 25 and 30, T. 8 N., Rs. 9 and 10 E., in corner of wire fence in northwest corner of NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 30; iron post stamped "Prim. Trav. Sta. No. 7 1910 ILLINOIS".....	39 06 18.0	88 09 11.6
T. 8 N., Rs. 9 and 10 E., quarter corner between secs. 25 and 30, center of intersection of crossroads.....	39 06 18.2	88 09 11.8
T. 8 N., R. 10 E., west corner of secs. 30 and 31, on west edge of road, opposite wire fence east.....	39 05 52.0	88 09 11.3
T. 8 N., R. 9 E., east corner stones at secs. 25 and 36, on west edge of road, opposite wire fence west.....	39 05 51.9	88 09 11.3
Tps. 7 and 8 N., Rs. 9 and 10 E., corner of secs. 1, 6, 31, and 36, center of north-south road at T road east, opposite fence west.....	39 04 59.0	88 09 10.0
T. 7 N., R. 10 E., west corner secs. 6 and 7, stone in center of north-south road, at T road west.....	39 04 06.2	88 09 08.9
T. 7 N., R. 9 E., east corner of secs. 1 and 12, center of road in line with rail fence east.....	39 04 05.6	88 09 08.9
T. 7 N., R. 9 E., east corner secs. 12 and 13, center of north-south road, at T road west.....	39 03 13.3	88 09 08.0
T. 7 N., R. 10 E., west corner secs. 7 and 18, center of north-south road, at T road east.....	39 03 12.4	88 09 08.0
T. 7 N., R. 9 E., east corner of secs. 13 and 24, stone in center of north-south road, at T road west.....	39 02 20.2	88 09 07.4
T. 7 N., R. 10 E., west corner of secs. 18 and 19, center of north-south road, at T road east.....	39 02 19.6	88 09 07.4
T. 7 N., R. 9 E., east corner of secs. 24 and 25, stone in center of east-west road, 5 feet west of triangle.....	39 01 27.2	88 09 06.6
T. 7 N., R. 10 E., west corner of secs. 19 and 30, corner stone near wire fence, 40 feet south of east-west road.....	39 01 26.9	88 09 06.5
T. 7 N., Rs. 9 and 10 E., center of road at crossing of east-west line between secs. 30 and 31.....	39 00 33.6	88 09 23.1

Geographic positions along highways near north border of quadrangle.

Greenup, in southwest corner of town-hall square, 60 feet northeast of intersection of Kentucky and Illinois streets; iron post stamped "Prim. Trav. Sta. No. 6 1910".....	39 14 46.8	88 09 50.3
National Road crossing of Illinois Central R. R.....	39 14 35.0	88 10 26.4
Embarrass River, center of iron bridge over.....	39 14 19.6	88 11 14.3
Embarrass River, 0.5 mile west of bridge over; 4 corners.....	39 14 09.0	88 11 49.3

ROSE HILL QUADRANGLE—Continued.

Geographic positions along highways near west border of quadrangle.

Stations.	Latitude.	Longitude.
Goldsmith's store, 60 feet northeast and 220 feet north of Vandalia R. R. crossing of T road south, 3 corners, 50 feet northwest of corner of dwelling, center of National Road.....	° ' "	° ' "
T. 9 N., R. 8 E., east corner of secs. 24 and 25, at second-class crossroads; stone in center of north-south road.....	39 12 26.3	88 14 51.5
T. 9 N., R. 9 E., corner of secs. 19 and 30.....	39 12 01.0	88 14 51.2
T. 9 N., Rs. 8 and 9 E., corner of secs. 25, 30, 31, and 36, at end of straight road in creek bottom at T road east and bend of main road to southeast, opposite wire fence to west.....	39 12 01.2	88 14 51.2
Muddy Creek, center of iron bridge over.....	39 11 08.6	88 14 50.6
T. 9 N., Rs. 8 and 9 E., south corner of secs. 31 and 36, center of east-west road (line between Jasper and Cumberland counties) at T road north.....	39 10 57.7	88 14 40.5
T. 9 N., Rs. 11 E. and 14 W., corner of secs. 1, 6, 7, and 12 (range is short, and sections may be marked 6, 6, 7, and 7), stone on south edge of east-west road, at T road north, line between Cumberland and Clark counties.....	39 10 16.8	88 14 50.0
	39 14 50.2	88 00 34.3

Magnetic declination of east border of quadrangle, 3° 46' E.; of west border of quadrangle, 3° 45' E.; of north border of quadrangle, 3° 36' E.; of south border of quadrangle, 3° 46' E.

NEWTON QUADRANGLE.

Geographic positions along Indianapolis Southern R. R. near north border of quadrangle.

Stations.	Latitude.	Longitude.
T. 7 N., R. 9 E., south corner of secs. 31 and 32, center of east-west road, at T road north.....	° ' "	° ' "
T. 6 N., R. 9 E., north corner of secs. 5 and 6, center of east-west road, at T road south.....	38 59 41.0	88 14 44.5
T. 7 N., R. 9 E., south corner of secs. 32 and 33, center of east-west road, at wire fence north.....	38 59 41.0	88 14 43.6
T. 6 N., R. 9 E., north corner of secs. 4 and 5, center of east-west road, at T road south.....	38 59 40.7	88 13 36.9
T. 7 N., R. 9 E., south corner of secs. 33 and 34, center of east-west road, at wire fence north.....	38 59 40.7	38 13 34.9
T. 6 N., R. 9 E., north corner of secs. 3 and 4, at T road south.....	38 59 40.6	88 12 29.0
T. 7 N., R. 9 E., south corner of secs. 34 and 35, center of east-west road, 30 feet west of T road north.....	38 59 40.6	88 12 26.0
T. 6 N., R. 9 E., north corner of secs. 2 and 3, at right angle bend in road to south.....	38 59 40.4	88 11 20.9
Tps. 6 and 7 N., R. 9 E., 4 corners at west end of Newton, on line through center of secs. 35 and 2.....	38 59 40.5	88 11 18.0
Embarrass River, 1,100 feet north of bridge over; T road east.....	38 59 26.5	88 10 43.6
Newton, center of iron highway bridge over Embarrass River.....	38 59 53.5	88 09 39.6
Newton, near northeast corner of courthouse square, 30 feet northeast of pump; iron post stamped "Prim. Trav. Sta. No. 8 1910 ILLINOIS".....	38 59 42.9	88 09 42.8
Newton, Jasper County courthouse; spire.....	38 59 26.7	88 09 41.1
Newton, on south edge of Washington Street, 300 feet northwest of railroad station, 70 feet west of Illinois Central R. R. main track north; iron post stamped "Elevation 512 1906 ILL.".....	38 59 25.2	88 09 42.6
Milepost E24, 170 feet east of; north-south road crossing at.....	38 59 23.3	88 09 30.9
Milepost E25, 540 feet east of; north-south crossing at.....	38 59 25.2	88 09 05.4
Second-class road crossing, center of track at.....	38 59 31.2	88 07 56.0
Embarrass River, center of east span of iron bridge over.....	38 59 22.9	88 07 31.0
Road crossing, center of track.....	38 59 13.4	88 06 56.1
Creeds, 40 feet northeast of road crossing at station; center of main track.....	38 59 11.9	88 06 20.2
North-south road crossing, center of track at.....	38 59 20.5	88 05 53.0
T. 6 N., R. 10 E., north corner of secs. 2 and 3, center of east-west road, at T road south.....	38 59 28.3	88 05 35.2
T. 7 N., R. 10 E., south corner of secs. 34 and 35, center of east-west road, at T road north.....	38 59 45.2	88 04 28.4
T. 6 N., R. 10 E., north corner of secs. 1 and 2, center of east-west road, at T road south.....	38 59 45.2	88 04 26.9
T. 7 N., R. 10 E., south corner of secs. 35 and 36, center of east-west road, at T road north.....	38 59 44.8	88 03 20.4
Tps. 6 and 7 N., Rs. 10 and 11 E., corner of secs. 1, 6, 31, and 36, center of east-west road at crossroads.....	38 59 44.8	88 03 19.2
Willow Hill, center of cross streets at; corner of secs. 6, 6, 31, and 31, Tps. 6 and 7 N., Rs. 11 E. and 14 W.; cross streets 5 feet from corner stone.....	38 59 44.7	88 02 12.8
Willow Hill, 300 feet west of station, Illinois Central R. R. crossing.....	38 59 44.8	88 01 19.6
Willow Hill, crossing of Illinois Central R. R. and Cincinnati, Hamilton & Dayton R. R.....	38 59 57.8	88 01 19.5
Willow Hill, 1 mile east of; 10 feet west of north-south road crossing.....	38 59 57.7	88 01 15.7
	38 59 57.5	88 00 06.9

Magnetic declination of north border of quadrangle, 3° 46' E.

TEUTOPOLIS QUADRANGLE.

Geographic positions along highways near east border of quadrangle.

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
T. 9 N., R. 8 E., quarter corner between secs. 11 and 12, center of intersection of crossroads, 100 feet southeast of Morton Chapel.....	39	14	12.0	88	15	59.4
T. 9 N., R. 8 E., corner of secs. 1, 2, 11, and 12, center of north-south road, at east-west fence line.....	39	14	38.2	88	16	00.2
T. 9 N., R. 8 E., corner of secs. 11, 12, 13, and 14, center of north-south road, at wire fence south and private road southwest.....	39	13	45.7	88	15	58.5
T. 9 N., R. 8 E., quarter corner between secs. 13 and 14, in grass at second-class road south; stone.....	39	13	19.5	88	15	58.4
Cottonwood Creek, center of iron bridge over.....	39	12	41.2	88	15	36.4
T. 8 N., Rs. 8 and 9 E., north corner of secs. 1 and 6, T road south, 300 feet west of schoolhouse, center of east-west road, line between Jasper and Cumberland counties.....	39	10	16.6	88	15	41.8
T. 8 N., Rs. 8 and 9 E., corner of secs. 1, 6, 7, and 12, 100 feet southeast of White Church, center of intersection of roads.....	39	09	22.0	88	15	40.6
T. 8 N., Rs. 8 and 9 E., corner of secs. 7, 12, 13, and 18, center of east-west road, at T road south, 50 feet west of T road north.....	39	08	29.5	88	15	39.4
T. 8 N., Rs. 8 and 9 E., corner of secs. 13, 18, 19, and 24, center of north-south road, at crossroads, 30 feet north of bridge, 25 feet east of hedge.....	39	07	37.0	88	15	38.2
Gila, corner of secs. 19, 24, 25, and 30, T. 8 N., Rs. 8 and 9 E., 50 feet west of southeast corner of sec. 24, in northwest corner of intersection of crossroads, in southeast corner of store of Wm. Bager (vacant); iron post stamped "Prim. Trav. Sta. No. 10 1910 ILL.".....	39	06	45.2	88	15	38.5
T. 8 N., Rs. 8 and 9 E., corner of secs. 19, 24, 25, and 30; center of intersection of crossroads.....	39	06	44.8	88	15	38.2
T. 8 N., R. 9 E., west corner of secs. 30 and 31, on east edge of north-south road, at T road east, east-west road south makes a 10-foot jog; stone.....	39	05	52.2	88	15	37.7
T. 8 N., R. 8 E., east corner of secs. 25 and 36, center of north-south road, at T road west.....	39	05	52.1	88	15	37.8
Tps. 7 and 8 N., Rs. 8 and 9 E., corner of secs. 1, 6, 31, and 36, stone in center of intersection of crossroads.....	39	04	59.7	88	15	37.5
Four corners, public crossroads, on east-west line between Cumberland and Jasper counties.....	39	05	01.4	88	16	04.9
T. 7 N., R. 9 E., quarter corner between secs. 1 and 12, center of small grass triangle at T road east; stone in center of triangle.....	39	04	06.3	88	16	11.2
T. 7 N., R. 8 E., quarter corner between secs. 12 and 13, center of east-west road, at public T road north, 10 feet north to center of triangle.....	39	03	13.6	88	16	11.6
T. 7 N., R. 8 E., east corner of secs. 12 and 13, at junction of rail levee.....	39	03	14.2	88	15	37.9
T. 7 N., R. 9 E., west corner of secs. 7 and 18, bend of second-class road east, at wire fence.....	39	03	12.4	88	15	37.9
T. 7 N., R. 8 E., east corner of secs. 13 and 24, center of north-south road, at T road west.....	39	02	20.5	88	15	37.6
T. 7 N., R. 9 E., west corner of secs. 18 and 19, center of north-south road, at T road east.....	39	02	18.8	88	15	37.6
T. 7 N., R. 9 E., west corner of secs. 19 and 30, center of north-south road, at T road east.....	39	01	26.0	88	15	37.0
T. 7 N., R. 8 E., east corner of secs. 24 and 25, center of north-south road, at T road west.....	39	01	25.1	88	15	37.0
Liz station, 100 feet south of station sign, crossing of Illinois Central R. R. and north-south road.....	39	01	10.3	88	15	36.8
T. 7 N., R. 9 E., west corner of secs. 30 and 31, center of north-south road at wire fence post.....	39	00	31.8	88	15	32.1
T. 7 N., R. 8 E., east corner of secs. 25 and 36, center of north-south road opposite fence west.....	39	00	31.8	88	15	37.0

Magnetic declination of east border of quadrangle, 3° 45' E.

TOLEDO QUADRANGLE.

Geographic positions along highways near south border of quadrangle.

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
T. 9 N., R. 9 E., center of sec. 4, center of east-west hedge row south.....	39	15	06.6	88	12	07.6
T. 9 N., R. 9 E., quarter corner stone between secs. 4 and 5, in center of east-west road at north-south fence line.....	39	15	06.4	88	12	41.7
T. 9 N., R. 9 E., center of sec. 5, center of crossroads, 75 feet southwest of a white schoolhouse.....	39	15	06.4	88	13	14.7
T. 9 N., R. 9 E., quarter corner stone between secs. 5 and 6, in center of east-west road at second-class T road south, 750 feet west of Illinois Central R. R. crossing and 440 feet east of bridge over Cottonwood Creek.....	39	15	06.4	88	13	47.8
Cottonwood Creek, center of iron bridge over.....	39	15	06.4	88	13	53.4
T. 9 N., R. 9 E., center of sec. 6, center of east-west road, at intersection of T road north and wire fence south with main road.....	39	15	06.2	88	14	21.3
Secs. 1 and 6, stone in center of public crossroads.....	39	15	06.2	88	14	37.2
T. 9 N., Rs. 8 and 9 E., east quarter corner between secs. 1 and 6 ¹	39	15	04.3	88	14	53.0
T. 9 N., Rs. 8 and 9 E., west quarter corner between secs. 1 and 6 ¹	39	15	06.5	88	14	53.0

Magnetic declination of south border of quadrangle, 3° 36' E.

¹ The numbers of the sections as given in these descriptions may not be correct.

MATTOON QUADRANGLE.

Geographic positions along highways near southeast corner of quadrangle.

Stations.	Latitude.	Longitude.
T. 9 N., Rs. 8 and 9 E., quarter corner between secs. 1 and 6, 1,320 feet west of stone in center of crossroads ^a	° ' " 39 15 04.1	° ' " 88 15 09.7
T. 9 N., R. 8 E., 20 feet northeast of quarter corner stone between secs. 1 and 2, in southeast corner of NW $\frac{1}{4}$ of sec. 1, northeast corner of crossroads; iron post stamped "Prim. Trav. Sta. No. 9 1910 ILL.".....	39 15 04.4	88 16 00.2
T. 9 N., R. 8 E., quarter corner stone between secs. 1 and 2, in the center of crossroads.....	39 15 04.3	88 16 00.3

^a The numbers of the sections as given may not be correct.**SAILOR SPRINGS QUADRANGLE.**

Geographic positions along highways near northeast corner of quadrangle.

Stations.	Latitude.	Longitude.
Tps. 6 and 7 N., Rs. 8 and 9 E., 30 feet northwest of corner of secs. 1, 6, 31, and 36, at corner of wire fence, in northwest corner of intersection of crossroads, in southeast corner of sec. 36; iron post stamped "Prim. Trav. Sta. No. 11, 1910 ILL.".....	° ' " 38 59 41.3	° ' " 88 15 37.1
Tps. 6 and 7 N., Rs. 8 and 9 E., stone in center of intersection of crossroads at corner of secs. 1, 6, 31, and 36.....	38 59 41.1	88 15 36.9

MOONSHINE QUADRANGLE.

Geographic positions along highways north-south through center of quadrangle.

Stations.	Latitude.	Longitude.
T. 7 N., R. 13 W., corner of secs. 28, 29, 32, and 33, at T fence north, 1,400 feet east of road.....	° ' " 39 00 44.6	° ' " 87 52 16.4
Three corners T road west at, center of north-south road at.....	39 01 24.3	87 52 34.4
T. 7 N., R. 13 W., corner of secs. 20, 21, 28, and 29, center of east-west road, at wire fence south and rail fence north, 1,370 feet east to T road east.....	39 01 37.6	87 52 17.1
T. 7 N., R. 13 W., quarter corner between secs. 28 and 21, center of east-west road at T road north, 240 feet east of T road south.....	39 01 37.6	87 51 43.5
Four corners, public road west, second-class road east, center of north-south road.....	39 02 17.6	87 51 43.6
T. 7 N., R. 13 W., quarter corner stone between secs. 16 and 21, in center of north-south road, at wire fence west and hedgerow east.....	39 02 30.7	87 51 43.6
T. 7 N., R. 13 W., center of sec. 16, stone in center of north-south road, on line with south edge of road west and north edge of road east.....	39 02 57.1	87 51 43.6
T. 7 N., R. 13 W., quarter corner between secs. 9 and 16, center of intersection of crossroads.....	39 03 24.2	87 51 43.7
T. 7 N., R. 13 W., quarter corner between secs. 4 and 9, stone in center of crossroads, 10 feet southeast of large oak.....	39 04 17.7	87 51 44.0
Tps. 7 and 8 N., R. 13 W., quarter corner between secs. 4 and 33, center of east-west road at T road south.....	39 05 09.8	87 51 45.0
Tps. 7 and 8 N., R. 13 W., corner of secs. 4, 5, 32, and 33, center of east-west road at T road north, 250 feet southwest of Liberty schoolhouse.....	39 05 09.8	87 52 21.5
T. 8 N., R. 13 W., corner of secs. 28, 29, 32, and 33, center of north-south road, at T road west.....	39 06 00.9	87 52 20.5
T. 8 N., R. 13 W., northwest of corner of secs. 20, 21, 28, and 29, in southeast corner of sec. 20, near wire fence, in northwest corner of crossroads, 15 feet northwest of large oak tree; iron post stamped "Prim. Trav. Sta. No. 12 1910 ILL.".....	39 06 52.3	87 52 19.6
T. 8 N., R. 13 W., corner of secs. 20, 21, 28, and 29, of intersection of crossroads, 12 feet east of large oak.....	39 06 52.1	87 52 19.4
Muddy Creek, center of iron bridge over.....	39 07 19.7	87 52 24.6
T. 8 N., R. 13 W., corner of secs. 16, 17, 20, and 21, center of north-south road (intersection with) at T road east and wire fence west.....	39 07 44.6	87 52 20.7
T. 8 N., R. 13 W., corner of secs. 8, 9, 16, and 17, center of crossroads at.....	39 08 40.7	87 52 28.3
T. 8 N., R. 13 W., corner of secs. 4, 5, 8, and 9, center of north-south road at T road east.....	39 09 36.1	87 52 29.7
T. 8 N., R. 13 W., north corner of secs. 4 and 5, center of east-west road at T road south, on line between Crawford and Clark counties.....	39 10 35.1	87 52 31.9
T. 9 N., R. 13 W., south corner of secs. 31 and 32, on north edge of east-west road, 270 feet west of T road south, on line between Crawford and Clark counties.....	39 10 35.0	87 52 35.3
T. 9 N., R. 13 W., corner of secs. 29, 30, 31, and 32, 1,330 feet west of, at center east-west road, at edge of T road south.....	39 11 27.5	87 52 20.0
T. 9 N., R. 13 W., corner of secs. 28, 29, 32, and 33, center of crossroads.....	39 11 28.9	87 51 29.4
T. 9 N., R. 13 W., quarter corner between secs. 28 and 29, 1,330 feet east of stone in center of crossroads.....	39 11 55.4	87 51 13.1

MOONSHINE QUADRANGLE—Continued.

Geographic positions along highways north-south through center of quadrangle—Continued.

Stations.	Latitude.	Longitude.
T. 9 N., R. 13 W., corner of secs. 20, 21, 28, and 29, 4 corners on east-west line between secs. 28 and 29.....	° ' "	° ' "
T. 9 N., R. 13 W., stone at corner of secs. 20, 21, 28, and 29.....	39 12 21.7	87 51 13.9
T. 9 N., R. 13 W., secs. 16 and 21, center of east-west road at east-west line between 3 corners at store, T road south.....	39 12 21.7	87 51 30.7
T. 9 N., R. 13 W., secs. 16, 17, 20, and 21, corner of; 3 corners west of west end of bridge over Willow Creek, T road north.....	39 13 13.9	87 51 15.5
T. 9 N., R. 13 W., corner of secs. 8, 9, 16, and 17, center of crossroads at.....	39 13 13.7	87 51 33.7
T. 9 N., R. 13 W., corner of secs. 4, 5, 8, and 9, 25 feet northwest of, northwest corner of crossroads, in southeast corner of front yard of H. L. Atkins, in southeast corner of sec. 5; iron post stamped "Prim. Trav. Sta. No. 13 1910 ILL"....	39 14 05.6	87 51 35.5
	39 14 58.0	87 51 37.9

Geographic positions along highways near north border of quadrangle.

T. 9 N., R. 13 W., corner of secs. 4, 5, 8, and 9, center of intersection of crossroads.	39 14 57.8	87 51 37.7
T. 9 N., R. 13 W., corner of secs. 5, 6, 7, and 8, center of north-south road, at wire fences north and south.....	39 14 55.6	87 52 45.2
T. 9 N., R. 13 and 14 W., corner of secs. 1, 6, 7, and 12, center of north-south road at T road east.....	39 14 54.2	87 53 50.3
T. 9 N., R. 14 W., 0.2 miles south of secs. 1, 2, 11, and 12, 50 feet northeast of schoolhouse, center of intersection of 4 corners.....	39 14 29.3	87 54 56.8
T. 9 N., R. 14 W., corner of secs. 1, 2, 11, and 12, center of road south at bend east, at east-west wire fence, 1,320 feet north of crossroads at schoolhouse.....	39 14 42.3	87 54 57.0
Embarrass River, north fork of; center of iron bridge over.....	39 14 20.8	87 55 42.7
T. 9 N., R. 14 W., about 0.2 mile west of corner of secs. 2, 3, 10, and 11; center of east-west road at T road south.....	39 14 53.5	87 56 20.5
Three corners, center of east-west road at T road north.....	39 14 52.9	87 56 56.3
T. 9 N., R. 14 W., corner of secs. 3, 4, 9, and 10, T road south and hedgerow north.....	39 14 52.5	87 57 13.1
T. 9 N., R. 14 W., quarter corner between sections 4 and 9, center of east-west road, at T road north, opposite wire fence south, 250 feet northwest of white oak, 35 feet north to center of bridge over small stream.....	39 14 51.7	85 57 46.8
T. 9 N., R. 14 W., corner of secs. 4, 5, 8, and 9, stone near fence post on north edge of road opposite wire fence south, 30 feet east of slight bend in road and 600 feet west of bridge over creek.....	39 14 51.2	87 58 20.4
T. 9 N., R. 14 W., corner of secs. 5, 6, 7, and 8, center of intersection of crossroads.....	39 14 51.4	87 59 28.2

Magnetic declination of north-south line through center of quadrangle, 3° 44' E.; of north border of quadrangle, 3° 51' E.

Augusta, Avon, Canton, Carthage, Colchester, Galesburg, Glasford, Good Hope, Havana, Keokuk, La Harpe, Lomax, Macomb, Manilo, Maquon, Rushville, and Vermont quadrangles.

FULTON, HANCOCK, McDONOUGH, AND SCHUYLER COUNTIES.

The following geographic positions were determined by primary traverse in 1910 by C. B. Kendall.

The line starts from triangulation stations near the Illinois River and runs west along highways near the north border of the Havana, Vermont, Macomb, Colchester and Carthage quadrangles, thence south and west in the Keokuk quadrangle to Keokuk, Iowa, where it is tied to triangulation stations of the Mississippi River Commission. For the stations in Iowa see, under Iowa, Keokuk quadrangle, page 98.

The Colchester quadrangle is further controlled by lines on the east, west, and south borders, and also by a line through the center of the quadrangle.

The State cooperated in the work.

HAVANA QUADRANGLE.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
State triangulation station, of Illinois and Desplaines River Survey.....	40 18 00.28	90 03 57.94
Havana, center of drawbridge over Illinois River.....	40 17 56.77	90 04 03.80
West Havana, opposite station, center of main track Chicago, Burlington & Quincy R. R.....	40 17 56.04	90 04 14.65
West Havana, 1 mile west of, at forks of road, near road northwest to ferry over Spoon River, 35 feet southeast of mail box 6, 40 feet northeast of telegraph pole, 100 feet east of center of Chicago, Burlington & Quincy R. R. crossing.....	40 18 03.32	90 05 19.68
West Havana, 2 miles west of, 3 corners center of north-south road on line between secs. 25 and 30, at T road east, 15 feet west of center of triangle.....	40 18 01.58	90 06 19.21
Bridge over drainage canal.....	40 18 17.14	90 06 53.42
T. 4 N., R. 4 E., corner of secs. 23, 24, 25, and 26, center of crossroads.....	40 18 17.04	90 07 27.49
T. 4 N., R. 4 E., center of sec. 23, center of east-west road at T road north.....	40 18 43.59	90 08 02.09
T. 4 N., R. 4 E., quarter corner between secs. 14 and 23, center of north-south road at T road east, 20 feet north to old gate.....	40 19 09.18	90 08 01.99
Road crossing at drainage canal.....	40 19 12.12	90 07 35.12
Three corners, 1,000 feet north of Wm. Ray's house, main road turns 90° west, second-class road up river.....	40 19 48.83	90 07 40.93
Three corners, T road north, 25 feet north to forked gum tree.....	40 19 48.83	90 07 54.62
Three corners, on north-south line through center of sec. 15, second-class T road south.....	40 19 48.90	90 09 10.66
Quarter corner between secs. 15 and 16, east side north-south road and north side road east, 50 feet north of grass triangle.....	40 19 35.49	90 09 44.68
Bridge over small stream.....	40 20 12.02	90 10 08.20
Duncan's Mills, 0.5 mile east of, center of iron bridge over deep ravine.....	40 20 26.28	90 10 50.63
Duncan's Mills, center of east-west road at T road north leading across Spoon River.....	40 20 24.97	90 11 25.18
Duncan's Mills, in northwest corner of G. C. Slater's store, southeast corner of T road south, 35 feet south of center of Havana-Ipava road, 35 feet east of center of Duncan's Mills, Otto road; iron post stamped "Prim. Trav. Sta. No. 14 1910 ILL".....	40 20 24.38	90 11 26.46
Duncan's Mills, 0.8 mile west of, forks of road, road west and northwest, 25 feet northeast to forks, center of roads.....	40 20 32.44	90 12 08.80
Center of iron bridge over Potato Creek.....	40 20 54.72	90 12 40.17
Four corners, on township line between Rs. 2 and 3 E., crossroads at second-class north-south crossroad, 25 feet southeast of R. Rose's mail box.....	40 21 22.25	90 13 04.58
Center of highway bridge over Chicago, Burlington & Quincy R. R. at shovel cut. Tps. 4 and 5 N., R. 2 E., quarter corner on south side of sec. 36; stone on east-west fence at T fence north.....	40 21 26.71	90 13 14.66
Tps. 4 and 5 N., R. 2 E., quarter corner on north side of sec. 1, at T fence south.....	40 21 52.12	90 13 38.36
Tps. 4 and 5 N., R. 2 E., corner of secs. 35, 36, 1, and 2; stone in fence corner, 10 feet west of hackberry tree.....	40 21 52.12	90 13 38.74
T. 5 N., R. 2 E., center of sec. 35, center of east-west road at T road north, 15 feet south of center of triangle, 25 feet north of wire fence.....	40 21 51.19	90 14 12.22
T. 5 N., R. 2 E., quarter corner between secs. 26 and 35, center of north-south road at T road west, 25 feet southeast to telegraph pole, 15 feet west to center of triangle.....	40 22 17.15	90 14 45.17
Center of triangle, forks of road at foot of hill, 140 feet southeast to bridge over small stream, roads southeast-east.....	40 22 43.41	90 14 44.11
	40 23 19.50	90 14 48.33

Magnetic declination of line diagonal through middle of quadrangle, 5° E.

Geographic positions along highways near north border of quadrangle.

T. 6 N., R. 2 E., corner of secs. 23, 24, 25, and 26, center of crossroads.....	40 28 50.59	90 14 04.76
T. 6 N., Rs. 2 and 3 E., corner of secs. 19, 24, 25, and 30, center of crossroads.....	40 28 50.60	90 12 57.61
Center of east-west road at T road north to Cuba.....	40 28 50.28	90 11 50.58
Center of Chicago, Burlington & Quincy R. R. main track at east-west road crossing, 250 feet north of coal mine.....	40 28 50.17	90 11 39.45
Cuba, southeast corner of 3 corners, T road south, 15 feet north of crossing, 10 feet west of crossing of siding to coal mine.....	40 29 18.65	90 11 07.48
T. 6 N., R. 3 E., quarter corner between secs. 20 and 21, center of north-south road at road to east.....	40 29 16.11	90 10 50.40
T. 6 N., R. 3 E., center of sec. 21, stone in center of north-south road at north edge of T road east, opposite rail fence to west.....	40 29 16.18	90 10 16.09
Slug Run, center of bridge over.....	40 29 16.09	90 09 27.05
T. 6 N., R. 3 E., on north-south line between secs. 22 and 23, 3 corners, second-class T road north (corner stone could not be found).....	40 29 28.89	90 08 33.62
T. 6 N., R. 3 E., 3 corners, northwest corner of cemetery, T road west, center of north-south road.....	40 29 29.73	90 07 35.18
T. 6 N., R. 3 E., corner of secs. 13, 14, 23, and 24, second-class road south, bend of main road 90° north, 775 feet northwest of schoolhouse.....	40 29 43.22	90 07 25.02
Forks of road at top of hill, oak tree in angle of main road at 90° bend.....	40 29 30.26	90 05 39.84
T. 6 N., R. 4 E., corner of secs. 17, 18, 19, and 20, center of road, 400 feet east of 50° bend in road east, opposite wire fence south, east edge of schoolhouse lot.....	40 29 43.44	90 05 12.52
T. 6 N., R. 3 E., quarter corner between secs. 17 and 20, center of north-south road at T road west, 5 feet from center of triangle.....	40 29 43.43	90 04 38.35
Big Creek, center of bridge over.....	40 29 51.16	90 03 12.66

HAVANA QUADRANGLE—Continued.**Geographic positions along highways near north border of quadrangle—Continued.**

Stations.	Latitude.	Longitude.
St. David, at northeast edge of town, T. 6 N., R. 4 E., corner of secs. 15, 16, 21, and 22, 3 corners, T road south into town, 5 feet northwest of center of triangle, 30 feet east of corner of board fence.....	° ' " 40 29 43.47	° ' " 90 02 55.69
T. 6 N., R. 4 E., corner of secs. 14, 15, 22, and 23, center of east-west road, 45 feet east of railroad crossing, 50 feet west of center of north-south road at T road west.....	40 29 43.39	90 01 47.03
Center of north-south road at T road west.....	40 29 43.39	90 01 46.39
T. 6 N., R. 4 E., corner of secs. 22, 23, 26, and 27, center of north-south road, 10 feet south of T road east, opposite wire fence west.....	40 28 51.26	90 01 47.54
T. 6 N., R. 4 E., on north-south line between secs. 25 and 26, 3 corners, center of east-west road at T road south.....	40 28 43.41	90 00 38.70
T. 6 N., R. 4 E., corner of secs. 23, 24, 25, and 26, at T fence south, 760 feet north of T road.....	40 28 50.92	90 00 38.70
Buckheart Creek, center of iron bridge over.....	40 28 42.57	90 00 00.10

Magnetic declination near northeast corner of quadrangle, 4° 54' E.; near northwest corner of quadrangle, 5° 25' E.

GLASFORD QUADRANGLE.**Geographic positions along highways near south border of quadrangle.**

Stations.	Latitude.	Longitude.
T. 6 N., R. 5 E., corner of secs. 8, 9, 16, and 17, center of crossroads.....	° ' " 40 30 35.27	° ' " 89 57 11.91
T. 6 N., R. 5 E., center of sec. 15, on south edge of east-west road at T road north to Banner.....	40 30 09.07	89 55 29.83
Banner, 0.5 mile southeast of, center of sec. 14 (?), center of levee at T road west.....	40 30 09.13	89 54 16.38
Banner, in northeast corner of Gusta Fidler's yard, in southwest corner of Main and Bridge streets, 60 feet southwest of center of Bridge Street at junction with Main Street; iron post stamped "Prim. Trav. Sta. No. 20, ILLINOIS 1910.".....	40 31 01.33	89 54 30.94
Banner, 0.2 mile east of, center of triangle at forks of road, 20 feet east of east end of bridge over Copperas Creek.....	40 31 01.65	89 54 14.64
Copperas Creek, triangulation station, NE. $\frac{1}{4}$ SE. $\frac{1}{4}$ of sec. 1, T. 6 N., R. 5 E., Fulton County, on point of bluff about 400 feet west of dwelling house owned by Mr. Houston.....	40 31 31.12	89 52 57.80

Magnetic declination of south border of quadrangle, 5° 05' E.

Geographic positions along highways near west border of quadrangle.

T. 7 N., Rs. 4 and 5 E., public T road north, on range line, center of east-west road.	40 33 25.03	89 59 26.03
T. 7 N., Rs. 4 and 5 E., east corner of secs. 24 and 25, 15 feet east of north-south road at T road west.....	40 34 05.94	89 59 25.25
T. 7 N., Rs. 4 and 5 E., west corner of secs. 19 and 30, in center of north-south road at wire fence east.....	40 34 06.92	89 59 25.25
West Branch, Copperas Creek, center of bridge over.....	40 34 26.69	89 59 24.83
T. 7 N., Rs. 4 and 5 E., east quarter corner between secs. 24 and 25, center of north-south road at T road west.....	40 34 32.42	89 59 24.48
T. 7 N., Rs. 4 and 5 E., west quarter corner between secs. 19 and 30, center of north-south road at T road east, 15 feet from second-class road north, center of triangle.....	40 34 33.01	89 59 24.48
Three corners, center of large triangle at public T road to southwest.....	40 34 42.40	89 58 44.28
T. 7 N., R. 5 E., center of sec. 18, center of east-west road at T road south, 25 feet north to large fence post, 12 feet south to center of triangle.....	40 35 25.70	89 58 42.70
Three corners, public T road east, center of north-south road, 25 feet east to center of triangle.....	40 35 58.67	89 58 28.12
T. 7 N., Rs. 4 and 5 E., north-south line between secs. 7 and 12, center of east-west road at T lane south.....	40 36 31.33	89 59 22.06

Magnetic declination of west border of quadrangle, 5° 10' E

MANILO QUADRANGLE.**Geographic positions along highways near north border of quadrangle.**

Stations.	Latitude.	Longitude.
T. 6 N., Rs. 4 and 5 E., 35 feet southeast of west corner of secs. 18 and 19, in south-east corner of cross roads at corner of high fence; iron post stamped "Prim. Trav. Sta. No. 19, 1910 ILLINOIS"	° ' "	° ' "
T. 6 N., Rs. 4 and 5 E., corner of secs. 24 and 25, center of north-south road at T road west, 20 feet south of corner of secs. 18 and 19, center of north-south road at T road east.	40 28 50.82	89 59 30.76
T. 6 N., Rs. 4 and 5 E., corner of secs. 13, 18, 19, and 24, 300 feet southeast of Eureka schoolhouse, center of cross roads	40 28 50.82	89 59 31.08
T. 6 N., R. 5 E., corner of secs. 17, 18, 19, and 20, center of east-west road, opposite wire fence south, 100 feet southeast of southeast corner of barn, 100 feet west of hickory tree at south edge of road	40 29 43.63	89 59 29.75
Buckheart Creek, center of bridge over	40 29 43.72	89 58 21.71
Corner of secs. 16, 17, 20, and 21, center of north-south road at T road west.	40 29 43.57	89 58 10.33
	40 29 42.62	89 57 13.10

Magnetic declination of north border of quadrangle, 4° 38' E.

CANTON QUADRANGLE.**Geographic positions along highways near south border of quadrangle.**

Stations.	Latitude.	Longitude.
T. 6 N., R. 3 E., near corner of secs. 11, 12, 13, and 14, northwest corner of crossroads, 5 feet west of corner post of wire fence, 30 feet northwest of intersection; iron post stamped "Prim. Trav. Sta. No. 18 ILL 1910"	° ' "	° ' "
T. 6 N., R. 3 E., corner of secs. 11, 12, 13, and 14, center of crossroads.	40 30 35.64	90 07 25.07
T. 6 N., R. 3 E., T road west on line between secs. 12 and 13, 3 corners.	40 30 35.43	90 07 24.80
Second-class road east at 90° bend in main road to south.	40 30 34.99	90 06 33.57
T. 6 N., R. 4 E., center of sec. 17, center of north-south road at T road east.	40 30 09.45	90 06 01.72
T. 6 N., R. 4 E., quarter corner between secs. 16 and 17, center of east-west road at T road north, 15 feet south of center of triangle.	40 30 09.59	90 04 37.95
T. 6 N., R. 4 E., quarter corner between secs. 16 and 17, center of east-west road at T road north, 15 feet south of center of triangle.	40 30 09.43	90 04 03.92
St. David, north of, center of triangle at 3 corners, public T road west.	40 30 09.28	90 03 12.85

Magnetic declination of south border of quadrangle, 4° 46' E.

Geographic positions along highways near south border of quadrangle.

T. 6 N., R. 4 E., center of sec. 13, center of intersection of crossroads.	40 30 09.44	90 00 03.51
T. 6 N., R. 4 E., center of sec. 12, center of intersection of crossroads.	40 31 01.91	90 00 02.45
T. 6 N., R. 4 E., quarter corner between secs. 1 and 12, center of intersection of crossroads, red brick schoolhouse in northwest corner.	40 31 28.30	90 00 02.08
Tps. 6 and 7 N., R. 4 E., quarter corner between secs. 1 and 36, center of north-south road at wire fence east-west.	40 32 21.08	90 00 01.65
T. 7 N., R. 4 E., quarter corner between secs. 25 and 36, stone in center of north-south road at T road west and 25 feet north of Toledo, Peoria & Western Ry. crossing.	40 33 13.55	90 00 00.77
Canton, 1.5 miles east of, center of intersection of crossroads.	40 33 25.33	90 00 00.35

Geographic positions along highways near east border of quadrangle.

Curtis schoolhouse, 3 corners 100 feet southeast of center of east-west road at public T road north.	40 36 43.39	90 00 16.17
T. 7 N., R. 4 E., corner of secs. 1, 2, 11, and 12; stone in center of east-west road.	40 36 43.74	90 00 31.20
Tps. 7 and 8 N., south corner of secs. 35 and 36, center of east-west road at high fence north.	40 37 33.94	90 00 28.47
Tps. 7 and 8 N., R. 4 E., north corner of secs. 1 and 2, center of east-west road at board fence south.	40 37 33.96	90 00 30.55
Norris, 1 mile east of; near high fence on south edge of east-west road at public T road north, 3 feet north of fence and 35 feet south of center of triangle road intersection, 1,150 feet west of north corner of secs. 1 and 2, Tps. 7 and 8 N.; iron post stamped "Prim. Trav. Sta. No. 21 ILLINOIS 1910"	40 37 33.70	90 00 45.48
Center of township road at T road north near above station.	40 37 33.85	90 00 45.48
Forks of road 0.2 mile northeast of bridge over creek, public road southeast-southwest, center of triangle at.	40 38 03.61	90 00 27.18
T. 8 N., R. 4 E., corner of secs. 25, 26, 35, and 36, center of north-south road at cross fences, second-class T road to east.	40 38 26.14	90 00 26.58
T. 8 N., R. 4 E., corner of secs. 23, 24, 25, and 26, center of intersection of crossroads, schoolhouse in northeast corner of crossroads.	40 39 18.31	90 00 24.87
T. 8 N., R. 4 E., quarter corner between secs. 23 and 24, center of north-south road at T road west.	40 39 44.40	90 00 24.07
T. 8 N., R. 4 E., corner of secs. 13, 14, 23, and 24, center of north-south road at T road east into barnyard.	40 40 10.51	90 00 23.13

CANTON QUADRANGLE—Continued.

Geographic positions along highways near east border of quadrangle—Continued.

Stations.	Latitude.	Longitude.
T. 8 N., R. 4 E., corner of secs. 11, 12, 13, and 14, center of intersection of crossroads.....	° ' "	° ' "
Farmington, corner of secs. 1, 2, 11, and 12, T. 8 N., R. 4 E., intersection of Main and Fort streets, 70 feet northeast of Copp's Hotel, 70 feet northwest of Littlewood & Sternberg's Bank.....	40 41 02.67	90 00 21.47
Farmington, 1 mile north of, corner of secs. 1, 2, 35, and 36, Tps. 8 and 9 N., R. 4 E., center of north-south road at fences east-west, line between Fulton and Knox counties.....	40 41 54.84	90 00 20.16
T. 9 N., R. 4 E., quarter corner between secs. 35 and 36, center of north-south road at T road east, 10 feet from center of triangle.....	40 42 46.44	90 00 18.77
T. 9 N., R. 4 E., corner of secs. 35, 36, 25, and 26, center of north-south road at fences east-west.....	40 43 12.73	90 00 18.33
T. 9 N., R. 4 E., quarter corner between secs. 25 and 26, center of intersection of crossroads, 250 feet from schoolhouse in northwest corner.....	40 43 38.93	90 00 18.15
T. 9 N., R. 4 E., corner of secs. 23, 24, 25, and 26, center of north-south road at T road west.....	40 44 05.13	90 00 17.98
	40 44 31.43	90 00 17.98

Geographic positions along highways east-west through center of quadrangle.

Tps. 7 and 8 N., R. 2 E., north corner of secs. 1 and 2, at corner of high fence 200 feet south of road and in southeast corner of schoolhouse yard.....	40 37 33.12	90 14 00.23
Tps. 7 and 8 N., R. 2 E., south corner of secs. 35 and 36.....	40 37 33.12	90 14 01.01
Fairview, 3.5 miles west of, near southeast corner of SW. $\frac{1}{4}$ of sec. 36, T. 8 N., R. 2 E., on the Fairview-Ellisville road, near corner of wire fence in northwest corner of crossroads; iron post stamped "Prim. Trav. Sta. No. 26 1910 ILLINOIS and 701 1909.".....	40 37 42.52	90 13 27.28
Tps. 7 and 8 N., Rs. 2 and 3 E., west corner of secs. 31 and 6, center of north-south road at rail fence east, 1,475 feet north of T road south.....	40 37 32.19	90 12 52.21
Tps. 7 and 8 N., Rs. 2 and 3 E., east corner of secs. 1 and 36, center of north-south road at wire fence west, 1,510 feet north of T road south.....	40 37 31.94	90 12 52.21
T. 7 N., Rs. 2 and 3 E., west quarter corner of sec. 6, stone in center of north-south road at T road east, 25 feet west of center of triangle, 1,940 feet west of center of sec. 6, center of road at fences north-south, 20 feet east of bridge over small stream.....	40 37 07.95	90 12 52.46
T. 7 N., R. 3 E., quarter corner between secs. 5 and 6, in center of east-west road at T road south and 12 feet southwest of large hackberry tree.....	40 37 08.25	90 11 53.18
T. 7 N., R. 3 E., quarter corner between secs. 4 and 5, east-west road crossing the Chicago, Burlington & Quincy R. R.....	40 37 08.43	90 10 44.19
Fairview, 1 mile south of; quarter corner between secs. 3 and 4, T. 7 N., R. 3 E., center of intersection of crossroads.....	40 37 08.60	90 09 34.99
T. 7 N., R. 3 E., quarter corner between secs. 2 and 3; stone 5 feet northeast of center of crossroads.....	40 37 08.91	90 08 25.25
Sunnyside, center of east-west road at T road north and 75 feet southeast of schoolhouse, district 1.....	40 37 09.18	90 07 41.41
Tps. 7 and 8 N., 3 corners on line between, at public T road south, center of east-west road.....	40 37 35.60	90 07 41.49
Tps. 7 and 8 N., R. 3 E., north corner of secs. 1 and 2; stone in center of east-west road at wire fence south.....	40 37 35.70	90 07 16.32
Tps. 7 and 8 N., R. 3 E., south corner of secs. 35 and 36; stone in center of east-west road at wire fence north.....	40 37 35.70	90 07 16.00
Tps. 7 and 8 N., Rs. 3 and 4 E., 35 feet southeast of corner of secs. 1, 6, 31, and 36, in southeast corner of crossroads, the intersection of which is the corner of Canton, Fairview, Farmington, and Joshua townships; iron post stamped "Prim. Trav. Sta. No. 27 1910 ILLINOIS".....	40 37 34.27	90 06 06.80
Tps. 7 and 8 N., Rs. 3 and 4 E., corner of secs. 1, 6, 31, and 36, center of intersection of crossroads.....	40 37 34.52	90 06 07.12
Tps. 7 and 8 N., R. 4 E., south corner of secs. 31 and 32, center of east-west road opposite wire fence north.....	40 37 34.23	90 05 03.11
Tps. 7 and 8 N., R. 4 E., north corner of secs. 5 and 6, center of east-west road at T road south, 20 feet north of center of triangle.....	40 37 34.24	90 05 02.45
Tps. 7 and 8 N., R. 4 E., corner of secs. 4, 5, 32, and 33, center of intersection of crossroads.....	40 37 34.90	90 03 54.49
Tps. 7 and 8 N., R. 4 E., north corner of secs. 3 and 4, center of east-west road at T road south, 25 feet north of center of triangle.....	40 37 33.85	90 02 47.29
Tps. 7 and 8 N., R. 4 E., south corner of secs. 33 and 34, center of east-west road at T road north, 15 feet south of center of triangle.....	40 37 33.85	90 02 45.59
Norris, 3 corners at public T road south, 40 feet northeast of corner saloon, 45 feet south of door of elevator.....	40 37 33.74	90 01 55.65
Norris, 3 corners at public T road north, 25 feet south of lamp-post, 45 feet west of main track of Chicago, Burlington & Quincy R. R.....	40 37 33.75	90 01 54.86
Norris, east edge of town, north corner of secs. 2 and 3, Tps. 7 and 8 N., R. 4 E., center of east-west road at T road south.....	40 37 33.80	90 01 38.77
Norris, south corner of secs. 34 and 35, Tps. 7 and 8 N., R. 4 E., center of east-west road at fence north.....	40 37 33.82	90 01 36.81

Magnetic declination of southeast corner of quadrangle, 5° E.; of east border of quadrangle, 5° 10' E.; of east-west line through center of quadrangle, 5° E.

CANTON QUADRANGLE—Continued.**Geographic positions along highways near northwest corner of quadrangle.**

Stations.	Latitude.	Longitude.
T. 9 N., R. 3 E., corner of secs. 19, 20, 29, and 30, center of 90° bend to west, west of T road south.	° ' "	° ' "
T. 9 N., R. 3 E., 1,330 feet west of corner of secs. 19, 20, 29, and 30, 3 corners, center of east-west road at public T road south.	40 44 34.78	90 11 44.95
T. 9 N., Rs. 2 and 3 E., west corner of secs. 19 and 30, on range line at T road east, 30 feet east of apple tree.	40 44 34.87	90 12 02.24
T. 9 N., Rs. 2 and 3 E., east corner of secs. 24 and 25, stone in center of old road north at T road west, 40 feet north of east-west road.	40 44 35.23	90 12 54.05
T. 9 N., R. 2 E., quarter corner between secs. 24 and 25, center of east-west road at T road south, 15 feet northwest of center of triangle.	40 44 35.93	90 12 54.05
Bridgeport, center of iron highway bridge over Spoon River, half-way between the 2 stone piers	40 44 36.42	90 13 27.91
	40 44 36.75	90 14 08.22

Magnetic declination of northwest corner of quadrangle, 5° 15' E.

MAQUON QUADRANGLE.**Geographic positions along highways near south border of quadrangle.**

Stations.	Latitude.	Longitude.
Yates City, 1.5 miles south of, in southeast corner of crossroads, in northwest corner of sec. 24; iron post stamped "Prim Trav. Sta. No. 22 1910 ILLINOIS".	° ' "	° ' "
T. 9 N., R. 4 E., corner of secs. 13, 14, 23, and 24, center of intersection of crossroads.	40 45 23.28	90 00 17.71
T. 9 N., R. 4 E., quarter corner between secs. 14 and 23, center of intersection of crossroads, 25 feet southwest of walnut tree.	40 45 23.51	90 00 18.01
T. 9 N., R. 4 E., corner of secs. 14, 15, 22, and 23, center of east-west road at fences north-south, 25 feet north to hackberry tree.	40 45 24.79	90 00 52.60
T. 9 N., R. 4 E., quarter corner between secs. 15 and 22, center of intersection of 2 telephone roads.	40 45 25.91	90 01 27.02
T. 9 N., R. 4 E., corner of secs. 15, 16, 21, and 22, in center of east-west road at high north-south fence, about 800 feet west of schoolhouse; stone.	40 45 26.79	90 02 00.52
T. 9 N., R. 4 E., corner of secs. 16, 17, 20, and 21, center of intersection of crossroads.	40 45 27.48	90 02 33.78
T. 9 N., R. 4 E., corner of secs. 17, 18, 19, and 20, center of intersection of crossroads.	40 45 27.04	90 03 43.05
T. 9 N., Rs. 3 and 4 E., west corner of secs. 18 and 19, center of north-south road at T road east, 60 feet northeast to cottonwood tree.	40 45 26.82	90 04 53.62
T. 9 N., Rs. 3 and 4 E., east corner of secs. 13 and 24; stone in center of north-south road at T road west, 110 feet south of T road east.	40 45 27.03	90 06 01.63
T. 9 N., R. 3 E., corner of secs. 13, 14, 23, and 24, center of intersection of crossroads, 200 feet southeast of schoolhouse (district 158).	40 45 25.94	90 06 01.63
Maquon, 3 miles south by 1.2 miles east of; 40 feet southwest of corner of secs. 14, 15, 22, and 23, in T. 9 N., R. 3 E., in northeast corner of sec. 22, in southwest corner of crossroads near fence corner; iron post stamped "Prim. Trav. Sta. No. 23 1910 ILLINOIS".	40 45 25.51	90 07 09.54
T. 9 N., R. 3 E., corner of secs. 14, 15, 22, and 23, center of intersection of crossroads.	40 45 26.07	90 08 18.91
T. 9 N., R. 3 E., corner of secs. 15, 16, 21, and 22, center of intersection of crossroads, 250 feet northwest of schoolhouse.	40 45 26.35	90 08 18.55
T. 9 N., R. 3 E., 3 corners, T road south, 15 feet north of center of triangle, 20 feet southwest of large oak, 12 feet southeast of corner fence post.	40 45 26.12	90 09 27.26
T. 9 N., R. 3 E., quarter corner between secs. 20 and 21, corner at cross fences, 400 feet south of road at 90° bend west.	40 45 26.33	90 10 18.73
	40 45 00.32	90 10 36.25

Magnetic declination of south border of quadrangle, 5° 12' E.

GALESBURG QUADRANGLE.**Geographic positions along highways near southeast corner of quadrangle.**

Stations.	Latitude.	Longitude.
T. 9 N., R. 2 E., quarter corner between secs. 22 and 23, in center of crossroads, 100 feet southeast of schoolhouse in northwest corner of crossroads; stone.	° ' "	° ' "
Center of east-west road at crossing of Chicago, Burlington & Quincy R. R. (Galesburg and Havana Branch), center of track.	40 45 03.54	90 15 11.02
T. 9 N., R. 2 E., 35 feet southwest of quarter corner between secs. 21 and 22, 2.5 miles north of London Mills, near corner of high fence, in southwest corner of T road south; iron post stamped "Prim Trav. Sta. No. 24 1910 ILLINOIS".	40 45 02.90	90 16 06.17
T. 9 N., R. 2 E., quarter corner between secs. 21 and 22; center of east-west road at T road south.	40 45 02.46	90 16 21.42
	40 45 02.71	90 16 21.10

Magnetic declination near southeast corner of quadrangle, 5° 15' E.

AVON QUADRANGLE.

Geographic positions along highways near south border of quadrangle.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Marietta, near, T road west.....	40 29 17.2	90 20 46.6	
Marietta, 0.8 mile east of; 3 corners, center of north-south road at public T road west, 15 feet east of center of triangle.....	40 30 20.5	90 22 25.5	9,976
Marietta, at east edge of town, in quarter corner between secs. 15 and 16, T. 6 N., R. 1 E., center of east-west road at T road south, 25 feet south to center of triangle.....	40 30 10.1	90 23 17.2	4,126
Marietta, northwest corner of town, center of sec. 15, T. 6 N., R. 1 E., center of north-south road at T road east.....	40 30 10.6	90 23 52.2	2,700

Magnetic declination of south border of quadrangle, 5° 26' E.

Geographic positions along highways near east border of quadrangle.

T. 9 N., R. 2 E., corner of secs. 21, 22, 27, and 28, center of north-south road at high fence east-west, 280 feet north of Chicago, Burlington & Quincy R. R. crossing.....	40 44 36.44	90 16 20.68	
T. 9 N., R. 2 E., corner of secs. 27, 28, 33, and 34, center of north-south road at T road west, 20 feet east of center of triangle.....	40 43 43.78	90 16 20.65	
London Mills, 150 feet west of Iowa Central Ry. station, center of track at street crossing.....	40 42 43.90	90 15 56.91	
London Mills, 1 mile south of; corner of secs. 3, 4, 9, and 10, T. 8 N., R. 2 E., center of intersection of crossroads.....	40 41 56.96	90 16 17.36	
T. 8 N., R. 2 E., corner of secs. 9, 10, 15, and 16, center of north-south road at T road east, 15 feet west of center of triangle, 45 feet south of center of bridge.....	40 41 04.30	90 16 17.51	
Crossroads at head of deep gully, center of intersection of, 20 feet south of C. S. A. Schrodt's mail box.....	40 40 13.36	90 16 18.29	
T. 8 N., R. 2 E., corner of secs. 15, 16, 21, and 22, in ravine opposite road east, about 80 feet southeast of crossroads.....	40 40 12.68	90 16 17.65	
T. 8 N., R. 2 E., quarter corner between secs. 21 and 22, center of triangle at forks, roads west and southeast.....	40 39 46.42	90 16 17.67	
T. 8 N., R. 2 E., 3 corners, center of east-west road at T road north, 15 feet northwest of large oak, 15 feet south of center of triangle.....	40 39 20.98	90 16 34.93	
T. 8 N., R. 2 E., quarter corner between secs. 21 and 28, at 90° bend of road south.....	40 39 21.46	90 16 51.85	
Ellisville, 30 feet west of station; center of track at north-south road crossing.....	40 38 50.65	90 16 52.32	
Ellisville, 900 feet south of station, center of bridge over Cose Creek.....	40 38 41.73	90 16 52.77	
Ellisville, 0.5 mile south of station, 3 corners, center of north-south road at public T road east.....	40 38 23.17	90 16 53.17	
Tps. 7 and 8 N., R. 2 E., south corner of secs. 33 and 34; stone in center of east-west road, 70 feet west of T road south.....	40 37 35.23	90 16 18.59	
Tps. 7 and 8 N., R. 2 E., north corner of secs. 3 and 4, center of east-west road at T road south.....	40 37 35.23	90 16 17.68	
Tps. 7 and 8 N., R. 2 E., 45 feet southeast of north corner of secs. 3 and 4, in southeast corner of T road south, in northwest corner of sec. 3, in corner of wire fence, 30 feet south of center of town-line road, 30 feet east of center of T road south; iron post stamped "Prim. Trav. Sta. No. 25 1910 ILLINOIS".....	40 37 34.93	90 16 17.26	
Tps. 7 and 8 N., R. 2 E., south corner of secs. 34 and 35; stone in center of east-west road, 30 feet west of center of T road south, 100 feet southwest of church.....	40 37 34.19	90 15 10.34	
Tps. 7 and 8 N., R. 2 E., north corner of secs. 2 and 3; stone in center of east-west road at east edge of T road south and 60 feet southwest of church.....	40 37 34.19	90 15 09.56	
T. 7 N., R. 2 E., corner of secs. 3, 4, 9, and 10; stone in center of crossroads at public road east and second-class road west.....	40 36 41.44	90 16 15.22	
T. 7 N., R. 2 E., corner of secs. 9, 10, 15, and 16; stone in center of crossroads.....	40 35 49.19	90 16 16.11	
T. 7 N., R. 2 E., 3 corners, center of north-south road at public T road west, 20 feet east of center of triangle.....	40 35 10.82	90 16 34.40	
T. 7 N., R. 2 E., center of north-south road at east-west line between secs. 16 and 21; fence west along north side of schoolhouse yard.....	40 34 57.89	90 16 34.18	
T. 7 N., R. 2 E., 3 corners, public T road west to Blyton, center of north-south road at.....	40 34 12.65	90 16 34.90	
Blyton, 3 corners at; 800 feet south of store, public T road north, center of east-west road at, 5 feet north to center of triangle.....	40 33 53.09	90 16 35.10	
T. 7 N., R. 2 E., center of sec. 28, at second-class crossroad, center of main road at intersection.....	40 33 40.80	90 16 55.75	
Three corners, 125 feet southwest of white schoolhouse, public T road west, center of north-south road, 25 feet east of center of triangle.....	40 33 15.66	90 17 04.80	
Tps. 6 and 7 N., center of north-south road at crossing of east-west line between; Deerfield and Cass township line is at board fence west, 160 feet north of T road east.....	40 32 22.29	90 16 43.63	

AVON QUADRANGLE—Continued.

Geographic positions along highways near east border of quadrangle—Continued.

Stations.	Latitude.	Longitude.	Distance between stations.
Tps. 6 and 7 N., 160 feet south of line between, public T road east along township line, center of triangle at 3 corners.....	° ' "	° ' "	<i>Fect.</i>
Center of triangle at 3 corners, 100 feet northwest of bridge across creek; public T road west.....	40 32 20.80	90 16 43.16	.....
T. 6 N., R. 2 E., corner of secs. 3, 4, 9, and 10, center of north-south road at T road east, 10 feet west of center of triangle, 1,320 feet west of sixteenth corner.....	40 31 54.37	90 16 44.00	.....
T. 6 N., R. 2 E., corner of secs. 9, 10, 15, and 16; center of road at 90° bend east.....	40 31 26.94	90 16 35.20	.....
T. 6 N., R. 2 E., about 500 feet northwest of center of sec. 15, center of north-south road at public T road east, 15 feet northwest of telephone pole, 25 feet northwest of corner wire fence, 10 feet west of center of triangle.....	40 30 33.92	90 16 18.61	.....
T. 6 N., R. 2 E., quarter corner between secs. 15 and 16, second-class road northwest at 90° bend of main road south, 160 feet north of Laswell's Branch.....	40 30 10.91	90 15 51.95	.....
	40 30 07.65	90 16 18.92	.....

Magnetic declination of east border of quadrangle, 5° 15' E.

VERMONT QUADRANGLE.

Geographic positions along highways in northeastern portion of quadrangle.

Stations.	Latitude.	Longitude.	Distance between stations.
Spoon River, near center of triangle at 3 corners, 100 feet south of south end of Elrod iron bridge over river.....	° ' "	° ' "	<i>Fect.</i>
Center of triangle at forks of road, 50 feet northwest of center of bridge, public road northwest-southwest.....	40 23 27.73	90 15 16.77	.....
Center of triangle at 3 corners, public T road south, second-class road east, public road west.....	40 23 30.51	90 15 33.06	.....
T. 5 N., R. 2 E., quarter corner between secs. 21 and 22, in old east-west road at 90° angle south.....	40 23 59.92	90 15 53.58	.....
T. 5 N., R. 2 E., center of iron bridge over small creek.....	40 24 00.41	90 16 27.29	.....
T. 5 N., R. 2 E., 1,330 feet south of corner of secs. 16, 17, 20, and 21, 3 corners at public T road east, center of east-west road.....	40 24 13.37	90 16 57.97	.....
T. 5 N., R. 2 E., quarter corner between secs. 19 and 20, 0.8 mile southeast of Bernadotte, center of east-west road at T road south.....	40 24 13.36	90 17 34.68	.....
Bernadotte, in front of Bernadotte mill, 20 feet northwest of southeast corner of square, 60 feet northwest of intersection of Market and Illinois streets, 50 feet north of center of Market Street, 35 feet west of center of Illinois Street; iron post stamped "Prim. Trav. Sta. No. 15 ILLINOIS 1910".....	40 24 00.21	90 18 43.21	.....
Spoon River, center of bridge over, at north end of covered part, over second pier from east end.....	40 24 08.64	90 19 17.37	.....
Three corners, 1,500 feet north of bridge over Spoon River, at T road east, 30 feet northwest to stone at corner of fence, 30 feet southwest of corner of fence.....	40 24 14.30	90 19 15.65	.....
Forks of road, at top of hill, public road north, down hill and northeast along ridge, 40 feet southwest of oak tree on bank, 35 feet north of corner of fence.....	40 24 36.06	90 19 16.62	.....
Bend of main road, 90° west, at private road east, 20 feet south of gate, 35 feet northwest of mail box.....	40 25 18.41	90 19 15.18	.....
Center of road at small stream crossing.....	40 25 46 03	90 19 36.01	.....
T. 5 N., Rs. 1 and 2 E., corner of secs. 1, 6, 7, and 12, center of north-south road at slight bend east, fences east-west.....	40 25 50.87	90 19 53.92	.....
Tps. 5 and 6, center of east-west road on line between, public T road south, 15 feet south of telephone pole, 30 feet northwest of corner of fence.....	40 26 12.48	90 19 52.92	.....
Tps. 5 and 6 N., Rs. 1 and 2 E., quarter corner between secs. 31 and 6, center of road on township line at 90° bend north.....	40 27 05.28	90 19 24.71	.....
Center of triangle at public T road south.....	40 27 05.31	90 19 32.22	.....
Three corners, public road to north, center of east-west road, 30 feet southeast to wheel with 5 mail boxes on it, 35 feet northwest to telephone pole.....	40 27 28.05	90 20 44.25	.....
Seville, 1 mile southeast of; forks of road on top of hill, public road northwest, second-class road west, 10 feet to corner post of wire fence, 40 feet southeast to oak.....	40 27 23.45	90 20 25.85	.....
	40 28 29.13	90 21 10.86	.....

VERMONT QUADRANGLE—Continued.

Geographic positions along highways in northeastern portion of quadrangle—Continued.

Stations.	Latitude.	Longitude.	Distance between stations.
Private road leading south to house, corner post of wire fence on west edge of road, main road makes 45° angle north, 2 feet east of east end of gate to field.....	° ' "	° ' "	Feet.
Center of north-south road at private T road west into barn.....	40 28 49.58	90 21 17.02	.....
Seville, 0.2 mile northwest of station, in south edge of right of way of Toledo, Peoria & Western Ry., 40 feet south of road crossing leading to ferry across Spoon River, 200 feet north of ferry; iron post stamped "Prim. Trav. Sta. No. 16 1910 ILLINOIS, elev. 496 1908 ILLINOIS".....	40 29 05.86	90 21 16.58	.....
Seville, 0.2 mile northwest of station, crossing of Toledo, Peoria & Western Ry., center of main track at road crossing.....	40 29 18.78	90 21 05.32	.....
Seville, 0.2 mile east of station, 3 corners at store, 30 feet northeast to blacksmith shop, 20 feet south to elm tree.....	40 29 19.18	90 21 05.32	.....
Seville, 0.5 mile east of; center of highway bridge over Spoon River.....	40 29 09.86	90 20 47.68	.....
Bend of main road 60° to north, fork to east, center of triangle, 10 feet west to oak tree.....	40 29 10.50	90 20 34.25	.....
T. 6 N., R. 2 E., corner of secs. 19, 20, 29, and 30, center of east-west road at crossroads, public road south and second-class road north.....	40 29 11.64	90 19 57.18	.....
Three corners, center of east-west road, public road to south, 30 feet southeast to two hickory trees in triangle.....	40 28 51.32	90 18 36.80	.....
Smithfield, center of North Main Street at T road west to Seville, 600 feet north of Toledo, Peoria & Western Ry.....	40 28 31.60	90 17 46.19	.....
Smithfield, 0.5 mile north of, T. 6 N., R. 2 E., corners of secs. 20, 21, 28, and 29, center of north-south road at T road east to Cuba, 20 feet east to center of triangle and 35 feet northeast to corner post of wire fence.....	40 28 30.92	90 17 29.20	.....
T. 6 N., R. 2 E., quarter corner between secs. 21 and 28, center of east-west road at crossroads, 150 feet northeast of church.....	40 28 51.94	90 17 28.99	.....
T. 6 N., R. 2 E., corner of secs. 15, 16, 21, and 22, center of north-south road at wire fence east, 60 feet north of large spreading dead elm on west edge of road.....	40 28 50.22	90 16 54.53	.....
T. 6 N., R. 2 E., 220 feet east of corner of secs. 21, 22, 27, and 28, in center of large triangle; iron post stamped "Prim. Trav. Sta. No. 17 ILLINOIS 1910" (at T road south).....	40 29 41.17	90 16 19.32	.....
T. 6 N., R. 2 E., quarter corner between secs. 22 and 27, center of east-west road at T road to north and fence south.....	40 28 48.32	90 16 17.21	.....
T. 6 N., R. 2 E., corner of secs. 22, 23, 26, and 27, in east-west road in bottom of small ravine, 30 feet west of culvert opposite fence north, pond on south side of road.....	40 28 50.22	90 15 46.13	.....
	40 28 51.78	90 15 12.17	.....

Magnetic declination in northeastern part of quadrangle, 5° 20' E.

Geographic positions along highways near border of quadrangle.

Primary traverse station No. 233.....	40 29 08.8	90 20 39.4	.....
Seville, 600 feet north of store, 3 corners, at public T road west.....	40 29 17.2	90 20 46.6	1,012
T road east.....	40 30 10.6	90 23 52.2	.....
T. 6 N., R. 1 E., stone at corner of secs. 17, 18, 19, and 20, east edge of grass triangle, at T road west, on east edge of walled part of north-south road.....	40 29 47.2	90 25 36.6	8,413
T. 6 N., R. 1 E. and 1 W., stone at quarter corner between secs. 19 and 24 (marking a point on the fourth principal meridian, on line between Fulton and McDonald counties), north edge of east-west road at intersection of unused T road north.....	40 29 19.5	90 26 50.4	6,361
T. 6 N., R. 1 W., center of sec. 24, 40 feet west of, east-west road crossing Toledo, Peoria & Western Ry.....	40 29 20.6	90 27 25.9	2,738
T. 6 N., R. 1 W., center of sec. 23, 0.2 mile west of New Philadelphia, center of intersection of crossroads.....	40 29 22.7	90 28 34.1	5,279
T. 6 N., R. 1 W., sec. 22, center of east-west road at Chicago, Burlington & Quincy R. R. crossing.....	40 29 25.1	90 29 42.0	5,250

Magnetic declination of north border of quadrangle, 5° 26' E.

MACOMB QUADRANGLE.

Geographic positions west along highways along north border of quadrangle.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
T. 6 N., R. 1 W., sec. 22.	40 29 25.1	90 29 42.0	.....
T. 6 N., R. 1 W., 70 feet northeast of quarter corner between secs. 21 and 22, southwest corner of NW. $\frac{1}{4}$ sec. 22, intersection of crossroads; iron post stamped "Prim. Trav. Sta. No. 45, 1910 ILLINOIS".	40 29 27.2	90 30 15.9	2,628
T. 6 N., R. 1 W., quarter corner between secs. 20 and 21, intersection of crossroads.	40 29 29.0	90 31 26.5	5,458
T. 6 N., R. 1 W., quarter corner between secs. 19 and 20, center of east-west road at north-south fence, near east end of schoolhouse.	40 29 31.4	90 32 36.7	5,429
Bardolph, 300 feet northeast of station, center of main track of Chicago, Burlington & Quincy R. R., at range line road crossing.	40 29 49.9	90 33 39.2	5,182
Primary traverse station No. 46.	40 30 50.0	90 38 15.9	.....
T. 6 N., R. 2 W., corner of secs. 16, 17, 20, and 21, 300 feet north of bridge over Crooked Creek, intersection of north-south road and T road west.	40 29 56.9	90 38 15.7	5,380
T. 6 N., R. 2 W., corner of secs. 17, 18, 19, and 20, 170 feet west of second-class T road south, at high fence, center of east-west road.	40 29 57.1	90 39 24.3	5,300
T. 6 N., Rs. 2 and 3 W., corner of secs. 13, 18, 19, and 24, at intersection of crossroads.	40 29 57.0	90 40 28.1	4,930
Spring Creek, center of iron bridge over.	40 27 22.0	90 45 14.8	.....
Tps. 5 and 6 N., R. 3 W., 170 feet west of north corner of secs. 4 and 5, 1,000 feet east of Mr. Berry's residence, 0.2 mile east of iron bridge over Spring Creek, at south edge of east-west road; iron post stamped "Prim. Trav. Sta. No. 62, 1910 ILLINOIS, Elevation, 621, 1909".	40 27 21.4	90 44 57.9	1,312
T. 6 N., R. 3 W., quarter corner between secs. 33 and 34, center of east-west road at T road north, 20 feet north to center of triangle.	40 27 47.8	90 44 02.1	5,071
T. 6 N., R. 3 W., corner of secs. 27, 28, 33, and 34, 0.5 mile north of T road north, center of north-south road at east-west fence.	40 28 14.7	90 44 02.2	2,730
T. 6 N., R. 3 W., center of sec. 28, center of east-west road at public T road north.	40 28 42.1	90 44 38.0	3,916
T. 6 N., R. 3 W., stone at center of sec. 21, center of north-south road at T road west.	40 29 35.5	90 44 37.2	5,401
Primary traverse station No. 47.	40 30 02.7	90 44 37.2	2,754

Geographic positions along highways near southwest corner of quadrangle.

Crooked Creek bridge, 1.7 miles northeast of.	40 14 51.5	90 44 39.9	.....
T. 2 N., R. 3 W., in sec. 4, three corners, center of north-south road at public T road east, 25 feet northeast to corner fence post, 25 feet southeast to corner fence post.	40 15 50.9	90 44 26.0	6,090
Tps. 3 and 4 N., R. 3 W., 20 feet north of north quarter corner of sec. 4, on north edge of east-west county line with T road south to Brooklyn; iron post stamped "Prim. Trav. Sta. No. 58, 1910, ILLINOIS".	40 16 50.7	90 44 37.5	6,109
Tps. 3 and 4 N., R. 3 W., stone at south quarter corner of sec. 33 and line between McDonough and Schuyler counties, in center of east-west county line road at T road north, at Mount Zion schoolhouse.	40 16 50.5	90 44 40.2	210

Magnetic declination of north border of quadrangle, 5° 36' E., of west border of southwest quarter of quadrangle, 5° 30' E.

GOOD HOPE QUADRANGLE.

Geographic positions along highways from Bardolph west to south border of quadrangle.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Road crossing near Bardolph.	40 29 49.9	90 33 39.2	.....
T. 6 N., Rs. 1 and 2 W., 80 feet south of west and east quarter corner sec. 13, quarter corner of sec. 18 at intersection of north-south road and T road west.	40 30 22.5	90 33 38.8	3,300
Crooked Creek, center of bridge over.	40 30 33.4	90 34 46.7	5,358
T. 6 N., R. 2 W., corner of secs. 11, 12, 13, and 14, 1,600 feet north of bridge over Crooked Creek, intersection of north-south road and T road west.	40 30 49.2	90 34 46.9	1,596
T. 6 N., R. 2 W., stone at corner of secs. 10, 11, 14, and 15, 30 feet north of T road east, at intersection of north-south road and T road west.	40 30 50.6	90 35 56.2	5,351
T. 6 N., R. 2 W., corner of secs. 9, 10, 15, and 16, 100 feet west of small stream, at wire fence north-south, center of east-west road.	40 30 49.8	90 37 06.8	5,450

GOOD HOPE QUADRANGLE—Continued.

Geographic positions along highways from Bardolph west to south border of quadrangle—Contd.

Stations.	Latitude.	Longitude.	Distance between stations.
T. 6 N., R. 2 W., 25 feet southwest of corner of secs. 8, 9, 16, and 17, in southwest corner of crossroads; iron post stamped "Prim. Trav. Sta. No. 46, 1910 ILLINOIS".....	40 30 50.0	90 38 15.9	Feet. 5,344
T. 6 N., R. 3 W., corner of secs. 13, 18, 19, and 24.....	40 29 57.0	90 40 28.1	.....
T. 6 N., R. 3 W., stone at corner of secs. 13, 14, 23, and 24, in center of east-west road and 25 feet east of intersection of crossroads.....	40 30 00.9	90 41 39.9	5,560
T. 6 N., R. 3 W., corner of secs. 14, 15, 22, and 23, center of east-west road at T road south, 20 feet from corner post of wire fence, 12 feet southwest to clump of willows.....	40 30 01.4	90 42 49.9	5,410
Spring Creek, center of iron bridge over.....	40 30 01.4	90 43 33.5	3,366
T. 6 N., R. 3 W., 30 feet north by 15 feet east of quarter corner between secs. 16 and 21, 35 feet northeast of intersection of crossroads, inside front yard; iron post stamped "Prim. Trav. Sta. No. 47, 1910 ILLINOIS".....	40 30 02.67	90 44 37.21	4,926

Magnetic declination of south border of quadrangle, 5° 36' E.

LA HARPE QUADRANGLE.

Geographic positions west along highways on the south border of the quadrangle.

Stations.	Latitude.	Longitude.	Distance between stations.
Primary traverse station No. 47.....	40 30 02.67	90 44 37.21	Feet.
T. 6 N., R. 3 W., stone at corner of secs. 16, 17, 20, and 21, 0.5 mile west of crossroads, in center of east-west road at north-south wire fences.....	40 30 03.1	90 45 13.2	2,779
T. 6 N., R. 3 W., quarter corner between secs. 17 and 20, at intersection of crossroads.....	40 30 03.5	90 45 47.7	2,670
T. 6 N., R. 3 W., stone at corner of secs. 17, 18, 19, and 20, 40 feet north of barn, at center of east-west road.....	40 30 04.0	90 46 23.2	2,740
T. 6 N., Rs. 3 and 4 W., 55 feet south of east corner of secs. 18 and 19, west corner of secs. 13 and 24, intersection of north-south road at T road west.....	40 30 02.2	90 47 26.0	4,849
T. 6 N., R. 4 W., corner of secs. 13, 14, 23, and 24, center of north-south road at T road east, 15 feet east to center of triangle.....	40 30 02.6	90 48 33.7	5,218
T. 6 N., R. 4 W., center of sec. 14, center of east-west road at T road north, 10 feet south to mail box.....	40 30 30.7	90 49 08.1	3,899
T. 6 N., R. 4 W., center of sec. 15, intersection of crossroads.....	40 30 35.0	90 50 17.2	5,359
T. 6 N., R. 4 W., center of sec. 16; stone in center of north-south road at intersection of T road east.....	40 30 38.8	90 51 26.4	5,348
T. 6 N., R. 4 W., corner of secs. 8, 9, 16, and 17, opposite stump on north edge of road, at wire fences north-south, center of east-west road.....	40 31 06.5	90 52 00.1	3,865
T. 6 N., R. 4 W., 25 feet southwest of quarter corner between secs. 17 and 18, in southwest corner of crossroads, near large corner post of wire fence; iron post stamped "Prim. Trav. Sta. No. 48, 1910 ILLINOIS".....	40 31 08.8	90 52 34.4	2,598
T. 6 N., R. 4 W., corner of secs. 7, 8, 17, and 18, intersection of north-south road and T road east, 15 feet east to center of triangle.....	40 31 11.3	90 53 08.3	2,629
Hancock, 0.2 mile east of; McDonough County line, intersection of east-west road and public T road south.....	40 30 48.6	90 54 03.1	4,812
T. 6 N., Rs. 4 and 5 W., 60 feet south of west quarter corner of sec. 13, quarter corner sec. 18, on county line 35 feet south of east-west road at slight bend northwest, 0.2 mile west of T road south.....	40 30 50.5	90 54 23.5	1,589
T. 6 N., R. 5 W., quarter corner between secs. 13 and 14, center of east-west road at T road south.....	40 30 47.9	90 55 32.6	5,345
T. 6 N., R. 5 W., quarter corner between secs. 14 and 15, 150 feet east of schoolhouse, 10 feet south to center of triangle, center of east-west road at T road south.....	40 30 45.3	90 56 41.2	5,308
T. 6 N., R. 5 W., 0.2 mile south of quarter corner between secs. 15 and 16, at three corners, center of north-south road at public T road south, 10 feet west to center of triangle.....	40 30 29.7	90 57 50.7	5,597
Crooked Creek, 150 feet south of iron bridge over, three corners, at T road east, center of large triangle.....	40 30 27.4	90 58 59.9	5,351
T. 6 N., R. 5 W., 480 feet east of center of sec. 17, center of east-west road at fork northwest, 30 feet northwest to center of triangle.....	40 30 39.5	90 59 27.9	2,451

Magnetic declination of south border of quadrangle, 5° 29' E.

LOMAX QUADRANGLE.

Geographic positions west along highways on south border of quadrangle.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	<i>Feet.</i>
T. 6 N., R. 5 W., center of sec. 17.....	40 30 39.5	90 59 27.9	.....
T. 6 N., R. 5 W., center of sec. 18, center of crossroads.....	40 30 36.6	91 00 43.2	5,819
T. 6 N., Rs. 5 and 6 W., 30 feet northwest of quarter corner between secs. 13 and 18, northwest corner of crossroads, at corner of front yard; iron post stamped "Prim. Trav. Sta. No. 49, 1910 ILLINOIS".....	40 30 35.7	91 01 23.9	3,148
T. 6 N., Rs. 5 and 6 W., east corner secs. 13 and 24, second-class T road northwest.....	40 30 08.5	91 01 24.1	2,750
Primary traverse station No. 49.....	40 30 35.7	91 01 23.9	.....
T. 6 N., R. 6 W., 0.2 mile west of center of sec. 13, three corners, center of intersection of east-west road at public T road south, 5 feet south to center of triangle.....	40 30 35.8	91 02 16.4	4,054
T. 6 N., R. 6 W., 0.2 mile east of corner of secs. 13, 14, 23, and 24, intersection of public road west and second-class road east, at schoolhouse.....	40 30 09.3	91 02 16.7	2,670
T. 6 N., R. 6 W., corner of secs. 13, 14, 23, and 24, center of east-west road at wire fence south and field road north.....	40 30 09.6	91 02 34.0	1,340
T. 6 N., R. 6 W., between secs. 21 and 22.....	40 29 45.4	91 04 51.7	.....
T. 6 N., R. 6 W., corner of secs. 15, 16, 21, and 22, 160 feet north of Toledo, Peoria & Western Ry., center of north-south road at T road west.....	40 30 12.1	91 04 51.6	2,700
Burnside, corner of secs. 16, 17, 20, and 21, T. 6 N., R. 6 W., intersection of cross streets.....	40 30 14.6	91 06 00.3	5,310
T. 6 N., R. 6 W., stone at corner of secs. 17, 18, 19, and 20, 1 mile west of Burnside, center of crossroads.....	40 30 16.9	91 07 08.2	5,250
T. 6 N., Rs. 6 and 7 W., 30 feet east of east corner of secs. 13 and 24, on east side of range line road opposite and in line with public T road west; iron post stamped "Prim. Trav. Sta. No. 50, 1910 ILLINOIS".....	40 30 19.1	91 08 18.5	5,434
T. 6 N., R. 7 W., 1 mile south of Adrian, stone at corner of secs. 13, 14, 23, and 24, in center of crossroads, 125 feet northwest of schoolhouse.....	40 30 20.9	91 09 28.6	5,420
T. 6 N., R. 7 W., corner of secs. 14, 15, 22, and 23, at center of crossroads, 5 feet east to center of plank bridge.....	40 30 19.9	91 10 39.0	5,440
T. 6 N., R. 7 W., corner of secs. 15, 16, 21, and 22, at center of crossroads, schoolhouse in northwest corner of crossroads.....	40 30 21.3	91 11 48.8	5,390
T. 6 N., R. 7 W., corner of secs. 16, 17, 20, and 21, center of crossroads.....	40 30 22.0	91 12 59.2	5,440
T. 6 N., R. 7 W., corner of secs. 17, 18, 19, and 20, stone in center of crossroads.....	40 30 22.1	91 14 09.4	5,420

Magnetic declination of south border of quadrangle, 5° 56' E.

CARTHAGE QUADRANGLE.

Geographic positions along highways near north border of quadrangle.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	<i>Feet.</i>
T. 6 N., R. 6 W., corner of secs. 13, 14, 23, and 24.....	40 30 09.6	91 02 34.0	.....
Crooked Creek, 70 feet east of iron bridge, center of east-west road at public T road north, 20 feet southeast to gate.....	40 29 42.8	91 02 51.2	3,024
T. 6 N., R. 6 W., quarter corner between secs. 22 and 23, intersection of crossroads.....	40 29 44.7	91 03 42.2	3,942
T. 6 N., R. 6 W., quarter corner between secs. 21 and 22, center of north-south road at T road east, 10 feet east to center of triangle.....	40 29 45.4	91 04 51.7	5,370

CARTHAGE QUADRANGLE—Continued.

Northeast corner of quadrangle south along highways to Webster.

Stations.	Latitude.	Longitude.	Distance between stations.
T. 6 N., Rs. 5 and 6 W., east corner of secs. 13 and 24, second-class T road northwest.....	° ' "	° ' "	Feet.
T. 6 N., Rs. 5 and 6 W., 15 feet north of corner of secs. 24 and 25; stone at east corner of secs. 19 and 30, center of north-south road and 15 feet north of hedge fence.....	40 30 08.5	91 01 24.1	.....
T. 6 N., R. 5 W., 0.2 mile north of 90° bend in road east, center of north-south road at public T road west.....	40 29 15.6	91 01 24.8	5,350
Crooked Creek, center of iron bridge over.....	40 29 02.3	91 01 24.9	1,350
T. 6 N., R. 5 W., 1 mile north of Webster; stone at quarter corner between secs. 29 and 30, center of crossroads.....	40 28 49.0	91 01 17.6	1,455
T. 6 N., R. 5 W., corner of secs. 29, 30, 31, and 32, center of north-south road at east-west fence.....	40 28 51.9	91 00 10.0	5,231
Webster, 3 corners at, center of east-west road at T road north, 35 feet southeast to northwest corner of Fuller's store, 40 feet southwest to brick foundation to old store.....	40 28 25.5	91 00 10.4	2,679
Tps. 5 and 6 N., Rs. 5 and 6 W.; stone at corner of secs. 1, 6, 31, and 36, center of east-west road, 20 feet southeast of intersection of crossroads.....	40 27 59.3	91 00 02.3	2,715
Tps. 5 and 6 N., Rs. 5 and 6 W., 3 corners, public T road south, 40 feet southwest to gatepost and corner fence, 60 feet southeast to corner of plank fence.....	40 27 29.7	91 01 26.2	7,139
T. 5 N., Rs. 5 and 6 W., corner of secs. 1, 6, 7, and 12, center of north-south road at second-class east-west crossroad.....	40 26 57.9	91 01 26.7	3,237
T. 5 N., Rs. 5 and 6 W.; stone corner of secs. 7, 12, 13, and 18, 125 feet northwest of 2-story white house, opposite wire fence east and a little west of center of north-south road.....	40 26 36.7	91 01 26.9	2,130
Crooked Creek, center of iron bridge over.....	40 25 43.8	91 01 27.0	5,349
T. 5 N., R. 5 and 6 W., corner of secs. 13, 18, 19, and 24, center of east-west road at T road north, 5 feet north to plank bridge.....	40 25 29.1	91 01 26.5	1,485
T. 5 N., R. 5 W., quarter corner between secs. 18 and 19, center of east-west road at T road south, 25 feet south to center of triangle.....	40 24 51.2	91 01 28.1	3,841
T. 5 N., R. 5 W., stone at center of sec. 30, in center of north-south road at T road west.....	40 24 51.0	91 00 47.2	3,159
T. 5 N., Rs. 5 and 6 W., 30 feet north of corner of secs. 25, 30, 31, and 36, 10 feet south of corner post of wire fence north.....	40 23 32.7	91 00 48.5	7,919
T. 5 N., R. 6 W., quarter corner between secs. 25 and 36, 160 feet east of T road south, center of east-west road at T road north, 20 feet north to center of triangle.....	40 23 06.4	91 01 29.5	4,150
Tps. 4 and 5 N., Rs. 5 and 6 W., corner of secs. 1, 6, 31, and 36, 0.5 mile west by 0.1 mile north of, 2,000 feet west of Middle Creek store and post office, at fence corner, 25 feet northwest of intersection of crossroads; iron post stamped "Prim. Trav. Sta. No. 54, 1910 ILLINOIS".....	40 23 06.7	91 02 04.4	2,698
Tps. 4 and 5 N., Rs. 5 and 6 W., 700 feet north of corner of secs. 1, 6, 31, and 36, 700 feet east of store and post office at Middle Creek, center of east-west road at public T road south, 3 corners.....	40 22 23.4	91 02 05.4	4,372
Tps. 4 and 5 N., Rs. 5 and 6 W., stone at corner of secs. 1, 6, 31, and 36, 100 feet south of T road south, at east edge of range line road, 10 feet west of cherry tree.....	40 22 24.4	91 01 30.2	2,720
T. 4 N., Rs. 5 and 6 W., corner of secs. 1, 6, 7, and 12, at center of intersection of crossroads, 25 feet south to large oak.....	40 22 13.2	91 01 30.6	1,150
T. 4 N., Rs. 5 and 6 W., west corner of secs. 7 and 18, center of north-south road at T road east.....	40 21 19.9	91 01 31.2	5,390
T. 4 N., Rs. 5 and 6 W., east corner of secs. 12 and 13, center of north-south road at T road west.....	40 20 29.2	91 01 31.1	5,130
T. 4 N., Rs. 5 and 6 W., east corner of secs. 18 and 24, 40 feet north of T road west, center of plank bridge.....	40 20 27.2	91 01 31.1	210
Three corners, center of north-south road at public T road east, 15 feet southeast to 3-pronged elm tree, 120 feet south to bridge.....	40 19 34.3	91 01 32.5	5,350
T. 4 N., Rs. 5 and 6 W., stone at west corner of secs. 19 and 30, 0.2 mile south of T road east, center of north-south road opposite wire fence.....	40 18 55.9	91 01 32.8	3,890
T. 4 N., Rs. 5 and 6 W., stone at east corner of secs. 24 and 25, center of north-south road at wire fence west.....	40 18 42.3	91 01 33.0	1,370
T. 4 N., R. 5 W., 1,400 feet east of center of sec. 30, center of east-west road at public T road south, center of east-west road, 10 feet southwest to center of triangle.....	40 18 41.6	91 01 33.0	70
T. 4 N., R. 5 W., stone at center of sec. 31, center of east-west road at public T road north and abandoned road south.....	40 18 16.9	91 00 33.1	5,278
T. 4 N., R. 5 W., 0.2 mile west of sec. 33; 3 corners.....	40 17 23.4	91 00 54.2	5,646
Tps. 3 and 4 N., R. 5 W., south corner of secs. 32 and 33, north edge of road, 0.2 mile west of T road west.....	40 16 59.0	90 59 10.7	.....
T. 3 N., R. 5 W., corner of secs. 5, 6, 7, and 8, center of north-south road at T road west, 10 feet south to center of plank bridge.....	40 16 59.0	90 59 10.7	.....
T. 3 N., R. 5 W., 40 feet northeast of stone at corner of secs. 7, 8, 17, and 18, at corner of hedge in northeast corner of T road east; iron post stamped "Prim. Trav. Sta. No. 55, 1910 ILLINOIS".....	40 16 03.8	91 00 23.5	7,940
	40 15 11.0	91 00 24.1	5,334

Magnetic declination of north border of quadrangle, 5° 56' E.; of east border of quadrangle, 5° 36' E.; of west border of northwest quarter of quadrangle, 6° 13' E.

COLCHESTER QUADRANGLE.

Geographic positions along highways from Middle Creek south to Augusta.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
T. 4 N., R. 5 W., stone at center of sec. 31.....	40 17 23.4	91 00 54.2	.....
T. 4 N., R. 5 W., stone at center of sec. 32, center of east-west road at T road north.....	40 17 24.7	90 59 45.1	5,349
T. 4 N., R. 5 W., 0.2 mile west of center of sec. 33, east-west road at T road south, 20 feet south to center of triangle.....	40 17 25.8	90 58 53.2	4,020
Tps. 3 and 4 N., R. 5 W., south corner of secs. 32 and 33, north edge of road, 0.2 mile west of T road west, 270 feet east of north corner of secs. 4 and 5.....	40 16 59.0	90 59 10.7	3,029
Primary traverse station No. 55.....	40 15 11.0	91 00 24.1	.....
T. 3 N., R. 5 W., corner of secs. 8, 9, 16, and 17, center of intersection of crossroads.....	40 15 10.8	90 59 15.7	5,309
T. 3 N., R. 5 W., corner of secs. 9, 10, 15, and 16, center of east-west road at public T road north.....	40 15 08.2	90 58 07.1	5,320
Center of east-west road at north-south line of secs. 12 and 13.....	40 14 54.0	90 55 49.8	.....
T. 3 N., R. 5 W., corner of secs. 11, 12, 13, and 14, cross fences.....	40 15 07.1	90 55 49.8	1,320
South quarter corner of sec. 33.....	40 16 50.5	90 44 40.2	.....
T. 3 N., R. 3 W., north corner of secs. 4 and 5, center of east-west road at T road north (line between Schuyler and McDonough counties).....	40 16 51.4	90 45 11.8	2,420
Tps. 3 and 4 N., R. 3 W., south corner of secs. 32 and 33, center of north-south road at T road north.....	40 16 51.5	90 45 14.3	230
T. 4 N., R. 3 W., corner of secs. 28, 29, 32, and 33, center of north-south road at T road west.....	40 17 43.9	90 45 13.7	5,300
Grindstone Creek, ford at.....	40 18 06.2	90 45 14.3	2,204
T. 4 N., R. 3 W., corner of secs. 20, 21, 28, and 29, center of north-south road at public T road north, 25 feet southwest to center of triangle.....	40 18 36.0	90 45 12.8	3,010
Camp Creek, center of bridge over.....	40 19 14.3	90 45 16.0	3,950
T. 4 N., R. 3 W., corner of secs. 16, 17, 20, and 21, 0.2 mile west of, on east-west line between secs. 17 and 20, stone in center of north-south road where it straightens north after crossing Camp Creek.....	40 19 29.1	90 45 29.2	1,765
T. 4 N., R. 3 W., 1,330 feet west of corner of secs. 8, 9, 16, and 17, center of north-south road at crossing of east-west line between secs. 8 and 17.....	40 20 21.1	90 45 28.3	5,250
T. 4 N., R. 3 W., quarter corner between secs. 8 and 9, center of east-west road at T road north, 10 feet north to center of triangle.....	40 20 46.8	90 45 10.4	2,948
T. 4 N., R. 3 W., quarter corner between secs. 4 and 5, center of east-west road at public T road south.....	40 21 39.4	90 45 10.0	5,320

Geographic positions along highways from Middle Creek to Hillsgrove station.

Primary traverse station No. 54.....	40 22 23.4	91.02 05.4	.....
Tps. 4 and 5 N., R. 5 W., north quarter corner of sec. 5, center of east-west road at T road south, 10 feet south to center of triangle.....	40 22 13.4	90 59 39.4	11,351
Tps. 4 and 5 N., R. 5 W., stone at corner of secs. 4, 5, 32, and 33, in center of east-west road at T road north.....	40 22 13.3	90 59 06.5	2,540
Tps. 4 and 5 N., R. 5 W., corner of secs. 3, 4, 33, and 34, in front yard, 25 feet northwest of northwest corner of house, 150 feet south of east-west road.....	40 22 12.8	90 57 58.6	5,257
Tps. 4 and 5 N., R. 5 W., 650 feet northeast of corner of secs. 3, 4, 33, and 34, T road north, center of triangle.....	40 22 16.0	90 57 52.3	580
Tps. 4 and 5 N., R. 5 W., 20 feet south and 15 feet east of south corner of secs. 34 and 35, south edge of east-west road, 15 feet east of line of center of T road north; iron post stamped "Prim. Trav. Sta. No. 60, 1910 ILLINOIS".....	40 22 13.3	90 56 47.9	4,975
Tps. 4 and 5 N., R. 5 W., north quarter corner of sec. 2, center of east-west road at T road south.....	40 22 13.7	90 56 14.9	2,559
Tps. 4 and 5 N., R. 5 W., south quarter corner of sec. 35, center of east-west road at T road north.....	40 22 13.7	90 56 13.6	100
Tps. 4 and 5 N., R. 5 W., north corner of secs. 1 and 2, near clump of small trees 10 feet south of center of east-west road.....	40 22 13.9	90 55 39.9	2,610
Tps. 4 and 5 N., R. 5 W., 30 feet south of; stone at south corner of secs. 35 and 36, 15 feet west of center of road into barn lot, center of east-west road.....	40 22 13.8	90 55 39.0	70
Crooked Creek, center of iron bridge over.....	40 22 15.0	90 54 27.3	5,549
Tps. 4 and 5 N., Rs. 4 and 5 W., corner of secs. 1, 6, 31, and 36, 40 feet west of second-class road north, opposite wire fence, center of east-west road.....	40 22 14.7	90 54 08.2	1,479
Tps. 4 and 5 N., R. 4 W., south corner of secs. 31 and 32, center of east-west road at T road north to Hillsgrove.....	40 22 14.0	90 53 17.6	3,921
Tps. 4 and 5 N., R. 4 W., north corner of secs. 5 and 6, center of east-west road at T road south, 10 feet southeast to large oak.....	40 22 13.9	90 53 16.1	110
Hillsgrove, 1.2 miles south of station, intersection of Chicago, Burlington & Quincy R. R. and second-class road.....	40 22 12.0	90 52 51.8	1,900
T. 5 N., R. 4 W., north of corner of secs. 28, 29, 32, and 33, 500 feet east of T road crossing Chicago, Burlington & Quincy R. R. near old Hillsgrove station, 200 feet north of T road east, on edge of north-south road; iron post stamped "Prim. Trav. Sta. No. 61, 1910 ILLINOIS".....	40 23 21.2	90 52 07.5	7,788

COLCHESTER QUADRANGLE—Continued.

Geographic positions along highways from Hillsgrove west along highways to Fandon.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Primary traverse station No. 61.....	40 23 21.2	90 52 07.5	.....
T. 5 N., R. 4 W., quarter corner between secs. 32 and 33, center of north-south road at T road east, 15 feet east to center of triangle, 15 feet west to corner post of fence.....	40 22 37.9	90 52 08.3	4,380
T. 5 N., R. 4 W., quarter corner between secs. 34 and 33, 200 feet east of schoolhouse, center of east-west road at T road south.....	40 22 36.8	90 50 58.4	5,401
Tps. 4 and 5 N., R. 4 W., south quarter corner of sec. 34, center of east-west road at T road north, (20 feet east is north corner of sec. 3 at wire fence south).....	40 22 09.5	90 50 23.6	3,858
Troublesome Creek, 100 feet north of, 3 corners at public T road west, center of bridge.....	40 22 10.5	90 49 50.2	2,598
T. 4 N., R. 4 W., quarter corner between secs. 1 and 2, center of east-west road at public T road north.....	40 21 46.7	90 48 39.2	5,997
T. 4 N., Rs. 3 and 4 W., quarter corner between secs. 1 and 6, 15 feet west to end of wire fence, center of north-south range line road at T road east to Fandon.....	40 21 40.7	90 47 31.3	5,297
T. 4 N., R. 3 W., 15 feet north by 25 feet west of quarter corner between secs. 5 and 6, 10 feet west of corner of wire fence and 25 feet northwest of center of north-south road at T road west; iron post stamped "Prim. Trav. Sta. No. 59, 1910 ILLINOIS, Elev. 663".....	40 21 41.3	90 46 19.9	5,530
Fandon, 0.5 mile west of, center of east-west road at T road north, 40 feet west of plank bridge.....	40 22 05.8	90 46 11.7	2,552

Geographic positions north along highways from Fandon.

Fandon, 0.5 mile west of.....	40 22 05.8	90 46 11.7	.....
Fandon, 0.8 mile north of, center of iron bridge over Troublesome Creek.....	40 22 58.2	90 45 56.9	5,428
Fandon, 1.2 miles north of, 5 feet north to center of triangle, center of east-west road at public T road north.....	40 23 11.6	90 45 48.0	1,522
T. 5 N., R. 3 W., 0.2 mile south of quarter corner between secs. 20 and 29, center of north-south road at T road east, 3 corners.....	40 23 37.2	90 45 47.2	2,597
T. 5 N., R. 3 W., stone quarter corner between secs. 20 and 29, 0.2 mile north of T road east, center of north-south road, opposite end of wire fence.....	40 23 51.3	90 45 47.3	1,419
T. 5 N., R. 3 W., stone quarter corner between secs. 17 and 20, 80 feet northwest of West Chalmers schoolhouse, district 104, 5 feet northwest of intersection of crossroads.....	40 24 44.0	90 45 47.0	5,340
Colchester, 1.5 miles northeast of, intersection of north-south public road with Chicago, Burlington & Quincy R. R.....	40 26 09.4	90 45 45.4	8,644
T. 5 N., R. 3 W., 0.2 mile south of corner of secs. 5, 6, 7, and 8, center of north-south road at public T road east, 20 feet south to center of triangle, 15 feet west to oak tree.....	40 26 14.7	90 46 19.8	2,678
T. 5 N., R. 3 W., stone at corner of secs. 5, 6, 7, and 8, 400 feet north of coal mine, in center of north-south road at second-class road crossing.....	40 26 30.2	90 46 19.7	1,560
Crooked Creek, 30 feet north of north end of bridge over, public T road south across creek, center of triangle at 3 corners.....	40 26 57.1	90 46 30.9	2,857
Tps. 5 and 6 N., R. 3 W., corner of secs. 5 and 6, center of east-west road at T road south, 10 feet south to center of triangle.....	40 27 22.3	90 46 18.6	2,748
Spring Creek, center of iron bridge over.....	40 27 22.0	90 45 14.8	3,729

Magnetic declination of north border of quadrangle is 5° 29' E.; of east border of quadrangle is 5° 30' E.; of south border of quadrangle is 5° 39' E.; of west border of quadrangle is 5° 36' E.; of center line through quadrangle is 5° 27' E.

AUGUSTA QUADRANGLE.

Geographic positions along highways near north border of quadrangle.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
T. 3 N., R. 5 W., corner of secs. 9, 10, 15, and 16.....	40 15 08.2	90 58 07.1	.....
T. 3 N., R. 5 W., center of sec. 15, 10 feet south to center of triangle, center of east-west road at public T road south.....	40 14 41.7	90 57 33.2	3,761
T. 3 N., R. 5 W., quarter corner between secs. 14 and 15, 1 mile north of Augusta, center of north-south road at T road north.....	40 14 41.5	90 56 58.5	2,690
Augusta, 1.2 miles north of, east-west road crossing the Chicago, Burlington & Quincy R. R., center of track.....	40 14 54.6	90 56 46.9	1,597
T. 3 N., R. 5 W., between secs. 12 and 13, plank fence north, hedge south, 125 feet northwest to schoolhouse, center of east-west road at north-south line.....	40 14 54.0	90 55 49.8	4,430
T. 3 N., Rs. 4 and 5 W., 0.2 mile south of corner of secs. 7, 12, 13, and 18, center of east-west road, at crossing of Hancock and McDonough County line.....	40 14 53.9	90 54 38.4	5,530
Oakwood schoolhouse, 500 feet north of, public T road west at 3 corners, center of triangle.....	40 14 56.8	90 53 20.8	6,016
T. 3 N., R. 4 W., 0.2 mile west of center of sec. 17, 0.4 mile southeast of Oakwood schoolhouse, 200 feet east of 90° bend in east-west road, 15 feet south of center of east-west road; iron post stamped "Prim. Trav. Sta. No. 56, 1910 ILLINOIS".....	40 14 40.7	90 53 03.2	2,130
T. 3 N., R. 4 W., 0.2 mile east of quarter corner between secs. 16 and 17, center of intersection of crossroads at 4 corners.....	40 14 41.4	90 51 53.6	5,398
T. 3 N., R. 4 W., stone at quarter corner between secs. 15 and 16, 15 feet northwest of large oak tree, in line with wire fence north and at center of 90° angle in road north.....	40 14 41.4	90 51 02.1	3,990
William Creek, center of iron bridge over.....	40 14 42.7	90 50 32.4	2,312
T. 3 N., R. 4 W., 60 feet west of stone at center of sec. 15, center of triangle at T road south, in wire fence, 60 feet west of center of triangle at 3 corners.....	40 14 41.2	90 50 27.9	411
T. 3 N., R. 5 W., center of sec. 14, center of east-west road at T road north.....	40 14 40.8	90 49 19.7	5,260
T. 3 N., R. 4 W., corner of secs. 13, 14, 23, and 24, about 20 feet west of hickory tree in weeds, at a 90° bend in road east.....	40 14 15.3	90 48 45.7	3,701
T. 3 N., R. 4 W., 0.2 mile north by 0.2 mile east of center of sec. 24, 3 feet east to oak, 15 feet southeast to oak, public T road west at 3 corners.....	40 14 01.4	90 47 54.8	4,190
T. 3 N., Rs. 3 and 4 W., 900 feet south of quarter corner of sec. 24, center of triangle at 3 corners at public T road east.....	40 13 39.4	90 47 37.9	2,583
T. 3 N., R. 3 W., center of sec. 19, 10 feet northwest to center of triangle, center of east-west road at T road north.....	40 13 45.3	90 46 57.7	3,178
Brooklyn, west side of schoolhouse square, 30 feet east of intersection of Kentucky Street and Broadway; iron post stamped "Prim. Trav. Sta. No. 57, 1910 ILLINOIS".....	40 13 32.6	90 45 48.8	5,494
Brooklyn, northeast part of town, center of iron bridge over Crooked Creek.....	40 13 46.0	90 45 34.0	1,778
Crooked Creek, 0.8 mile north of iron bridge over, public T road east at 3 corners, 20 feet east to center of triangle, 30 feet north to corner of fence.....	40 14 22.0	90 45 30.0	3,643

Magnetic declination of north border of quadrangle, 5° 39' E.

RUSHVILLE QUADRANGLE.

Geographic positions near northwest corner of quadrangle.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Crooked Creek, 0.8 mile north of, iron bridge over.....	40 14 22.0	90 45 30.0	.....
Crooked Creek bridge, 1.7 miles northeast of, 3 corners, center of east-west road at T road northwest, 40 feet southeast to telephone pole, 30 feet northwest to H. Nooner's mail box, 35 feet north to walnut tree, in center of triangle.....	40 14 51.5	90 44 39.9	4,924

Magnetic declination at northwest corner of quadrangle, 5° 39' E.

KEOKUK QUADRANGLE.

Geographic positions southwest along highways from northwest corner of quadrangle to Keokuk.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Primary traverse station No. 51.....	40 30 24.0	91 16 10.8	.....
T. 6 N., R. 8 W., corner of secs. 23, 24, 25, and 26, center of crossroads..	40 29 30.4	91 16 12.1	5, 441
T. 6 N., R. 8 W., corner of secs. 25, 26, 35, and 36, center of north-south road at T road east.....	40 28 37.8	91 16 14.1	5, 320
Tps. 5 and 6 N., R. 8 W., corner of secs. 1, 2, 35, and 36, center of crossroads.....	40 27 43.2	91 16 14.7	5, 520
T. 5 N., R. 8 W., corner of secs. 1, 2, 11, and 12, center of north-south road, 15 feet south of T road east, at hedge east-west.....	40 26 50.0	91 16 15.3	5, 390
T. 5 N., R. 8 W., stone at quarter corner between secs. 13 and 14, at center of intersection of crossroads.....	40 25 29.8	91 16 17.5	8, 111
T. 5 N., R. 8 W., corner of secs. 13, 14, 23, and 24, center of north-south road at east-west hedge.....	40 25 03.5	91 16 18.1	2, 670
T. 5 N., R. 8 W.; stone at corner of secs. 23, 24, 25, and 26, center of north-south road at T road east.....	40 24 09.8	91 16 18.9	5, 430
T. 5 N., R. 8 W., 50 feet south by 30 feet east of quarter corner between secs. 25 and 26, in southeast corner of crossroads, near entrance to field; iron post stamped "Prim. Trav. Sta. No. 52, 1910".....	40 23 42.8	91 16 19.2	2, 731
T. 6 N., R. 8 W., quarter corner between secs. 26 and 27, at center of intersection of crossroads.....	40 23 44.4	91 17 29.1	5, 413
T. 6 N., R. 8 W., quarter corner between secs. 27 and 28, at center of crossroads.....	40 23 45.9	91 18 38.4	5, 360
T. 6 N., R. 8 W., quarter corner between secs. 28 and 29, at crossing of Nineteenth and Keokuk streets, 75 feet northeast of Crum's store... Hamilton, center of cupola of Bethel Church.....	40 23 47.1	91 19 47.4	5, 339
Hamilton, 150 feet northwest of school building, 60 feet southeast of intersection of Ninth and Main streets, in school yard; iron post stamped "Prim. Trav. Sta. No. 53, 1910 ILLINOIS".....	40 23 36.0	91 20 21.9	2, 901
Hamilton, artesian well, at tollhouse at east end of bridge across Mississippi River.....	40 23 27.3	91 20 47.3	2, 155
Hamilton, center of draw span of Keokuk Bridge.....	40 23 22.8	91 22 02.1	5, 802
	40 23 30.8	91 22 34.4	2, 630

Magnetic declination of the east border of the northeast quarter of the quadrangle, 6° 13' E.; of south border of the northeast quarter of the quadrangle, 6° 13' E.

For additional control in this area see under Iowa (p. 98).

Alexis, Davenport, Edgington, Keithsburg, Milan, and Orion quadrangles.

MERCER AND ROCK ISLAND COUNTIES.

The following geographic positions were determined by primary traverse by C. B. Kendall in 1910. The lines were run as follows: The first line starts at Moline triangulation station of the Mississippi River Commission and follows highways south to a point near Griffin; thence west to a point near the southwest corner of Milan quadrangle; thence north to a point 4.5 miles west of Reynolds; thence east through center of the quadrangle to east border near Rural. The second line, which starts at a point 4.5 miles west of Reynolds (Prim. Trav. Station No. 35), follows highways north to Andalusia triangulation station of the Mississippi River Commission; thence east to a point 3 miles west of Milan, along the Chicago, Rock Island & Pacific Railway to Milan; thence along highways and the streets of Rock Island and Moline to the initial point.

The State cooperated in the work.

ALEXIS QUADRANGLE.

Geographic positions along highways near north border of quadrangle.

Stations.	Latitude.	Longitude.
Tps. 14 and 15 N., R. 1 W., 25 feet south of south quarter corner of sec. 33, near board fence on south edge of east-west road, in line with center of T road north and 25 feet south of center of town-line road, which forms the quarter corner and is 25 feet south by 160 feet west of north quarter corner of sec. 4, about 0.5 mile west of Griffin Clay Manufacturing Co.'s works; iron post stamped "Prim. Trav. Sta. No. 32 1910, ILL".....	° ' " 41 14 21.1	° ' " 90 30 13.5
Tps. 14 and 15 N., R. 1 W., south quarter corner of sec. 33, center of east-west road at T road north.....	41 14 21.3	90 30 13.5
Tps. 14 and 15 N., R. 1 W., north corner of sec. 4, center of east-west road at T road south.....	41 14 21.3	90 30 11.4
Tps. 14 and 15 N., R. 1 W.; stone at north corner of secs. 4 and 5, in center of east-west road at T road south.....	41 14 21.7	90 30 46.2
Tps. 14 and 15 N., R. 1 W.; stone at south corner of secs. 32 and 33, on north edge of east-west road at wire fence north.....	41 14 21.9	90 30 48.3
Tps. 14 and 15 N., R. 1 W.; stone at north corner of secs. 5 and 6, in center of east-west road, 70 feet northeast to schoolhouse.....	41 14 22.4	90 31 54.8
Tps. 14 and 15 N., R. 1 W.; stone at south corner of secs. 31 and 32, center of east-west road at hedge fence north, 250 feet west of schoolhouse.....	41 14 22.4	90 31 57.9
Tps. 14 and 15 N., R. 1 W., south quarter corner of sec. 31, center of east-west road at T road north, 15 feet north of center of triangle.....	41 14 22.8	90 32 32.6
T. 15 N., R. 1 W., center of sec. 31, center of north-south road at T road west and hedge fence east.....	41 14 49.0	90 32 32.2
T. 15 N., Rs. 1 and 2 W., west quarter corner of sec. 31, center of east-west road at second-class T road north.....	41 14 49.3	90 33 06.8
T. 15 N., Rs. 1 and 2 W., east quarter corner of sec. 36.....	41 14 49.5	90 33 06.8
T. 15 N., R. 2 W., quarter corner between secs. 35 and 36, center of east-west road at north-south hedge row, 5 feet east of east end of bridge over small stream.....	41 14 50.2	90 34 16.2
Boden, 0.5 mile south of; center of iron bridge over Edwards River.....	41 14 50.2	90 35 09.6
Three corners, second-class T road through gate to north, in center of sec. 34, T. 15 N., R. 2 W., center of east-west road.....	41 14 51.7	90 36 01.3
T. 15 N., R. 2 W., quarter corner between secs. 33 and 34, public crossroads north and east, second-class roads south and west, center of intersection, 30 feet north to center of triangle, 70 feet west to gate.....	41 14 51.7	90 36 36.5
T. 15 N., R. 2 W., 1,320 feet south of quarter corner between secs. 32 and 33, 0.5 mile west of Rock Island Southern Ry. power plant, 0.25 mile north of bridge over Edwards River, east side of north-south road, in line with public T road west; iron post stamped "Prim. Trav. Sta. No. 33 1910 ILL".....	41 14 39.3	90 37 46.1
Three corners, center of east-west road at public T road south, 25 feet southwest to mail box, 10 feet south to center of triangle.....	41 14 52.6	90 39 13.3
T. 15 N., Rs. 2 and 3 W., quarter corner between secs. 31 and 36, center of north-south road at T road east.....	41 14 53.1	90 40 06.0
Tps. 14 and 15 N., Rs. 2 and 3 W., south corner of secs. 31 and 36, center of east-west road at public T road north, 15 feet north to center of triangle.....	41 14 26.8	90 40 06.8
Tps. 14 and 15 N., Rs. 2 and 3 W., north corner of secs. 1 and 6, center of 90° bend south.....	41 14 26.8	90 39 53.5
Tps. 14 and 15 N., R. 3 W., 270 feet east of north corner of secs. 1 and 2, 3 corners, center of east-west road at public T road north.....	41 14 27.3	90 40 58.6
Tps. 14 and 15 N., R. 3 W.; stone at north corner of secs. 1 and 2, in center of east-west road at wire fence south and 270 feet west of T road north.....	41 14 27.3	90 41 02.1
Tps. 14 and 15 N., R. 3 W., south corner of secs. 35 and 36, center of east-west road at high fence north, 270 feet west of bridge.....	41 14 27.4	90 41 16.0
Tps. 14 and 15 N., R. 3 W.; stone at north corner of secs. 2 and 3, in center of east-west road at T road south, 560 feet east of bridge.....	41 14 27.9	90 42 10.9
Tps. 14 and 15 N., R. 3 W., south corner of secs. 34 and 35, center of east-west road at T road north, 12 feet north to plank bridge over river.....	41 14 27.9	90 42 25.5
Tps. 14 and 15 N., R. 3 W.; stone at north quarter corner of sec. 3, in line of high fence at 90° bend in main road to south.....	41 14 28.1	90 42 46.1
T. 14 N., R. 3 W., corner of sec. 4, west edge of triangle at public T road east.....	41 14 06.5	90 43 56.2
Tps. 14 and 15 N., R. 3 W.; stone at north quarter corner of sec. 4, in woods, in line with plank fence north and 100 feet south of corner; it is also 210 feet east of a 90° bend in road west and in line with road west.....	41 14 28.3	90 43 56.4
Tps. 14 and 15 N., R. 3 W., south quarter corner of sec. 33, center of east-west road at public T road north, 440 feet west of bridge.....	41 14 28.4	90 44 06.2

Magnetic declination of north border of quadrangle, 5° 27' E.

DAVENPORT QUADRANGLE.

Geographic positions in Moline and Rock Island.

Stations.	Latitude.	Longitude.
Moline, on wooded hill diagonally opposite Fourth Street school, almost in line with prolongation of Fifth Avenue; tile and iron pipe, marked "Miss. River Com. U. S. Δ 1891" (Moline triangulation station of the Mississippi River Commission).....	41 30 16.0	90 31 50.5
Moline, center of street car track at intersection of Fifth Avenue and Fifteenth Street.....	41 30 22.5	90 30 58.5
Moline, center of street car track at intersection of Sixth Avenue and Twenty-fifth Street.....	41 30 33.3	90 30 06.2
Intersection of Ninth Street and Third Avenue.....	41 30 26.5	90 35 14.6
Rock Island, in southeast corner of square around county courthouse, 60 feet northwest of intersection of Fifteenth Street and Third Avenue; iron post stamped "Prim. Trav. Sta. No. 44, 1910, ILL".....	41 30 33.9	90 34 44.1
Rock Island, intersection of Twenty-third Street and Third Avenue, center of car tracks.....	41 30 35.8	90 34 03.7
Rock Island, iron electric-light pole at west end of parking, in center of intersection at Thirty-fifth Street, just west of Andalusia College.....	41 30 17.6	90 33 03.5
Moline, Fifth Avenue and First Street, center of intersection of; boundary line between Rock Island and Moline.....	41 30 17.2	90 32 13.8

Magnetic declination of south border of quadrangle, 5° 32' E.

EDGINGTON QUADRANGLE.

Geographic positions along highways near east border of quadrangle.

Stations.	Latitude.	Longitude.
Three corners, public T road, center of north-south road, 30 feet east to center of triangle.....	41 15 05.6	90 46 28.7
T. 15 N., R. 3 W., quarter corner between secs. 30 and 31, center of north-south road at high fence east and wire fence west.....	41 15 22.3	90 46 28.2
Three corners, public T road south, center of east-west road at; 25 feet south to center of triangle.....	41 16 01.0	90 46 27.3
T. 15 N., R. 3 W., corner of secs. 17, 18, 19, and 20, in stream 20 feet east of road, 70 feet north of center of bridge.....	41 17 06.8	90 45 51.3
T. 15 N., R. 3 W., quarter corner between secs. 17 and 18, center of intersection of crossroads, 10 feet southwest to center of triangle, 5 feet east to center of traveled part of north-south road.....	41 17 32.9	90 45 50.9
T. 15 N., R. 3 W.; stone at corner of secs. 7, 8, 17, and 18, on west edge of traveled part of road, 15 feet west of a gate.....	41 17 59.4	90 45 50.7
T. 15 N., R. 3 W., corner of secs. 5, 6, 7, and 8, center of east-west road at T road north, 60 feet east of T road south, 15 feet north to center of triangle.....	41 18 51.7	90 45 49.7
Tps. 15 and 16 N., R. 3 W., north corner of secs. 5 and 6, center of east-west road at public road south, 35 feet south to center of triangle.....	41 19 44.7	90 45 48.3
Tps. 15 and 16 N., R. 3 W.; stone at south corner of secs. 31 and 32, in center of east-west road, 135 feet west of T road south, also county line between Rock Island and Mercer counties.....	41 19 44.7	90 45 50.1
T. 16 N., R. 3 W., 0.25 mile west of corner of secs. 29, 30, 31, and 32, in southwest corner of crossroads, 45 feet southwest of intersection of line of travel; iron post stamped "Prim. Trav. Sta. No. 35, 1910 ILL".....	41 20 37.0	90 46 08.0
T. 16 N., R. 3 W., 0.25 mile west of corner of secs. 29, 30, 31, and 32, center of intersection of crossroads, 25 feet southeast to center of triangle, 25 feet northwest to center of triangle.....	41 20 37.3	90 46 07.6
T. 16 N., R. 3 W., corner of secs. 29, 30, 31, and 32, center of east-west road at wire fence north, 370 feet west of bridge, and 0.25 mile east of crossroads.....	41 20 37.0	90 45 50.1
T. 16 N., R. 3 W., corner of secs. 19, 20, 29, and 30, at north end of gate into pasture at 90° bend in road north.....	41 21 29.0	90 45 49.2
T. 16 N., R. 3 W., corner of secs. 17, 18, 19, and 20, center of east-west road at T road north, 40 feet east of T road south, 25 feet northwest to center of small bridge, schoolhouse in northwest corner of crossroads.....	41 22 21.2	90 45 49.2
Edginton, 25 feet southwest of corner of secs. 7, 8, 17, and 18, T. 16 N., R. 3 W., near telephone pole in southwest corner of crossroads, 12 feet northeast of northeast corner of front yard; iron post stamped "Prim. Trav. Sta. No. 39, 1910, ILL".....	41 23 13.4	90 45 49.5
Edginton, 15 feet southwest of intersection of crossroads at; on west edge of north-south road, stone at corner of secs. 7, 8, 17, and 18, T. 16 N., R. 3 W.....	41 23 13.6	90 45 49.3
T. 16 N., R. 3 W., corner of secs. 5, 6, 7, and 8, 1 mile north of Edginton, center of intersection of crossroads.....	41 24 05.8	90 45 49.0
Tps. 16 and 17 N., R. 3 W., north corner of secs. 5 and 6, center of east-west road at T road south, 10 feet south to center of triangle.....	41 24 58.6	90 45 48.6
Tps. 16 and 17 N., R. 3 W.; south stone at corner of secs. 31 and 32, center of road opposite fence to east, at 90° bend to north and 250 feet east of T road south.....	41 24 58.4	90 45 45.4
T. 17 N., R. 3 W., near center of sec. 28, 15 feet east of gate at southwest corner of fence around Greenbush schoolhouse, 15 feet north of river road, at junction with T road south to Edginton, 120 feet south of front door of schoolhouse; iron post stamped "Prim. Trav. Sta. No. 40, 1910 ILL".....	41 26 12.9	90 45 09.9

Magnetic declination of east border of quadrangle, 5° 45' E.

KEITHSBURG QUADRANGLE.

Geographic positions along public roads near northeast corner of quadrangle.

Stations.	Latitude.	Longitude.
Tps. 14 and 15 N., R. 3 W., north quarter corner of sec. 5, center of east-west road at T road south to Aledo, 15 feet southeast to center of triangle, 25 feet northwest to telegraph pole.....	° ' " 41 14 28.8	° ' " 90 45 05.7
Tps. 14 and 15 N., R. 3 W., south corner of sec. 32, center of east-west road at T road north, 5 feet north to center of triangle, 15 feet south to walnut tree.....	41 14 29.0	90 45 19.7
Three corners, public T road south, center of east-west road at; 20 feet south to center of triangle.....	41 14 29.5	90 45 57.6
Tps. 14 and 15 N., R. 3 W., 35 feet northeast of south quarter corner of sec. 31, at corner of high fence in northeast corner of intersection of east-west road with T road north, 30 feet north of center of east-west road, 25 feet east of center of north-south road, about 4 miles northwest of Aledo; iron post stamped "Prim. Trav. Sta. No. 34, 1910 ILL".....	41 14 30.4	90 46 29.3
Tps. 14 and 15 N., R. 3 W., south quarter corner of sec. 31, center of east-west road at T road north.....	41 14 30.2	90 46 29.6

MILAN QUADRANGLE.

Geographic positions along highways near east border of quadrangle.

Stations.	Latitude.	Longitude.
Moline, at junction of Twenty-third Avenue and Twenty-fifth Street, 15 feet southeast to telephone pole, 30 feet northwest to center of triangle, 3 corners... T. 15 N., R. 1 W., quarter corner between secs. 28 and 33, center of east-west road at T road south, 30 feet south of center of triangle.....	° ' " 41 29 32.3 41 15 15.8	° ' " 90 30 01.6 90 30 13.1

Geographic positions along highways east-west through center of quadrangle.

T. 16 N., R. 3 W., stone at corner of secs. 28, 29, 32, and 33, 10 feet south of center of east-west road at T road south, 125 feet southwest of Monitor schoolhouse (district No. 6).....	41 20 36.2	90 44 41.2
T. 16 N., R. 3 W., quarter corner between secs. 28 and 33, center of intersection at crossroads.....	41 20 35.9	90 44 06.7
T. 16 N., R. 3 W., stone at corner of secs. 27, 28, 33, and 34, in center of east-west road at wire fence south and hedge fence north.....	41 20 35.7	90 43 33.2
T. 16 N., R. 3 W., corner between secs. 27 and 34, center of north-south road at T road west.....	41 20 35.9	90 42 58.6
T. 16 N., R. 3 W., center of sec. 26, center of intersection of crossroads, Prairie Union schoolhouse (district 86) stands in northeast corner of crossroads.....	41 21 01.9	90 41 49.2
T. 16 N., R. 3 W., corner of secs. 25, 26, 35, and 36, center of north-south road at T road east.....	41 20 35.3	90 41 14.4
T. 16 N., Rs. 2 and 3 W., east corner of secs. 25 and 36, 25 feet east by 15 feet south of, on east edge of range line road in line with south edge of T road west, 1 mile north of Reynolds and 100 feet east of east-west road crossing the Rock Island Southern Ry.; iron post stamped "Prim. Trav. Stat. No. 36, 1910 ILL".....	41 20 35.0	90 40 04.6
T. 16 N., Rs. 2 and 3 W., east corner secs. 25 and 36, center of north-south range line road at T road west.....	41 20 35.1	90 40 04.9
T. 16 N., Rs. 2 and 3 W., west corner of secs. 30 and 31, center of north-south range line road at T road east.....	41 20 36.5	90 40 05.0
T. 16 N., R. 2 W., corner of secs. 29, 30, 31, and 32, 70 feet east of bridge, center of intersection of crossroads.....	41 20 35.9	90 38 46.6
T. 16 N., R. 2 W., corner of secs. 28, 29, 32, and 33, 140 feet east of bridge, center of intersection of crossroads.....	41 20 34.6	90 37 36.9
T. 16 N., R. 2 W., corner of secs. 27, 28, 33, and 34, 30 feet southeast of, at corner of wire fence, 3 feet east of telephone pole, 30 feet southeast of intersection of crossroads, in northwest corner of sec. 34; iron post stamped "Prim. Trav. Sta. No. 37, 1910, ILL, 776".....	41 20 33.3 41 20 33.6	90 36 27.1 90 36 27.4
T. 16 N., R. 2 W., corner of secs. 26, 27, 34, and 35, center of east-west road at wire fence north-south, 70 feet west of bridge.....	41 20 32.5	90 35 18.1
T. 16 N., R. 2 W., quarter corner between secs. 26 and 35, center of east-west road at public T road south and 20 feet east of second-class T road north.....	41 20 31.9	90 34 42.7
T. 16 N., R. 2 W., stone at corner of secs. 25, 26, 35, and 36, in center of east-west road at T road south, 150 feet north of church and 130 feet east of T road north.....	41 20 31.2	90 34 07.7
T. 16 N., Rs. 1 and 2 W., corner of secs. 25, 30, 31, and 36, center of intersection of crossroads.....	41 20 29.5	90 32 59.1
T. 16 N., Rs. 1 and 2 W., 60 feet east by 15 feet north of, corner of secs. 25, 30, 31, and 36, on edge of east-west road, 65 feet northeast of crossroads; iron post stamped "Prim. Trav. Sta. No. 38, 1910 ILL, 735".....	41 20 29.6	90 32 58.3
T. 16 N., R. 1 W., corner of secs. 29, 30, 31, and 32, center of intersection of crossroads.....	41 20 28.3	90 31 50.4
T. 16 N., R. 1 W., corner of secs. 26, 29, 32, and 33, center of intersection of crossroads.....	41 20 27.6	90 30 40.3

MILAN QUADRANGLE—Continued.

Geographic positions along highways near north border of quadrangle.

Stations.	Latitude.	Longitude.
Andalusia triangulation station of Mississippi River Commission, on land of Mrs. Paul Jahn, occupied by Henry Wilkins, about 0.5 mile below limit of Andalusia, Ill., on side of bluff about 150 meters south of main road and 50 meters east of a fence: tile and pipe on Illinois side of river.....	41 26 10.4	90 44 00.6
Andalusia triangulation station, about 0.2 mile northeast of, near wire fence on south edge of main road; Mississippi River Commission iron bench mark "U. S. B. M. 1891".....	41 26 15.8	90 43 41.0
Andalusia, 4 corners crossing of Main Street and street leading north to boat landing, 25 feet northwest to stone, 20 feet northeast to stone.....	41 26 21.1	90 43 08.6
Intersection of Ninth Street and Eighteenth Avenue at fair grounds, south line of Rock Island city limits.....	41 29 39.3	90 35 09.7
Andalusia, 0.5 mile east of; 3 corners at public T road south, center of east-west road, 35 feet south to center of triangle.....	41 26 22.1	90 42 37.2
Three corners at public T road to south, 10 feet south to center of triangle.....	41 26 40.1	90 40 37.1
T. 17 N., R. 2 and 3 W., west corner stone at secs. 19 and 30, in center of road at wire fence south, 100 feet east of T road north to barn and 340 feet west of bridge.	41 26 39.8	90 40 02.0
T. 17 N., R. 2 W., corner of secs. 19, 20, 29, and 30, 20 feet north by 60 feet east of, on north edge of east-west road, 3 feet south of wire fence and 65 feet northeast of T road south; iron post stamped "Prim. Trav. Sta. No. 41, 1910 ILL, 565, 1909".....	41 26 39.1	90 38 36.0
T. 17 N., R. 2 W., corner of secs. 19, 20, 29, and 30, center of east-west road at T road south.....	41 26 38.9	90 38 36.8
T. 17 N., R. 2 W., corner of secs. 20, 21, 28, and 29, center of east-west road at fences and second-class T road north.....	41 26 37.5	90 37 28.6
Three corners, center of east-west road at public T road south, 45 feet south to Rock Island Southern Ry.....	41 26 36.9	90 36 37.7
T. 17 N., R. 2 W., 35 feet southwest of corner of secs. 22, 23, 26, and 27, near corner of fence on south edge of east-west road, in northeast corner of sec. 27; iron post stamped "Prim. Trav. Sta. No. 42, 1910, ILL, 573, 1909".....	41 26 35.1	90 35 12.6
T. 17 N., R. 2 W., corner of secs. 22, 23, 26, and 27, center of intersection at crossroads.....	41 26 35.3	90 35 12.2
Center of drawbridge over the Illinois & Mississippi Canal, center of street-car track. Rock River just below dam, center of bridge over main run of.....	41 27 18.7	90 34 29.3
Street crossing Milan bridge of electric line, 150 feet southwest of junction with watch tower line, center of track at.....	41 27 40.3	90 34 43.8
South Rock Island, on west edge of Ninth Street, 4 feet east of plank fence a little south of line of junction with center of street leading east to central street-car station, about 300 feet west of schoolhouse No. 1 (district 2); iron post stamped "Prim. Trav. Sta. No. 43, 1910, ILL, 596".....	41 27 57.0	90 35 02.6
	41 28 54.3	90 35 11.6

Magnetic declination of north border of quadrangle, 5° 32' E.; of south border of quadrangle, 5° 27' E.; of east border of quadrangle, 5° 30' E.; of west border of quadrangle, 5° 45' E.; of center east-west line of quadrangle, 5° 41' E.

ORION QUADRANGLE.

Geographic positions along highways near west border of quadrangle.

Stations.	Latitude.	Longitude.
T road south, center of east-west road at, 35 feet west to bench mark on stone fence painted "590.4".....	41 28 36.8	90 29 56.4
T. 17 N., R. 1 W., center of sec. 16, center of north-south road at T road east.....	41 27 57.1	90 29 56.4
Rock River, center of highest span of iron bridge over.....	41 27 40.6	90 29 56.3
T. 17 N., R. 1 W., center of sec. 21, 0.2 mile north of; 0.6 mile south of bridge over Rock River, in northwest corner of T road north, 30 feet west of center of north-south road, 50 feet north of center of east road; iron post stamped "Prim. Trav. Sta. No. 28, 1910, ILL 590".....	41 27 11.8	90 29 58.6
T. 17 N., R. 1 W., 0.25 mile north of center of sec. 21, center of east-west road at T road north to Rock River bridge.....	41 27 11.3	90 29 58.3
T. 17 N., R. 1 W., quarter corner between secs. 21 and 22, at cross fences.....	41 26 59.9	90 29 23.7
Four corners at public crossroads, 560 feet north of north-south road crossing the Chicago, Rock Island & Pacific Ry., 25 feet northwest to and at corner of fence painted "576.8," about 130 feet east to bridge.....	41 26 34.0	90 29 08.0
Coal Valley, 1 mile northwest of; center of track at south end of road crossing Chicago, Rock Island & Pacific Ry.....	41 26 04.4	90 28 33.2
Chicago, Rock Island & Pacific Ry. overhead crossing, center of public road under.	41 25 47.2	90 28 06.5
Tps. 16 and 17 N., R. 1 W., south corner of secs. 34 and 35, center of east-west road at T road north.....	41 24 50.4	90 28 15.2
Tps. 16 and 17 N., R. 1 W., north corner of secs. 2 and 3, center of east-west road at fence south.....	41 24 50.4	90 28 14.5
Poor farm, center of east-west road at public T road south, 25 feet south to center of triangle, on line between Tps. 16 and 17 N., 0.25 mile west of corner of secs. 2, 3, 34, and 35.....	41 24 50.1	90 28 33.5
T. 16 N., R. 1 W., 0.2 mile east of corner of secs. 2, 3, 10, and 11, 4 corners at public crossroads, center of intersection.....	41 23 55.1	90 28 01.0
T. 16 N., R. 1 W., 1,330 feet east of corner of secs. 10, 11, 14, and 15, 25 feet southwest to 2 mail boxes, center of intersection of crossroads.....	41 23 02.7	90 28 01.7

ORION QUADRANGLE—Continued.

Geographic positions along highways near west border of quadrangle—Continued.

Stations.	Latitude.	Longitude.
T. 16 N., R. 1 W., stone at corner of secs. 10, 11, 14, and 15, center of east-west road, on east edge of second-class north-south road, in line with high fence north.	41 23 02.5	90 28 19.6
T. 16 N., R. 1 W., corner of secs. 9, 10, 15, and 16, center of intersection of crossroads.	41 23 03.2	90 29 29.0
T. 16 N., R. 1 W., 150 feet west by 20 feet north of corner of secs. 15, 16, 21, and 22, on north edge of east-west road, opposite junction with T road south, 200 feet northeast of schoolhouse; iron post stamped "Prim. Trav. Sta. No. 29, 1910, ILL, 724, 1909"	41 22 11.2	90 29 31.2
T. 16 N., R. 1 W., corner of secs. 15, 16, 21, and 22, center of east-west road at T road north, 150 feet east of a T road south.	41 22 11.0	90 29 29.2
T. 16 N., R. 1 W., corner of secs. 21, 22, 27, and 28, center of east-west road at T road north, 500 feet east of Rock Island-Knoxville old stage road, 20 feet south to center of triangle.	41 21 18.8	90 29 29.8
T. 16 N., R. 1 W., 600 feet east of quarter corner between secs. 27 and 28, center of large triangle at junction of Rock Island and Knoxville public road with east-west road.	41 20 52.9	90 29 22.8
T. 16 N., R. 1 W., corner of secs. 21, 22, 27, and 28, 40 feet east of center of north-south road, on east edge of north-south road and in line with center of T road west; iron post stamped "Prim. Trav. Sta. No. 30, 1910 ILL"	41 20 26.7	90 29 30.8
Tps. 15 and 16 N., R. 1 W., south corner of secs. 33 and 34, center of road at wire fence east, line between Rock Island and Mercer counties.	41 19 36.9	90 29 31.2
Tps. 15 and 16 N., R. 1 W., north corner of secs. 3 and 4.	41 19 36.9	90 29 32.4
T. 15 N., R. 1 W., north corner of secs. 3 and 4, 0.2 mile south of, 0.8 mile northeast of Sherrard, at fence corner in northwest corner of crossroads, 30 feet northwest of intersection of crossroads; iron post stamped "Prim. Trav. Sta. No. 31, 1910, ILL, 791.5 1909"	41 19 24.4	90 29 33.6
Center of intersection of crossroads.	41 19 24.2	90 29 33.3
T. 15 N., R. 1 W., stone at corner of secs. 3, 4, 9, and 10, in center of old road, high fence west about 250 feet south of pipe drain across road.	41 18 51.8	90 29 34.5
T. 15 N., R. 1 W., stone at corner of secs. 9, 10, 15, and 16, in center of old road, opposite wire fence west and about 100 feet south of top of hill.	41 17 55.8	90 29 35.4
Cable, 1 mile east of; center of iron bridge over Camp Creek.	41 17 22.6	90 29 36.8
Cable, 1 mile east of; corner of secs. 15, 16, 21, and 22, T. 15 N., R. 1 W.; crossroads.	41 17 00.1	90 29 36.3
T. 15 N., R. 1 W., stone at corner of secs. 21, 22, 28, and 29, 25 feet east of traveled part of north-south road, 1,200 feet north of bridge.	41 16 09.4	90 29 37.1
T. 15 N., R. 1 W., corner of secs. 27, 28, 33, and 34, center of east-west road at T road north, 20 feet north to center of triangle.	41 15 17.3	90 29 39.0

Magnetic declination of west border of quadrangle, 5° 30' E.

Campbellhill, Pinckneyville, and Sparta quadrangles.

JACKSON, PERRY, RANDOLPH, AND WASHINGTON COUNTIES.

The following geographic positions were determined by primary traverse in 1909 by J. R. Ellis. The line starts from a position at Sparta and follows highways east to the east side of the Sparta quadrangle; thence near the border of the same quadrangle to position at Oakdale. Another line starts at primary traverse station No. 2, 1908, and follows highways east to position at Denmark; thence north to position at east side of Sparta quadrangle.

The State cooperated in the work.

SPARTA QUADRANGLE.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
T. 5 S., R. 6 W., east corner of secs. 1 and 12, T road west.	38 07 03.7	89 42 12.2
T. 5 S., R. 5 W., west corner of secs. 6 and 7, T road east.	38 07 05.5	89 42 12.2
T. 5 S., R. 5 W., corner of secs. 5, 6, 7, and 8; fence line crossing with east-west road, west side of cemetery.	38 07 05.4	89 41 08.2
Sparta, about 2 miles east of, T road south.	38 07 05.3	89 40 00.8
T. 5 S., R. 5 W., south corner of secs. 3 and 4.	38 07 04.8	89 38 54.1
T. 5 S., R. 5 W., north corner secs. 9 and 10.	38 07 04.8	89 38 52.7
T. 5 S., R. 5 W., corner of secs. 2, 3, 10, and 11; stone.	38 07 04.3	89 37 47.3
T. 5 S., R. 5 W., corner of secs. 1, 2, 11, and 12.	38 07 03.6	89 36 39.8
T. 5 S., Rs. 4 and 5 W., 6 miles east of Sparta, on north side of east-west road, 65 feet east of crossroads, 25 feet south by 65 feet east to corner of secs. 1, 6, 7, and 12, Randolph-Perry County line; iron post stamped "Prim. Trav. Sta. No. 9 1909 ILLINOIS"	38 07 02.2	89 35 33.0

SPARTA QUADRANGLE—Continued.**Geographic positions along highways—Continued.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
T. 5 S., R. 4 W., corner of secs. 5, 6, 7, and 8.....	38 07 01.1	89 34 26.2
T. 5 S., R. 4 W., corner of secs. 4, 5, 8, and 9.....	38 06 59.2	89 33 18.3
T. 5 S., R. 4 W., corner of secs. 3, 4, 9, and 10, 10 feet east to crossroads.....	38 06 58.2	89 32 13.3
T. 5 S., R. 4 W., corner of secs. 2, 3, 10, and 11, 10 feet east to T lane south.....	38 06 56.6	89 31 04.5
Oakdale, 1.3 miles south of; center of crossroads.....	38 14 45.9	89 30 05.2
Oakdale, 1.8 miles south of; center of crossroads.....	38 14 06.7	89 30 06.2
T. 4 S., R. 4 W., quarter corner between secs. 2 and 11.....	38 12 11.6	89 30 25.9
T. 6 S., R. 6 W., corner of secs. 11, 12, 13, and 14, center of crossroads.....	38 00 55.2	89 43 21.3
T. 6 S., R. 5 W., stone west corner of secs. 7 and 18 in field.....	38 00 53.2	89 42 16.5
T. 6 S., R. 5 W., T road north at range line, 35 feet east to north end of bridge.....	38 00 54.8	89 42 16.2
T. 6 S., R. 5 W.; stone corner of secs. 7, 8, 17, and 18.....	38 00 52.1	89 41 09.2
Steelville, at post office; square stone at T street west.....	38 00 25.7	89 39 29.6
Percy, 1 mile south of, T road west at J. M. Meyers's house.....	38 00 10.6	89 37 16.4
Denmark, about 1.5 miles west of; center of crossroads.....	38 00 07.1	89 31 28.1

Magnetic declinations for Sparta quadrangle: East border, 5° 49' E.; south border, 5° 14' E.; center line running east and west, 5° 49' E.

PINCKNEYVILLE QUADRANGLE.**Geographic positions along highways near west border of quadrangle.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
T. 5 S., R. 4 W., corner of secs. 1, 2, 11, and 12.....	38 06 55.1	89 29 55.9
Center of crossroads.....	38 06 15.5	89 29 56.3
Winkle station (Craig post office), 3 miles south of; near corner of secs. 12, 13, 7, and 18, T. 5 S., R. 4 W., at northwest corner of T road west; iron post stamped "Prim. Trav. Sta. No. 10 1909 ILLINOIS".....	38 05 59.3	89 28 51.9
T. 5 S., R. 4 W., east corner of secs. 12 and 13, T road west, 15 feet east by 20 feet south of Primary Traverse Station No. 10, 1909.....	38 05 59.1	89 28 51.7
T. 5 S., R. 3 W., west corner of secs. 7 and 18, T road east, 15 feet east by 50 feet north of Primary Traverse Station No. 10, 1909.....	38 05 59.8	89 28 51.7
T. 5 S., Rs. 3 and 4 W., corner of secs. 1, 6, 7, and 12, north-south road at east-west fence.....	38 06 52.1	89 28 50.2
Tps. 4 and 5 S., Rs. 3 and 4 W., corner of secs. 1, 6, 31, and 36.....	38 07 44.1	89 28 49.2
T road south.....	38 08 38.4	89 28 48.4
Winkle station (Craig post office), north-south road crossing Illinois Central R. R. just west of town.....	38 09 09.2	89 29 18.0
T. 3 S., R. 4 W., corner of secs. 23, 24, 25, and 26.....	38 14 45.1	89 29 48.4
T. 3 S., R. 4 W., south corner of secs. 35 and 36, Washington-Perry county line.....	38 13 01.0	89 29 51.2
T. 4 S., R. 4 S., north corner of secs. 1 and 2, Washington-Perry county line.....	38 13 01.0	89 29 51.5
T. 4 S., R. 4 W., quarter corner between secs. 2 and 11.....	38 11 44.3	89 29 52.7
Winkle station, 3 miles north of; T road west.....	38 11 43.2	89 29 35.8
T. 4 S., R. 4 W.; stone corner quarter mile east of corner of secs. 13, 14, 23, and 24, center of T road west.....	38 10 24.2	89 29 37.0
Denmark, 1 mile north of; center of T road west.....	38 00 45.2	89 29 48.3
Denmark, 2 miles north by 0.25 mile east of; center of crossroads.....	38 01 37.5	89 29 30.5
Conant, 0.5 mile west by 0.7 mile south of; center of T road south.....	38 02 57.4	89 29 28.7
T. 5 S., Rs. 3 and 4 W., corner of secs. 25, 30, 31, and 36, center of crossroads.....	38 03 22.1	89 28 55.1
T. 5 S., R. 4 W.; stone at east corner of secs. 24 and 25, 15 feet north to T road west.....	38 04 14.2	89 28 54.1
T. 5 S., R. 3 W., west corner of secs. 19 and 30.....	38 04 14.6	89 28 54.2
T. 5 S., R. 3 W., west corner of secs. 18 and 19.....	38 05 07.6	89 28 53.0

Magnetic declination of west border of quadrangle, 5° 49' E.

CAMPBELLHILL QUADRANGLE.**Geographic positions along highways near north border of quadrangle.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Wellsville, 1.5 miles west of; in northeast corner of T road east; iron post stamped "Prim. Trav. Sta. No. 11 1909 ILLINOIS".....	37 59 05.9	89 37 17.4
T. 6 S., R. 5 W.; stone corner of secs. 25 and 26, 35 and 36.....	37 59 05.3	89 36 44.1
T. 6 S., R. 5 W., east corner of secs. 24 and 25, Randolph-Perry county line.....	37 59 05.9	89 35 38.0
Wellsville, center of cross street 1 block from St. Joseph Catholic Church.....	37 59 04.8	89 35 21.2
T. 6 S., R. 4 W., corner of secs. 19, 20, 29, and 30; east-west road at fence south.....	37 59 04.3	89 34 30.9
T. 6 S., R. 4 W., crossroads, quarter corner between secs. 20 and 29.....	37 59 03.8	89 33 57.3
T. 6 S., R. 4 W.; stone at corner of secs. 20, 21, 28, and 29.....	37 59 03.3	89 33 24.0
T. 6 S., R. 4 W.; stone at corner of secs. 15, 16, 21, and 22.....	37 59 54.8	89 32 18.2
T. 6 S., R. 4 W.; stone at corner of secs. 13, 14, 23, and 24.....	37 59 53.1	89 30 05.5

Magnetic declination of north border of quadrangle, 5° 14' E.

Crystal City, Kimmswick, Renault, St. Louis, and Waterloo quadrangles.

MONROE, RANDOLPH, AND ST. CLAIR COUNTIES.

The following geographic positions were determined by primary traverse in 1909 by J. R. Ellis.

Control for the Renault and Crystal City quadrangles was obtained by a line starting from primary traverse station No. 21, 1907, following highways west to Mississippi River Commission station 44/1; thence southeast to near Fults station and north to position at Monroe City. Additional control for the Renault quadrangle was obtained by a line starting from a position near Fults station and following highways and the St. Louis, Iron Mountain & Southern Railway to tie point at Glasgow farm. The Waterloo quadrangle was controlled by a line starting from position at Madonnville and following highways north and connecting with Bocan triangulation station. Another line starts from primary traverse station No. 15, 1909, and follows highways east to primary traverse station No. 22, 1907. A line starting from primary traverse station No. 15, 1905, at Belleville, and following highways west to Mississippi River Commission station 50/1, thence south along the St. Louis, Iron Mountain & Southern Railway to position at Fountain station, furnishes additional control for this quadrangle. The Kimmswick quadrangle was controlled by the continuation of the line starting at Madonnville and following highways north, connecting with Bocan triangulation station, to Mississippi River Commission station No. 45/1 at Harrisonville.

The State cooperated in the work.

RENAULT QUADRANGLE.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
T. 3 S., R. 8 W.; stone at quarter corner between secs. 29 and 30	38 14 40.2	90 01 00.6
T. 3 S., Rs. 8 and 9 W., quarter corner between secs. 25 and 30	38 14 42.5	90 02 10.3
T. 3 S., R. 9 W., corner of secs. 25, 26, 35, and 36	38 14 17.2	90 03 16.7
Foe siding, 1 mile southeast of; east-west road crossing Mobile & Ohio R. R.	38 14 16.5	90 03 37.4
Brownburg (Fults), about 1.5 miles northwest of; center of crossroads, 25 feet east to northwest corner of bridge	38 10 55.1	90 13 51.0
T road west	38 11 45.7	90 14 51.2
Maeystown, 0.3 mile southwest of; 15 feet east to telephone pole, T road southeast ..	38 13 08.8	90 14 18.3
Maeystown, center of cross streets at	38 13 29.5	90 14 00.0
Road west, south end of small box culvert	38 13 54.3	90 14 42.5
Maeystown, 1.5 miles northwest of; 25 feet north to corner fence, T road west ..	38 14 33.0	90 14 51.6
Brownburg (Fults), 0.25 mile north of; T road southwest	38 10 10.2	90 12 50.4
T road west; telephone pole in front of house	38 09 29.8	90 11 41.1
T road southwest, center of; at mail box 59 on sycamore tree	38 08 41.4	90 10 07.0
Renault, grain elevator at station, end of north gable	38 07 37.7	89 09 46.3
Renault, about 0.8 mile north of station, crossroads at bridge	38 08 00.0	89 08 59.5
Prairie Du Rocher, 3.3 miles northwest of; on east side of road about 500 feet southeast of forks of road, 350 feet north of John Levertz's residence, 20 feet north and 5 feet west to center of stone arch culvert; iron post stamped "Prim. Trav. Sta. No. 14 1909 ILLINOIS"	38 07 15.7	90 07 45.7

RENAULT QUADRANGLE—Continued.**Geographic positions along St. Louis, Iron Mountain & Southern Ry.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
St. Louis-Kaskaskia road at Monroe-Randolph county line.....	38 06 41.7	90 07 23.9
Prairie Du Rocher, 300 feet southeast of station, road crossing.....	38 04 54.0	90 06 00.4
Prairie Du Rocher, 1.25 miles southeast of station, road crossing.....	38 04 11.7	90 05 02.2
Prairie Du Rocher, 2.4 miles southeast of station, private road crossing just north of trestle at milepost 44.....	38 03 34.7	90 04 11.4
Modoc station, road crossing at.....	38 02 31.3	90 02 44.5

Geographic positions along highways.

Glascow farm, 23 feet due south to well, T road northeast.....	38 02 31.4	90 00 57.4
Ivy, 0.5 mile above; 265 meters back from bank of large ditch, 150 meters below flood gate in levee, in cultivated field under a leaning 24-inch pecan, land owned by Wm. Winkleman, flat stone and iron post, Mississippi River Commission bench mark 41/1.....	38 09 04.22	90 14 45.83

Magnetic declination of north border of quadrangle, 5° 40' E.; of northwest corner, 4° 57' E.; of line diagonally across southwest corner, 5° 13' E.

NEW ATHENS QUADRANGLE.**Geographic positions along highway.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
T. 2 S., R. 8 W., near stone at quarter corner between secs. 4 and 9, 2.0 miles south of Smithton, northeast corner of T road east, 15 feet south and 5 feet west to quarter corner stone; iron post stamped "Prim. Trav. Sta. No. 22 1907".....	38 22 52.7	89 59 23.9

WATERLOO QUADRANGLE.**Geographic positions along highways near south border of quadrangle.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Poe siding, 15 feet north by 5 feet east to Dennis Noonan's mail box, T road west..	38 15 08.5	90 04 26.8
T. 3 S., R. 9 W., corner of secs. 21, 22, 27, and 28, crossroads.....	38 15 08.8	90 05 29.5
Stone culvert.....	38 15 34.5	90 06 40.5
Burkville, south part of station, at southwest corner of T road west, 20 feet north by 25 feet east to center of T road; iron post stamped "Prim. Trav. Sta. No. 12 1909 ILLINOIS".....	38 16 02.5	90 07 08.0
T. 3 S., R. 9 W., corner of secs. 17, 18, 19, and 20.....	38 16 01.1	90 07 40.6
Burkville, cross streets at; 15 feet west by 12 feet south to Mrs. Lena Minkers's mail box.....	38 16 02.2	90 09 08.6
T. 3 S., R. 10 W., corner of secs. 13, 14, 23, and 24.....	38 16 03.5	90 09 52.9
T. 3 S., R. 10 W., corner of secs. 14, 15, 22, and 23, T road north.....	38 16 03.0	90 10 59.4
T. 3 S., R. 10 W.; stone at corner of secs. 15, 16, 21, and 22, T road south at stone schoolhouse.....	38 16 03.7	90 12 06.0
Madonnville, 1.5 miles east of; center of crossroads.....	38 16 04.0	90 13 00.9
Madonnville, T road north just east of; near Catholic Church, 25 feet south by 15 feet east to center of cemetery gate.....	38 15 55.3	90 14 36.3
Madonnville, center of forks of road just west of Catholic Church.....	38 15 55.2	90 14 45.7

Geographic positions along highways near southwest corner of quadrangle.

Forks of road.....	38 16 31.0	90 14 53.8
T road east.....	38 17 47.3	90 14 23.6
Tooter's pond, 0.3 mile west of; T road south.....	38 18 40.9	90 14 07.1
T. 3 S., R. 10 W., north corner of secs. 5 and 6.....	38 18 41.5	90 14 19.7
W. Schnellbecker's mail box, 10 feet north of, crossroads.....	38 19 27.9	90 14 20.9
Deerhill Church, south corner of.....	38 19 57.3	90 14 08.4
Forks of road.....	38 20 23.3	90 14 43.6
T. 2 S., R. 10 W.; stone at quarter corner between secs. 17 and 18.....	38 21 29.1	90 14 16.9

WATERLOO QUADRANGLE—Continued.

Geographic positions along highways east and west through center of quadrangle.

Stations.	Latitude.	Longitude.
New Hanover, 2 miles southwest of; just west of steel bridge over Fountain Creek, at southeast fork of forks of road, 20 feet north by 15 feet west to center of triangle in forks; iron post stamped "Prim. Trav. Sta. No. 15 1909 ILLINOIS".....	° ' "	° ' "
Forks of road southwest.....	38 21 53.3	90 14 00.3
T. 2 S., R. 10 W.; stone at quarter corner between secs. 15 and 16.....	38 21 35.8	90 12 52.4
Milepost 623, just north of; east-west road crossing Mobile & Ohio R. R.....	38 21 41.7	90 12 02.8
Waterloo, 2 miles north of; center of crossroads.....	38 21 27.7	90 10 42.6
T. 2 S., Rs. 9 and 10 W., quarter corner between secs. 13 and 18.....	38 21 32.5	90 09 43.6
T. 2 S., R. 9 W., southwest corner of Schroeder schoolhouse yard, 20 feet south by 5 feet west to corner of secs. 7, 8, 17, and 18; iron post stamped "Prim. Trav. Sta. No. 16 1909 ILLINOIS".....	38 21 40.1	90 08 43.6
T road west.....	38 22 05.3	90 07 38.5
T. 2 S., R. 9 W.; stone at corner of secs. 9, 10, 15, and 16, Monroe-St. Clair county line (northwest and southeast).....	38 22 04.1	90 06 02.6
T. 2 S., R. 9 W., corner of secs. 10, 11, 14, and 15.....	38 22 03.3	90 05 27.2
T. 2 S., R. 9 W., quarter corner between secs. 11 and 12, T road south.....	38 22 02.8	90 04 21.0
T. 2 S., R. 9 W., quarter corner on east side of sec. 12.....	38 22 28.0	90 03 15.1
South end of bridge over creek.....	38 22 27.4	90 02 11.0
	38 22 50.4	90 00 47.6

Geographic positions along highways near north border of quadrangle.

T. 1 N., R. 8 W., corner of secs. 29, 30, 31, and 32; 20 feet east to T road south at schoolhouse.....	38 29 53.2	90 01 13.4
T. 1 N., R. 8 W., west corner of secs. 30 and 31.....	38 29 53.8	90 02 09.8
T. 1 N., R. 9 W., stone at corner of secs. 25, 26, 35, and 36.....	38 29 54.3	90 03 16.3
T. 1 N., R. 9 W., corner of secs. 26, 27, 34, and 35.....	38 29 56.0	90 04 22.8
T. 1 N., R. 9 W., corner of secs. 27, 28, 33, and 34.....	38 29 56.1	90 05 29.5
Concordia Church, crossroads at.....	38 29 56.2	90 05 46.2
T. 1 S., R. 9 W., north corner of secs. 3 and 4, 5 feet west to crossroads.....	38 29 03.6	90 05 28.6
T. 1 N., R. 9 W., south corner of secs. 33 and 34.....	38 29 03.7	90 05 30.4
Millstadt, 1.5 miles north by 1 mile west of; at T road south, 20 feet north by 20 feet east to center of T road; iron post stamped "Prim. Trav. Sta. No. 17 1909 ILLINOIS".....	38 29 02.6	90 06 32.5
T. 1 S., R. 9 W.; stone at quarter corner on north side of sec. 5, 20 feet north to T road south.....	38 29 04.5	90 07 10.8
Hickaman Church, just south of, at T road north.....	38 29 07.0	90 08 00.1
Bluffside Hotel and saloon, crossroads at, 20 feet due east to corner of hotel yard fence.....	38 29 01.0	90 09 15.2
T. 1 S., R. 10 W., north corner of secs. 1 and 2.....	38 29 06.4	90 09 46.7
T. 1 S., R. 10 W., north corner of secs. 2 and 3, center of T road south.....	38 29 07.2	90 10 54.6

Geographic positions along St. Louis, Iron Mountain & Southern Ry.

Lakeview, in southeast corner of T road east, 10 feet east and 15 feet south to northwest corner of Charles Baker's blacksmith shop; iron post stamped "Prim. Trav. Sta. No. 18 1909 ILLINOIS".....	38 29 13.3	90 13 03.8
Stone on St. Clair-Monroe County line.....	38 29 05.8	90 13 07.9
Valley Crossing, crossing of Mobile & Ohio R. R. and St. Louis, Iron Mountain & Southern Ry. (west track of latter railroad).....	38 28 25.7	90 13 56.6
Milepost 12, St. Louis, Iron Mountain & Southern Ry., 0.25 mile north of, at east-west road crossing.....	38 26 30.9	90 14 50.4
H. Wecker's place, in front of barn on east bank of Fish Lake, 120 meters below point where road along bank of Fish Lake crosses Mobile & Ohio R. R.; flat stone and iron post (Mississippi River Commission bench mark 50/1).....	38 29 16.86	90 14 35.15

Magnetic declination of north border of quadrangle, 5° 30' E.; of southwest corner, 5° 14' E.; of south border, 5° 40' E.; of center line east and west, 5° 30' E.

KIMMSWICK QUADRANGLE.**Geographic positions along highways.**

Stations.	Latitude.	Longitude.
Monroe City, on south side of road, 2.5 feet from fence and 160 feet west of T road southeast, iron post stamped "Prim. Trav. Sta. No. 13 1909 ILLINOIS".....	38 15 16.5	90 15 44.7
Ryan Creek Hollow, large forked honey locust near entrance to, at forks of road..	38 15 03.7	90 17 40.0
Valmeyer, 2.5 miles south of station, at crossing board at road crossing St. Louis, Iron Mountain & Southern Ry.; 3-inch gas pipe.....	38 15 24.0	90 17 58.7
Fountain, about 1 mile east of station, center of, T road north at G. Boien's mail box.....	38 21 57.7	90 15 15.4
Fountain, east-west road crossing at station.....	38 21 46.4	90 17 03.7
Speiss store, 0.5 mile north of, T road southeast at church.....	38 20 59.0	90 18 26.3
T road northwest at mail boxes of H. Sensel and others.....	38 20 12.8	90 19 26.3
Road northeast at G. Pfaltstear's mail box.....	38 18 48.0	90 19 47.5
Harrisonville, 0.5 mile east by 1 mile north of, T road west.....	38 17 36.2	90 19 57.5
Harrisonville, crossroads in.....	38 16 39.7	90 21 00.2
Harrisonville, 1 mile south of, T. 3 S., R. 11 W., northwest corner of sec. 20, corner stone.....	38 16 05.5	90 20 59.3

Geographic positions along St. Louis, Iron Mountain & Southern Ry.

Milepost 13, 0.25 mile south of, at road crossing (west track).....	38 25 13.2	90 15 26.8
Warnock, road crossing at station.....	38 23 44.6	90 16 08.3
Fountain, road crossing at station.....	38 21 46.38	90 17 03.74
Bocan triangulation station.....	38 22 13.48	90 15 36.69
Harrisonville, 0.5 mile north of point where main roads cross, 125 meters north of crossroads, on land of Patrick Murray, 85 meters north of his house, in pasture, on west side of road, flat stone and iron post (Mississippi River Commission bench mark 45/1).....	38 17 04.64	90 20 57.18

Magnetic declination of southeast corner of quadrangle, 5° 13' E.; east border, 5° 14' E.

CRYSTAL CITY QUADRANGLE.**Geographic positions along highways.**

Stations.	Latitude.	Longitude.
Valmeyer, 2.5 miles south of, just north of curve, road crossing St. Louis, Iron Mountain & Southern Ry.....	38 14 52.4	90 17 46.6
T road north.....	38 14 19.1	90 18 18.8
T. 3 S., R. 11 W., corner of secs. 28, 29, 32, and 33.....	38 14 22.0	90 19 49.5
Tom Treat's mail box, forks of road at.....	38 13 15.8	90 20 14.8
T. 4 S., R. 11 W., west corner of secs. 4 and 9, T road south.....	38 12 36.8	90 19 47.2
Levy road, at T road east of John Ellis's mail box.....	38 11 31.5	90 18 55.8
Levy road, south side of, iron post.....	38 10 59.6	90 18 00.7
South corner of secs. 23 and 24.....	38 09 46.5	90 16 28.4
Chalfin's bridge, center of.....	38 12 43.4	90 16 07.3
T. 3 S., Rs. 10 and 11 W.; stone at corner of secs. 19, 24, 25, and 30.....	38 14 58.4	90 15 25.2
Flag 14 on stone line No. 43.....	38 12 17.12	90 19 35.90
Head of Calico Island, 680 meters back of, 160 meters south of John Trout's house on top of levee, flat stone and iron pipe (Ivy and Harrisonville Road on top of same levee) (Mississippi River Commission bench mark 44/1).....	38 14 31.78	90 20 50.00

Magnetic declination of northeast corner of quadrangle, 5° 00' E.

ST. LOUIS QUADRANGLE.**Geographic positions along the St. Louis, Iron Mountain & Southern Ry.**

Station.	Latitude.	Longitude.
Center of bridge over creek east.....	38 30 17.8	90 00 06.9

Cornland, Kenney, Lincoln, McLean, Mason City, Minier, and Niantic quadrangles.

DEWITT, LOGAN, McLEAN, MACON, MENARD, SANGAMON, AND TAZEWEILL COUNTIES.

The following geographic positions based on Springfield astronomic datum were determined by primary traverse in 1909 by J. R. Ellis. The line starts from primary traverse station No. 2, 1905, and follows north along public highways to Rankin's mill; thence east to east side of the Lincoln quadrangle and south to Narita; thence along Illinois Central Railroad to Lakeford station and west along highways to starting point. The line follows highways north from Rankin's mill to northwest corner of Lincoln quadrangle; thence east to Atlanta and south to primary traverse station No. 2, 1909.

The State cooperated in the work.

LINCOLN QUADRANGLE.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
T. 18 N., R. 3 W., stone at corner of secs. 13, 18, 19, and 24.....	40 00 21.2	89 29 02.5
Elkhart, just northeast of station, street crossing Chicago & Alton R. R. (south track).....	40 01 15.8	89 29 00.0
T. 18 N., R. 4 W., east corner of secs. 1 and 12.....	40 02 05.6	89 29 03.0
Tps. 18 and 19 N., Rs. 3 and 4 W., corner of secs. 1, 6, 31, and 36, crossroads.....	40 02 57.9	89 29 03.6
T. 19 N., R. 4 W., east corner of secs. 25 and 36, T road west.....	40 03 50.2	89 29 03.8
T. 19 N., R. 3 W., west corner of secs. 19 and 30, 20 feet north of center of crossroads.....	40 04 41.8	89 29 04.2
T. 19 N., R. 4 W., east corner of secs. 24 and 25.....	40 04 42.4	89 29 04.2
T. 19 N., R. 3 W., west corner of secs. 18 and 19, at T road east.....	40 05 34.1	89 29 04.7
T. 19 N., R. 4 W., east corner of secs. 13 and 24.....	40 05 34.7	89 29 04.7
T. 19 N., R. 3 W., corner of secs. 17, 18, 19, and 20, crossroads.....	40 05 34.6	89 27 42.1
T. 19 N., R. 3 W., corner of secs. 7, 8, 17, and 18, crossroads.....	40 06 27.0	89 27 42.3
T. 19 N., Rs. 3 and 4 W., corner of secs. 1, 6, 7, and 12.....	40 07 19.2	89 29 05.6
Rankin's mill, corner of secs. 5, 6, 7, and 8, T. 19 N., R. 3 W., T road south.....	40 07 19.4	89 27 42.8
T. 19 N., R. 3 W., corner of secs. 4, 5, 8, and 9, center of T road south.....	40 07 18.3	89 26 34.6
T road south, 20 feet east and 15 feet north to S. D. Wilson's mail box.....	40 07 15.8	89 25 10.8
Lincoln, 0.5 mile north by 0.2 mile west of water tank, center of T road west.....	40 07 17.3	89 24 02.2
Kickapoo River, center of covered bridge over.....	40 08 01.1	89 23 27.5
Lincoln, crossing of Illinois Central R. R. and Chicago & Alton R. R. (north track). Lincoln, about 1 mile southeast of Logan County courthouse, at west side of intersection of roads, 50.5 feet west to corner of secs. 5 and 6, T. 19 N., R. 2 W., iron post stamped "Prim. Trav. Sta. No. 1 1909".....	40 08 35.4	89 22 09.6
T. 19 N., R. 2 W., north corner of secs. 4 and 5.....	40 08 08.7	89 20 55.2
T. 20 N., R. 2 W., south corner of secs. 32 and 33.....	40 08 08.3	89 19 47.8
T. 19 N., R. 2 W., north corner of secs. 3 and 4.....	40 08 08.3	89 19 46.7
T. 19 N., R. 2 W., south corner of secs. 33 and 34.....	40 08 08.0	89 18 39.0
T. 20 N., R. 2 W., north corner of secs. 2 and 3, T road south.....	40 08 08.0	89 18 38.4
T. 20 N., R. 2 W., south corner of secs. 34 and 35, T road north.....	40 08 07.6	89 17 30.8
T. 19 N., R. 2 W., north corner of secs. 1 and 2.....	40 08 07.6	89 17 29.9
T. 20 N., R. 2 W., south corner of secs. 35 and 36.....	40 08 07.3	89 16 21.9
Skelton, 0.5 mile south of, corner of secs. 1, 6, 31, and 36, Tps. 19 and 20 N., R. 2 W., crossroads.....	40 08 07.3	89 16 21.7
Mount Pulaski, T. 18 N., R. 1 W., center of crossing of Illinois Central R. R. main line and Peoria Branch.....	40 08 07.0	89 15 13.4
T. 18 N., R. 1 W., corner of secs. 14, 15, 22, and 23.....	40 00 16.7	89 17 07.5
T. 20 N., Rs. 3 and 4 W., corner of secs. 1, 6, 7, and 12, T road north.....	40 00 16.3	89 17 30.7
T. 20 N., Rs. 3 and 4 W., north corner of secs. 1 and 6, T road south.....	40 12 32.2	89 29 10.0
T. 21 N., Rs. 3 and 4 W., south corner of secs. 31 and 36, T road north.....	40 13 11.8	89 29 10.4
T. 21 N., Rs. 3 and 4 W., corner of secs. 25, 30, 31, and 36, center of crossroads.....	40 13 11.8	89 29 13.5
T. 21 N., Rs. 3 and 4 W., corner of secs. 24, 25, 19, and 30, 2.5 miles west of Hartsburg, center of crossroads.....	40 13 53.9	89 29 14.2
	40 14 57.1	89 29 15.6

Magnetic declinations of quadrangle: North border, 4° 06' E.; south border, 4° 48' E.; east border, 4° 38' E.; west border, 4° 29' E.; center line east and west, 4° 21' E.

CORNLAND QUADRANGLE.**Geographic positions along Illinois Central R. R.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Mount Pulaski station, 1.5 miles southeast of north-south road crossing.....	39 59 51.5	89 15 48.5
Lake Fork, 1.25 miles northeast of station, north-south road crossing.....	39 59 56.4	89 19 47.4
Lake Fork, 80 feet north of station, road crossing.....	39 58 16.9	89 21 00.2
Lake Fork, 0.3 mile west by 0.5 mile south of station, at northwest corner of crossroads, 25 feet east and 20 feet north to crossroads; iron post stamped "Prim. Trav. Sta. No. 4 1909 ILLINOIS".....	39 58 06.8	89 21 45.3

Geographic positions along highways near north border of quadrangle.

T. 18 N., Rs. 2 and 3 W., quarter corner between secs. 31 and 36.....	39 58 07.0	89 22 00.3
T. 18 N., R. 3 W., quarter corner between secs. 35 and 36, center of T road south.....	39 58 07.7	89 23 08.3
T. 18 N., R. 3 W., corner of secs. 26, 27, 34, and 35, T road north.....	39 58 34.4	89 24 16.4
T. 18 N., R. 3 W., corner of secs. 27, 28, 33, and 34, fence north and south.....	39 58 34.7	89 25 23.8
T. 18 N., R. 3 W., corner of secs. 28, 29, 32, and 33, center of T road north.....	39 58 35.3	89 26 31.8
T. 18 N., R. 3 W., west corner of secs. 19 and 30, center of T road east.....	39 59 29.2	89 29 02.2

Magnetic declination of north border of quadrangle, 4° 48' E.

MASON CITY QUADRANGLE.**Geographic positions along highways near east border of quadrangle.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
T. 19 N., R. 4 W., 2.0 miles west of Rankin's mill, northeast corner of T road north, 20 feet south and 25 feet west to corner of secs. 1, 2, 11, and 12; iron post stamped "Prim. Trav. Sta. No. 5 1909 ILLINOIS".....	40 07 19.4	89 30 13.9
T. 20 N., R. 4 W., stone at south corner of secs. 35 and 36.....	40 08 11.2	89 30 14.3
T. 19 N., R. 4 W., north corner of secs. 1 and 2.....	40 08 11.2	89 30 14.6
T. 20 N., R. 4 W., corner of secs. 25, 26, 35, and 36, at east-west fence.....	40 09 03.5	89 30 15.0
T. 20 N., R. 4 W., corner of secs. 23, 24, 25, and 26, center of T road south.....	40 09 55.9	89 30 15.7
T. 20 N., R. 4 W., corner of secs. 23, 24, 25, and 26, T road east.....	40 10 48.1	89 30 16.5
T. 20 N., R. 4 W., corner of secs. 11, 12, 13, and 14, T road west.....	40 11 40.4	89 30 17.3
T. 20 N., R. 4 W., corner of secs. 1, 2, 11, and 12, T road south.....	40 12 32.8	89 30 18.0

Magnetic declination of east border is 4° 29' E.

MINIER QUADRANGLE.**Geographic positions along highways near south border of quadrangle.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Hartsburg, 2.5 miles west by 1 mile north of; northwest corner of T road west, 27 feet south by 15 feet east to center of T road; iron post stamped "Prim. Trav. Sta. No. 6 1909 ILLINOIS".....	40 16 00.7	89 29 17.1
King schoolhouse, 0.25 mile north of; north-south road at private road west.....	40 16 03.3	89 28 12.9
T. 21 N., R. 3 W., corner of secs. 16, 17, 20, and 21, T road east.....	40 15 51.5	89 27 04.5
T. 21 N., R. 3 W., corner of secs. 15, 16, 21, and 22, 10 feet west to crossroads at Pleasant Valley schoolhouse.....	40 15 52.1	89 25 56.7
T. 21 N., R. 3 W., corner of secs. 14, 15, 22, and 23, T road north.....	40 15 53.1	89 24 48.6
T. 21 N., R. 3 W., corner of secs. 13, 14, 23, and 24, north-south fence.....	40 15 53.8	89 23 40.4
T. 21 N., R. 3 W., east corner of secs. 13 and 24.....	40 15 55.5	89 22 32.9
T. 21 N., R. 2 W., west corner of secs. 18 and 19.....	40 15 55.9	89 22 32.9
Gold Spring, Illinois Electric R. R. station, at southwest corner of crossroads, 30 feet north by 15 feet east to quarter corner; iron post stamped "Prim. Trav. Sta. No. 7 1909 ILLINOIS".....	40 15 55.5	89 21 59.6
T. 21 N., R. 2 W., corner of secs. 17, 18, 19, and 20.....	40 15 56.1	89 21 25.2
Sugar Creek, center of steel bridge over.....	40 15 57.4	89 20 10.5
T. 21 N., R. 2 W., stone at corner of secs. 15, 16, 21, and 22.....	40 15 57.7	89 19 08.4
T. 21 N., R. 2 W., corner of secs. 14, 15, 22, and 23.....	40 15 58.2	89 18 00.6
T. 21 N., R. 1 W., T road east.....	40 16 11.9	89 17 26.9

Magnetic declination of south border of quadrangle, 4° 06' E.

McLEAN QUADRANGLE.

Geographic positions along highways near southwest corner of quadrangle.

Stations.	Latitude.	Longitude.
T. 21 N., R. 1 W., corner of secs. 17, 18, 19, and 20, 15 feet east to road crossing Vandalia R. R., T road south	° ' "	° ' "
Atlanta, in northeast part of; southwest corner of crossroads, 15 feet north by 135 feet east to road crossing Chicago & Alton R. R., 15 feet north by 365 feet east to corner of secs. 16, 17, 20, and 21, T. 21 N., R. 1 W.; iron post stamped "Prim. Trav. Sta. No. 8 1909 ILLINOIS"	40 16 00.4	89 14 35.9
T. 21 N., R. 1 W., corner of secs. 16, 17, 20, and 21	40 16 00.9	89 13 33.3
	40 16 01.1	89 13 28.6

KENNEY QUADRANGLE.

Geographic positions along highways near west border of quadrangle.

Stations.	Latitude.	Longitude.
T. 19 N., R. 1 W., corner of secs. 5 and 6	° ' "	° ' "
Skelton, 1.8 miles east by 0.5 mile south of; northwest corner of T road north, 20 feet east by 40 feet south to corner of secs. 32 and 33, T. 20 N., R. 1 W., T road north, 90 feet east by 40 feet south to corner of secs. 4 and 5, T. 20 N., R. 1 W., T road south; iron post stamped "Prim. Trav. Sta. No. 2 1909 ILLINOIS"	40 08 07.6	89 14 23.5
T. 19 N., R. 1 W., west corner of secs. 4 and 9	40 08 08.7	89 13 17.3
T. 19 N., R. 1 W., corner of secs. 5 and 8, 15 feet north to crossroads	40 07 13.6	89 13 14.8
T. 19 N., R. 1 W., west corner of secs. 9 and 16	40 07 13.4	89 13 14.8
T. 19 N., R. 1 W., east corner of secs. 8 and 17, 15 feet north to crossroads	40 06 21.8	89 13 13.9
T. 19 N., R. 1 W., corner of secs. 16, 17, 20, and 21, crossroads	40 06 21.5	89 13 13.9
T. 19 N., R. 1 W., corner of secs. 20, 21, 28, and 29, crossroads	40 05 29.6	89 13 13.2
Kickapoo Creek, center of steel bridge over	40 04 37.4	89 13 12.4
T. 19 N., R. 1 W., stone at corner of secs. 32 and 33	40 03 30.5	89 13 12.0
T. 18 N., R. 1 W., corner of secs. 4, 5, 8, and 9, 15 feet northwest to center of crossroads	40 02 53.2	89 13 11.9
T. 18 N., R. 1 W., corner of secs. 8, 9, 16, and 17, center of crossroads	40 01 59.5	89 13 08.8
T. 18 N., R. 1 W., corner of secs. 16, 17, 20, and 21, center of crossroads	40 01 07.5	89 13 08.3
Atlanta, 0.3 mile south of; center of crossroads	40 00 15.5	89 13 07.9
T. 21 N., R. 1 W., south corner of secs. 32 and 33	40 14 42.0	89 13 42.8
T. 20 N., R. 1 W., north corner of secs. 4 and 5	40 13 23.4	89 13 24.5
Bluegrass Church, T road east	40 13 23.4	89 13 22.7
T. 20 N., R. 1 W., corner of secs. 8, 9, 16, and 17	40 12 43.0	89 13 05.3
T. 20 N., R. 1 W., corner of secs. 16, 17, 20, and 21, T road west, at Deer Creek schoolhouse	40 11 35.7	89 13 20.7
T. 20 N., R. 1 W., corner of secs. 20, 21, 28, and 29	40 10 43.9	89 13 20.1
T. 21 N., R. 1 W., corner of secs. 28, 29, 32, and 33, crossroad at schoolhouse	40 09 52.0	89 13 19.0
	40 09 00.0	89 13 18.0

Magnetic declination of west border of quadrangle, 4° 38' E.

NIANTIC QUADRANGLE.

Geographic positions along highways near northwest corner of quadrangle.

Stations.	Latitude.	Longitude.
T. 18 N., R. 1 W., corner of secs. 20, 21, 28, and 29	° ' "	° ' "
Narita station, southeast corner of road crossing, 30 feet west by 50 feet north to center of road crossing; iron post stamped "Prim. Trav. Sta. No. 3 1909 ILLINOIS"	39 59 23.4	89 13 07.7
T. 18 N., R. 1 W., corner of secs. 19, 20, 29, and 30, 15 feet northeast to road crossing	39 59 01.3	89 13 07.4
	39 59 22.7	89 14 15.8

ILLINOIS-INDIANA.**PRIMARY TRAVERSE.**

Birds, Bridgeport, Hardinville, and Vincennes quadrangles.

LAWRENCE COUNTY, ILL.; KNOX COUNTY, IND.

The following geographic positions were located by C. B. Kendall in 1910. The line begins at primary traverse station No. 11, 1907, at Fairview Church, and runs southeastward to Vincennes astronomic

pier, the position of which is reduced to United States standard datum of Coast and Geodetic Survey, thence southwestward to primary traverse No. 17, 1908.

The work in Illinois was done in cooperation with the State.

VINCENNES QUADRANGLE (ILL.).

Geographic positions along highways.

Stations.	Latitude.	Longitude.
T. 4 N., R. 12 W., corner of secs. 26, 27, 34, and 35, center of north-south road at plank bridge over section line ditch.....	38 44 47.5	87 43 19.8
T. 4 N., R. 12 W., quarter corner between secs. 34 and 35, center of north-south road, 5 feet south to center of plank bridge.....	38 44 21.3	87 43 19.8
T. 4 N., R. 12 W., south corner of secs. 34 and 35, center of east-west road at T road north, 34 feet northeast to corner of wire fence.....	38 43 54.8	87 43 19.8
T. 3 N., R. 12 W., north corner of secs. 2 and 3, center of east-west road at T road south, 25 feet southwest to sycamore tree, 33 feet northwest to corner of picket fence.....	38 43 54.8	87 43 18.4
Tps. 3 and 4 N., R. 12 W., south quarter corner between secs. 2 and 35, at fence north.....	38 43 55.2	87 42 46.9
Tps. 3 and 4 N., R. 12 W., north quarter corner between secs. 2 and 35, at fence south.....	38 43 55.2	87 42 46.1
T. 4 N., R. 12 W., south corner secs. 35 and 36, T road north, 10 feet south to center of east-west road.....	38 43 55.9	87 42 12.2
T. 4 N., R. 12 W., north corner secs. 1 and 2, T road south to house, 10 feet south to center of east-west road.....	38 43 55.9	83 42 11.1
Cleveland, Cincinnati, Chicago & St. Louis Ry. and Sugar-State Street crossing, center of track at.....	38 43 46.4	87 41 07.4
Lawrenceville, in northwest corner of Lawrence County courthouse yard, 75 feet southeast of center of intersection of State (or Sugar) Street and Market Street; iron post stamped "Prim. Trav. Sta. No. 1, 1910 ILLINOIS".....	38 43 45.7	87 40 58.3
Lawrenceville, cupola of Lawrence County courthouse.....	38 43 45.2	87 40 57.0
Tps. 3 and 4 N., R. 11 W., corner of secs. 32, 33, 4, and 5, center of east-west road at T road south, 10 feet south to center of triangle, 20 feet southeast to corner of board fence.....	38 43 58.1	87 39 03.2
Baltimore & Ohio Southwestern R. R., center of track, 4 corners at crossing of State road with north-south road.....	38 43 15.2	87 39 03.2
T. 3 N., R. 11 W., corner of secs. 4, 5, 8, and 9, center of north-south road, at wire fence to east, opposite pond of water, 12 feet east to center of triangle.....	38 43 03.3	87 39 03.1
T. 3 N., R. 11 W., quarter corner between secs. 8 and 9, center of north-south road, at T road east, 12 feet east to center of triangle.....	38 42 36.0	87 39 03.2
T. 3 N., R. 11 W., stone at corner of secs. 8, 9, 16, and 17, center of north-south road at T road west, 250 feet southwest of J. L. Barcroft's residence.....	38 42 09.7	87 39 02.3
T. 3 N., R. 11 W., quarter corner stone between secs. 16 and 17, center of north-south road at wire fence to west, 120 feet north of T road east.....	38 41 43.5	87 39 02.1
T road north, center of east-west road at, 10 feet north to center of triangle.....	38 41 46.9	87 38 04.0
T. 3 N., R. 11 W., corner of secs. 15, 16, 21, and 22, center of north-south road at T road east, 20 feet west to stump, 30 feet northeast to post.....	38 41 16.4	87 37 54.5
T. 3 N., R. 11 W., quarter corner between secs. 15 and 22, center of east-west road at second-class T road north, picket fence to south.....	38 41 17.0	87 37 20.2
T. 3 N., R. 11 W., corner of secs. 14, 15, 22, and 23, center of east-west road at T road south, 10 feet southeast to center of triangle, 20 feet north to oak tree.....	38 41 17.7	87 36 46.1
T. 3 N., R. 11 W., corner of secs. 13, 14, 23, and 24 (?), center of east-west road at second-class T road north.....	38 41 17.3	87 35 38.5
T. 3 N., R. 11 W., 1,390 feet east of corner of secs. 13, 14, 23, and 24, junction of east-west section line road and road south dividing the NW $\frac{1}{4}$ sec. 24, in center of road south and 20 feet south of center of east-west road; iron post stamped "Prim. Trav. Sta. No. 2, 1910 ILLINOIS".....	38 41 17.0	87 35 20.9
T. 3 N., R. 11 W., fractional corner of secs. 23, 24, 25, and 26, corner stone near oak tree on fence line between 2 cultivated fields.....	38 40 24.2	87 35 38.0
Billet, 1 mile east of; center of triangle at forks of road, 55 feet west to top of levee.....	38 39 38.5	87 36 08.4
Billet, 0.8 mile east of; center of triangle at forks of road, 300 feet west of bridge over Embarrass River, public roads southeast-northwest.....	38 39 50.8	87 38 03.3
T. 3 N., R. 11 W., stone at corner of secs. 28, 29, 32, and 33, in northwest corner of Billet cemetery, halfway between 2 witness hickory trees, 110 feet east of Cleveland, Cincinnati, Chicago & St. Louis Ry. crossing.....	38 39 29.8	87 39 01.9
Billet station, 0.2 mile south of, Cleveland, Cincinnati, Chicago & St. Louis Ry. crossing.....	38 39 29.9	87 39 03.3
Billet, 1.2 miles south of, T road east, center of north-south road at, 10 feet east to center of triangle.....	38 38 50.0	87 39 18.8
Cleveland, Cincinnati, Chicago & St. Louis Ry. crossing, 4 corners at; private road east-west, public road north-south, 12 feet north to corner fence post, 20 feet east-west to telephone pole.....	38 38 04.9	87 38 56.0
Cleveland, Cincinnati, Chicago & St. Louis Ry. crossing.....	38 37 20.9	87 38 54.9
Three corners, T road west, center of north-south road at, 5 feet west to center of triangle.....	38 36 49.5	87 38 56.2
Cleveland, Cincinnati, Chicago & St. Louis Ry. crossing, center of main track at; 300 feet south of water tank.....	38 35 55.7	87 38 50.2
T. 2 N., R. 11 W., sec. 20, near center of intersection of Cleveland, Cincinnati, Chicago & St. Louis Ry. with east-west road leading west from St. Francisville, at southwest corner, inside wire fence corner, 90 feet southwest of road crossing, 2,000 feet south of St. Francisville railroad station, and 25 feet south of east-west road; iron post.....	38 35 25.0	87 39 21.4

VINCENNES QUADRANGLE (ILL.)—Continued.

Geographic positions along highways—Continued.

Stations.	Latitude.	Longitude.
T. 2 N., R. 11 W., quarter corner between secs. 19 and 20, center of road at north-south fence, 20 feet west of T road north.....	° ' "	° ' "
T. 2 N., Rs. 11 and 12 W., quarter corner between secs. 29 and 24 (?), 20 feet west of second-class T road south, at fence line south.....	38 35 25.5	87 40 38.0
T. 2 N., R. 12 W., center of sec. 24, at center of crossroads, 100 feet northwest of the Sand Barrens Church.....	38 35 25.7	87 41 06.2
T. 2 N., R. 12 W., quarter corner between secs. 23 and 24, stone at north end of 3-plank bridge, 10 feet east to T road south, 15 feet north of end of wire fence....	38 35 25.2	87 41 39.1
T. 2 N., R. 12 W., center of sec. 23, 4 corners, at center of intersection of roads....	38 35 24.7	87 42 12.2
T. 2 N., R. 12 W., quarter corner between secs. 22 and 23, center of east-west road at T road north, 10 feet south of mail box 48.....	38 35 24.9	87 42 45.7
T. 2 N., R. 12 W., center of sec. 22, at center of east-west road at T road north, 300 feet west of Liberty Church, 12 feet north to plank bridge.....	38 35 25.0	87 43 19.4
T. 2 N., R. 12 W., quarter corner between secs. 21 and 22, center of intersection at 4 corners, 25 feet northwest to fence post painted "427.3".....	38 35 25.2	87 43 53.2
Drainage canal, center of iron bridge over.....	38 35 25.4	87 44 26.4
State road, center of, at T road southwest, 15 feet to center of triangle.....	38 41 17.4	87 33 54.1
Vincennes, Ind., 100 feet south of south end of Wabash River highway bridge at forks of roads northeast-northwest and southeast-southwest, 30 feet southwest to door of livery stable, 20 feet southwest to telegraph pole.....	38 41 25.8	87 32 44.0
Vincennes, Ind., in courthouse yard, 182.3 feet east and 48.5 feet north of cupola of clock tower of courthouse, marked by 3 stones (limestone) set in concrete; station mark, cross cut on center stone.....	38 40 59.8	87 32 07.3
	38 40 35.70	87 31 35.05

HARDINVILLE QUADRANGLE (ILL.).

Geographic positions along highways.

Stations.	Latitude.	Longitude.
T. 4 N., R. 12 W., quarter corner between secs. 28 and 29, center of crossroads at, 20 feet northeast to oak, 30 feet south of plank bridge.....	° ' "	° ' "
T. 4 N., R. 12 W., center of sec. 28, center of crossroads, 20 feet southeast to telegraph pole painted "455.7," 25 feet southwest to corner of wire fence.....	38 45 12.5	87 45 35.5
	38 45 13.0	87 45 01.3

BIRDS QUADRANGLE (ILL.).

Geographic positions along highways.

Stations.	Latitude.	Longitude.
T. 4 N., R. 12 W.; stone at quarter corner between secs. 27 and 28, at edge of ditch on north edge of east-west road, at T road south, 20 feet south of Isaac Deckard's mail box in triangle.....	° ' "	° ' "
T. 4 N., R. 12 W., center of sec. 27, center of east-west road at second-class T road north, near new house.....	38 45 13.5	87 44 27.2
T. 4 N., R. 12 W., quarter corner between secs. 26 and 27, center of north-south road at T road west and at south edge of second-class T road east.....	38 45 13.8	87 43 53.8
	38 45 14.0	87 43 19.6

BRIDGEPORT QUADRANGLE (ILL.).

Geographic positions along highways.

Stations.	Latitude.	Longitude.
T. 2 N., R. 12 W., center of east-west road at center of sec. 21, 10 feet east to bridge.	° ' "	° ' "
T. 2 N., R. 12 W., quarter corner stone between secs. 20 and 21, center of crossroads, 250 feet southwest to Harmony schoolhouse.....	38 35 25.4	87 45 00.3
Harmony schoolhouse, in southwest corner of yard, 35 feet south and 30 feet west to north corner between secs. 20 and 21, T. 2 N., R. 12 W., crossroads; iron post stamped "Prim. Trav. Sta. No. 17, 1908 ILLINOIS 445".....	38 35 25.7	87 45 34.4
	38 35 26.0	87 45 34.1

Magnetic declination of line, 3° 33' E.

IOWA.

PRIMARY TRAVERSE.

Des Moines, Madrid, Perry, and Slater quadrangles.

BOONE, DALLAS, MADISON, POLK, STORY, AND WARREN COUNTIES.

The following geographic positions on Des Moines astronomic datum were determined by primary traverse run in 1910 by C. B. Kendall. The line starts from primary traverse station No. 19, established by J. R. Ellis in 1904, 1.5 miles south of Cambridge, and runs west to Sheldahl; thence west and south to Polk, and to Corydon Bridge over Des Moines River. Another line runs west through Madrid across the Madrid quadrangle, and a line south from northeast corner of quadrangle to a tie with east-west line. Additional control on the Slater and Madrid quadrangles was run in 1904 by J. R. Ellis.

The State cooperated in the work.

SLATER QUADRANGLE.

Geographic positions east along highways through center of quadrangle.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Cambridge, 1.5 miles south of; in northeast corner of field, 53 feet south-west of east-west road crossing the railroad between Des Moines and Iowa Falls; iron post stamped "Prim. Trav. Sta. No. 19, 1904".....	41 52 38.7	93 31 13.2	.....
Polk-Story county line crossing railroad between Des Moines and Iowa Falls.....	41 51 46.9	93 31 05.2	5,278
Tps. 81 and 82 N., R. 23 W., quarter corner between secs. 4 and 33, center of crossroads.....	41 51 46.7	93 31 47.3	3,184
Tps. 81 and 82 N., R. 23 W., stone at corner of secs. 4, 5, 32, and 33, center of county line road at fences north-south.....	41 51 46.7	93 32 22.4	2,660
Tps. 81 and 82 N., R. 23 W., stone at corner of secs. 5, 6, 31, and 32, intersection of crossroads.....	41 51 46.6	93 33 32.4	5,300
Tps. 81 and 82 N., Rs. 23 and 24 W., corner of secs. 1, 6, 31, and 36, center of crossroads.....	41 51 46.7	93 34 44.7	5,470
Tps. 81 and 82 N., R. 24 W., corner of secs. 1, 2, 35, and 36, center of crossroads.....	41 51 46.8	93 35 54.8	5,300
Tps. 81 and 82 N., R. 24 W., quarter corner between secs. 2 and 35, center of track at east-west county line road crossing the Des Moines Electric R. R.....	41 51 46.7	93 36 29.9	2,660
Tps. 81 and 82 N., R. 24 W., corner of secs. 2, 3, 34, and 35, center of east-west county line road at T road south.....	41 51 46.8	93 37 05.2	2,670
T. 81 N., R. 24 W., in northwest corner of sec. 3, 2.8 miles east of Sheldahl, about 20 feet south of county line, 30 feet southeast to corner of secs. 3, 4, 33, and 34, in southeast corner of T road south in northwest corner of field; iron post stamped "Prim. Trav. Sta. No. 1, 1910, IOWA".....	41 51 46.8	93 38 14.9	5,271
Tps. 81 and 82 N., R. 24 W., corner of secs. 4, 5, 32, and 33, center of crossroads.....	41 51 47.2	93 39 25.4	5,340
Tps. 81 and 82 N., R. 24 W., corner of secs. 5, 6, 31, and 32, center of crossroads.....	41 51 47.3	93 40 35.6	5,310
Sheldahl, 100 feet south of station, center of main track at east-west county line crossing Chicago & Northwestern Ry.....	41 51 47.3	93 41 36.5	4,610
Tps. 81 and 82 N., Rs. 24 and 25 W., corner of secs. 1, 6, 31, and 36, center of crossroads at corner of Boone and Story counties on Polk County.....	41 51 47.3	93 41 46.4	750
Tps. 81 and 82 N., R. 25 W., stone at corner of secs. 1, 2, 35, and 36, center of crossroads 1 mile west of Sheldahl.....	41 51 47.4	93 42 56.6	5,310
Tps. 81 and 82 N., R. 25 W., corner of secs. 2, 3, 34, and 35, center of east-west county line road at fences north and south, 200 feet east to bridge.....	41 51 47.5	93 44 06.9	5,320
Tps. 81 and 82 N., R. 25 W., stone at quarter corner between secs. 3 and 34, center of east-west county line road at T road north.....	41 51 47.6	93 44 42.2	2,670

SLATER QUADRANGLE—Continued.

Geographic positions in southwest part of quadrangle.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	<i>Feet.</i>
Triangle at forks of roads north and northwest, center of, 25 feet north to mail box.....	41 48 00.4	93 44 36.0	.....
T. 81 N., R. 25 W., corner of secs. 26, 27, 34, and 35, at T fence east.....	41 47 31.0	93 44 04.1	3,826
T road west, center of State road at, 35 feet northeast to mail box, 40 feet northwest to telephone pole, 40 feet southwest to corner of yard fence.....	41 47 22.0	93 43 50.7	1,364
Polk, 1 mile northwest of, 35 feet west to stone in triangle, 15 feet southeast to telephone pole, center of State road at road forks west and northwest.....	41 46 48.4	93 43 38.9	3,520
Polk, 45 feet southwest to corner of Commercial Hotel, 55 feet southeast to post at northwest corner of public square, cross streets.....	41 46 17.8	93 42 42.5	5,628
T. 80 N., R. 25 W., corner of secs. 1, 2, 11, and 12, at south end of gate at 90° angle in main road to east, 1 mile south of Polk.....	41 45 38.1	93 42 54.1	4,124
T road south, center of east-west road at.....	41 45 38.2	93 42 45.4	655

Geographic positions near west border of quadrangle.

T. 82 N., R. 25 W., quarter corner between secs. 22 and 27, center of crossroads.....	41 53 32.5	93 44 41.9	.....
T. 82 N., R. 25 W., quarter corner between secs. 27 and 34, center of crossroads.....	41 52 40.0	93 44 41.7	5,310

Magnetic declination of east-west line through center of quadrangle, N. 8° 18' E.; of west border of quadrangle, N. 7° 38' E.

MADRID QUADRANGLE.

Geographic positions along highways south along southeast side of quadrangle.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	<i>Feet.</i>
Sheldahl, 3 miles west of, on north edge of east-west county line road, opposite and in line with center of public T road south, 25 feet north of center of junction; iron post stamped "Prim. Trav. Sta. No. 2, 1910 IOWA".....	41 51 47.9	93 45 17.4	.....
T. 81 N., R. 25 W.; stone at corner of secs. 3, 4, 9, and 10, 1 mile south of county line, center of crossroads.....	41 50 57.8	93 45 16.4	5,080
Public T road east, 200 feet south of T road west, 3 corners.....	41 50 05.5	93 45 15.4	5,288
T. 81 N., R. 25 W., quarter corner between secs. 15 and 16, public T road west, center of north-south road at.....	41 49 39.5	93 45 15.3	2,637
T. 81 N., R. 25 W., corner of secs. 15, 16, 21, and 22, 200 feet north to bridge, center of north-south road at fences east-west.....	41 49 13.3	93 45 15.0	2,650
T. 81 N., R. 25 W., quarter corner between secs. 21 and 22, center of north-south road at T road east.....	41 48 46.9	93 45 14.8	2,680
T. 81 N., R. 25 W., corner of secs. 21, 22, 27, and 28, junction of State road and road north, public T road west.....	41 48 21.6	93 45 14.5	2,560

Geographic positions along highways west through center of quadrangle.

Tps. 81 and 82 N., R. 25 W.; stone at corner of secs. 3, 4, 33, and 34, center of east-west county line road at T road south.....	41 51 47.9	93 46 27.7	.....
Tps. 81 and 82 N., R. 25 W., north corner of secs. 5 and 6, center of east-west county line road at T road south.....	41 51 47.8	93 47 38.2	5,330
Tps. 81 and 82 N., R. 25 W., south corner between secs. 31 and 32, center of east-west county line road at T road south.....	41 51 47.8	93 47 38.6	30
Tps. 81 and 82 N., Rs. 25 and 26 W., corner of secs. 1, 6, 31, and 36, at cemetery, 1 mile southeast of Madrid, corner of Dallas, Polk, and Boone counties, center of north-south range line road at T county line road east.....	41 51 47.9	93 48 50.2	5,420
Madrid, cross streets at Madrid State Bank, 55 feet northwest to entrance to bank, 35 feet northeast to fire plug.....	41 52 32.8	93 49 07.0	4,720
T. 82 N., R. 26 W., corner of secs. 25, 26, 35, and 36, 220 feet east of bridge, center of east-west road at north and south fences.....	41 52 40.0	93 49 59.6	4,043

MADRID QUADRANGLE—Continued.

Geographic positions along highways west through center of quadrangle—Continued.

Stations.	Latitude.	Longitude.	Distance between stations.
T. 82 N., R. 26 W., quarter corner between secs. 26 and 35, center of east-west road at T road north.....	41 52 40.0	93 50 34.6	<i>Feet.</i> 2,650
Des Moines River, center of iron bridge over, 2.8 miles west of Madrid.	41 52 28.9	93 51 46.0	5,516
T. 82 N., R. 25 W.; stone at corner of secs. 27, 28, 33, and 34, on south-east edge of road south, 28 feet east to a T fence west, 30 feet north-east of center of bridge, 30 feet south of center of triangle in forks.....	41 52 40.0	93 52 18.8	2,728
Three corners, public T road south, 10 feet west to telephone pole, 12 feet north to dead elm.....	41 52 13.8	93 52 20.5	2,651
T. 82 N., R. 26 W.; stone at quarter corner between secs. 32 and 33, center of road at 90° bend to south.....	41 52 13.9	93 53 26.8	5,018
T road west, stone in center of north-south road at.....	41 52 00.6	93 53 27.3	1,350
Tps. 81 and 82 N., R. 26 W., corner of secs. 4, 5, 32, and 33; stone in center of north-south road on Boone-Dallas county line.....	41 51 47.4	93 53 27.3	1,340
T. 82 N., R. 26 W., center of sec. 31, 1 mile north of Woodward, center of crossroads.....	41 52 13.4	93 55 12.4	8,380
T. 82 N., Rs. 26 and 27 W.; stone at quarter corner between secs. 31 and 36, center of crossroads.....	41 52 13.3	93 55 45.8	2,530
T. 82 N., R. 27 W., quarter corner between secs. 35 and 36, center of crossroads.....	41 52 13.0	93 56 55.6	5,280
T. 82 N., R. 27 W., quarter corner between secs. 34 and 35, center of crossroads.....	41 52 13.0	93 58 05.4	5,280
T. 82 N., R. 27 W.; stone at quarter corner between secs. 33 and 34, at T fence north.....	41 52 12.8	93 59 15.4	5,300
Center of crossroads.....	41 52 12.8	93 59 32.9	1,320

Geographic positions along highways from northeast corner, primary traverse station No. 16, 1904, south along east border of quadrangle.

Primary traverse station No. 16, 1904.....			
T. 83 N., R. 25 W., stone at corner of secs. 21, 22, 27, and 28, center of crossroads.....	41 58 46.5	93 45 17.6	5,329
T. 83 N., R. 25 W., corner of secs. 27, 28, 33, and 34, 200 feet northeast of schoolhouse, center of crossroads.....	41 57 53.9	93 45 16.8	5,320
Tps. 82 and 83 N., R. 25 W., corner of secs. 3, 4, 33, and 34, center of crossroads.....	41 57 01.3	93 45 16.6	5,330
T. 82 N., R. 25 W., corner of secs. 3, 4, 9, and 10, 100 feet north of schoolhouse, center of east-west road at T road north.....	41 56 09.1	93 45 17.4	5,288
T. 82 N., R. 25 W., quarter corner between secs. 4 and 9, 150 feet southwest of Garden Prairie Church, center of east-west road at T road south.....	41 56 09.7	93 45 52.6	2,670
T. 82 N., R. 25 W., quarter corner between secs. 9 and 16, center of crossroads.....	41 55 17.4	93 45 52.6	5,290
T. 82 N., R. 25 W., quarter corner between secs. 16 and 21, center of crossroads.....	41 54 25.1	93 45 52.4	5,300
T. 82 N., R. 25 W., quarter corner between secs. 21 and 28, center of east-west road at T road north.....	41 53 32.6	93 45 52.2	5,310
T. 82 N., R. 25 W., corner of secs. 21, 22, 27, and 28, at west edge of grove on north, center of east-west road at fences north and south.....	41 53 32.5	93 45 17.1	2,650
Primary traverse station No. 2, 1910, Iowa.....	41 51 47.9	93 45 17.4	

Magnetic declination of east-west line through center of quadrangle, N. 7° 39' E.; of east border of quadrangle, N. 7° 38' E.

PERRY QUADRANGLE.

Geographic positions along highways west through center of quadrangle.

Stations.	Latitude.	Longitude.	Distance between stations.
T. 82 N., R. 27 W.; stone at quarter corner between secs. 32 and 33, center of crossroads.....	41 52 13.0	94 00 25.5	<i>Feet.</i>
Primary traverse station No. 13, 1904, Iowa.....	41 51 46.5	94 00 25.2	2,681

DES MOINES QUADRANGLE.

Geographic positions along roads south along western side of quadrangle from northeast corner.

Stations.	Latitude.	Longitude.	Distance between stations.
Corydon Bridge, 600 feet east of, 45 feet south to telephone pole, 4 corners (public crossroads).....	° ' " 41 44 47.2	° ' " 93 42 21.2	Feet.
Center pier of bridge over Des Moines River at Corydon.....	41 44 44.2	93 42 28.2	612

Keokuk quadrangle.

LEE COUNTY.

These geographic positions were determined by primary traverse in 1910 by C. B. Kendall, in connection with work in Illinois.

For additional positions in this area see under Illinois, Keokuk quadrangle (p. 79).

Geographic positions near Keokuk in Iowa.

Stations.	Latitude.	Longitude.	Distance between stations.
Hamilton, center of draw span of Keokuk bridge.....	° ' " 40 23 30.8	° ' " 91 22 34.4	Feet.
Keokuk, northeast corner of Second and High streets, cupola of Mrs. H. W. Samples's residence (Mississippi River Commission triangulation station).....	40 23 40.93	91 22 41.58	1,169
Keokuk, at southwest corner of intersection of Fourth and High streets, spire of First Unitarian Church (Mississippi River Commission triangulation station).....	40 23 49.32	91 22 46.22	926
Keokuk, at southwest corner of intersection of Seventh and Blondeau streets, spire of Presbyterian Church (Mississippi River Commission triangulation station).....	40 23 53.11	91 23 02.29	1,303

Magnetic declination of east border of northeast quarter of quadrangle, 6° 13' E.; of south border of quadrangle, 6° 13' E.

KENTUCKY.

TRIANGULATION STATIONS.

Crockettsville and Troublesome quadrangles.

BREATHITT, KNOTT, LESLIE, AND PERRY COUNTIES.

The following geodetic positions were determined by G. T. Hawkins in 1910, and are based on Brashier and Lost triangulation stations, on United States Standard datum. The values given are preliminary, the observations taken being uncertain owing to unfavorable weather conditions.

The State cooperated in the work.

CARR, PERRY COUNTY, KY.

On divide between Carrs Fork and Lous Creek, headwater of Asap Creek, Stacy Branch, and Dickon's Branch. It is nearly the highest point in neighborhood and has timber cleared so as to give a good view in all directions except southeast. Route

from Hazard is up Kentucky River and Carrs Fork about 13 miles to James Stacy's; thence by horseback up Stacy Branch to divide; thence on foot half a mile westward to signal.

Signal: Chestnut oak 8 inches in diameter with flag in top.

Station mark: Sandstone post 8 by 9 by 30 inches set 20 inches in ground, on sandstone, into which was driven a long flat file. A stone is set over the file, and a tablet is cemented in the top of the post.

Reference mark: Signal tree, true azimuth $235^{\circ} 09'$, distance $12\frac{1}{2}$ feet.

[Latitude $37^{\circ} 14' 27.58''$. Longitude $83^{\circ} 05' 34.92''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Lost.....	136 19 13	316 15 54	4.06922	7.287
Cinder.....	143 51 18	323 45 38	4.36861	14.520
Potatoe.....	173 28 13	353 27 16	4.30978	12.680
Pine.....	182 50 09	2 50 40	4.40554	15.808

CINDER, BREATHITT-PERRY COUNTIES, KY.

Top of hill on line between Breathitt and Perry counties, about 2 miles nearly east from Ned post office, 20 miles southeast of Jackson, on land owned by John Watts, Jim Meace, and George Noble. There is a good view in all directions, for nearly all the timber is cleared from the top. Two dead chestnuts on north end.

Signal: Chestnut oak 20 inches in diameter, on southwest end of knob, 13.5 feet and $4^{\circ} 16'$ azimuth from station mark.

Station mark: Aluminum tablet set in solid rock on highest part of knob.

[Latitude $37^{\circ} 24' 39.30''$. Longitude $83^{\circ} 14' 55.37''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Langdon.....	47 37 48	227 32 42	4.22527	10.438
Tenmile.....	58 25 04	238 23 02	3.76405	3.609
Nailor.....	111 28 23	291 22 13	4.20637	9.994
Pine.....	246 23 37	66 29 49	4.21502	10.195
Carr.....	323 45 38	143 51 18	4.36861	14.520
Lost.....	331 13 24	151 15 44	4.07338	7.357

LANGDON, PERRY COUNTY, KY. (Not occupied.)

Partly cleared knob about 3 miles southwest from Chavies post office, which is on North Fork of Kentucky River about 25 miles up river from Jackson, at headwaters of Neversole and Langdon creeks. An 18-inch chestnut oak tree near highest part was left for signal and temporary mark. The land is owned by Mr. Langdon, who lives about three-fourths mile south of station on Middle Fork of Kentucky River. From his house horses may be ridden to knob.

[Latitude $37^{\circ} 18' 31.78''$. Longitude $83^{\circ} 23' 19.34''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Nailor.....	171 27 52	351 26 48	4.24047	10.810
Cinder.....	227 32 40	47 37 46	4.22527	10.438
Lost.....	266 56 07	87 03 33	4.25854	11.269

NAILOR, BREATHITT COUNTY, KY.

On a well-known knob locally known as Nailor's Rock. Station is on the highest of three knobs which are within a half mile of each other, a large mass of rock which rises above surrounding trees and overlooks a large tract of country. A space about 80 feet square on top is nearly level and had a small growth, which was cleared, except for a small pine on north end to be seen from Cinder and two small chestnuts near center to be seen from other points. Station is 1.5 miles southwest of Gamboill's still house and about 9 miles up Kentucky River from Jackson.

Permanent mark: Aluminum tablet set in solid rock on highest part.

Reference marks: Three drill holes in rock for tripod legs to rest in.

Signals: One pine and two small chestnut trees.

[Latitude 37° 27' 49.84". Longitude 83° 25' 04.39".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Cinder.....	291 22 13	111 28 23	4.20637	9.994
Tenmile.....	311 36 26	131 40 34	4.12777	8.339
Langdon.....	351 26 48	171 27 52	4.24047	10.810

PINE, KNOTT COUNTY, KY. (Not occupied.)

On divide between Quicksand and Buckhorn creeks, about 20 miles northeast of Hazard, 30 miles southeast of Jackson, and 10 miles northwest of Hindman. It is a high sharp knob with a pine tree which appears to be on the highest point. No chopping was done on this knob, the pine tree being used for a signal and mark.

[Latitude 37° 28' 11.84". Longitude 83° 04' 43.60".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Carr.....	2 50 40	182 50 09	4.40554	15.808
Lost.....	28 56 59	208 53 08	4.28656	12.020
Potatoe.....	34 56 40	214 55 03	3.79571	3.882
Cinder.....	66 29 49	246 23 37	4.21502	10.195

POTATOE, KNOTT COUNTY, KY.

On sharp knob which belongs to Mr. Pardee, about 18 miles nearly north of Hazard. Mat Combs lives about 0.5 mile south of station. The knob is about as high as any in the neighborhood, and the top is cleared of timber, except two small red oaks left for signal; two large chestnut oaks stand on east side 45 feet from center, azimuth 64° 15'.

Station mark: Sandstone post 20 by 15 by 30 inches set 24 inches in ground; aluminum tablet cemented in top.

Signal: Two small red oaks; 22° 29' azimuth, distance 8 feet from station mark.

[Latitude 37° 25' 25.23". Longitude 83° 07' 09.30".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Lost.....	26 05 30	206 03 08	4.11835	8.160
Tenmile.....	74 49 14	254 42 24	4.23079	10.572
Pine.....	214 55 03	34 56 40	3.79571	3.882
Carr.....	353 27 16	173 28 13	4.30978	12.680

TENMILE, BREATHITT-PERRY COUNTIES, KY.

On sharp knob at headwaters of Salt Fork and Caney Creek, on land owned by Jim Guin, Henry Niece, and Jo Watts, about 3 miles from Ned post office, and 23 miles from Jackson. It can be reached by road to mouth of Tenmile Creek on Lost Creek,

then up former creek 10 miles to Jim Guin's house, thence on foot to top, which is cleared of timber except two trees. The south one, a chestnut oak 20 inches in diameter, was used for signal.

Signal tree: Chestnut oak 20 inches in diameter. Azimuth from station mark to signal tree is $112^{\circ} 03'$, distance 17.3 feet.

Station mark: Aluminum tablet set in solid rock.

Reference marks: Three drill holes in rock for tripod legs to rest in.

[Latitude $37^{\circ} 23' 00.58''$. Longitude $83^{\circ} 18' 16.50''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Nailor.....	131 40 34	311 36 26	4.12777	8.339
Cinder.....	238 23 02	58 25 04	3.76405	3.609
Potatoe.....	254 42 24	74 49 14	4.23079	10.572
Lost.....	304 31 57	124 36.19	4.11163	8.035

Cranston, Ewing, Flemingsburg, and Stepstone quadrangles.

BATH, CARTER, FLEMING, LEWIS, MASON, NICHOLAS, AND ROWAN COUNTIES.

During the season of 1909 triangulation of the preceding year was extended southwest by E. L. McNair and R. C. Seitz from stations Sugarloaf, Hughes, and Sand, so as to control three additional 15' quadrangles.

The State cooperated in the work.

COYLE, BATH COUNTY, KY.

About 4 miles west of Owingsville and 1 mile south of Reynoldsville, on land belonging to J. M. Coyle (Match Coyle). Station is 88 feet west of his house in pasture and orchard. Some wild plum and apple trees surround signal, but there is a fine view toward east, south, and west.

Signal: Quadripod of sawed lumber.

Station mark: An aluminum tablet set in cut stone post 5 by 9 by 27 inches, set 25 inches in ground.

Reference mark: Southwest corner of Coyle's house is 88 feet distant, magnetic bearing N. $82^{\circ} 30'$ E.

[Latitude $38^{\circ} 10' 26.95''$. Longitude $83^{\circ} 49' 53.86''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Dooley.....	135 40 58	315 35 13	4.28815	12.064
Doggett.....	199 24 08	19 24 58	3.76974	3.657

DAVENPORT, MASON COUNTY, KY.

Station is situated in an orchard on the property of Marshall Davenport, about 100 feet south of the Maysville pike. It is about 1.5 miles west of Rectorville and 6.5 miles east of Maysville.

Signal: Quadripod of usual form made out of sawed lumber.

Station mark: Aluminum tablet cemented in 30 by 9 by 5 inch stone post, set 24 inches in ground.

102 TRIANGULATION AND PRIMARY TRAVERSE FOR 1909 AND 1910.

Reference marks: (1) Quarter brick set on top of crushed limestone about 1 foot below surface; distance 7.84 feet, true azimuth $133^{\circ} 51'$. (2) Half brick set on top of crushed limestone about 1 foot below surface; distance 6.50 feet, true azimuth $234^{\circ} 41'$.

[Latitude $38^{\circ} 35' 36.79''$. Longitude $83^{\circ} 40' 13.40''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Cherry Ridge.....	245 24 30	65 31 33	4.25476	11.171
Elk Lick.....	301 36 12	121 44 05	4.33406	13.409
Sugarloaf.....	338 17 10	158 19 24	4.15010	8.779

DOGGETT, BATH COUNTY, KY.

About 4 miles south of Sherburne and 1.5 miles west of pike road from Sherburne to Owingsville, on pasture land owned by Mrs. Eliza Doggett (aged 90). Brush and small timber has been entirely cleared around station.

Signal: Quadripod of sawed lumber.

Station mark: Aluminum tablet set in top of stone post 5 by 9 by 27 inches set 26 inches in ground.

[Latitude $38^{\circ} 13' 26.96''$. Longitude $83^{\circ} 48' 33.47''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Coyle.....	19 24 58	199 24 08	3.76974	3.657
Dooley.....	118 16 11.37	298 09 35.90	4.2459920	10.948
Mers.....	164 28 21.83	344 25 42.31	4.3675171	14.483
Gregory.....	196 36 42.47	16 38 04.50	4.0512375	6.992
Sand.....	254 01 52.53	74 12 50.39	4.4290562	16.688

DOOLEY, NICHOLAS COUNTY, KY.

About 2.5 miles east of Carlisle, near Miranda, on land belonging to James Dooley, who lives in Carlisle, in field of cultivated ground, about 0.2 mile south of pike road.

Station mark: Aluminum tablet in top of cut stone 6 by 6 by 18 inches set 12 inches below surface of ground. Above the stone is about 2 inches of broken glass.

Reference marks: Iron bench-mark post 4 feet long set 42 inches in ground; distance 264 feet, true azimuth $184^{\circ} 20'$, magnetic azimuth N. 12° E. A trench 10 feet long and 15 inches deep was dug and filled with empty beer bottles laid side by side, in rows of three, between 40 and 50 altogether, and then covered with earth. This trench is at right angles to and bisected by line from station mark to iron post and is distant 8 feet from station mark.

[Latitude $38^{\circ} 17' 57.13''$. Longitude $83^{\circ} 59' 12.09''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Maxey.....	208 01 24.21	28 03 49.53	4.0827086	7.517
Mers.....	213 12 43.40	33 16 40.10	4.2276212	10.495
Kirby.....	233 19 43.47	53 26 57.47	4.3254140	13.145
Gregory.....	262 28 37.08	82 36 35.07	4.2762930	11.739
Doggett.....	298 09 35.90	118 16 11.37	4.2459920	10.948
Coyle.....	315 35 13	135 40 58	4.28815	12.064

ELK LICK, LEWIS COUNTY, KY.

About 4 miles north of Petersville and 2 miles south of Glen Springs, on a cleared, round knob at the head of Elk Lick and Black Lick, both of which are branches of Kinniconick Creek. George Washburn lives at base of hill at the north, and his

place can be reached by road up Elk Lick. There is an excellent view in every direction.

Signal: A 14-inch chestnut oak tree; distance 8.3 feet, true azimuth $58^{\circ} 11'$ from station mark.

Station mark: An iron post set 30 inches in ground and resting on bedrock.

[Latitude $38^{\circ} 29' 29.335''$. Longitude $83^{\circ} 27' 35.002''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Stacey.....	12 55 52.29	192 54 58.26	3.9740697	5.854
Sugarloaf.....	82 15 53.32	262 10 15.56	4.1231271	8.250
Davenport.....	121 44 05	301 36 12	4.33406	13.409
Cherry Ridge.....	173 50 24.98	353 49 32.71	4.2761801	11.736
Hamilton.....	244 36 40.01	64 41 44.47	4.1174591	8.143
Hilger.....	287 39 21.94	107 48 04.55	4.3301371	13.289
Gulley.....	334 55 46.95	154 57 29.24	3.9739314	5.852

ENIX, LEWIS COUNTY, KY.

Knot near headwaters of Laurel Creek, at head of Schoolhouse Branch and left fork of Bedford Branch. Schoolhouse Branch is about 2 miles above Harris post office, and a rough road follows it to top of hill. Knob was timbered on west side, but has been partially cleared. There is a good view east, south, and southwest. Land belongs to W. A. Enix.

Signal: Quadripod of poles 18 feet long, off center 0.45 foot.

Station mark: Aluminum tablet set in surface of bowlder about 4 inches below surface of ground. A pile of stone is placed over the tablet.

[Latitude $38^{\circ} 20' 46.87''$. Longitude $83^{\circ} 21' 25.30''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Morehead.....	13 12 29	193 10 36	4.28877	12.082
Sand.....	65 42 29.52	245 36 38.78	4.1784813	9.372
Stacey.....	122 02 56.68	301 58 13.22	4.1162798	8.121
Gulley.....	146 42 06.16	326 39 58.74	3.9575624	5.635
Hilger.....	229 54 44.65	49 59 36.84	4.1736614	9.269
Gearhart.....	301 43 47	121 50 21	4.25935	11.290

GREGORY, FLEMING COUNTY, KY.

About 2 miles south of Tilton, Fleming County, in pasture field with some scattering trees at southwest end, owned by J. H. Gregory.

Signal: Sawed lumber quadripod.

Station mark: Iron post 4 feet long set 40 inches in ground.

Reference marks: (1) Chiseled cross (+) on surface rock; distance 21.5 feet, true azimuth $330^{\circ} 22'$. (2) Chiseled cross (+) on surface rock; distance 39.3 feet, true azimuth $131^{\circ} 37'$.

[Latitude $38^{\circ} 19' 16.65''$. Longitude $83^{\circ} 46' 21.04''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Doggett.....	16 38 04.50	196 36 42.47	4.0512375	6.992
Dooley.....	82 36 35.07	262 28 37.08	4.2762930	11.739
Maxey.....	122 18 09.35	302 12 36.21	4.1878657	9.577
Mers.....	141 01 01.36	320 56 59.47	4.1768039	9.336
Kirby.....	170 17 39.88	350 16 55.40	4.0133600	6.408
Hughes.....	229 23 39.12	49 28 10.45	4.1452762	8.682
Sand.....	278 33 42.08	98 43 18.58	4.3590208	14.203

GULLEY, LEWIS COUNTY, KY.

On a low knob on the divide between waters of Briery and Indian creeks, at head of Buck Lick. Hill is partially cleared to afford view of other signals. Station can be reached from Briery Creek side by road to head of Buck Lick, thence on foot to ridge, and from Indian Creek side by driving to Alonzo Pitts's place and walking to top of ridge, thence 0.5 mile along ridge. Land belongs to Charles Gulley.

Signal: Quadripod of usual form.

Station mark: Iron post set 36 inches in ground on bed rock.

[Latitude $38^{\circ} 24' 52.66''$. Longitude $83^{\circ} 24' 50.52''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Stacey.....	83 55 56.47	263 53 20.29	3.7876887	3.811
Elk Lick.....	154 57 29.24	334 55 46.95	3.9739314	5.852
Hilger.....	262 55 13.63	83 02 13.58	4.2178900	10.262
Enix.....	326 39 58.74	146 42 06.16	3.9575624	5.635

HILGER, CARTER-LEWIS COUNTIES, KY.

On Lewis-Carter county line about 12 miles north of Olive Hill, at the head of a branch of Buffalo Creek and Scotts Branch of Laurel Creek, on land owned by Peter Hilger. It is on a knob of the ridge slightly higher than surrounding knobs. The land where the signal stands is bare, but fringes of timber around the edges and on nearby knobs obstruct the view considerably. From an elevation of about 35 feet above the ground a very fine view can be had in nearly every direction.

Signal: Quadripod of chestnut poles 37 feet long, having top of center pole 45 feet above ground, directly over station mark.

Station mark: Iron post set 3.5 feet in ground.

Reference marks: Two glass bottles buried with tops about 8 inches below surface, and each covered with a flat stone—one, distance, 8.06 feet, true azimuth $14^{\circ} 10'$; the other, 7.99 feet, true azimuth $115^{\circ} 58'$.

[Latitude $38^{\circ} 25' 58.13''$. Longitude $83^{\circ} 13' 34.786''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Enix.....	49 59 36.84	229 54 44.65	4.1736614	9.269
Gulley.....	83 02 13.58	262 55 13.63	4.2178900	10.262
Elk Lick.....	107 48 04.55	287 39 21.94	4.3301371	13.289
Hamilton.....	144 56 49.65	324 53 11.00	4.1706814	9.205
Round Top.....	184 00 51.36	4 01 26.86	4.2944105	12.239
Gearhart.....	348 10 07	168 11 49	4.29188	12.168

HUGHES, FLEMING COUNTY, KY.

On a prominent knob about 5 miles east of Flemingsburg and about 0.2 mile south of Wattingford pike, at east side of north-south road, on property owned by S. B. Hughes.

Signal: Quadripod of pine poles set 1.86 feet off center.

Station mark: Aluminum triangulation tablet set in solid rock.

Reference marks: (1) chisel mark (+) on stone, distance, 8.90 feet, true azimuth $14^{\circ} 38'$. (2) Chisel mark (+) on stone, distance, 12.25 feet, true azimuth $116^{\circ} 7'$. (3) Fourteen-inch pine tree; distance, 29.80 feet, true azimuth $117^{\circ} 28'$.

[Latitude 38° 24' 11.36''. Longitude 83° 39' 03.86'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Gregory.....	49 28 10.45	229 23 39.12	4.1452762	8.682
Kirby.....	95 01 54.91	274 56 38.79	4.0931732	7.701
Sugarloaf.....	203 51 18.45	23 52 49.27	3.9422873	5.440
Stacy.....	267 30 20.49	87 36 34.45	4.1649203	9.084
Sand.....	316 15 03.02	136 20 08.80	4.2385862	10.763

KIRBY, FLEMING COUNTY, KY.

About 4 miles west of Flemingsburg, on land belonging to Jerry Kirby, in open field, about 0.2 miles east of his house.

Signal: Quadripod of sawed lumber.

Station mark: Aluminum tablet set in a stone post 5 by 7 by 18 inches, set 9 inches below the surface of the ground.

Reference marks: Iron post set 33 inches in the ground, 2 feet south of fence line, distance, 92.7 feet, azimuth 179° 17'. (1) Ten-inch locust tree close to fence line; distance, 94.5 feet, azimuth 195° 27'. (2) Nine-inch locust tree near fence line; distance, 101.2 feet, azimuth 211° 30'.

[Latitude 38° 34' 46.31''. Longitude 83° 47' 32.70'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Dooley.....	53 26 57.47	233 19 43.47	4.3254140	13.145
Maxey.....	80 17 32.17	260 12 43.21	4.058831	7.116
Mers.....	101 05 42.67	281 02 25.06	3.8954534	4.884
Sugarloaf.....	246 22 20.11	66 29 07.32	4.2387523	10.767
Hughes.....	274 56 38.79	95 01 54.91	4.0931732	7.701
Gregory.....	350 16 55.40	170 17 39.88	4.0133600	6.408

MAXEY, FLEMING COUNTY, KY.

In Ewing precinct, about 1.5 miles west of Cowan, in pasture field west of pike road on land belonging to Maxey estate and occupied by James C. Maxey, of Cowan. The hill is low for extension, and a fringe of timber cuts off view toward west and north, but there is a good view east.

Signal: Quadripod of sawed lumber.

Station mark: Iron post set 3 feet in ground.

[Latitude 38° 23' 43.43''. Longitude 83° 55' 17.86'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Dooley.....	28 03 49.53	208 01 24.21	4.0827086	7.517
Mers.....	225 59 21	46 00 51	3.039575	3.084
Kirby.....	260 12 43.21	80 17 32.17	4.058831	7.116
Gregory.....	302 12 36.21	122 18 09.35	4.1878657	9.577

MERS, FLEMING COUNTY, KY.

About 1 mile west of Ewing on highest land in vicinity, in cultivated field belonging to James Mers. Ground at station is 2 or 3 feet lower than highest part of field, having been so located to avoid cutting through timber.

Signal: Quadripod of sawed lumber.

Station mark: Aluminum tablet set in cut stone 5 by 7 by 9 inches, set 12 inches below surface of ground.

Reference marks: (1) Iron post set close to fence line, which is line between James Mers and J. W. Shockley's properties; distance 203.3 feet, azimuth 194° 33'. (2) Quart

bottle inverted, set 12 inches below surface on line with above iron post; distance 9.45 feet, azimuth $194^{\circ} 33'$. (3) Quart bottle inverted, set 12 inches below surface; distance 5.7 feet, azimuth $319^{\circ} 50'$. (4) Quart bottle inverted, set 12 inches below surface; distance 6.8 feet, azimuth $15^{\circ} 02'$.

[Latitude $38^{\circ} 25' 35.25''$ Longitude $83^{\circ} 52' 50.70''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Dooley.....	33 16 40.10	213 12 43.40	4.2276212	10.495
Maxey.....	46 00 51	225 59 21	3.68575	3.084
Sugarloaf.....	256 58 35.75	77 08 40.77	4.3839332	15.041
Kirby.....	281 02 25.06	101 05 42.67	3.8954534	4.884
Gregory.....	320 56 59.47	141 01 01.36	4.1768039	9.336
Doggett.....	344 25 42.31	164 28 21.82	4.3675171	14.483

MOREHEAD, ROWAN COUNTY, KY.

On southwest end of a high ridge about 2 miles east (air line) from Morehead, lying between Dry Creek and Christy Creek, about 2 miles south of Rodbourn. The end of ridge is cleared, affording a splendid view in almost every direction.

Signal: An 8-inch pine tree; distance 43.6 feet, azimuth $74^{\circ} 21'$.

Station mark: Whisky flask set about 2 inches below surface and covered with a pile of stone.

[Latitude $38^{\circ} 10' 32.91''$ Longitude $83^{\circ} 24' 27.82''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Sand.....	143 47 36	323 43 39	4.19765	9.795
Enix.....	193 10 36	13 12 29	4.28877	12.082

SAND, ROWAN-FLEMING COUNTIES, KY.

About 10 miles northwest of Morehead, on a high knob known as Sand Mountain, on the north and east the waters drain into Brushy Fork of Triplett Creek, on the south and west into Crain Creek, and thence into Fox Creek. The timber is mostly cleared from the summit, and there is an excellent view in every direction. Land is owned by W. S. Moore, whose house is on a branch of Brushy Fork about 0.5 mile east of knob. Station is best reached from Mr. Moore's house by ascending ridge by way of a cleared field; it is less than 200 yards west of field.

Signal: Quadripod of usual form.

Station mark: An aluminum tablet buried in loose earth, about 6 inches below surface. It is covered with a small flat stone, and above is a pile of stones 2.5 feet high.

Reference marks: Quart bottle, set neck up about 2 inches below surface and covered with flat stone and the stone pile forming the station mark; distance 0.92 feet, true azimuth $353^{\circ} 00'$. A lone 6-inch hickory tree is distant 8 feet, true azimuth $183^{\circ} 16'$.

[Latitude $38^{\circ} 17' 25.26''$ Longitude $83^{\circ} 30' 50.98''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Coyle.....	65 12 25	245 00 38	4.48628	19.038
Doggett.....	74 12 50.39	254 01 52.53	4.4290562	16.688
Gregory.....	98 43 18.58	278 33 42.08	4.3590208	14.203
Hughes.....	136 20 08.80	316 15 03.02	4.2385862	10.763
Stacey.....	191 23 05.34	11 24 13.03	4.1273888	8.332
Enix.....	245 36 38.78	65 42 29.52	4.1784813	9.372
Morehead.....	323 43 39	143 47 36	4.19765	9.795

STACEY, LEWIS COUNTY, KY.

About 3 miles south of Petersville, on a round knob, entirely cleared, at the head of Indian Creek and Sargent Branch of Kinnickonick Creek, 0.2 mile north of Lewis-Fleming County line. Land is owned by William Stacey. A road crosses divide from Indian Creek to Sargent Branch a few hundred feet north of station. There is a splendid view west and south.

Station mark: Iron post set 2 feet in ground and resting on solid rock.

Reference marks: (1) Glass bottle set with neck up 8 inches below surface and covered with small flat stone; distance 8.12 feet, azimuth $110^{\circ} 43'$. (2) Glass bottle, same as (1); distance 8.02 feet, azimuth $198^{\circ} 12'$. Reference tree is a 12-inch chestnut tree; distance 27 feet, true azimuth $32^{\circ} 23'$.

[Latitude $38^{\circ} 24' 31.56''$. Longitude $83^{\circ} 29' 01.89''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Sand.....	11 24 13.03	191 23 05.34	4.1273888	8.332
Hughes.....	87 36 34.45	267 30 20.49	4.1649203	9.084
Sugarloaf.....	123 46 37.11	303 41 53.68	4.1236859	8.261
Elk Lick.....	192 54 58.26	12 55 52.29	3.9740697	5.854
Gulley.....	263 53 20.29	83 55 56.47	3.7876887	3.811
Enix.....	301 58 13.22	122 02 56.68	4.1162798	8.121

SUGARLOAF, FLEMING COUNTY, KY.

On a prominent point known as Sugar Loaf Mountain, about 2 miles east of Mount Carmel, on south side of pike.

Signal: Quadripod of usual form, set on center.

Station mark: Aluminum triangulation tablet set in solid rock.

Reference marks: (1) Chisel mark (+) on stone; distance 12.88 feet, true azimuth $324^{\circ} 00'$. (2) Chisel mark (+) on stone; distance 5.65 feet, true azimuth $117^{\circ} 30'$.

[Latitude $38^{\circ} 28' 31.03''$. Longitude $83^{\circ} 36' 37.78''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Hughes.....	23 52 49.27	203 51 18.45	3.9422873	5.440
Kirby.....	66 29 07.32	246 22 20.11	4.2387523	10.767
Mers.....	77 08 40.77	256 58 35.75	4.3839332	15.041
Davenport.....	158 19 24	338 17 10	4.15010	8.779
Cherry Ridge.....	208 19 42.94	28 24 29.07	4.3689290	14.530
Elk Lick.....	262 10 15.56	82 15 53.32	4.1231271	8.250
Stacy.....	303 41 53.68	123 46 37.11	4.1236859	8.261

PRIMARY TRAVERSE.

Berrys Lick, Glenmore, Falls of Rough, Horsebranch, Kirk, Leitchfield, Little Muddy, Russellville, and Salmon quadrangles.

BUTLER, GRAYSON, LOGAN, OHIO, AND WARREN COUNTIES.

The following geographic positions, based on Henderson (Ky.) astronomic datum, were determined by C. B. Kendall in 1909. The line starts from a position obtained from primary traverse and follows highways east, south, and west near borders of the Horsebranch quadrangle and is tied to former work at Logansport. The line starts again near the southeast corner of the Horsebranch quadrangle and follows highways south, west, and north near borders of the

Little Muddy quadrangle and is tied to former work at Logansport. From a point near the southwest corner of the Little Muddy quadrangle the line follows highways west near the south border of the Berrys Lick quadrangle to the Louisville & Nashville Railroad, thence along the railway northwest and is tied to former work at Dunmor. The State cooperated in the work.

FALLS OF ROUGH QUADRANGLE.

Geographic positions along highways near south border of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Cedar Grove church and schoolhouse, at T road west.....	37 30 56.9	86 44 15.3
Cedar Grove church and schoolhouse, 0.6 mile south of, at T road north.....	37 30 29.9	86 44 05.8
Grayson-Ohio county line, new cut road on or near.....	37 30 34.0	86 33 55.6
Olaton, 3 miles south of, at T road south, 15 feet northwest to walnut tree, 40 feet southeast to persimmon tree.....	37 31 09.7	86 38 23.9
Brady Creek Church, 0.5 mile east of, at T road south, 35 feet southeast to forked oak tree, 25 feet south to oak tree.....	37 31 12.3	86 37 08.8
Brady Creek Church, 0.5 mile east of, on north edge of Hartford-Leitchfield road, at southwest corner of front yard to small dwelling; iron post stamped "Prim. Trav. Sta. No. 1 1909 KY".....	37 31 12.2	86 37 05.7
Yeaman, 1.5 mile west of, at T road south, 100 feet south to ford, 25 feet southeast to forked hickory, 25 feet north to small oak.....	37 31 08.1	86 35 22.6
Yeaman, crossroads at, 25 feet northwest to corner of store porch, 25 feet southeast to hickory tree, 40 feet east to corner of store porch.....	37 31 08.1	86 34 33.6
Tousey, 0.5 mile southwest of, bridge at forks, 35 feet east to stump.....	37 30 47.1	86 33 08.0
Tousey, at east edge of, at T road south, 15 feet northwest to burnt sycamore, 35 feet southwest to walnut.....	37 30 52.0	86 32 34.1
Tousey, 1 mile east of, at 4 corners in woods, 20 feet southwest to hickory, 15 feet northeast to oak.....	37 30 56.0	86 31 26.6
Short Creek, 0.5 mile east of, at 4 corners, 40 feet southwest to corner of barn, 40 feet south to Wash Young's mail box, 10 feet north to pipe culvert.....	37 31 00.9	86 30 31.4

Magnetic declination of south border of quadrangle is 3° 48' E.

KIRK QUADRANGLE.

Geographic positions along highways near southwest corner of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Short Creek, 1.5 miles east of, at 4 corners; second-class road east through gate, 10 feet northwest to walnut tree and Emily Young's mail box, 15 feet southwest to corner stone.....	37 30 43.0	86 29 28.8
Short Creek, 1 mile southeast of post office, at corner of rail fence, north of intersection of Hartford-Leitchfield and Bowling Green-Cloverport roads; iron post stamped "Prim. Trav. Sta. No. 2 1909 KY".....	37 30 34.4	86 28 11.6
Short Creek, 1 mile southeast of post office, at 4 corners; 30 feet southeast to stump, 40 feet northwest to oak.....	37 30 33.0	86 28 10.8

Magnetic declination of southwest corner of quadrangles, 4° 02' E.

LITTLE MUDDY QUADRANGLE.

Geographic positions along highways near north border of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Aberdeen Ferry, 3 corners, 300 feet northwest of; 25 feet south to corner of fence, 50 feet west to house.....	37 14 43.0	86 41 04.9
Morgantown, west edge of, at 3 corners; 30 feet north to Oak, 40 feet southwest to second-class T road south.....	37 13 44.0	86 41 17.7
Morgantown, 1 mile northwest of bridge at 3 corners; 10 feet southwest to corner of picket fence, 25 feet northwest to corner of yard.....	37 14 04.5	86 42 13.4
Morgantown, 2 miles northwest of, at T road northeast; 20 feet southeast to large oak, 20 feet east to telephone pole at corner of fence.....	37 14 37.0	86 42 48.5
Minnie Grove, 1.25 miles southwest of, at forks; 15 feet east to large oak, 60 feet north to skinned oak.....	37 14 35.9	86 30 11.1

Magnetic declination of north border of quadrangle, 3° 55' E.

LITTLE MUDDY QUADRANGLE—Continued.

Geographic positions along highways near south border of quadrangle.

Stations.	Latitude.	Longitude.
Greencastle Ferry, 0.8 mile southwest of, at forks; 15 feet southeast to gum tree, 35 feet north to cedar.....	37 05 06.1	86 30 17.1
Forks, west and northwest; 10 feet south to oak, 20 feet west to stump.....	37 04 30.6	86 30 51.2
Forks of public road southwest, second-class road southeast, 15 feet west to black gum, 15 feet east to cedar, 35 feet southeast to double cedar.....	37 04 00.5	86 30 39.8
Barren River Church, T road south at; 20 feet to stump, 70 feet northeast to corner of church.....	37 02 58.0	86 30 54.3
Barren River schoolhouse, 600 feet west of, at T road west; 25 feet north to oak at corner of fence.....	37 02 15.1	86 31 18.2
Barren River schoolhouse, 0.8 mile south of, at 4 corners; 15 feet south to stump, 30 feet northeast to oak.....	37 01 40.1	86 31 23.6
Log church, 1,500 feet southeast of; oak tree at forks.....	37 00 23.6	86 31 21.9
Martin's store, forks at; 15 feet south to oak, 25 feet southwest to store door.....	37 00 05.3	86 33 44.1
Two-story white house, crossroad opposite; 90 feet east to bridge, 80 feet north to oak.....	37 00 30.3	86 35 21.0
Gasper River Ford, 150 feet east of; forks 35 feet southwest to elm, 20 feet west to cedar.....	37 00 34.1	86 36 47.4
New Gasper Church, 1,500 feet south of, at corner of wire fence, 20 feet north of crossroads, about 1.5 miles northwest of Galloway's mill; iron post stamped "Prim. Trav. Sta. No. 8 1909 KY".....	37 00 30.9	86 38 44.8
New Gasper Church, 1,500 feet south of; crossroads.....	37 00 30.7	86 38 44.8
Cave Hill, 0.8 mile north of, at 3 corners; 35 feet southeast to blacksmith shop, 40 feet west to cherry tree.....	37 01 19.5	86 40 18.6
Richlieu, at 4 corners; 50 feet northeast to corner of stone wall at store.....	37 00 17.7	86 41 24.7

Magnetic declination of south border of quadrangle, 4° 26' E.

Geographic positions along highways near west border of quadrangle.

Bald Knob Church, 0.5 mile north of; large oak on line between Logan and Butler counties.....	37 01 30.3	86 44 52.0
Sawmill, 600 feet northwest of; tall sycamore at forks.....	37 02 00.6	86 44 41.1
Davis's crossroads, 25 feet southeast to corner of picket fence.....	37 03 05.7	86 44 22.5
Sawmill, 800 feet north of, at forks; 50 feet west to hickory, 50 feet northwest to dead tree.....	37 04 06.9	86 44 17.0
Schoolhouse, 800 feet southeast of; forks.....	37 05 02.6	86 43 40.9
Telephone pole at 4 corners, 15 feet southwest to cedar, 40 feet northwest to elm at corner of fence.....	37 05 52.4	86 43 15.3
Richland Church, 600 feet west of, at forks; 50 feet west to 2 white oaks.....	37 06 29.6	86 43 05.5
Old store, 1 mile northeast of factory, 3 corners, 25 feet west to oak by store.....	37 07 27.2	86 43 22.7
Church, 1,800 feet north of; set in center of triangle at junction of roads; iron post stamped "Prim. Trav. Sta. No. 12 1909 KY".....	37 08 48.4	86 42 57.1
Johnson's old store, forks at; 60 feet southwest to oak, 40 feet northwest to corner of house.....	37 09 01.0	86 42 57.1
Davenport, 400 feet south of, at 3 corners; 25 feet northwest to fence, 40 feet southwest to fence.....	37 10 59.3	86 42 59.7
Morgantown, 3 miles southwest of; leaning elm at forks.....	37 11 41.0	86 42 15.0
Morgantown, 4 corners at fair grounds, 25 feet south to telephone pole, 20 feet east to culvert.....	37 13 08.4	86 41 32.4
Morgantown, intersection of Butler and Ohio streets.....	37 13 35.7	86 40 53.3
Morgantown, Butler County courthouse spire.....	37 13 33.1	86 40 53.3

Magnetic declination of west border of quadrangle, 3° 16' E.; of east border of quadrangle, 4° 42' E.

BERRYS LICK QUADRANGLE.**Geographic positions along highways near south border of quadrangle.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Costelow, 1.5 miles north of; 0.8 mile south of Pauline, 35 feet west of small stream, 80 feet south of Mass's blacksmith shop, set on east side of road opposite junction; iron post stamped "Prim. Trav. Sta. No. 9 1909 KY".....	37 00 21.2	86 45 40.0
Mass crossroads, 1 mile northwest of, at forks in ford; 10 feet south to stump, 10 feet west to large rock in stream.....	37 00 32.1	86 46 31.7
Anderson, 1.25 miles east of, near oak tree and M. M. Belcher's mail box, 300 feet south of Belcher's residence.....	37 00 29.2	86 47 07.8
Anderson, 500 feet east of store at; 250 feet northwest of church, 3 corners.....	37 01 06.6	86 47 54.5
Anderson, 0.5 mile north of, at 3 corners.....	37 01 36.7	86 47 54.2
Four corners, 800 feet east of covered bridge over creek, large oak.....	37 01 53.0	86 48 52.2
Negro schoolhouse, crossroads east of; 45 feet southwest to oak at corner of rail fence, 12 feet northeast to oak.....	37 01 56.0	86 49 29.4
Zion (negro) Baptist Church, at southeast corner of; 300 feet northeast to forks of road; iron post stamped "Prim. Trav. Sta. No. 10 1909 KY".....	37 01 52.1	86 50 08.0
Zion Baptist Church, 0.5 mile southwest of; small cedar at forks.....	37 01 29.7	86 50 27.1
New log barn, 100 feet west of, second-class crossroads; 35 feet northeast to sycamore, 10 feet southeast to stump.....	37 01 01.9	86 51 50.2
Second-class crossroad in hollow at corner of rail fence; 20 feet southeast to leaning sycamore.....	37 00 41.2	86 52 46.7
Negro house, forks at; 15 feet south to gum tree, 50 feet northwest to corner of house.....	37 00 17.7	86 53 29.0

Geographic positions along Louisville & Nashville R. R. near south border of quadrangle.

Lewisburg, 1.5 miles north of; second-class railway crossing 280 feet south of mile-pole "0.59-L. 156".....	37 00 33.4	86 56 57.2
Lick, 400 feet west of station, overhead crossing 400 feet west of water tank, at east end of trestle.....	37 01 13.4	86 57 24.3
Blue Cut, 600 feet north of; crossing.....	37 01 30.1	86 58 01.4
Diamond Springs, 700 feet south of station; crossing.....	37 02 08.6	86 58 26.4
Milepost "0.55-L. 160," 520 feet south of; second-class crossing.....	37 03 12.8	86 59 10.4

Geographic positions along highways near south border of quadrangle.

Bald Knob Church, 200 feet north of, at crossroads; 30 feet east to corner of wire fence, 90 feet west to front door of schoolhouse.....	37 01 10.6	86 45 08.4
--	------------	------------

Magnetic declination of south border of quadrangle, 3° 24' E.; of east border, 3° 16' E.

GLENMORE QUADRANGLE.**Geographic positions along highways near west border of quadrangle.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Phelps's store, 75 feet north of, at 3 corners; 35 feet west to gate.....	37 12 43.1	86 29 32.4
New Bethel Church, 500 feet southwest of; sycamore tree at 3 corners.....	37 11 47.5	86 29 52.8
Threlkel, southeast corner of store and post office.....	37 11 28.0	86 29 47.6
Threlkel, 1 mile south of; 4 corners on top of hill.....	37 10 24.5	86 29 46.3
Long, 0.25 mile south of; second-class T road east on top of ridge at bend of main road to south, 15 feet north to oak.....	37 09 15.1	86 28 52.2
Long, 1.5 miles south of; second-class crossroad, 25 feet southeast to hickory tree, 25 feet southwest to hickory tree.....	37 08 28.1	86 28 48.5
Richardsville, 1 mile north of; 25 feet west of north-south road, 60 feet north of junction of roads, at corner of fence; iron post stamped "Prim. Trav. Sta. No. 6 1909 KY".....	37 07 12.1	86 27 58.9
Richardsville, forks at; 60 feet northwest to large oak, 45 feet northeast to corner of store porch.....	37 06 17.7	86 28 08.5
Richardsville, 0.5 mile south of, junction of pikes; 25 feet northwest to oak with sign "Richardsville 0.5 mile;" 15 feet south to stump.....	37 05 54.4	86 28 08.2
Greencastle Ferry, forks east of; 15 feet west to telephone pole, 60 feet south to barn, 35 feet northwest to house.....	37 05 32.5	86 29 36.7

Magnetic declination of west border of quadrangle, 4° 41' E.

SALMONS QUADRANGLE.

Geographic positions along highways near north border of quadrangle.

Stations.	Latitude.	Longitude.
Bowling Green, 4.25 miles west of, at 4 corners; 35 feet west to double cedar at corner of fence.....	° ' " 36 59 46.4	° ' " 86 31 30.5
Bowling Green, 5 miles west of, 10 feet south of southeast corner of W. E. Kuykindall's store, 40 feet west of junction of pikes; iron post stamped "Prim. Trav. Sta. No. 7 1909 KY".....	36 59 50.2	86 32 10.7
W. E. Kuykindall's store, at 3 corners; 40 feet north to 6 mail boxes.....	36 59 50.2	86 32 10.2
W. E. Kuykindall's store, 1 mile west of; forks opposite house, 40 feet southwest to forked oak.....	36 59 47.8	86 33 10.7
Richlieu, 1.5 miles southwest of, at forks; 25 feet northwest to corner rail and picket fence, 50 feet southwest to dead tree, 10 feet southeast to stump.....	36 59 27.9	86 42 10.0
Richlieu, 1.8 miles southwest of, at 3-corners; 15 feet southwest to oak in road, 30 feet northwest to oak.....	36 58 52.1	86 42 47.6
Second-class crossroad, 10 feet southeast to oak at corner of rail and picket fence, 20 feet northeast to corner of wire fence.....	36 59 23.8	86 43 59.8

Magnetic declination of north border of quadrangle, 4° 26' E.

RUSSELLVILLE QUADRANGLE.

Geographic positions along highways near north border of quadrangle.

Stations.	Latitude.	Longitude.
Sutton's bridge over Mud River, 50 feet east of, at forks of road.....	° ' " 36 59 58.1	° ' " 86 54 19.9
Lewisburg, 1.8 miles northeast of, at 4 corners; 15 feet south to corner picket fence, 55 feet northwest to oak tree.....	36 59 55.5	86 55 10.8
Lewisburg, 250 feet south of station, crossing of main track.....	36 59 12.2	86 56 50.1
Lewisburg, 500 feet northwest of station, in southeast corner of front yard of Arnold Hotel, 180 feet west of Louisville & Nashville R. R.; iron post stamped "Prim. Trav. Sta. No. 11 1909 KY".....	36 59 17.5	86 56 52.6
Lewisburg, 0.8 mile north of; second-class crossing Louisville & Nashville R. R.....	36 59 56.9	86 56 54.0

Magnetic declination of north border of quadrangle, 3° 24' E.

HORSEBRANCH QUADRANGLE.

Geographic positions along highways near north border of quadrangle.

Stations.	Latitude.	Longitude.
Sylvester White's mail box, just south of, 4 corners; 15 feet southwest to corner of rail fence.....	° ' " 37 29 58.3	° ' " 86 42 59.0
Friedland, 2 miles northwest of, forks at bridge over Muddy Creek, 40 feet south to bridge, 30 feet northwest to corner of picket fence.....	37 29 33.5	86 41 44.0
Friedland, 0.8 mile west of; T road north, 30 feet northeast to oak at corner of wire fence.....	37 29 21.6	86 41 06.4
Friedland, road crossing Illinois Central R. R. at station.....	37 29 30.7	86 40 32.6
Friedland, 1 mile northeast of; T road south, 20 feet southwest to post picket fence, 30 feet southeast to corner post in barnyard fence.....	37 29 59.5	86 39 59.8

Magnetic declination of north border of quadrangle, 3° 48' E.

HORSEBRANCH QUADRANGLE—Continued.

Geographic positions along highways near south border of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Lee, 300 feet north of white church, small bridge at forks.....	37 17 16.0	86 30 00.1
Second-class crossroads, 10 feet north to stump, 30 feet east to stump.....	37 16 54.8	86 30 54.0
Love, 0.25 mile north of, at 3 corners, 200 feet north of schoolhouse; 25 feet north to stump.....	37 16 22.2	86 31 31.5
Love, 1,000 feet south of, near picket fence on south bank of Phelps Creek, 75 feet south of Embry & Woosley's store, 75 feet east of 3 corners; iron post stamped "Prim. Trav. Sta. No. 4 1909 KY".....	37 15 56.8	86 31 36.5
Love, 1 mile west of, at 3 corners, 10 feet southwest to forked oak, 15 feet northeast to corner of rail fence.....	37 15 33.6	86 32 32.5
Love, 2 miles west of, near log blacksmith shop, at 4 corners; 25 feet southwest to corner of rail and picket fence.....	37 15 24.9	86 33 08.1
Welsh Creek, 0.8 mile east of, at 4 corners; 50 feet north to oak, 30 feet south to fence.....	37 15 43.0	86 34 54.3
Two stores, 4-plank bridge at; 30 feet west to corner of new store, 40 feet southwest to corner of old store, 100 feet east to fork south.....	37 16 07.1	86 36 22.3
Second-class fork to south, 10 feet southeast to small oak, 30 feet west to oak by fence, 300 feet south to house.....	37 16 25.9	86 37 24.4
Manford, 0.5 mile north of, at forks; 20 feet south to rail fence, 60 feet northeast to oak.....	37 16 31.3	86 37 50.7
Alonzo James's store, 375 feet south of, in center of triangle at forks, 5 miles north of Morgantown; iron post stamped "Prim. Trav. Sta. No. 5 1909 KY".....	37 16 11.2	86 38 08.1
Three corners, 40 feet east of top of hill, 25 feet north to double oak at corner of fence, 15 feet south to picket fence.....	37 16 04.3	86 39 36.8
Bend of main road south, 80 feet south of, at second-class fork to west; 25 feet northwest to sassafras tree, 35 feet northeast to oak, 35 feet south to stump....	37 15 58.1	86 40 05.5
Forks of public roads northeast and southeast.....	37 15 20.0	86 40 18.5
Small house at 3 corners, 30 feet southwest to front yard gate.....	37 15 27.0	86 40 41.2
Logansport, 2 miles southeast of, at 4 corners; 25 feet northwest to small oak at corner of fence, 30 feet northwest to oak at corner of fence.....	37 15 03.0	86 43 37.4
Minnie Grove, 3 corners at; 50 feet north to front door of store.....	37 15 14.8	86 30 58.4

Magnetic declination of south border of quadrangle, 3° 55' E.

LEITCHFIELD QUADRANGLE.

Geographic positions along highways near west border of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Post, bridge near T road east at post office.....	37 29 03.5	86 28 24.6
Post, 0.5 mile south of; 4 corners at old store, 35 feet southeast to corner of store, 35 feet northeast to cedar and corner of picket fence.....	37 28 27.2	86 28 27.2
Caneyville, 2 miles north of, at 3 corners; 10 feet west to sycamore, 15 feet northwest to sycamore.....	37 27 40.8	86 28 57.3
Caneyville, 1.25 miles north of, at forks; 15 feet southwest to oak with shoe sign, 50 feet northwest to sycamore, 25 feet west to small blazed oak.....	37 26 52.0	86 29 07.6
Caneyville, 0.8 mile north of, at 4 corners; 10 feet west to bridge, 10 feet east to bridge, 20 feet southeast to bridge.....	37 26 33.8	86 28 55.1
Caneyville station, 75 feet west of; Illinois Central R. R. crossing.....	37 25 47.2	86 29 03.8
Caneyville, 125 feet south of bank of Caneyville, cross streets.....	37 25 29.8	86 29 13.2
Caneyville, 0.5 mile south of, at forks; 50 feet south to bridge.....	37 24 55.3	86 29 10.9
Caneyville, 1.3 miles south of; set on south edge of road, 0.25 mile southwest of Caney Creek Baptist Church; iron post stamped "Prim. Trav. Sta. No. 3 1909 KY".....	37 24 02.6	86 28 26.7
Ready, 1 mile north of; oak tree at forks.....	37 23 12.8	86 28 17.3
Ready, 0.25 mile south of; oak at 3 corners.....	37 22 09.6	86 28 14.7
Butler-Grayson county line, near second-class fork through gate.....	37 21 16.5	86 28 48.7
Decker, 150 feet northeast of; small bridge near forks, 60 feet southwest to stump.....	37 20 10.0	86 29 01.0
Decker, 0.8 mile south of, at crossroads; 15 feet southeast to forked oak, 80 feet southwest to corner of rail fence.....	37 19 34.3	86 28 55.9
Lee, 0.8 mile north of; 3 corners near corner of rail fence, 40 feet southeast to double oak.....	37 18 50.9	86 29 05.6
Lee, 3 corners near schoolhouse, 90 feet north to southwest corner of schoolhouse, 85 feet east to well, 20 feet south to corner of picket fence.....	37 18 09.2	86 29 58.0

Magnetic declination of west border of quadrangle, 4° 21' E.

KENTUCKY-VIRGINIA-WEST VIRGINIA.**TRIANGULATION STATIONS.**

Bald Knob, Gilbert, Holden, Jaeger, Inez, Laynesville, Logan, Marshes, Matewan, Mullens, Pineville, Pocohontas special, Warfield, Welch, and Williamson 15' quadrangles; Grundy, Hazard, Jonesville, and Whitesburg 30' quadrangles.

FLOYD, HARLAN, JOHNSON, KNOTT, LAWRENCE, LESLIE, LETCHER, MARTIN, PERRY, AND PIKE COUNTIES, KY.; BUCHANAN, DICKENSON, AND TAZEVELL COUNTIES, VA.; BOONE, FAYETTE, KANAWHA, McDOWELL, MINGO, RALEIGH, AND WYOMING COUNTIES, W. VA.

During the season of 1909 triangulation was extended from Coast and Geodetic Survey stations, Table Rock and Ivy, W. Va., southward and westward into Virginia and Kentucky, where connection was made with several of the old stations of the United States Geological Survey. The work in the eastern portion of the area controlled was done by Oscar Jones and C. P. McKinley, and that in the western portion by E. L. McNair and R. C. Seitz. Included in this list are the recomputed positions, on United States standard datum, of the stations determined by E. L. McNair in 1906 and published in bulletin 440. Unless otherwise noted, positions are on United States standard datum.

The work in Kentucky and West Virginia was done in cooperation with the respective States.

BEAVER, PIKE, KNOTT, AND LETCHER COUNTIES, KY.

On a high knob at the head of Long Fork of Shelby Creek, Beaver Creek, and Rockhouse Creek, and at junction of Pike, Knott, and Letcher counties. It can be best reached from head of Beaver and Long Fork, thence south along ridge about 1 mile to station. Summit is only partially cleared.

Station mark: Iron post set 30 inches in the ground.

Reference marks: Chestnut oak tree 24 inches in diameter; distance 11.70 feet azimuth 73° 44'.

[Latitude 37° 16' 17.69". Longitude 82° 43' 57.80".]

To station—	Azimuth.	Back azimuth.	Distance.	
			Log. meters.	Miles.
Brashear.....	63 08 04.74	242 53 08.21	4.6133839	25.511
Walnut.....	103 52 47.07	283 47 00.35	4.1619391	9.022
Quicksand.....	143 37 19.47	323 30 08.82	4.4681256	18.259
Frazier.....	201 36 15.55	21 38 35.78	4.1887976	9.597
Willard.....	272 16 43.91	92 29 25.09	4.4913792	19.263
Waseoto.....	359 44 00.65	179 44 02.66	4.2468304	10.969

BRANDY KEG, FLOYD COUNTY, KY.

On a prominent cleared knob between Sandy River and Johns Creek, is about 0.2 mile west of gap between Brandy Keg Creek and Louders Creek. It can be reached from head of Brandy Keg Creek by ascending northern dividing ridge, following it west from its summit.

Signal: Quadripod of poles set over center.

Station mark: Aluminum triangulation tablet set in rock at north edge of knoll.

8283°—Bull. 496—12—8

114 TRIANGULATION AND PRIMARY TRAVERSE FOR 1909 AND 1910.

Reference marks: (1) Oak tree 20 inches in diameter on highest part of knob; distance 31.6 feet, true azimuth $290^{\circ} 43'$. (2) Hole drilled in rock; distance 30.43 feet, true azimuth $303^{\circ} 57'$. (3) Chisel mark (+) on rock; distance 11 feet, true azimuth $105^{\circ} 55'$.

[Latitude $37^{\circ} 40' 26.05''$. Longitude $82^{\circ} 40' 57.23''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Porter.....	147 27 08.20	327 25 39.25	3.8209275	4.114
Standifer.....	178 30 06.71	358 29 57.29	4.1585556	8.952
Hurricane.....	233 06 37.30	53 13 33.57	4.3183096	12.932
Flag.....	275 50 38.19	95 57 36.97	4.2275336	10.493
Ivy.....	328 08 40.71	148 11 06.44	4.0452148	6.895

BRASHEAR, PERRY COUNTY, KY.

On a high knob at the head of Middle and Left Fork of Macies Creek and Owens Branch of Leatherwood Creek. It is 15 miles by road south of Hazard. The knob is rather flat, three ridges meeting on top, one from west, one from south, and one from northeast. These ridges were not all cleared of timber.

Station mark: Iron pipe 30 inches long, 0.75 inch in diameter, set 20 inches in the ground. Flat strips of iron are fastened at right angles to foot of rod to prevent pulling up.

Reference marks: (1) Large oak on top of knob; distance 26.7 feet, azimuth $58^{\circ} 06'$. (2) Oak on ridge to northeast; distance 27.6 feet, azimuth $189^{\circ} 15'$. (3) Oak on ridge to south; distance 45 feet, azimuth $347^{\circ} 36'$.

[Latitude $37^{\circ} 06' 13.26''$. Longitude $83^{\circ} 08' 41.065''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Harlan.....	34 08 06.57	214 01 51.14	4.4397113	17.103
Thousand Stick.....	106 35 40.03	286 26 09.43	4.3861985	15.120
Lost.....	171 34 00.47	351 32 34.12	4.3797893	14.898
Walnut.....	225 23 09.96	45 32 20.76	4.4985206	19.583
Beaver.....	242 53 08.21	63 08 04.74	4.6133839	25.511
Waseoto.....	268 20 47.65	88 35 44.54	4.5648858	22.816
Long Spur.....	333 25 35.18	153 29 17.03	4.3092396	12.665

CANADA, PIKE COUNTY, KY.

On a partially cleared knob on ridge just east of Road Fork of Big Creek, at head of small branch that empties into Road Fork at John B. Norris's residence. It can be reached by going up branch at the Norris residence. The knob has three large bowl-ers on top.

Signal: Quadripod of usual form set 19.45 feet south of station.

Station mark: Aluminum triangulation tablet set flush in central bowl-der.

Reference marks: (1) Chiseled cross on north bowl-der; distance 13.4 feet, azimuth $222^{\circ} 22'$. (2) Chiseled cross on south bowl-der; distance 14 feet, azimuth $28^{\circ} 23'$.

[Latitude $37^{\circ} 35' 45.62''$. Longitude $82^{\circ} 21' 39.16''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Stratton.....	34 27 50.01	214 24 18.70	4.1777338	9.356
Flag.....	120 50 13.06	300 45 24.45	4.1301726	8.385
Chestnut Camp.....	213 14 06.97	33 18 09.83	4.2494135	11.035
Taylor.....	244 58 13.70	65 04 49.37	4.2437898	10.893
Dick.....	311 44 40.42	131 49 32.63	4.1982587	9.809

COLLINS ROCK, FLOYD COUNTY, KY.

On a high, cleared knob between the forks of Beaver Creek and about 4 miles above their junction. It is at head of Turkey Branch and Henry Branch of Right Fork of Beaver Creek, and may be reached from either fork.

Signal: Quadripod of usual form set on center.

Station mark: Aluminum tablet set flush in solid rock.

Reference marks: (1) Chisel mark (+) on rock; distance 8.28 feet, true azimuth 188° 29'. (2) Chisel mark (+) on rock; distance 7.20 feet, true azimuth 285° 04'. (3) Chestnut oak 20 inches in diameter; distance 24.74 feet, true azimuth 32° 28'.

[Latitude 37° 30' 48.63". Longitude 82° 46' 24.59".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Porter.....	190	47	10.23	10	49	01.29	4.3766449	14.791
Ivy.....	238	52	40.17	58	58	25.18	4.2101409	10.081
Stratton.....	276	33	27.16	96	45	00.29	4.4496061	17.497

DICK, PIKE COUNTY, KY.

On a very high knob at head of Johns Creek, Blackberry Creek, and Calloway branch of Peter Creek. It may be reached from gap between Johns and Peter creeks by following ridge 1 mile north or by going to gap at head of Calloway Branch and following ridge south.

Signal: Quadripod of usual form.

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

Reference marks: (1) Eight-inch oak tree; distance 4.4 feet, true azimuth 322° 16'. (2) Cross chiseled in rock; distance 4.7 feet, true azimuth 3° 42'. (3) Cross chiseled in rock; distance 7.3 feet, true azimuth 111°. (4) Cross chiseled in rock; distance 7.8 feet, true azimuth 166°.

[Latitude 37° 30' 04.42". Longitude 82° 13' 39.68".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Willard.....	27	19	01.82	207	13	21.21	4.4189254	18.719
Frazier.....	74	12	36.28	253	56	31.31	4.6081135	25.204
Stratton.....	184	43	21.17	264	34	58.23	4.3093628	12.668
Canada.....	131	49	32.63	311	44	40.42	4.1982587	9.809
Chestnut Camp.....	175	28	30.90	355	27	40.86	4.4056259	15.812
Taylor.....	192	59	00.26	13	00	43.08	4.2646264	11.428
Browning.....	233	08	13.52	53	16	47.48	4.4121264	16.050
Elk.....	276	47	52.08	96	56	01.13	4.2984616	12.354

¹ New.

FLAG, PIKE COUNTY, KY.

On a knob, south end cleared, on the dividing ridge of the W. L. Keesee and Hunan Maynard properties, and south of the junction of Right and Left Hand forks of Brushy Creek. Station may be reached by path up branch at W. L. Keesee's residence.

Signal: Quadripod of usual form.

Station mark: Iron post set in ground with top projecting about 1 foot above surface.

[Latitude 37° 39' 29.73". Longitude 82° 29' 31.89".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Ivy.....	54	57	30.07	234	52	57.42	4.1265588	8.316
Brandy Keg.....	95	57	36.97	275	50	38.19	4.2275336	10.493
Porter.....	109	50	31.89	289	42	03.94	4.3350551	13.440
Hurricane.....	179	29	53.31	359	29	50.20	4.1526849	8.832
Anthony.....	211	37	34.06	31	43	52.67	4.4595441	17.902
Runyon.....	226	44	14.76	46	54	49.38	4.5343142	21.265
Chestnut Camp.....	249	30	07.69	69	38	59.77	4.3569745	14.136
Canada.....	300	45	24.45	120	50	13.06	4.1301726	8.385
Stratton.....	350	54	20.58	170	55	37.36	4.2916647	12.162

FRAZIER, FLOYD COUNTY, KY.

On a prominent knob near the head of Mud Creek and between Mud and Frazier creeks. Timber is cleared except on north side. The old singal tree has fallen and is nearly rotted; the position of tree is apparently indicated by a depression and a hole, all of the stump having rotted away.

Station mark: Iron bench mark post set 24 inches in the ground on bed rock; apparent position of former station mark; distance 27.7 feet, true azimuth 234°.

[Latitude 37° 24' 03.44". Longitude 82° 40' 06.58".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Waseoto.....	9 58 09.64	189 55 51.68	4.5118902	20.195
Beaver.....	21 38 35.78	201 36 15.55	4.1887976	9.597
Walnut.....	61 14 03.58	241 05 56.07	4.3536343	14.028
Quicksand.....	111 57 06.21	291 47 34.35	4.3964679	15.482
Stratton.....	243 39 56.44	63 47 38.86	4.3191200	12.956
Dick.....	253 56 31.31	74 12 36.28	4.6081135	25.204
Willard.....	301 41 44.01	121 52 06.11	4.4729105	18.461

HARLAN, HARLAN COUNTY, KY.

On a spur of Pine Mountain about 4 miles north of Harlan. The timber is mostly cleared on summit. The station is best reached by driving to foot of incline (cable log railway) on Poor Fork of Cumberland River, about 4 miles from Harlan and walking or riding up incline to summit, there turning west and following mountain ridge about 1 mile to station.

Station mark: Piece of iron gas pipe 40 inches long, 0.75 inch outside diameter, set 22 inches in ground. A T is fastened to bottom end.

Reference marks: (1) Drill hole 1.25 inches in diameter and 2 inches deep in projecting ledge of sandstone; distance 8 feet, true azimuth 243° 03'. (2) Position of old signal tree and old station mark; distance 8 feet, true azimuth 87° 02'.

[Latitude 36° 53' 53.76". Longitude 83° 19' 04.88".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Thousand Stick.....	165 03 38.73	345 00 25.18	4.4879384	19.111
Brashear.....	214 01 51.14	34 08 06.57	4.4397113	17.103
Long Spur.....	259 23 36.48	79 33 32.52	4.3976120	15.523

HURRICANE, MARTIN COUNTY, KY.

On a cleared knob at the head of Big Crooked Branch of Wolf Creek, Walnut Fork of Coldwater Fork, and Hurricane Fork of Jack Cassady Branch of Coldwater Fork. Coldwater Fork empties into Rock Castle Creek. Station may be reached by going up Jack Cassady Branch.

Signal: Quadripod of usual form.

Station mark: Aluminum triangulation tablet countersunk and cemented in 28 by 26 by 15 inch sandstone.

Reference mark: Sixteen-inch hickory tree; distance 21 feet, true azimuth 216° 45'.

[Latitude 37° 47' 10.72". Longitude 82° 29' 36.98".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Ivy.....	26 19 18.58	206 14 48.63	4.3879190	15.180
Brandy Keg.....	53 13 33.57	233 06 37.30	4.3183096	12.932
Standifer.....	96 30 48.92	276 23 42.60	4.2337179	10.643
Nelson.....	131 43 25	311 34 38	4.44874	17.462
Anthony.....	235 52 57.68	55 59 19.96	4.2647713	11.432
Runyon.....	294 44 43.01	69 55 21.65	4.4264598	16.589
Chestnut Camp.....	286 14 45.41	106 23 41.37	4.3487973	13.872
Flag.....	359 29 50.20	179 29 53.31	4.1526849	8.832

IVY, FLOYD COUNTY, KY.

On a partially cleared knob on ridge between Ivy, Mase, and Buffalo creeks, about 1 mile below head of Ivy Creek. It may be reached from only one of the three streams.

Signal: Quadripod of usual form set on center.

Station mark: Aluminum tablet set flush in a sandstone 26 inches long, 17 inches wide, and 12 inches deep.

Reference marks: (1) Chisel mark (+) on rock ledge at base of 14-inch chestnut oak, distance 54.05 feet, true azimuth $320^{\circ} 43'$. (2) Chisel mark (+) on rock ledge; distance 86.58 feet, true azimuth $358^{\circ} 05'$. (3) Tree sighted from Stratton, distance 38.35 feet, true azimuth $79^{\circ} 48'$.

[Latitude $37^{\circ} 35' 20.24''$. Longitude $82^{\circ} 36' 58.51''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Collins Rock.....	58 58 25.18	238 52 40.17	4.2101409	10.081
Porter.....	147 55 34.98	327 51 40.30	4.2484148	11.009
Brandy Keg.....	148 11 06.44	328 08 40.71	4.0452148	6.895
Hurricane.....	206 14 48.63	26 19 18.58	4.3879190	15.180
Flag.....	234 52 57.42	54 57 30.07	4.1265586	8.316
Stratton.....	309 34 13.58	129 40 02.41	4.2612164	11.339

LONG SPUR, HARLAN COUNTY, KY.

On a high point of Black Mountain, between Clover Fork and Poor Fork of Cumberland River. It is best reached from Poorfork post office by trail (4 miles) over mountain to head of Clover Fork. At summit of divide, turn north and follow ridge about 1 mile. The timber is cleared over part of the ridge but is heavy from north to northeast.

Station mark: Bronze triangulation tablet cemented in top of a flat sandstone 15 by 12 by 6 inches set 3 inches below surface and covered with a pile of stone 2 feet high.

Reference marks: (1) Drill hole 1.5 inches deep in boulder in ground; distance 80.8 feet, true azimuth $212^{\circ} 50'$. (2) Tall dead tree 30 inches in diameter, the former station mark, distance 9.7 feet, true azimuth $16^{\circ} 00'$.

[Latitude $36^{\circ} 56' 21.77''$. Longitude $83^{\circ} 02' 32.61''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Harlan.....	79 33 32.50	259 23 36.48	4.3976120	15.523
Thousand Stick.....	127 52 48.92	307 39 37.39	4.6134433	25.515
Brashear.....	153 29 17.03	333 25 35.18	4.3092396	12.665
Waseoto.....	235 06 01.04	55 17 14.96	4.5271132	20.915

LOST, PERRY COUNTY, KY.

On prominent knob at head of Lost Creek, 7 miles by road north of Hazard, 0.5 mile west of gap through which passes main road to Jackson. The hill is entirely cleared, and there is an excellent view in all directions.

Station mark: Bronze triangulation tablet cemented in solid rock.

Reference marks: (1) Drill hole in solid rock 3 inches deep; distance 9 feet, true azimuth $31^{\circ} 56'$. (2) Drill hole in solid rock 3 inches deep; distance 16.7 feet, true azimuth $136^{\circ} 12'$. (3) Lone pine signal tree; distance 30 feet, azimuth $184^{\circ} 40'$.

[Latitude $37^{\circ} 19' 02.59''$. Longitude $83^{\circ} 11' 03.88''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Thousand Stick.....	49 43 14.70	229 35 09.11	4.4141161	16.124
Quicksand.....	230 28 01.35	50 37 18.14	4.4653955	18.145
Walnut.....	273 28 03.19	93 38 41.89	4.4149540	16.155
Brashear.....	351 32 34.12	171 34 00.47	4.3797893	14.898
Langdon ¹	87 03 33	266 56 07	4.25854	11.269
Tennile ¹	124 36 19	304 31 57	4.11163	8.035
Cinder ¹	151 15 44	331 13 24	4.07338	7.357
Potatoe ¹	206 03 08	26 05 30	4.11835	8.160
Fine ¹	208 53 06	28 56 57	4.28656	12.020
Carr ¹	316 15 54	136 19 13	4.06922	7.287

¹ These 6 values are preliminary; others are on United States standard datums.

NELSON, LAWRENCE COUNTY, KY.

On a cleared knob between the right and left forks of George Creek, about 2 miles northeast of Lowmansville. It can be reached from Jim Bryant's place on Nelson Branch of Left Fork.

Station mark: Aluminum triangulation tablet countersunk and cemented in rock.

Reference marks: (1) Chisel (+) mark on rock; distance 16.90 feet, true azimuth $155^{\circ} 26'$. (2) Chestnut tree 18 inches in diameter; distance 23.20 feet, true azimuth $150^{\circ} 38'$.

Signal: Quadripod of usual form set on center.

[Latitude $37^{\circ} 57' 16.48''$. Longitude $82^{\circ} 43' 56.10''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Anthony ¹	282 53 32	103 08 52	4.57015	23.094
Hurricane ¹	311 34 38	131 43 25	4.44874	17.462
Standifer ¹	346 34 19	166 35 59	4.23604	10.700

¹ These values are preliminary.

PORTER, FLOYD COUNTY, KY.

On an east-west ridge on the north side of Johns Creek about 2.5 miles (air line) above the mouth, between the properties of Lee Hall and John Porter. Station is best reached by following ridge to east from residence of William Nesbit.

Signal: Quadripod of usual form set over center.

Station mark: Aluminum triangulation tablet countersunk and cemented in solid rock.

Reference marks: (1) Chisel mark (+) on rock; distance 7.95 feet, true azimuth $304^{\circ} 47'$. (2) Chisel mark (+) on rock; distance 10.65 feet, true azimuth $59^{\circ} 10'$.

[Latitude $37^{\circ} 43' 27.06''$. Longitude $82^{\circ} 43' 22.69''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Collins Rock.....	10 49 01.29	190 47 10.23	4.3766449	14.791
Standifer.....	199 49 57.77	19 51 17.42	3.9721055	5.827
Flag.....	289 42 03.94	109 50 31.89	4.3350551	13.440
Brandy Keg.....	327 25 39.25	147 27 08.20	3.8209275	4.114
Ivy.....	327 51 40.30	147 55 34.98	4.2484148	11.009

QUICKSAND, FLOYD COUNTY, KY.

On a high ridge separating the headwaters of Quicksand Creek from Salt Lick Creek, 3 miles northwest of Hippo post office.

Station mark: Boulder in ground, in top of which is cemented a bronze triangulation tablet.

Reference marks: (1) Chestnut oak tree 2 feet in diameter; distance 6.6 feet, true azimuth $165^{\circ} 04'$. (2) Position of former signal tree and station mark (recently blown down); distance 13 feet, azimuth $16^{\circ} 00'$.

[Latitude $37^{\circ} 29' 04.52''$. Longitude $82^{\circ} 55' 47.19''$.]

To station	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Lost.....	50 37 18.14	230 28 01.35	4.4653955	18.145
Frazier.....	291 47 34.35	111 57 06.21	4.3964679	15.482
Beaver.....	323 30 08.82	143 37 19.47	4.4681256	18.259
Walnut.....	350 29 56.16	170 31 19.40	4.3106744	12.706

STANDIFER, JOHNSON COUNTY, KY.

On a high cleared knob between main Greasy Creek and Pigeon Roost Fork, at head of Buffalo Creek. It can be reached from Greasy Creek or from Pigeon Roost Fork.

Signal: Twenty-six-inch chestnut oak tree; distance 7.8 feet, true azimuth 127° 13'.

Station mark: Aluminum tablet countersunk and cemented in sandstone 28 by 20 by 14 inches.

[Latitude 37° 48' 13.17". Longitude 82° 41' 12.63".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Porter.....	19 51 17.42	199 49 57.77	3.9721055	5.827
Nelson.....	166 35 59	346 34 19	4.23604	10.700
Hurricane.....	276 23 42.60	96 30 48.92	4.2337179	10.643
Brandy Keg.....	358 29 57.29	178 30 06.71	4.1585556	8.952

STRATTON, PIKE COUNTY, KY.

On a knob on ridge between Burning Fork and Frozen Fork of Coon Creek, about 2 miles east of Pikeville, Ky. It is at head of Burning Fork and may be reached by climbing ridge back of Henry Stratton's residence on Burning Fork.

Signal: Quadripod of small poles.

Station mark: Bronze triangulation tablet set flush in rock near center of knob.

Reference mark: Dead stub of tree 2.5 feet in diameter; distance 30.4 feet, true azimuth 200° 18'.

[Latitude 37° 29' 02.80". Longitude 82° 27' 25.98".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Frazier.....	63 47 38.86	243 39 56.44	4.3191200	12.956
Collins Rock.....	96 45 00.29	276 33 27.16	4.4496061	17.497
Ivy.....	129 40 02.41	309 34 13.58	4.2612164	11.339
Flag.....	170 55 37.36	350 54 20.58	4.2916647	12.162
Canada.....	214 24 18.70	34 27 50.01	4.1777338	9.356
Dick.....	204 34 58.23	84 43 21.17	4.3093628	12.668
Willard.....	345 16 33.44	165 19 14.46	4.4102513	15.981

THOUSAND STICK, LESLIE COUNTY, KY.

About 1.5 miles northwest of Hyden. Knob is not as high as some surrounding ones to west and north, but gives a good view from north to east and south.

Station mark: Iron bolt 30 inches long and 0.75 inch in diameter, set 18 inches in ground down to bedrock. Flat strips fastened to foot of rod to prevent pulling up.

Reference marks: Chestnut-oak tree about 15 inches in diameter distance 16 feet, true azimuth 225° 24'.

[Latitude 37° 09' 57.65". Longitude 83° 24' 26.25".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Lost.....	229 35 09.11	49 43 14.70	4.4141161	16.124
Brashear.....	286 26 09.43	106 35 40.03	4.3861985	15.120
Long Spur.....	307 39 37.39	127 52 48.92	4.6134433	25.515
Harlan.....	345 00 25.18	165 03 38.73	4.4879384	19.111

WALNUT, KNOTT COUNTY, KY.

On the north end of a knob about 7 miles southeast of Hindman, at the head of Caney Fork of Beaver Creek and near the head of Troublesome Creek; south end of knob is not cleared.

120 TRIANGULATION AND PRIMARY TRAVERSE FOR 1909 AND 1910.

Station mark: Bronze triangulation tablet cemented in solid rock on top of a huge boulder or part of ledge 25 feet above ground.

[Latitude 37° 18' 10.28". Longitude 82° 53' 30.13'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Brashear.....	45 32 20.76	225 23 09.96	4.4985206	19.583
Lost.....	93 38 41.89	273 28 03.19	4.4149540	16.155
Quicksand.....	170 31 19.40	350 29 56.16	4.3106744	12.706
Frazier.....	241 05 56.07	61 14 03.58	4.3536343	14.028
Beaver.....	283 47 00.35	103 52 47.07	4.1619391	9.022
Waseoto.....	326 03 06.39	146 08 54.49	4.4056980	15.814

WASEOTO, LETCHER COUNTY, KY.

On spur of Pine Mountain near the Kentucky-Virginia State line at the head of Poor Fork of Cumberland River, 7 miles by road east of Whitesburg, at the head of Pine Creek.

Station mark: Bronze triangulation tablet cemented in sandstone outcrop.

Reference mark: Apparent location of former signal tree and station mark; distance 5 feet, azimuth 286° 00'.

[Latitude 37° 06' 45.04". Longitude 82° 43' 54.47'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Longspur.....	55 17 14.96	235 06 01.64	4.5271132	20.915
Brashear.....	88 35 44.54	268 20 47.65	4.5048858	22.816
Walnut.....	146 08 54.49	326 03 06.39	4.4056980	15.814
Beaver.....	179 44 02.66	359 44 00.65	4.2468304	10.969
Frazier.....	189 55 51.68	9 58 09.64	4.5118902	20.195
Willard.....	242 00 36.02	62 13 13.80	4.5439104	21.740

WILLARD, PIKE COUNTY, KY., DICKENSON COUNTY, VA.

On a high knob of Pine Mountain on State line, 3 miles southwest of Elkhorn City (Prairie post office). The mountain is best reached from the Kentucky side by a trail from John Sloan's on Elkhorn Creek, which crosses Pine Mountain 0.25 mile northeast of station.

Station mark: Bronze triangulation tablet cemented in small sandstone outcrop of boulder. This stone was partially split in drilling, so that tablet may not be permanently secure.

Reference marks: (1) A cross (+) well chiseled in sandstone near edge of bluff; the letters "J. B." also chiseled about 18 inches south of cross; distance 10.75 feet, azimuth 135°. (2) Another cross chiseled in flat stone (sandstone), partially embedded on edge in ground and leaning against two chestnut-tree stumps about 6 inches in diameter, one of which has partially grown around sandstone; distance 6.3 feet, azimuth 255° 30'.

[Latitude 37° 15' 35.85". Longitude 82° 23' 00.705'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Waseoto.....	62 13 13.80	242 00 36.02	4.5439104	21.740
Beaver.....	92 29 25.09	272 16 43.91	4.4913792	19.263
Frazier.....	121 52 06.11	301 41 44.01	4.4729105	18.461
Stratton.....	165 19 14.46	345 16 33.44	4.4102513	15.981
Dick.....	207 13 21.21	27 19 01.82	4.4789254	18.719

BEARWALLOW, BUCHANAN COUNTY, VA.

On a partially cleared knob about 0.1 mile west of the Virginia-West Virginia State line and about 0.5 mile north of corner of Buchanan and Tazewell (Va.) and McDowell (W. Va.) counties; also 1.25 miles north of Bearwallow post office.

Signal: Quadripod of usual form.

Station mark: Aluminum tablet cemented in a pointed block of sandstone flush with surface of ground.

Reference marks: (1) Chisel mark (+) on sandstone; distance 19.35 feet, true azimuth $31^{\circ} 28'$. (2) Chisel mark (+) on sandstone; distance 17.3 feet, true azimuth $284^{\circ} 58'$. (3) Thirty-inch chestnut-oak tree; distance 24.7 feet, true azimuth $338^{\circ} 06'$.

[Latitude $37^{\circ} 14' 38.67''$. Longitude $81^{\circ} 44' 50.55''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Elk.....	139 02 03.54	318 52 41.83	4.5401873	21.554
Hensley.....	181 49 34.15	1 49 56.10	4.4452748	17.323
Indian.....	211 02 44	31 16 30	4.50418	19.840
Pilot.....	237 30 29.74	57 47 48.81	4.6978483	30.988
Lambert.....	239 24 08.95	59 38 41.49	4.6137379	25.532
Harrison.....	268 52 48.22	89 04 52.94	4.4700566	18.340

ELK, BUCHANAN COUNTY, VA.

In northern part of county, in narrow neck of land between Kentucky and West Virginia, on round knob at head of Middle Elk, Upper Elk, and Long Branch creeks. The State line is on ridge about 0.3 mile east. The knob is mostly cleared of timber.

Signal: Pole quadripod of usual form.

Station mark: Aluminum triangulation tablet cemented in a flat sandstone, irregular in shape; extreme length 3 feet, extreme width 2.4 feet, thickness about 8 inches.

Reference marks: (1) Twelve-inch hickory tree; distance 21.15 feet, true azimuth $121^{\circ} 44'$. (2) Chisel (+) mark on rock; distance 60.95 feet, true azimuth $342^{\circ} 29'$.

Latitude $37^{\circ} 28' 47.32''$. Longitude $82^{\circ} 00' 16.16''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Dick.....	96 56 01.13	276 47 52.08	4.2984616	12.354
Taylor.....	142 32 33.06	322 26 05.91	4.4080398	15.900
Browning.....	183 05 54.35	3 06 18.37	4.2521918	11.106
Burning Rock.....	228 38 40.34	48 49 54.09	4.5569256	22.401
Hensley.....	265 47 54.37	85 57 39.70	4.3745554	14.720
Bearwallow.....	318 52 41.83	139 02 03.54	4.5401873	21.554

HARRISON, TAZEWEEL COUNTY, VA.

On a cleared hill near the head of Abbs Valley, 7 miles southwest of Pocahontas, Va., on property of the Harrison estate.

Signal: Flag and targets in a large bushy walnut tree 16 inches in diameter.

Station mark: Aluminum tablet cemented in sandstone ledge.

Reference mark: One-inch hole in ledge; distance 16.30 feet, true azimuth $275^{\circ} 40'$.

[Latitude $37^{\circ} 14' 55.70''$. Longitude $81^{\circ} 24' 53.15''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Bear Wallow.....	89 04 52.94	268 52 48.22	4.4700566	18.340
Hensley.....	133 50 04.89	313 38 20.03	4.5970946	24.572
Lambert.....	196 16 16.68	16 18 42.98	4.3256200	13.151

ANCHOR, BOONE COUNTY, W. VA.

On a partially cleared ridge 1 mile southwest of Anchor, W. Va.

Signal: Flag and targets in lone tree.

Station mark: Bronze tablet in sandstone 8 by 10 by 24, set in ground 24 inches.
Instrument elevated 42 feet.

[Latitude 37° 58' 55". Longitude 81° 54' 31.05'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Rattlesnake ¹	32 11 49	212 08 29	4.17425	9.281
Runyon ¹	64 44 29	244 33 24	4.46566	18.156

¹ These values are preliminary, and are computed from an unclosed triangle.

ANTHONY, MINGO COUNTY, W. VA.

On a high cleared knob between the waters of Marrowbone and Jennys creeks and at the head of Neely Branch of Marrowbone Creek, on land owned by Stanley Brisden. Station may be reached either from Marrowbone or Jennys Creeks.

Signal: Quadripod of usual form.

Station mark: Roundheaded bolt set in 23 by 12 by 12 inch sandstone.

Reference marks: (1) Earthenware crock set 12 inches below surface; distance 9.76 feet, true azimuth 229° 39'. (2) Chisel (+) mark on an 8 by 15 by 2 inch sandstone set 12 inches below surface; distance 9.58 feet, true azimuth 322° 30'.

[Latitude 37° 52' 44.97". Longitude 82° 19' 13.72'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Flag.....	31 43 52.67	211 37 34.06	4.4595441	17.902
Hurricane.....	55 59 19.96	235 52 57.68	4.2647713	11.432
Nelson.....	103 08 52	282 53 32	4.57015	23.094
Runyon.....	276 22 05.80	96 26 22.48	3.9944630	6.135
Chestnut Camp.....	339 34 44.86	159 37 19.34	4.2476798	10.991

BALD KNOB, BOONE COUNTY, W. VA.

On a partly cleared hill known as Bald Knob, 2 miles northeast of Bald Knob post office. It can be reached from Bald Knob post office by poor road. There is a good stopping place at the house of Chap Cook, who lives 400 yards southeast of station.

Signal: Flag in hickory tree on east end of ridge. There is timber from north to west, but flag should be seen from any direction. Two targets 3 by 6 feet placed high up about 40 feet above ground. One target 3 by 6 feet about 20 feet above ground facing north. Signal from Table Rock should appear on east end of timbered ridge.

Station mark: Bronze tablet in sandstone post 8 by 10 inches by 2.5 feet, set 2 feet in ground.

[Latitude 37° 53' 15.99". Longitude 81° 37' 02.79'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Workman.....	19 34 29.56	199 33 23.25	3.8969808	4.902
Table Rock.....	180 23 40.35	0 23 46.17	4.5234538	20.740
Ivy.....	314 57 18.22	135 01 56.97	4.1962245	9.763
Walnut.....	345 17 14	165 18 45	4.15517	8.882

BROWNING, MINGO-LOGAN COUNTY LINE, W. VA.

On a prominent cleared knob at the head of Island Creek, Pigeon Creek, Horsepen Creek, and Ben Creek. It can be best reached from the gap crossed by the road between Island Creek and Horsepen Creek, thence along the ridge south, about 30 minutes' walk.

Signal: Pole quadrupod of usual form.

Station mark: Bronze triangulation tablet set in irregular sandstone rock, flush with surface of ground.

Substation mark: Bronze triangulation tablet set in soft sandstone bedrock about 1 foot below ground surface.

Reference marks: (1) Tall hickory tree 8 inches in diameter; distance 25 feet, true azimuth $167^{\circ} 29'$; dead stub about 15 feet high, distance 17.5 feet, azimuth $174^{\circ} 29'$. (2) Glass bottle, top down, 3 inches below surface; distance 8 feet, azimuth $285^{\circ} 31'$. (3) Glass bottle, top down, 6 inches below surface; distance 12.3 feet, azimuth $50^{\circ} 08'$.

[Latitude $37^{\circ} 38' 26.20''$. Longitude $81^{\circ} 59' 36.76''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
			Log. meters.	Miles.
Elk.....	3 06 18.37	183 05 54.35	4.2521918	11.106
Dick.....	53 16 47.48	233 08 13.52	4.4121264	16.050
Taylor.....	98 29 26.70	278 22 34.78	4.2230008	10.384
Runyon.....	143 15 59.08	323 08 04.28	4.5009090	19.691
Rattlesnake.....	178 53 45.54	358 53 33.35	4.4021977	15.687
Burning Rock.....	257 06 44.74	77 17 35.63	4.4276523	16.634
Hensley.....	305 25 09.21	125 34 31.58	4.4440977	17.276

BURNING ROCK, WYOMING COUNTY, W. VA.

On a barren ridge about 4 miles west of Oceana, on the highest point of Huff Mountain, well known as Burning Rock. It is best reached by going up Jacob Cooks Branch. Horses can be ridden about a mile up branch; thence trip must be made on foot to station, a long, hard climb.

Signal: Red oak tree 6 inches in diameter, in which is flag and two targets; distance from station mark 18.6 feet; true azimuth from station mark $38^{\circ} 16'$.

Station mark: Bronze triangulation tablet set in large sandstone boulder 12 by 6 feet, 8 feet above ground.

Reference marks: (1) One-inch hole, 2 inches deep, in boulder 8.6 feet distant; true azimuth from station $11^{\circ} 56'$. (2) One-inch hole, 9.3 feet distant; true azimuth from station $231^{\circ} 07'$.

[Latitude $37^{\circ} 41' 38.54''$. Longitude $81^{\circ} 41' 51.61''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
			Log. meters.	Miles.
Hensley.....	9 01 44.74	189 00 17.63	4.3492839	13.888
Elk.....	48 49 54.09	228 38 40.34	4.5569256	22.401
Browning.....	77 17 35.63	257 06 44.74	4.4276523	16.634
Workman.....	197 26 34.16	17 28 24.85	4.1687786	9.165
Ivy.....	240 12 07.38	60 19 42.30	4.3213220	13.022
Shumate.....	286 02 57	106 10 53	4.29791	12.338
Pilot (2).....	301 35 44.06	121 51 19.31	4.6456523	27.479
Lambert.....	313 09 33.60	133 22 21.53	4.6279333	26.381
Indian.....	331 52 45	151 57 45	4.40843	15.914

CHESTNUT CAMP, MINGO COUNTY, W. VA.

On a knob at head of Miller Creek, which empties into Tug River about 1.2 miles below Nolan. Knob is at the head of Chestnut Camp Branch and Deaden Beech Branch, and about 0.8 mile southwest of head of Couley Branch of Pigeon Creek.

124 TRIANGULATION AND PRIMARY TRAVERSE FOR 1909 AND 1910.

It may be reached from J. H. Starr's place at the mouth of Couley Branch. The knob is a narrow ridge about 400 feet long. Its east end is entirely cleared.

Signal: Quadripod of usual form.

Station mark: Bronze triangulation tablet set in a flat sandstone of irregular shape weighing 300 pounds or more. Rock flush with surface of ground.

Reference marks: (1) Glass bottle 6 inches below surface; distance 13.5 feet, true azimuth 190° 39'. (2) Glass bottle 4 inches below surface; distance 12 feet, true azimuth 279° 35'. (3) Eighteen-inch chestnut oak tree; distance 97 feet, true azimuth 218° 04'.

[Latitude 37° 43' 47.22". Longitude 82° 15' 01.66".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Canada.....	33 18 09.83	213 14 06.97	4.2494135	11.035
Flag.....	69 38 59.77	249 30 07.69	4.3569745	14.136
Hurricane.....	106 23 41.37	286 14 45.41	4.3487973	13.872
Anthony.....	159 37 19.34	339 34 44.86	4.2476798	10.991
Runyon.....	193 16 47.10	13 18 18.71	4.2014969	9.882
Rattlesnake.....	235 11 57.24	55 21 11.91	4.4303692	16.739
Taylor.....	320 28 35.94	140 31 09.16	3.9845382	5.996
Dick.....	355 27 40.86	175 28 30.90	4.4056259	15.812

CROOK, BOONE COUNTY, W. VA.

On a partially-cleared ridge at head of White Oak Branch, 1 mile southwest of Crook post office.

Signal: Flag and target in large dead chestnut tree.

Station mark: Bronze tablet in sandstone 6 by 10 by 26 inches, set 2 feet in ground. Instrument on a 5-foot chestnut snag.

[Latitude 37° 55' 53.61". Longitude 81° 43' 49.95".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Table Rock.....	199 34 06.30	19 33 23.14	4.4810423	18.810
Ivy.....	307 05 41.23	127 14 30.01	4.4221037	16.423

GRAVEYARD, RALEIGH COUNTY, W. VA. (Secondary point.)

Brushy cedar tree standing in a graveyard 4 miles west of Beckley, W. Va. Road from Beckley to Lester passes within 20 yards of station.

Station mark: Cedar tree.

[Latitude 37° 45' 34.37". Longitude 81° 14' 49.76".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Ivy.....	98 20 21	278 11 23	4.33704	13.502
Phipps.....	195 49 36	15 50 09	3.69263	3.062

HENSLEY, McDOWELL COUNTY, W. VA.

On a high cleared knob at the head of Righthand Fork of Sandy Huff Branch, which empties into Tug River about 2 miles east of Iaeger, W. Va. Station may be reached by going up Righthand Fork, but better way is to follow path up Lower Hensley Branch to head and then along ridge to left.

Signal: Quadripod of usual form.

Station mark: Iron post projecting about 8 inches above ground.

Reference marks: Black oak tree 9 inches in diameter; distance 26.20 feet, true azimuth 281° 25'. (1) Inverted bottle 8 inches below surface; distance 14.1 feet,

true azimuth 355° 45'. (2) Inverted bottle 8 inches below surface; distance 12.97 feet, true azimuth 89° 05'.

[Latitude 37° 29' 42.53". Longitude 81° 44' 14.385".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Bearwallow.....	1 49 56.10	181 49 34.15	4.4452748	17.323
Elk.....	85 57 39.70	265 47 54.37	4.3745554	14.720
Browning.....	125 34 31.58	305 25 09.21	4.4440977	17.276
Burning Rock.....	189 00 17.63	9 01 44.74	4.3492839	13.888
Pilot (2).....	271 30 04.14	91 47 04.18	4.6147933	25.594
Indian.....	271 52 18	92 05 37	4.19283	9.687
Lambert.....	281 24 04.08	101 38 17.12	4.5462190	21.856
Harrison.....	313 38 20.03	133 50 04.89	4.5970946	24.572

INDIAN, McDOWELL-WYOMING COUNTIES, W. VA. (Not occupied.)

On a flat topped ridge known as Indian Ridge, 6 miles northeast of Welch. The road from Welch to Indian Creek passes 0.5 mile west of station. It is a very poor station for any purpose, but can be occupied with plane table by getting in top of a large poplar tree about 100 yards northeast of station.

Signal: Flag and target in oak tree.

Station mark: Signal tree blazed on four sides, with nail driven in each blaze.

Reference marks: Blazed trees facing signal tree. (1) N. 10° W., (2) N. 35° E., (3) S. 33° E., (4) S. 52° E.

[Latitude 37° 29' 25.57". Longitude 81° 33' 40.20".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Bearwallow.....	31 16 30	211 02 44	4.50418	19.840
Hensley.....	92 05 37	271 52 18	4.19283	9.687
Burning Rock.....	151 57 45	331 52 45	4.40843	15.914
Pilot (2).....	271 23 08	91 33 42	4.40830	15.909

IVY, RALEIGH COUNTY, W. VA.

Station of the Coast and Geodetic Survey on the highest part of a bare knob of the Cherry Pond Mountains, very steep ascent, near corner of Boone and Wyoming counties. One tree stands near station, which is 43 miles from Quinimont and 50 miles from Brownstown, two stations on the Chesapeake & Ohio Railway, and 3.5 miles by bridle path from house of Thomas Weeb, on Peach Tree Creek.

Underground mark: Iron spike in cement in a hole drilled in ledge 18 inches below ground surface, over which is placed a sandstone block with cross cut on its top.

Reference marks: Four sandstone blocks, north, south, east, and west, 7.07, 6.95, 6.99, and 6.95 feet, respectively, distant from station mark.

[Latitude 37° 47' 15.684". Longitude 81° 29' 28.382".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Burning Rock.....	60 19 42.31	240 12 07.38	4.3213220	13.022
Walnut.....	70 05 11	250 02 03	3.90139	4.952
Workman.....	105 00 19.10	284 54 34.33	4.1535745	8.850
Crook.....	127 14 30.01	307 05 41.23	4.4221037	16.423
Bald Knob.....	135 01 56.97	314 57 18.22	4.1962245	9.763
Table Rock.....	166 19 17.01	346 14 43.14	4.6607832	28.453
Paint.....	222 08 12.03	42 14 55.90	4.3792037	14.878
Beech.....	244 53 36.06	65 26 17.50	4.9335097	53.316
Phipps.....	265 52 14	86 01 46	4.35980	14.228
Keeney.....	271 03 22.37	91 32 15.67	4.8404260	43.030
Graveyard.....	278 11 23	98 20 21	4.33704	13.502
Pilot (2).....	330 00 27.44	150 08 29.83	4.5891176	24.125
Shumate.....	356 54 09	176 54 27	4.20223	9.899

LAMBERT, McDOWELL COUNTY, W. VA.

On a cleared ridge 1.5 miles west of Zenith, W. Va., on property of J. K. Lambert, who lives 100 yards southwest of station.

Signal: Quadripod covered with white cloth.

Station mark: Tablet in sandstone post 10 by 10 by 30 inches.

[Latitude 37° 25' 54.69". Longitude 81° 20' 51.96'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Harrison.....	16 18 42.98	196 16 16.68	4.3256200	13.151
Bearwallow.....	59 38 41.49	239 24 08.95	4.6137379	25.532
Hensley.....	101 38 17.12	281 24 04.08	4.5462190	21.856
Burning Rock.....	133 22 21.53	313 09 33.60	4.6279333	26.381
Pilot (2).....	228 58 48.08	49 01 54.43	3.9497559	5.535

PAINT, FAYETTE COUNTY, W. VA.

On a sharp knob on Paint Mountain known as Lick Knob, 2 miles northeast of Clear Creek post office, 2 miles southwest of Mossy post office. Line between Raleigh and Fayette counties passes near knob, which can be reached by means of Clear Fork of Coal River up White Oak Creek 1.5 miles north of Clear Creek post office. The trail is very steep, but horses can be ridden to the station. The knob is cleared of timber and a good view can be obtained in all directions.

Signal: Quadripod covered with white cloth, two targets 3 by 6 foot.

Station mark: Bronze tablet set in boulder.

Reference marks: (1) One-inch hole in boulder; true azimuth 19° 15', distance 4 feet. (2) One-inch hole in boulder; true azimuth 22° 45', distance 12 feet.

[Latitude 37° 56' 51.08". Longitude 81° 18' 30.43'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Ivy.....	42 14 55.90	222 08 12.03	4.3792037	14.878
Table Rock.....	54 56 44.84	314 45 24.80	4.5788898	23.564
Phipps.....	337 17 54	157 20 43	4.24238	10.858
Pilot (2).....	356 23 17.75	176 24 38.52	4.7117313	31.995

PHIPPS, RALEIGH COUNTY, W. VA.

On a hill cleared, except for a few chestnut trees, 4 miles northwest of Beckley, on land of Clarkson Phipps, who lives 400 yards northwest of station.

Signal: Four-foot target in chestnut tree 14 inches in diameter.

Station mark: Bronze tablet in sandstone post 8 by 8 by 24 inches.

[Latitude 37° 48' 08.14". Longitude 81° 13' 54.80'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Pilot (2).....	5 42 53	185 41 21	4.54952	22.023
Graveyard.....	15 50 09	195 49 36	3.69263	3.062
Ivy.....	86 01 46	265 52 14	4.35980	14.228
Paint.....	157 20 43	337 17 54	4.24238	10.858

PILOT (2), WYOMING COUNTY, W. VA.

On a sharp cleared knob 0.5 mile southwest of Black post office. The road from Clark Gap to Black passes within 200 yards of station.

Signal: Quadripod signal covered with white cloth target.

Station mark: Bronze tablet set in sandstone post.

Reference mark: One-inch hole drilled in ledge; true azimuth $293^{\circ} 25'$, distance 29.30 feet.

[Latitude $37^{\circ} 29' 04.23''$. Longitude $81^{\circ} 16' 18.40''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Lambert.....	49 01 34.43	228 58 48.08	3.9497559	5.535
Bearwallow.....	57 47 48.81	237 30 29.74	4.6978483	30.988
Indian.....	91 33 42	271 23 08	4.40830	15.909
Hensley.....	91 47 04.18	271 30 04.14	4.6147933	25.594
Burning Rock.....	121 51 19.31	301 35 44.06	4.6456523	27.479
Shumate.....	133 49 28	313 41 48	4.40909	15.938
Ivy.....	150 08 29.83	330 00 27.44	4.5891176	24.125
Phipps.....	185 41 21	5 42 53	4.54952	22.023

RATTLESNAKE, MINGO COUNTY, W. VA.

On first ridge west of Guyandotte River, about 2 miles north of Logan. The ridge begins just across river from Logan and may be followed to the summit. The knob is cleared on all sides, and though somewhat lower than ridges on east side of river, it affords an excellent view in every direction except to the east and northeast.

Signal: Quadripod of poles of the usual form.

Station mark: Bronze triangulation tablet cemented in an irregular flat sandstone, buried so that the top is flush with surface of ground. It is situated almost in center of top of rounded knob.

Reference mark: Lone chestnut tree 7 inches in diameter; distance 34.3 feet.

[Latitude $37^{\circ} 52' 04.93''$. Longitude $81^{\circ} 59' 56.66''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Taylor.....	35 09 22.33	215 02 41.54	4.4449279	17.309
Chestnut Camp.....	55 21 11.91	235 11 57.24	4.4303602	16.739
Runyon.....	90 28 37.34	270 20 53.55	4.2664016	11.475
Anchor.....	212 08 29	32 11 49	4.17425	9.281
Browning.....	358 53 33.35	178 53 45.54	4.4021977	15.687

RUNYON, MINGO COUNTY, W. VA.

On a knob about 2.5 miles northwest of Dingess, W. Va., at the head of Camp Branch, which empties into Twelve Pole Creek about 0.5 mile below Dingess. It may be reached by path up Camp Branch.

Signal: Quadripod of usual form.

Station mark: Iron post projecting about 10 inches above the surface.

Reference marks: (1) An iron kettle 8 inches below surface; distance 9.2 feet, azimuth $132^{\circ} 04'$. (2) Twin walnut trees, 9 and 12 inches in diameter; distance 37.2 feet, azimuth $179^{\circ} 35'$. (3) Chiseled square on rock at edge of knob; distance 56.5 feet, azimuth $160^{\circ} 33'$.

[Latitude $37^{\circ} 52' 09.24''$. Longitude $82^{\circ} 12' 32.20''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Chestnut Camp.....	13 18 18.71	193 16 47.10	4.2014969	9.882
Flag.....	46 54 49.38	226 44 14.76	4.5343142	21.265
Hurricane.....	69 55 21.65	249 44 43.01	4.4264598	16.589
Anthony.....	96 26 22.48	276 22 05.80	3.9944630	6.135
Anchor.....	244 33 24	64 44 29	4.46566	18.156
Rattlesnake.....	270 20 53.55	90 28 37.34	4.2664016	11.475
Browning.....	323 08 04.28	143 15 59.08	4.5009090	19.691
Taylor.....	353 49 49.01	173 50 50.93	4.3628010	14.327

SHUMATE, WYOMING COUNTY, W. VA. (Not occupied.)

On a cleared ridge 1 mile west of Wolf Gap and at head of Rockcastle Creek, on property of Jim Shumate, who lives 600 yards south of station.

Signal: Flag and target in trimmed hickory tree 12 inches in diameter.

Station mark: Signal tree blazed on four sides.

[Latitude 37° 38' 39.72". Longitude 81° 28' 53.24'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Burning Rock.....	106 10 53	286 02 57	4.29791	12.338
Walnut.....	147 39 55	327 36 19	4.19358	9.704
Ivy.....	176 54 27	356 54 09	4.20223	9.899
Pilot (2).....	313 41 48	133 49 28	4.40909	15.938

TABLE ROCK, KANAWHA COUNTY, W. VA.

Triangulation station of the Coast and Geodetic Survey on the range of hills lying between the two forks of Lens Creek, which flows into the Kanawha River at Brownstown, near the headwaters of the creek and about 7 miles from Brownstown station, on a long, very narrow, and steep ridge, cleared of trees.

Station mark: Small bottle set in cement 30 inches below surface, above which is a sandstone block 6 by 6 by 30 inches, top marked "U. S. C. S." Four other blocks are placed north, south, east, and west, with tops cut with cross and arrows pointing to center; north block 30 inches long, distance 7.01 feet; south block 30 inches long, distance 6.97 feet; east block 30 inches long, distance 7.05 feet; west block 30 inches long, distance 6.98 feet.

[Latitude 38° 11' 18.534". Longitude 81° 36' 53.338'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Bald.....	0 23 46.17	180 23 40.35	4.5234538	20.740
Crook.....	19 38 23.14	199 34 06.30	4.4810423	18.810
Whiteoak.....	32 08 10	212 05 18	4.10500	7.913
Foster.....	49 27 50	229 22 46	4.19868	9.818
Holly.....	84 34 27	264 29 30	4.07024	7.304
Sugar Camp.....	99 34 51	279 23 46	4.42375	16.485
Holmes.....	184 06 48.4	4 07 37.3	4.4258038	16.564
Creed.....	191 18 19.0	11 20 22.0	4.3886600	15.206
Flynn.....	306 48 48	126 52 44	4.06474	7.213
Graves.....	310 17 42	130 24 26	4.35488	14.068
Paint.....	314 45 24.80	134 56 44.84	4.5788898	23.564
Ivy.....	346 14 43.14	166 19 17.01	4.6607832	28.453
Coal.....	354 37 35	174 38 18	4.26047	11.319

TAYLOR, MINGO COUNTY W. VA.

On a cleared knob at the head of Sugar Camp Branch of Pigeon Creek, about 2.5 miles north of Matewan, W. Va., north of Horseshoe Bend of Tug River. It may be seen from a point a short distance below west end of first tunnel west of Matewan on Norfolk & Western Railway.

Signal: Quadripod of usual form.

Station mark: Bronze triangulation tablet cemented in large rock at east edge of knob flush with surface of ground.

Reference mark: Chestnut oak tree 26 inches in diameter; distance 34 feet, true azimuth 161° 08'.

[Latitude 37° 39' 45.70". Longitude 82° 10' 51.09".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Dick.....	13 00 43.08	192 59 00.26	4.2646264	11.428
Canada.....	65 04 49.37	244 58 13.70	4.2437898	10.893
Chestnut Camp.....	140 31 09.16	320 28 35.94	3.9845382	5.996
Runyon.....	173 50 50.93	353 49 49.01	4.3628010	14.327
Rattlesnake.....	215 02 41.54	35 09 22.33	4.4449279	17.309
Browning.....	278 22 34.78	98 29 26.70	4.2230008	10.384
Elk.....	322 26 05.91	142 32 33.06	4.4080398	15.900

WALNUT GAP, WYOMING COUNTY, W. VA.

On a timbered ridge 0.8 mile southwest of Walnut Gap on road from Oceana to Bald Knob.

Signal: Flag and target in a chestnut oak tree 2½ feet in diameter, blazed on four sides; 30-penny spike driven in each blaze.

[Latitude 37° 45' 47.53". Longitude 81° 34' 34.47".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Workman.....	135 34 09	315 31 32	3.95217	5.566
Bald Knob.....	165 18 45	345 17 14	4.15517	8.882
Ivy.....	250 02 03	70 05 11	3.90139	4.952
Shumate.....	327 36 19	147 39 55	4.19358	9.704

WORKMAN, BOONE-LOGAN COUNTIES, W. VA.

On a thinly timbered ridge about 1.5 miles southeast of the head of Jasper Workmans Branch, 3 miles southwest of Bald Knob post office. Line between Boone and Logan counties runs over station.

Signal: Flag and targets in locust tree 8 inches in diameter.

Station mark: Bronze tablet set in sandstone post 8 by 10 by 30 inches, set 2 feet in ground.

[Latitude 37° 49' 14.91". Longitude 81° 38' 50.84".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Burning Rock.....	17 28 24.85	197 26 34.16	4.1687786	9.165
Bald Knob.....	199 33 23.25	19 34 29.56	3.8969808	4.902
Ivy.....	284 54 34.33	105 00 19.10	4.1535745	8.850
Walnut.....	315 31 32	135 34 09	3.95217	5.566

LOUISIANA.**PRIMARY TRAVERSE.**

Tensas drainage district, including Ashton Bridge, Ashwood, Atherton, Baxter Bayou, Delta bridge, Delta Point, Dickard, Ferriday, Floyd, Frogmore, Glass, Gum Ridge, Kelloggs Landing, Lake Bruen, Lake Providence, Lamarque, Mable, Millikin, Millikens Bend, Mounds, Natchez, Newellton, Quebec, Stamboul, Sycamore Landing, Tallulah, Waddill, Waterproof, Wilsons Point, **IX**, **X**, and **XVI** 7½' quadrangles.

CONCORDIA, EAST CARROLL, MADISON, TENSAS, AND WEST CARROLL PARISHES.

The following geographic positions on approximate United States standard datum were determined in 1909 by C. B. Kendall, assistant topographer, and are based upon various triangulation points on the

west side of the river located by triangulation of the Mississippi River Commission. (See descriptions in the following lists.) Lines were run approximately around the borders of the $7\frac{1}{2}'$ quadrangles, following highways, railroads, and levees.

The work was done in cooperation with the State.

WILSONS POINT QUADRANGLE.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Small pecan tree in old field 50 feet east of forks.....	32 55 16.0	91 06 53.7
Front door of cabin, on west edge of bayou and 300 feet west of house on east edge of bayou.....	32 54 58.8	91 06 39.3
Irrigating pump on rice plantation.....	32 53 52.4	91 05 44.5
Cottonwood Landing, 300 feet west of levee, at forks of road, at southeast corner of A. K. Auaker's store; iron post stamped "Prim. Trav. Sta. No. 31-1909-LA".....	32 53 17.0	91 06 01.4
Large white house, 350 feet northwest of; farm road to northwest at bend of main road, 35 feet northwest to gate, 30 feet southeast to corner of wire fence....	32 51 36.4	91 07 22.1

Magnetic declination of quadrangle is $6^{\circ} 20' E$.

MILLIKIN QUADRANGLE.

Geographic positions along St. Louis, Iron Mountain & Southern Ry. from Shelburn north to Arkansas-Louisiana State line.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Shelburn, 0.6 mile south of; 170 feet south of trestle 122, crossing.....	32 52 32.7	91 13 34.3
Shelburn, 250 feet south of station, crossing.....	32 52 58.9	91 13 34.2
Shelburn, 250 feet southwest of station, 130 feet northwest of road crossing, at southeast corner of porch to store of C. A. Voelker; iron post stamped "Prim. Trav. Sta. No. 33-1909 LA".....	32 52 59.3	91 13 35.7
Shelburn, 1.5 miles north of; road crossing.....	32 54 26.8	91 13 34.0
Shelburn, 2.3 miles north of; 75 feet north of telephone pole painted "500-15", second-class road crossing.....	32 54 59.6	91 13 34.0
Lebanon, 800 feet north of side track to lumber yard south of station, 60 feet west of road crossing, about 15 feet northwest of center of plank bridge over ditch, in southwest corner of crossroads; iron post stamped "Prim. Trav. Sta. No. 34 1909 LA".....	32 55 47.8	91 13 34.6
Trestle 111, 15 feet north of center of; 800 feet north of switch to lumber yard, road crossing.....	32 55 47.8	91 13 33.9
Millikin, 1.4 miles south of; road crossing.....	32 56 28.1	91 13 33.8
Millikin, 0.8 mile south of; second-class road crossing.....	32 56 58.6	91 13 33.8
Millikin, 75 feet south of station, center of main track at road crossing.....	32 57 41.9	91 13 33.7
Millikin, 160 feet west of station, 40 feet north of east and west roads, at southeast corner of store of J. S. Millikin; iron post stamped "Prim. Trav. Sta. No. 35 1909 LA".....	32 57 42.4	91 13 35.3
Millikin, 0.5 mile north of; 180 feet north of trestle 103, road crossing.....	32 58 06.4	91 13 33.7
Millikin, 1.1 miles north of; second-class road crossing.....	32 58 37.7	91 13 33.6
Millikin, 1.8 miles north of; 1.2 miles south of Arkansas-Louisiana State line, road crossing.....	32 59 11.6	91 13 30.3
Arkansas and Louisiana State line, center of railway track opposite post set on east edge of railway marking the line.....	33 00 16.5	91 13 21.2
Millikin, 1.8 miles north of; 1.2 miles south of Arkansas-Louisiana State line, on south edge of road leading from levee west to Shelburn, 50 feet west of railway crossing; iron post stamped "Prim. Trav. Sta. No. 36 1909 LA".....	32 59 11.8	91 13 30.8
Bayou Mason, 1.4 miles east of; 10 feet south to gate, 10 feet northwest to old stamp, 1 mile west of railway, second-class T road through gate to south.....	32 59 26.8	91 14 21.5

MILLIKIN QUADRANGLE—Continued.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Shelburn, 1 mile east of, at 4 corners; 12 feet north to corner of yard fence.....	32 53 15.1	91 12 42.9
Well in front of cabin at second-class road south.....	32 53 37.5	91 12 16.2
Shelburn, 3 miles northeast of; 100 feet southeast of negro cabin, about 300 feet west of levee, in northeast corner of wire fence at junction of levee road with road leading southwest to Shelburn; iron post stamped "Prim. Trav. Sta. No. 28 1909 LA".....	32 54 19.4	91 11 54.0
Junction of levee road and road leading southwest to Shelburn.....	32 54 19.6	91 11 54.0
Belle of the Bend store, 1,500 feet east of, at 3 corners; second-class T road south.....	32 54 00.2	91 11 01.6
Brunet, 1 mile east of; 100 feet south of the south end of Jacob Marcus's store, 70 feet north of junction of levee road with road south to Lake Providence, on grassy knoll; iron post stamped "Prim. Trav. Sta. No. 29 1909 LA".....	32 53 53.9	91 09 24.2
Jacob Marcus's store, 160 feet south of, at 3 corners.....	32 53 53.4	91 09 23.7
Store, 350 feet southwest of, at 3 corners; second-class T road south, 30 feet south to gate.....	32 54 20.2	91 08 24.6
Old Eight Keys residence, 1,200 feet north of; 300 feet east of levee and 200 feet northwest of negro cabin, on south end of main levee road at gate to second-class T road leading south through field to Cottonwood Landing; iron post stamped "Prim. Trav. Sta. No. 30 1909 LA".....	32 55 12.4	91 07 42.5

Magnetic declination of quadrangle, 6° 25' E.

ASHTON BRIDGE QUADRANGLE.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Bayou Mason, 160 feet east of the east end of bridge over; 50 feet east of second-class T road north, on north edge of road; iron post stamped "Prim. Trav. Sta. No. 37 1909 LA".....	32 59 33.8	91 15 38.5
Second-class T road.....	32 59 33.8	91 15 39.1
Bayou Mason, on line between East and West Carroll parishes.....	32 59 34.1	91 15 41.8
Boyce Bayou, 100 feet east of center of bridge over; 30 feet west to forked locust tree, forks of public roads north and east.....	32 59 42.7	91 16 43.5
Kilbourne, 1 mile southeast of; 300 feet west of another crossroads, public crossroads, 420 feet west of forks, 25 feet southwest to oak, 35 feet southeast to oak, 4 corners at 5 points.....	32 59 28.5	91 18 01.9
Kilbourne, 1.25 miles southeast of; roads southeast and southwest, 40 feet north to tall black snag, 20 feet southeast to small hickory, point of angle of forks.....	32 59 12.8	91 18 06.2
Kilbourne, 1.5 miles south of; about 0.25 mile east of Endera and Gilbert branch of St. Louis, Iron Mountain & Southern Ry., on east edge of Kilbourne-Oak Grove road at fence corner, at T lane east; iron post stamped "Prim. Trav. Sta. No. 38 1909 LA".....	32 59 03.0	91 19 03.4
Kilbourne, 1.5 miles south of; center of main T road at T lane east.....	32 59 03.0	91 19 03.7
Forks of second-class road leading southwest to sawmill, 40 feet north to large oak, 35 feet southeast to old stump.....	32 57 54.2	91 19 22.8
Kilbourne, 4 miles south of the St. Louis, Iron Mountain & Southern Ry., 100 feet north of a second-class T road leading east toward Bayou Mason, at north point of grass triangle at forks of roads south and west; iron post stamped "Prim. Trav. Sta. No. 39 1909 LA".....	32 56 52.3	91 19 49.5
Point of angle at forks in roads 0.5 mile south of jog to west, roads southwest and southeast, 30 feet south to clump of small bushes.....	32 55 47.7	91 19 57.7
Four corners, crossroads in woods, 15 feet northwest to small persimmon tree, 30 feet southeast to small gum tree.....	32 55 29.0	91 20 03.4
Kilbourne, about 7 miles south of; 3.5 miles north of Lane's bridge over Bayou Mason and about 1.5 miles west of Bayou Mason, 70 feet west of the north end of J. T. Christy's dwelling (the old May place), near corner lot fence on west edge of road; iron post stamped "Prim. Trav. Sta. No. 40 1909 LA".....	32 54 27.8	91 20 1.5
Forks in hollow, 200 feet south of old gate, at roads south and west, 12 feet southwest to gum tree, 15 feet northwest to oak, 10 feet south to small stream crossing.....	32 54 14.3	91 20 11.1
Lane's Ferry, bridge over Bayou Mason, 2.4 miles north of, at forks of roads north and northwest, 15 feet southwest to oak, 30 feet northwest to sweet gum.....	32 53 37.6	91 20 23.7
Public T road north at corner of wire fence, center of main road at, 20 feet northeast to corner of fence, 45 feet southwest to live oak tree.....	32 50 31.2	91 14 17.8

Magnetic declination along north and south center line of quadrangle, 6° 21' E.

BAXTER BAYOU QUADRANGLE.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Center of main road opposite barn at second-class T road west.....	32 52 15.4	91 20 20.1
Oak Grove, about 3 miles east of; 310 feet west of Bayou Mason Front road and 70 feet north of Lake Providence-Oak Grove road at their junction west of the center of Lane's Ferry Bridge over Bayou Mason; iron post stamped "Prim. Trav. Sta. No. 41 1909 LA".....	32 51 35.6	91 20 30.9
Junction of Bayou Mason Front road and Lake Providence-Oak Grove roads west of the center of Lane's Ferry Bridge.....	32 51 35.0	91 20 30.9
Lane's Ferry Bridge, center of Bayou Mason line between East and West Carroll parishes.....	32 51 35.4	91 20 26.8
Tall sycamore tree on bank of ditch 150 feet east of negro cabin, 25 feet north of woods road to south, and 80 feet east of old plank bridge over ditch.....	32 51 10.7	91 20 7.8
Center of bridge over slough.....	32 50 43.0	91 19 0.9
Do.....	32 50 46.7	91 18 22.7
Do.....	32 50 50.2	91 17 48.9
Do.....	32 50 47.3	91 17 32.4
Center of bridge over bayou.....	32 50 43.6	91 16 58.3
Center of bridge over slough.....	32 50 43.7	91 15 57.2
Bayou Baxter and Lake Providence, west of junction of; 200 feet southeast of negro cabin, 130 feet west of crossing of small stream, on south edge of Oak Grove-Lake Providence road at T road to north, 0.25 mile east of edge of swamp; iron post stamped "Prim. Trav. Sta. No. 42 1909 LA".....	32 50 43.5	91 15 22.6
Center of triangle at T road north.....	32 50 43.8	91 15 22.6

Magnetic declination along north edge of quadrangle, 6° 18' E.

Geographic positions along highways.

Lane's Ferry Bridge, 0.25 mile west of; about 500 feet east of bridge over run, T road south.....	32 51 34.3	91 20 44.8
Bridge over ditch, center of; 300 feet north of dwelling.....	32 50 56.3	91 20 41.5
Shonery Branch, center of bridge over; 400 feet southwest of dwelling on east edge of road.....	32 50 05.4	91 21 22.5
Second-class road forks to southwest, center of main road at; 25 feet southeast to slim water oak, 15 feet west to rail fence.....	32 49 08.4	91 22 03.4
Lane's Ferry Bridge, 3 miles south of; southeast of Oak Grove, north of intersection of Bayou Mason road with State road and old turnpike, and about 350 feet south of negro cabin, on edge of Bayou Mason Hill road, northwest of junction with public road leading northwest to Oak Grove Forest; iron post stamped "Prim. Trav. Sta. No. 49 1909 LA".....	32 48 40.0	91 22 12.2
White house, 500 feet north of, T road west; 20 feet south to small stream crossing, 10 feet west to center of triangle.....	32 47 49.3	91 22 21.3
Second-class T road west, 25 feet southeast to 2 thorn bushes, 40 feet west to double mock orange tree.....	32 46 54.3	91 22 31.2
Corbin's Ferry, 2 miles west of; intersection of Bayou Mason Hill road and State road from Corbin's Ferry to Lake Providence, 4 corners.....	32 46 22.0	91 22 42.4
Center of bridge.....	32 46 21.9	91 22 07.3
Corbin's Ferry, 0.4 mile west of; center of bridge.....	32 46 21.7	91 20 58.8
Corbin's Ferry, 170 feet west of the center of Bayou Mason, 50 feet east of D. G. Bullin's house, near rail fence on north edge of road; iron post stamped "Prim. Trav. Sta. No. 50 1909 LA".....	32 46 21.6	91 20 38.8
Corbin's Ferry, center of Bayou Mason at line between East and West Carroll parishes.....	32 46 21.7	91 20 36.8
Corbin's Ferry, 0.8 mile east of; center of bridge over Baxter Bayou.....	32 46 25.9	91 19 54.8
Corbin's Ferry, 1.3 miles east of; center of old bridge.....	32 46 26.4	91 19 27.2
Dry Frong Bayou, 150 feet west of; about 300 feet southwest of negro house, on land of J. H. Baisdorfer estate, at the southwest corner of small plantation store on north edge of Dry Frong Bayou road at the junction with road leading west through swamp to Corbin's Ferry; iron post stamped "Prim. Trav. Sta. No. 58 1909 LA".....	32 46 17.2	91 17 53.9
T road west.....	32 46 17.0	91 17 53.6
Second-class crossroads, 15 feet southeast of; pecan tree.....	32 46 27.4	91 16 59.2
Second-class road south, center of triangle at bend of main road to east, 35 feet south to 3-pronged pecan tree.....	32 46 39.3	91 16 23.2
Bridge over Caney Bayou, 0.25 mile west of; forks of roads southwest and west, center of east and west road, 15 feet north of locust tree, 60 feet southeast to oak.....	32 46 43.4	91 15 40.4

Magnetic declination of line, 6° 21' E.

BAXTER BAYOU QUADRANGLE—Continued.**Geographic positions along highways.**

Stations.	Latitude.	Longitude.
Fisher's mill, 0.8 mile west of; 70 feet south of the south end of iron bridge over Caney Bayou, on the south edge of junction of Lake Providence-Waddill road and road leading west to Corbin's Ferry (known as the Hill road), near yard fence; iron post stamped "Prim. Trav. Sta. No. 44 1909 LA".....	° ' "	° ' "
Caney Bayou Bridge, 30 feet south of south end of, at forks.....	32 46 37.0	91 15 22.6
Pilgrims Rest (negro) Church, 350 feet north of; second-class T road east, 15 feet northeast to pecan tree, 35 feet southeast to pecan tree, at 3 corners.....	32 46 37.4	91 15 22.6
Fisher's mill, about 1.5 miles south of; 400 feet east of bridge over Bayou Lensos, 500 feet east of Fisher log railroad, 200 feet north of negro house, 40 feet south and 25 feet north of gates, near wire fence in forks of roads east and northeast; iron post stamped "Prim. Trav. Sta. No. 47 1909 LA".....	32 45 25.1	91 16 07.0
Three corners, T road northeast.....	32 45 13.1	91 15 17.7
Center of road opposite corner of garden between 2 white houses at T road east, 5 feet west to corner garden fence.....	32 45 12.8	91 15 18.0
Center of bridge over Duckpond Bayou.....	32 44 57.9	91 14 52.3
	32 44 36.0	91 14 12.7

Magnetic declination of line, 6° 18' E.

LAKE PROVIDENCE QUADRANGLE.**Geographic positions along the St. Louis, Iron Mountain & Southern Ry. near Desona.**

Stations.	Latitude.	Longitude.
Desona, 0.8 mile south of; 200 feet north of telegraph pole painted "513," public-road crossing.....	° ' "	° ' "
Desona, 150 feet east of store, public-road crossing.....	32 45 12.6	91 10 43.7
Desona, 40 feet east of store and 100 feet west of public-road crossing railroad, south of Lake Providence, in fence corner on north edge of public road; iron post stamped "Prim. Trav. Sta. No. 25-1909-LA".....	32 45 54.4	91 10 42.6
Desona, 0.8 mile north of; road crossing at cattle guard.....	32 45 54.4	91 10 43.9
Lake Providence, about 1 mile south of; 50 feet north of trestle 136, public-road crossing of railroad.....	32 46 35.6	91 10 41.6
	32 47 21.8	91 10 40.6

Geographic positions along highways.

Lake Providence, electric light pole at intersection of Gould Avenue with street near the west edge of town.....	32 48 15.7	91 11 02.6
Bayou Lensos, 150 feet south of trestle over; at public-road crossing of St. Louis, Iron Mountain & Southern Ry.....	32 48 31.5	91 11 56.5
Bayou Lensos, 1.6 miles southwest of lumber yard, at second-class T road west, 50 feet west to center of bridge over, 3 corners.....	32 47 51.8	91 13 09.6
Desona store, west of; southwest of Lake Providence, northeast of Fisher's mill, on east edge of the public road along the east bank of Bayou Mason at junction with a second-class T road east; iron post stamped "Prim. Trav. Sta. No. 43 1909 LA".....	32 47 26.0	91 13 18.4
Primary traverse station No. 43, center of main road at T road east, 20 feet east to ..	32 47 26.0	91 13 18.6
Center of main road at second-class T road through gate southeast, 50 feet northwest of storehouse, 25 feet east to gate, 40 feet south to store door.....	32 46 58.3	91 13 59.9
Fisher's mill, north of center of bridge over Bayou Lensos at public T road west, and 125 feet southwest of T road east.....	32 46 48.2	91 14 12.6
Fisher's mill, 800 feet northeast of, 100 feet east of store, at public road forks, west and southwest, 30 feet south to telephone pole at fence corner, 100 feet west to store.....	32 46 29.2	91 14 38.0
Center of triangle at forks, 150 feet east of negro cabin, at roads north and northwest.....	32 45 28.6	91 13 42.1
Joys Methodist Episcopal Church, 900 feet west of; 450 feet east of store, second-class T road south, 5 feet south to center of triangle.....	32 46 16.9	91 12 36.0
Lake Providence, 3 miles southwest of; west of Desona, crossing of Way Way-Lake Providence and Desona-Winter Bayou roads, 4 corners, center of intersection, 45 feet southwest to center of triangle.....	32 46 18.3	91 11 46.2
Sweet Canaan (negro) Church, about 0.8 mile southwest of; roads north and northeast, center of triangle at forks.....	32 45 59.4	91 12 00.9
Way Way plantation house, about 900 feet southwest of; 125 feet northwest of negro cabin, about 400 feet north of forks in public road, 25 feet northeast of the center of main road at T road north, 75 feet south of second-class T road west, inside wire fence corner on the east edge of the Lake Providence-Transylvania road at T road east; iron post stamped "Prim. Trav. Sta. No. 48 1909 LA".....	32 45 23.9	91 12 26.9
Negro cabin, 275 feet west of; 0.9 mile west of railroad, at T road south, 3 corners, 10 feet south to small bridge.....	32 45 16.5	91 11 35.8
Desona store, south of, center of public road crossing the St. Louis, Iron Mountain & Southern Ry.....	32 45 12.5	91 10 43.7

Magnetic declination of line, 6° 18' E.

LAKE PROVIDENCE QUADRANGLE—Continued.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
Lake Providence, in southeast corner of East Carroll Parish courthouse yard; iron post stamped "Prim. Trav. Sta. No. 26-1909 LA".....	° ' " 32 48 10.4	° ' " 91 10 22.4
Lake Providence, junction of Lake Street and Gould Avenue, at cemetery in west edge of town, 15 feet to water oak, 50 feet southwest to corner of cemetery fence, 40 feet south to telephone pole.....	32 48 38.3	91 11 01.8
T road south, at west end of bridge over bayou, 35 feet to end of bridge, 10 feet southwest to center of triangle.....	32 48 45.7	91 11 32.4
T road southwest, 40 feet west to china-berry tree, 40 feet northwest to telephone pole.....	32 49 04.9	91 12 25.7
Second-class T road southwest, 700 feet southeast of pumping station, 35 feet southwest to gate.....	32 50 12.8	91 13 20.8
Bridge over Baxter Bayou, 50 feet south to north end of forks of road, 20 feet north to double locust tree.....	32 50 44.1	91 13 27.1
Lake Providence, 5 miles northwest of; 90 feet north of the north end of iron bridge, 640 feet east of St. Louis, Iron Mountain & Southern Ry. crossing of Baxter Bayou road, near wire fence; iron post stamped "Prim. Trav. Sta. No. 27-1909-LA".....	32 50 44.5	91 13 27.2
Bridge at junction of levee road and road leading to Tyron.....	32 51 13.5	91 08 27.4
Cottonwood Landing, 3.5 miles south of; 2.5 miles east of Tyron, 100 feet west of small plank bridge at forks, 125 feet south of negro cabin with tin roof, 35 feet south of gate, in corner of wire fence in angle formed by junction of levee road and road leading west to Tyron; iron post stamped "Prim. Trav. Sta. No. 32, 1909-LA".....	32 51 13.3	91 08 28.5
Iron post stamped "U. S. B. M. 123.16" also "No. 129".....	32 50 59.8	91 08 44.0
Iron post stamped "U. S. B. M. 121.64" also "No. 134".....	32 50 40.7	91 09 27.9
Iron post stamped "U. S. B. M. 212.90" also "No. 138".....	32 49 50.9	91 09 54.9
Iron post stamped "U. S. B. M. 121.91" also "No. 142".....	32 49 12.8	91 10 08.1
Lake Providence, top of levee at road crossing leading to boat landing.....	32 48 17.4	91 09 52.0

Geographic positions along St. Louis, Iron Mountain & Southern Ry.

Baxter Bayou, road crossing 60 feet north of center of trestle 130.....	32 50 43.8	91 13 34.6
Shelburn, 1.5 miles south of; 80 feet south of trestle 147; crossing.....	32 51 48.6	91 13 34.4

Magnetic declination of quadrangle, 6° 39' E.

ATHERTON QUADRANGLE.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
Morgance plantation, southeast of old ferry across Bayou Lensos, at the junction of the Waddill-Transylvania road with road leading southwest across Bayou Lensos at Philips bridge; iron post stamped "Prim. Trav. Sta. No. 46 1909 LA".....	° ' " 32 41 43.0	° ' " 91 14 49.1
Center of bridge over ditch, 70 feet west of second-class road to north.....	32 41 31.8	91 13 51.0
Three corners at corner of garden fence, second-class T road south, 35 feet southeast to corner of garden.....	32 41 20.0	91 13 04.4
Transylvania, 1 mile northwest of; 4 corners at church on Mound plantation, 5 feet southeast to northwest corner of church.....	32 41 12.9	91 12 10.9
Mounds, 75 feet northwest to store steps, 35 feet southwest of hitching post, 4 corners.....	32 40 42.0	91 11 19.4

Magnetic declination of line, 6° 17' E.

Geographic positions along highways.

Goodrich Landing, in center of ramp leading to; top of levee, levee bears S. 70° 30' E., road to landing N. 36° 30' E.....	32 37 36.2	91 09 23.4
Goodrich Landing, 10 feet southwest of center of levee and 241 feet southwest of center of ramp crossing levee and leading to it, 2-inch iron post of levee survey.....	32 37 35.0	91 09 21.0

Geographic positions along the St. Louis, Iron Mountain & Southern Ry.

Alsatia, 1.1 miles north of; at trestle 159, road crossing.....	32 37 50.7	91 10 54.4
Alsatia, 1.5 miles north of; 360 feet south of telegraph pole painted "521," road crossing.....	32 38 10.6	91 10 54.0
Transylvania, 2.3 miles south of; at trestle 157, second-class road crossing.....	32 38 41.9	91 10 53.2
Transylvania, 1.6 miles south of station, second-class road crossing.....	32 39 20.2	91 10 52.3

ATHERTON QUADRANGLE—Continued.

Geographic positions along the St. Louis, Iron Mountain & Southern Ry.—Continued.

Stations.	Latitude.	Longitude.
Transylvania, 0.8 mile south of station, just south of gin house, public-road crossing.....	32 40 1.0	91 10 51.3
Transylvania, 1,070 feet south of station, public-road crossing.....	32 40 32.4	91 10 50.6
Transylvania, 1,070 feet south of station, at public T road north, 2 feet west of crossing sign, at public-road crossing, in north edge of east and west road and 20 feet east of main track; iron post stamped "Prim. Trav. Sta. No. 23-1909-LA".....	32 40 32.5	91 10 50.3
Transylvania, 0.7 mile north of; road crossing.....	32 41 18.6	91 10 49.4
Transylvania, 1.4 miles north of; public-road crossing.....	32 41 55.3	91 10 48.5
Transylvania, 2 miles north of; second-class road crossing.....	32 42 27.0	91 10 47.8
Transylvania, 3 miles north of; 200 feet southeast of telegraph pole painted "515," on north edge of east-west public road, 40 feet east of public-road crossing, at East Land; iron post stamped "Prim. Trav. Sta. No. 24-1909-LA".....	32 43 23.8	91 10 45.9
East Land, public road crossing.....	32 43 23.8	91 10 46.4
Trestle 142, 170 feet south of; second-class road crossing.....	32 44 05.2	91 10 45.4
Zion (negro) church, 400 feet northwest of; road crossing.....	32 44 42.7	91 10 44.4

WADDILL QUADRANGLE.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
Montgomery Ferry, 2 miles northeast of; center of pole bridge over bayou.....	32 38 09.2	91 22 28.8
Montgomery Ferry, 2.25 miles northeast of; center of pole bridge over bayou.....	32 38 16.2	91 22 14.0
Montgomery Ferry, 2 miles northeast of; 2 miles southwest of Caraway Lake, 30 feet south of the south end of bridge over Joe's Bayou; pecan tree at forks.....	32 38 24.4	91 21 52.4
Center of small bridge over ditch at second-class road to south.....	32 38 37.2	91 21 02.8
Caraway Lake, center of bridge over head of.....	32 38 47.7	91 20 56.9
Caraway Lake, southeast corner of porch to house on east bank of; about 400 feet east of the junction of Joe's Bayou and Caraway Lake, 75 feet northeast of J. H. Herring's old commissary and on the west edge of Montgomery-Lake Providence road; iron post stamped "Prim. Trav. Sta. No. 56 1909 LA".....	32 39 06.0	91 20 58.3
Center of cut around road in bottom of small slough, 30 feet south of junction of cut around road and old cutout.....	32 39 14.0	91 19 41.9
Negro house, 200 feet west of; center of plank bridge over ditch.....	32 39 44.4	91 19 00.9
Second-class road south, large oak tree on south edge of road at.....	32 40 34.3	91 18 43.4
Caraway Lake, 4.25 miles east of; in the southwest corner of New Light (negro) Baptist Church, on east edge of Montgomery Ferry-Lake Providence road; iron post stamped "Prim. Trav. Sta. No. 57 1909 LA".....	32 40 55.0	91 18 24.2
T road east, second class, leading through gate to Phillips's house, center of main road at, 30 feet east to gate, 35 feet northwest to locust tree, 75 feet northeast to large oak, 200 feet northeast to Phillips's house.....	32 41 14.0	91 18 00.3
Clearing gate across road at north edge of road.....	32 42 02.2	91 17 42.6
East-west crossroads, second-class, center of main road, 50 feet south of sharp bend to east, 35 feet west to dead oak, 80 feet north to plank bridge.....	32 42 50.8	91 17 11.0

Magnetic declination of line, 6° 28' E.

Geographic positions along highways.

Irvin's plantation store, 1,000 feet north of; T road west, 150 feet southeast of negro house, 20 feet northeast to sweet-gum tree, 50 feet southwest to corner wire fence, 3 corners.....	32 44 33.7	91 16 22.4
Irvin's residence, 500 feet southeast of; 450 feet north of bridge over Joe's Bayou, second-class T road through gate to west.....	32 44 06.7	91 16 25.5
Manning plantation, 10 feet east of center of gate across main road, 150 feet east of a negro cabin, northwest of old Lenos Ferry, south of Waddill post office, on east edge of the Lake Providence-Montgomery Ferry road at junction with road leading southeast across Bayou Lenos to Transylvania station; iron post stamped "Prim. Trav. Sta. No. 45 1909 LA".....	32 43 19.8	91 16 20.2
Swan Lake, at foot of; center of Bayou Lenos at old ferry crossing.....	32 42 53.3	91 16 04.1
Second-class T road southwest near the south end of house in edge of clearing, center of main road.....	32 42 23.4	91 15 41.8
Lenos Ferry, southeast of; center of road in front of small house in edge of clearing.....	32 42 10.8	91 15 31.9
Lenos Ferry, southeast of; point of angle at forks, roads northwest and west, 600 feet east of a row of five houses, 300 feet southeast of gate.....	32 41 49.4	91 15 04.2
Fisher's mill, about 2 miles south of; center of main road at T road east, 25 feet northeast to water oak, 40 feet southeast to snag in cotton patch, 3 corners.....	32 44 53.2	91 15 19.8

Magnetic declination of line, 6° 18' E.

FLOYD QUADRANGLE.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
Corbins Ferry, 2 miles west of; 2.5 miles north of Floyd, south of small bridge, 50 feet southeast of large water-oak tree, in corner of fence in the southeast corner of intersection of the old State road leading to Corbin's Ferry and the Bayou Mason Hill road; iron post stamped "Prim. Trav. Sta. No. 51 1909 LA".	° ' "	° ' "
Center of second-class T road west, 40 feet west to old gate, 60 feet north to large water oak.	32 46 21.7	91 22 42.9
Center of bridge over bayou.	32 45 31.0	91 23 15.0
Corbins Ferry (old State road), 2 miles south of; 20 miles east of Pioneer, 5 miles north of Floyd, 2 miles west of Bayou Mason, center of triangle at junction of Bayou Mason Hill road and T road leading west to Pioneer; iron post stamped "Prim. Trav. Sta. No. 52 1909 LA".	32 44 58.4	91 23 52.2
Second-class T road west, 800 feet north of bridge, 5 feet west to corner of rail fence and 15 feet north west to gum tree.	32 44 45.5	91 23 56.5
Forks of road south and west, second-class, 35 feet to double sweet gum, 45 feet northeast to large sweet gum.	32 43 49.6	91 24 00.6
Forks of road north and west, second-class, 300 feet east of negro cabin, 40 feet southeast to large oak.	32 43 03.9	91 24 02.6
Floyd, 1.4 miles north of; center of bridge over stream.	32 42 22.4	91 24 05.3
Floyd, at north edge of; center of north and south road at T road east, 10 feet west to wire fence, 60 feet east to corner of wire fence.	32 41 34.9	91 24 10.9
Floyd, West Carroll Parish courthouse, in southwest corner of plank fence around, 250 feet southwest of the center of the courthouse; iron post stamped "Prim. Trav. Sta. No. 53 1909 LA".	32 40 57.6	91 24 22.3
Floyd, 1.4 miles south of; T road west, 30 feet west to center of triangle, 35 feet southwest to corner wire fence.	32 40 38.0	91 24 17.0
Montgomery Ferry, north of; second-class road southwest to bend of main road to southeast, 15 feet south to sweet-gum tree; 35 feet northeast to corner wire fence.	32 39 40.2	91 24 20.0
Montgomery Ferry, about 400 feet east of large oak on east edge of road at junction with road leading east, center of Bayou Mason at ferry.	32 38 28.2	91 24 26.4
Center of Bayou Mason, line between East and West Carroll Parishes.	32 37 44.5	91 24 13.9
Bayou Mason, 900 feet southeast of center of, at ferry; junction of Delhi to Lake Providence road (old State road) and road northwest to Montgomery Ferry, center of triangle; iron post stamped "Prim. Trav. Sta. No. 54 1909 LA".	32 37 41.0	91 24 12.1
Forks of road, second-class, leading west to ford across Bayou Mason, old oak stump in triangle, 40 feet west to large water oak, 25 feet south to center of main road.	32 37 32.3	91 24 10.0
	32 37 54.1	91 23 36.6

Magnetic declination of line, 6° 25' E.

QUADRANGLE X.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
Montgomery Ferry, 1.3 miles south of; 0.25 mile south of rice pump, T road south, 50 feet north of old gate, 40 feet west to locust tree.	° ' "	° ' "
T road south at corner of wire fence, 10 feet southwest to old gate post, 10 feet northwest to old gate post.	32 36 39.7	91 23 38.1
Joe's Bayou, 30 feet north of forks of roads southeast and southwest, center of plank bridge over bayou.	32 36 38.8	91 22 23.0
Bend of road to northeast, center 1 of 3 large oaks on south edge of road at old house.	32 36 03.3	91 21 10.8
Junction of Montgomery-Alsatia road and road north to Joe's Bayou, in the northwest corner of front-yard fence of negro's house at; 150 feet east of Joe's Bayou; iron post stamped "Prim. Trav. Sta. No. 55 1909 LA".	32 36 12.9	91 20 28.6
Tensas Bayou, 1.1 mile west of crossing of, oak tree on north edge of road; marked "I. P. T. X" (chopped in fence).	32 36 40.1	91 19 49.9
Tensas Bayou, cypress tree at crossing in the center of.	32 36 40.9	91 18 53.6
Tensas Bayou, 70 feet east of the crossing of; at old bridge site, 8.5 miles west of Alsatia, on south edge of Montgomery Ferry-Alsatia road; iron post stamped "Prim. Trav. Sta. No. 59 1909 LA".	32 36 40.9	91 17 48.6
Tensas Bayou crossing, 1 mile east of; 1.5 miles west of Joe's Bayou crossing, leaning beech tree on north edge of road at turnout; marked "Aug. 14 II P. T. X".	32 36 40.7	91 17 47.7
Joe's Bayou crossing, small tree in center of road, 15 feet southwest to east end of part of old bridge, 70 feet northwest to large cypress tree, 35 feet west to leaning willow.	32 36 44.7	91 16 52.4
	32 36 45.0	91 15 20.7

Magnetic declination of line, 6° 19' E.

STAMBOUL QUADRANGLE.**Geographic positions along the St. Louis, Iron Mountain & Southern Ry.**

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
Talla Bena, 0.8 mile north of; second-class road crossing.....	32	30	3.9	91	09	24.1
Enoka, 350 feet south of station, public road crossing.....	32	31	49.0	91	10	02.1
Enoka, at southwest corner of negro Baptist Church, southeast of station and east of public road crossing; iron post stamped "Prim. Trav. Sta. No. 20-1909 LA"	32	31	48.9	91	10	00.4
Trestle 168, center of.....	32	32	22.8	91	10	14.3
Miller spur, 100 feet north of station board, at point of switch, road crossing.....	32	33	03.9	91	10	29.2
Roosevelt, 0.7 mile south of station, second-class road crossing.....	32	33	45.1	91	10	44.1
Roosevelt, 90 feet east of track, 60 feet south of public road, in angle of porch and front steps to McKenzie Mercantile Co.'s store; iron post stamped "Prim. Trav. Sta. No. 21-1909-LA"	32	34	18.1	91	10	54.6
Roosevelt, 100 feet north of station platform, public road crossing.....	32	34	18.6	91	10	55.8
Roosevelt, 0.7 mile north of; road crossing.....	32	34	57.1	91	10	58.5
Alsatia, 1.6 miles south of station, road crossing.....	32	35	30.5	91	10	57.7
Alsatia, 0.9 mile south of; second-class road crossing.....	32	35	53.7	91	10	57.2
Alsatia, 900 feet south of station, public road crossing.....	32	36	45.1	91	10	56.0
Alsatia, 900 feet south of station, 70 feet east of center of track, 80 feet southeast of public road crossing, at northwest corner of Outpost Plantation Co.'s store; iron post stamped "Prim. Trav. Sta. No. 22-1909-LA"	32	36	44.7	91	10	55.1

Geographic positions along highways.

Alsatia, 3 miles west of; on south edge of road, oak tree marked "III P. T. X." small tree 2 feet east is blazed.....	32	36	45.1	91	14	11.8
Alsatia, 1.8 miles west of; in northeast corner of garden on south edge of Montgomery Ferry-Alsatia road locally known as the Monticello-Goodrich road, 30 feet west of center of bridge over Graveyard Bayou, 70 feet west of crossroads; iron post stamped "Prim. Trav. Sta. No. 60 1909 LA"	32	36	45.3	91	12	44.0
Alsatia, 1 mile west of, at 3 corners; 10 feet south to center of bridge.....	32	36	45.3	91	11	58.3
Alsatia, 1.8 miles west of; on top of levee, 40 feet east of bridge over Graveyard Bayou; 4 corners.....	32	36	45.3	91	12	43.2
Alsatia, just south of station; center of railroad crossing.....	32	36	45.2	91	10	56.0
Stamboul post office, center of road crossing, road bears due north.....	32	36	46.2	91	10	19.6

Magnetic declination of line, 6° 15' E.

MILLIKENS BEND QUADRANGLE.**Geographic positions along highways.**

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
Barnes, near station, at southwest corner of store of Gassaway & Warren, 80 feet north of public road crossing the Vicksburg, Shreveport & Pacific Ry. main track and 40 feet northeast of the northwest corner of cotton platform; iron post stamped "Prim. Trav. Sta. No. 4-1909-LA"	32	22	44.2	91	07	23.2
Barnes, center of main track of Vicksburg, Shreveport & Pacific Ry. at public road crossing, about 250 feet east of water tank.....	32	22	43.5	91	07	23.5
Thomastown, 2 miles northeast of 3 corners of T road northwest, 20 feet to corner of front yard to near cabin, 45 feet north to corner of wire fence, 150 feet northwest to bridge over Walnut Bayou.....	32	22	56.2	91	03	11.5
Thomastown, northeast of; in center of triangle at public crossroads, 340 feet north of Huon store and 100 feet south of Grant's Canal, about 2 miles west of Duckpoint; iron post stamped "Prim. Trav. Sta. No. 14-1909-LA"	32	23	18.7	91	02	52.8
Huon store, 1 mile north of; second-class T road southwest, center of main road halfway between 2 turnout roads.....	32	24	8.5	91	03	3.9
Glen Mary plantation, 3 corners, near fire house at T road south, 20 feet to plank bridge, 35 feet southwest to corner plank fence.....	32	25	0.5	91	04	2.6
Water pump, 10 feet south of main road, at second-class fork southwest.....	32	25	3.1	91	05	36.2
Tallulah, 6 miles northeast of; on the east edge of Walnut Bayou public road, 30 feet north of junction with public T road southwest to point 1,800 feet northwest of Hughes's store, south of Millikens Bend; iron post stamped "Prim. Trav. Sta. No. 15-1909-LA"	32	25	33.0	91	06	58.3
Tallulah, 3 corners, 1,800 feet northwest of Hughes's store, public T road southwest to center of main road, 30 feet north to primary traverse station No. 15.....	32	25	32.7	91	06	58.3
Walnut Bayou, 3 corners, 200 feet north of vacant store, public T road west, 90 feet northwest to corner of wire fence, 130 feet west to bridge over bayou.....	32	26	19.0	91	07	22.1
Millikens Bend, 3 corners, southwest of public T road northwest, center of main road at, 15 feet northwest to center of triangle, 55 feet northwest to center of bridge over Walnut Bayou.....	32	27	13.1	91	06	26.7
Millikens Bend, at northeast corner of porch of store of N. Kahn, south of levee; iron post stamped "Prim. Trav. Sta. No. 16-1909-LA"	32	27	21.9	91	06	15.0
Millikens Bend, 1,800 feet north of gate across public road on levee, at junction of old and new parts.....	32	27	35.4	91	06	2.3
Junction of old and new levees at road crossing levee.....	32	28	19.2	91	06	23.8
Rose Hill Landing, top of levee at road crossing leading to point about 600 feet west of warehouse.....	32	28	34.2	91	06	34.8
Buckhorn Landing, top of levee at road crossing, 20 feet south to gate across levee.....	32	29	38.0	91	07	11.3
Buckhorn Landing, 3 corners, 1.8 miles east of Talla Bend, public T road to south, 5 feet south to center of triangle.....	32	29	38.3	91	07	29.1

Magnetic declination of line, 6° 23' E.

TALLULAH QUADRANGLE.

Geographic positions along Vicksburg, Shreveport & Pacific Ry.

Stations	Latitude.	Longitude.
	° ' "	° ' "
Grassy Lake, center of small trestle near west edge of trestle 32.....	32 23 7.7	91 08 17.8
Lums, at corner of wire fence on west edge of public road on bank of Brushy Bayou, 70 feet north of public road crossing Vicksburg, Shreveport & Pacific Ry., 60 feet north and 300 feet west of milepost 15; iron post stamped "Prim. Trav. Sta. No. 5-1909-LA".....	32 23 37.3	91 09 22.4
Lums, center of track at public road crossing, at milepost 15, 250 feet west of.....	32 23 38.2	91 09 22.9
Tallulah, 1 mile east of; center of track at public road crossing 80 feet east of milepost 16.....	32 24 0.7	91 10 16.6
Tallulah, at east edge of; public road crossing at corporation line.....	32 24 21.7	91 11 03.8
Tallulah, in the southwest corner of iron fence around the Madison Parish courthouse; iron post stamped "Prim. Trav. Sta. No. 6-1909-LA".....	32 24 28.6	91 11 16.3
Tallulah, 300 feet west of; crossing of Vicksburg, Shreveport & Pacific Ry. and St. Louis, Iron Mountain & Pacific Ry., center of crossing.....	32 24 33.2	91 11 31.7
Trestle over swamp, center of.....	32 24 43.1	91 12 25.4
Trestle 42, center of.....	32 24 50.0	91 13 11.8
Trestle 43, center of.....	32 24 55.3	91 13 47.8
Trestle 46, over bayou, center of.....	32 25 2.9	91 14 40.2
Talla Bena, east of; 20 feet north of center of public road from Talla Bena to Buckhorn Landing, 220 feet west of public T road south and 1,720 feet west of levee; iron post of Mississippi River Commission.....	32 29 38.5	91 07 31.7

Geographic positions along St. Louis, Iron Mountain & Southern Ry.

Talla Bena, 3 corners, 0.8 mile east of; public T road to north, 30 feet north to center of bridge over ditch.....	32 29 37.9	91 08 44.8
Talla Bena, in southwest corner of vacant lot between store and dwelling of Coltharn Co., south of store and east of center of St. Louis, Iron Mountain & Southern Ry., main track; iron post stamped "Prim. Trav. Sta. No. 13-1909-LA".....	32 29 27.3	91 09 9.5
Talla Bena, 0.9 mile south of; public road crossing, 15 feet south of small trestle 181.....	32 28 45.5	91 08 55.7
Mansford, at northwest corner of store of W. H. Ward, 200 feet east of St. Louis, Iron Mountain & Southern Ry., main track; iron post stamped "Prim. Trav. Sta. No. 12-1909-LA".....	32 28 9.9	91 08 40.5
Mansford, 1,800 feet south of station, road crossing 50 feet north of the north end of trestle 186, center of track.....	32 27 53.1	91 08 36.8
Trestle 187, 10 feet south of south end of; center of track at road crossing.....	32 27 36.1	91 08 37.7
Mansford, 1.6 miles south of; center of track at road crossing.....	32 26 56.7	91 09 13.2
Mansford, south of; north of Tallulah, 10 feet northeast of telegraph post in northwest corner of intersection of St. Louis, Iron Mountain & Southern Ry. and old dummy railroad right of way, 30 feet west of St. Louis, Iron Mountain & Southern Ry. and 20 feet north of center of dummy line right of way; iron post stamped "Prim. Trav. Sta. No. 11-1909-LA".....	32 26 40.4	91 09 29.4
Tallulah, north of; center of St. Louis, Iron Mountain & Southern Ry. at old dummy line right of way crossing.....	32 26 40.1	91 09 29.1
Telegraph pole 536, center of track opposite.....	32 25 56.5	91 10 11.4
Trestle 190, center of.....	32 25 19.4	91 10 47.1
Tallulah, second-class road crossing north of; center of track.....	32 25 2.2	91 11 3.7
Tallulah, crossing of Vicksburg, Shreveport & Pacific Ry. and St. Louis, Iron Mountain & Southern Ry.....	32 24 33.2	91 11 31.7

Geographic positions along highways.

Talla Bena, public road crossing St. Louis, Iron Mountain & Southern Ry., center of track.....	32 29 28.8	91 09 11.2
Talla Bena, 1.6 miles west of; 10 feet south to small locust tree, forks of road at junction of levees southwest and northwest.....	32 29 24.8	91 10 48.5
Forks of road, 60 feet west of west end of bridge over bayou, roads running northwest and south, 60 feet east to end of bridge, 18 feet southeast to locust tree.....	32 29 23.8	91 11 01.5
Talla Bena, west of; east of Bear Lake, 60 feet east of small bridge over ditch, in angle at junction of road leading from Talla Bena to Bear Lake; iron post stamped "Prim. Trav. Sta. No. 17-1909-LA".....	32 29 02.8	91 11 40.3
Center of plank bridge over slough, 50 feet west of.....	32 28 54.8	91 12 12.9
Center of plank bridge over slough.....	32 28 29.3	91 13 27.4
Do.....	32 28 17.3	91 14 7.1
Carlthorp's camp, 1.25 miles east of, northeast of Bear Lake clubhouse, west of Talla Bena, at junction of road from Talla Bena to Carlthorp's camp on Bear Lake and road to Bear Lake clubhouse; iron post stamped "Prim. Trav. Sta. No. 18-1909-LA;" an ash tree with characters "XVIII" cut on face stands 6 feet west of post.....	32 28 15.6	91 14 44.1
Forks at north edge of fill, roads southwest and northwest, northeast of Bear Lake clubhouse, 10 feet north to thorn tree, 100 feet southeast to old chimney.....	32 28 0.9	91 14 43.4

Magnetic declination of line, 6° 12' E.

TALLULAH QUADRANGLE—Continued.

Geographic positions along St. Louis, Iron Mountain & Southern Ry.

Stations.	Latitude.	Longitude.
Englewood, 30 feet north of north end of trestle over bayou at; public road crossing.....	° ' " 32 23 12.3	° ' " 91 12 37.4
Trestle 195, north of; second-class road crossing.....	32 23 47.8	91 12 15.4

QUEBEC QUADRANGLE.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
Bear Lake clubhouse, 50 feet southeast of south end of; on point between Roundaway Bayou and Bear Lake at lower end of Bear Lake, at corner of fence; iron post stamped "Prim. Trav. Sta. No. 19-1909-LA".....	° ' " 32 28 00.5	° ' " 91 16 01.3
Center of road at ford of bayou, 20 feet southwest to stake.....	32 27 10.2	91 17 05.1
Schoolhouse, 4,300 feet southeast of; in center of Tallulah and Delphi road at second-class crossroad, 60 feet west to large forked oak, 15 feet south to clump of mock orange trees.....	32 26 15.6	91 17 14.3
Quebec, 0.8 mile north of; forks of public roads northeast and northwest, 15 feet northwest to box culvert.....	32 26 06.6	91 17 38.0

Geographic positions along Vicksburg, Shreveport & Pacific Ry.

Lake One, center of iron bridge over lake at station.....	32 25 7.3	91 15 11.0
Lake One, in southeast corner of front yard to house of John Williams, 230 feet northwest of west end of railway bridge over lake, 150 feet north of track, about 200 feet west of Lake One station; iron post stamped "Prim. Trav. Sta. No. 7-1909-LA".....	32 25 9.5	91 15 15.3
Milepost 22, 300 feet west of; center of trestle over bayou at east end of trestle.....	32 25 16.8	91 16 16.8
Quebec, east of station, center of track over public road at west end of trestle 54.....	32 25 30.5	91 17 52.0
Quebec, at northeast corner of store of Frank Arnold (Quebec Mercantile Co.), 150 feet north of south side of station; iron post stamped "Prim. Trav. Sta. No. 8-1909-LA".....	32 25 31.4	91 18 07.5

QUADRANGLE IX.

Geographic positions along highways near east and west line through center of quadrangle, St. James Church to Laclede.

Stations.	Latitude.	Longitude.
Montgomery store, about 500 feet west of; crossing at barn lot, second-class crossing through barn lot and north across bayou, center of main road, 35 feet south to gate.....	° ' " 32 19 24.9	° ' " 91 08 24.6
Montgomery store, 1 mile west of; about a third of the way between road crossing levee and bridge across Roundaway Bayou, cypress tree.....	32 19 37.5	91 09 26.1
Tallulah, about 6 miles south of; 40 feet southeast of front of Arleton schoolhouse, west of Sevier's store, 40 feet south of Bayou Roundaway road, 60 feet southwest of junction with public road leading south to Bayou Beddell; iron post stamped "Prim. Trav. Sta. No. 63-1909-LA".....	32 19 49.7	91 10 35.3
Roundaway Bayou, 200 feet west of bridge over; public T road east, center of main road at 3 corners, 75 feet southwest to thorn tree, 15 feet west to wire fence.....	32 20 13.8	91 11 24.8
Forks of roads southwest, center of main road at junction, 40 feet southwest to large pecan tree, 50 feet southeast to telephone pole.....	32 20 33.4	91 11 37.4

Magnetic declination of east-west line through center of quadrangle, 6° 18' E.

QUADRANGLE IX—Continued.

Geographic positions along highways near south border of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Trestle 215, center of.....	32 15 03.1	91 12 25.0
Trestle 214, 400 feet north of; west rail of track at second-class road crossing.....	32 15 29.3	91 12 18.8
Trestle 212, 70 feet south of; center of track at second-class crossroads.....	32 16 14.4	91 12 36.0
Alligator Bayou, 0.7 mile south of station, about 300 feet north of telegraph pole 548, second-class road crossing.....	32 16 38.9	91 12 47.8
Alligator Bayou, 50 feet south of water tank at station, second-class road crossing..	32 17 05.6	91 13 00.8
Alligator Bayou, 700 feet south of station, 25 feet east of center of St. Louis, Iron Mountain & Southern Ry. track, at southwest corner of section foreman's house; iron post stamped "Prim. Trav. Sta. No. 66-1909-LA" equals station 1985.....	32 17 12.5	91 13 03.9
Alligator Bayou, at north end of tangent, opposite telegraph pole 546, west rail at center of trestle 208.....	32 18 13.6	91 13 33.6
Cotton gin, 100 feet north of; public road south, second-class road west, 15 feet northwest to corner of wire fence, forks of road.....	32 17 46.7	91 07 42.5
Tarman's house, opposite Kinderhook's sawmill, at northwest corner of; 80 feet east of center of St. Louis, Iron Mountain & Southern Ry. and 100 feet southeast of road crossing railroad; iron post stamped "Prim. Trav. Sta. No. 9-1909-LA".....	32 18 27.1	91 13 36.5
Kinderhook, center of crossing of St. Louis, Iron Mountain & Southern Ry. and road.....	32 18 27.7	91 13 37.4

Magnetic declination of south border of quadrangle, 6° 22' E.

Geographic positions along St. Louis, Iron Mountain & Southern Ry.

Kinderhook, 0.5 mile north of station, at public road crossing.....	32 18 49.0	91 13 34.9
Trestle 206, 75 feet south of, center of track at road crossing.....	32 19 04.2	91 13 26.6
Trestle 203, 500 feet south of, second-class road crossing.....	32 20 07.2	91 12 42.6
Laclede, 800 feet south of station, 60 feet southwest of public road crossing, 50 feet west of trestle 200, in northeast corner of front yard of house occupied by A. L. Wigler (colored) and owned by Warren Bigler, in the southwest corner of intersection of St. Louis, Iron Mountain & Southern Ry. and public east and west road; iron post stamped "Prim. Trav. Sta. No. 10-1909-LA".....	32 21 11.5	91 12 28.7
Laclede, 800 feet south of station, center of track at public road crossing.....	32 21 12.0	91 12 28.2
Laclede, north of; 40 feet north of trestle 197, second-class road crossing.....	32 21 54.8	91 12 31.5

MOUNDS QUADRANGLE.

Geographic positions along highways near north border of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Mounds, 1 mile south of station, second-class T road to west, center of main road at 3 corners, 70 feet southwest to corner of wire fence, 25 feet northwest to fence corner, 150 feet west to bridge over bayou.....	32 19 29.8	91 01 36.0
Mounds, 1.5 miles southwest of Thompson's Chapel (negro church), center of cupola.....	32 19 06.5	91 01 53.3
Mounds, 2.5 miles southwest of; southwest end of bridge over cross bayou at crossroads.....	32 18 38.4	91 02 28.3
Three corners, center of east and west road at T road north, 40 feet northwest to corner wire fence, 5 feet north to center of triangle.....	32 18 29.6	91 03 17.4
Blue Front store, 4.5 miles by road southwest of Mounds station, 35 feet south of bayou road, 30 feet west of center of triangle at junction of roads, 35 feet south northeast corner of negro house, in front yard of negro cabin on south edge of Walnut Bayou road at public T road south; iron post stamped "Prim. Trav. Sta. No. 61-1909-LA".....	32 18 56.3	91 04 22.9
Blue Front store, center of main bayou road at public T road southwest, 20 feet northwest to post, 30 feet southwest to northeast corner of store porch.....	32 19 30.4	91 05 03.6
Center of plank bridge over ditch.....	32 18 58.8	91 05 53.3
Crumpton Lake, 2 miles west of Blue Front store, center of bridge over.....	32 19 10.3	91 06 44.6
St. James (negro) Church, center of triangle at T road east on east bank of Roundaway Bayou, about 700 feet east of.....	32 19 02.6	91 07 09.6
Blue Front store, 2.5 miles by road west of; about 10 miles southeast of Tallulah, at the southwest corner of vestibule cupola of St. James Methodist Church (colored), on west side of Roundaway Bayou road about 300 feet west of Roundaway Bayou; iron post stamped "Prim. Trav. Sta. No. 62-1909-LA".....	32 19 02.9	91 07 17.5

Magnetic declination of north border of quadrangle, 6° 25' E.

MOUNDS QUADRANGLE—Continued.

Geographic positions along highways in southwest corner of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Gate across road.....	32 18 48.2	91 07 03.1
Center of triangle at forks of public road southeast, second-class road southwest..	32 17 05.1	91 07 27.3
Cape plantation house, 400 feet east of, north of King, 0.7 mile north of Solomons Temple Church, 30 feet east of center of Roundaway Bayou road, about at center of large grass triangle at second-class road east across the Roundaway Bayou, on plank bridge bank about 200 feet west of center of bridge; iron post stamped "Prim. Trav. Sta. No. 64-1909-LA".....	32 16 26.0	91 06 38.7
King, northeast of; large tall forked pecan tree on north edge of road, 75 feet east of negro cabin at edge of woods.....	32 15 18.0	91 06 29.7

Magnetic declination of southwest corner of quadrangle, 6° 14' E.

Geographic positions along Vicksburg, Shreveport & Pacific Ry.

Mounds, at northwest corner of porch to store of Maxwell, Yerger & Co., 200 feet southwest of station, south of public road crossing of railroad; iron post stamped "Prim. Trav. Sta. No. 2-1909-LA".....	32 20 19.0	91 01 26.3
Mounds, 250 feet west of station, public road crossing of railroad.....	32 20 20.5	91 01 26.5
Milepost 7, 130 feet west of center of track at second-class road crossing.....	32 20 34.2	91 02 02.4
Mounds, 1.3 miles west of center of track at public road crossing.....	32 20 48.6	91 02 38.9
Thomastown, 75 feet east of station, center of track at public road crossing.....	32 21 24.9	91 04 11.3
Thomastown, southeast corner of porch to store of F. P. Moore, about 125 feet northwest of public road crossing railroad; iron post stamped "Prim. Trav. Sta. No. 3-1909-LA".....	32 21 25.6	91 04 12.0
Milepost 10, center of track opposite.....	32 21 39.6	91 04 48.8
Barnes, 1.5 miles east of station, center of track at public road crossing.....	32 22 07.6	91 06 0.1

Geographic position on highway.

Thomastown, 1 mile north of, forks about halfway between 2 negro cabins on opposite sides of road, center of main road at second-class fork southeast, 30 feet southwest to second-class fork northwest leading to schoolhouse.....	32 22 12.6	91 04 14.8
---	------------	------------

Magnetic declination of line, 6° 23' E.

DELTA POINT QUADRANGLE.

Geographic positions along levees along west border of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Delta, 5 miles southwest of; on Bedford plantation, Mississippi River Commission iron bench-mark post at northeast corner of negro cabin 1,000 feet northeast of public road crossing levee on Bedford plantation, 1,000 feet northeast of sawmill, 250 feet west of levee, 150 feet southwest of fork leading northwest into swamp; no mark on post except stamped "1908".....	32 15 0.9	90 59 2.7
Levee, bench-mark post stamped "461".....	32 15 18.1	90 58 51.0
Levee, bench-mark post stamped "457".....	32 15 54.1	90 59 10.0
Levee, top, at 39° bend to west, at old short levee north.....	32 16 39.3	90 59 6.5
Levee, bench-mark post stamped "448," 240 feet south of 16° bend east.....	32 17 34.9	90 59 0.7
Delta, 3.4 miles southwest of, along levee, at southwest corner of porch to dwelling of Frank Briscoe (colored), which is situated about 300 feet west of the levee and is the first dwelling along levee after leaving Bedford plantation toward Delta; iron post stamped "Prim. Trav. Sta. No. 71-1909 LA".....	32 18 1.3	90 58 14.2
Delta, 2.5 miles southwest of, along levee, Mississippi River Commission iron bench-mark post on property of George Yerger, now occupied by Jack Millen (colored), 100 feet north of levee; marks obliterated.....	32 18 20.1	90 57 31.7
Levee, bench-mark post stamped "433".....	32 18 46.2	90 56 37.7

Geographic positions along Vicksburg, Shreveport & Pacific Ry.

Delta, at southwest corner of porch of small dwelling facing the railroad on railroad lot, on east corner of its junction with T street north, 325 feet east of station, 100 feet north of main line; iron post stamped "Prim. Trav. Sta. No. 1-1909-LA".....	32 19 26.9	90 55 36.3
Delta, at west edge of lawn, center of track at public road crossing near east end of long tangent.....	32 19 06.9	90 56 10.9
Delta, 1.9 miles west of; public road crossing.....	32 19 22.8	90 57 21.1
Delta, 2.5 miles west of; center of track at public road crossing.....	32 19 31.8	90 57 59.5
Milepost 3, 360 feet west of; center of track at public road crossing.....	32 19 34.2	90 58 09.6
Mounds, 1.6 miles east of; near milepost 5, center of track at public road crossing.....	32 19 58.2	90 59 52.6

GLASS QUADRANGLE.

Geographic positions along levees in northwest corner of quadrangle.

Stations.	Latitude.	Longitude.
Delta, about 8 miles by levee southwest of; on Bedford plantation, in southwest corner of crossroads; 40 feet southwest of intersection, 250 feet northeast of negro cabin, 190 feet southwest of road crossing levee; iron post stamped "Prim. Trav. Sta. No. 70, 1909 LA".....	° ' "	° ' "
Levee, center of, at public road crossing.....	32 14 26.5	90 59 48.7
Levee, top of, at road crossing leading west to sawmill and east to river.....	32 14 27.2	90 59 46.6
	32 14 53.2	90 59 9.8

Magnetic declination of line, 6° 16' E.

KELLOGGS LANDING QUADRANGLE.

Geographic positions along highways in northwest corner of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
King, 0.5 mile northeast of; center of long bridge over bayou.....	32 14 55.2	91 07 03.0
King, 200 feet west of Kell's store, at public T road north, 15 feet south to front of barn, 70 feet north to pole; 3 corners.....	32 14 29.0	91 07 20.8

Geographic positions along levee road near north border of quadrangle.

King, at southwest corner of store of T. P. Kell, on north edge of Bayou Vidal public road and 150 feet northeast of north end of parish bridge over Bayou Vidal; iron post stamped "Prim. Trav. Sta. No. 68, 1909, LA".....	32 14 28.4	91 07 18.6
King, center of steel bridge over Bayou Vidal, on line between Madison and Tensas parishes.....	32 14 26.7	91 07 20.3
Levee, center of, at crossing of road to river landing.....	32 14 12.8	91 07 14.5
Center of triangle at second-class road north, 100 feet southeast of negro cabin and 40 feet northeast of top of levee.....	32 14 41.5	91 05 24.0
Hodges Landing, top of levee at road crossing, near.....	32 14 40.6	91 05 0.4
King, 2 miles northeast of, 150 feet north of top of levee at road crossing, in northeast corner of intersection of levee road and road leading to Hodges Landing; Mississippi River Commission iron bench-mark post (not marked).....	32 14 42.1	91 05 0.2
King, 3.5 miles northeast of, 1 mile west of road to Hodges Landing, on north edge of levee road 3 feet east of east post to gate at T road north through W. P. Boryson's plantation, about 125 feet north of top of levee, 200 feet west of large hump on levee, about 200 feet south of Boryson's dwelling; iron post stamped "Prim. Trav. Sta. No. 69 1909 LA".....	32 14 39.5	91 03 25.7
Hodges Landing, top of levee at road crossing of road to.....	32 14 37.4	91 02 33.6
Christmas plantation, top of levee at road crossing on; 75 feet north to 2 negro cabins.....	32 14 30.0	91 01 03.9

Magnetic declination of quadrangle, 6° 19' E.

ASHWOOD QUADRANGLE.

Geographic positions along highways in northern border of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Store, 100 feet south of; center of main east-west road at, public road to north, 60 feet north to pecan tree, 3 corners.....	32 14 59.0	91 08 38.8
Three corners, center of east-west road at second-class T road north, 20 feet north to farm gate.....	32 14 43.5	91 09 37.3
Pinch em Easy plantation, 1,100 feet west of commissary, 3 miles west of King, 2 miles east of Quimby, 250 feet north of wagon bridge over Bayou Vidal, 30 feet south of east-west road, 40 feet west of T road south, 35 feet north of pecan tree, on south edge of Bayou Vidal Road, in southwest corner of intersection with T road south across bridge; iron post stamped "Prim. Trav. Sta. No. 65 1909 LA".....	32 14 44.4	91 10 32.6
Center of small triangle at forks of public roads north, south, and east, 60 feet south to large hollow gum tree, 25 feet west to large cottonwood, 45 feet northwest to large cottonwood.....	32 14 40.0	91 11 25.3
Quimby, 1,200 south of station, center of track at public road crossing.....	32 13 51.8	91 13 09.2
Quimby, 95 feet due east of center of east wall of station, 40 feet north along fence line from center of public road to station, in corner of wire fence; iron post stamped "Prim. Trav. Sta. No. 67 1909 LA".....	32 14 04.6	91 12 59.5

Magnetic declination of north border of quadrangle, 6° 04' E.

ASHWOOD QUADRANGLE.—Continued.

Geographic positions along St. Louis, Iron Mountain & Southern Ry.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Madison-Tensas parish line, center of trestle 218 at.....	32 13 45.3	91 13 13.2
Quimby, 1.25 miles south of, crossing.....	32 13 07.1	91 13 36.7
Quimby, 2.3 miles south of, crossing.....	32 12 21.1	91 14 05.1
Trestle 222, 440 feet north of, crossing 20 feet northeast to old well.....	32 11 58.0	91 14 19.4
Somerset, 1 mile north of, crossing 50 feet south to sign reading "Somerset".....	32 11 21.2	91 14 22.6
Somerset, 600 feet east of; northeast corner of front yard of negro cabin on west edge of public road at junction with road leading to Somerset station; iron post stamped "Prim. Trav. Sta. No. 72 1909 LA".....	32 10 34.2	91 14 01.8
Somerset, 1,000 feet south of, crossing.....	32 10 21.8	91 14 04.8
Milepost 557, 100 feet south of, second-class crossing.....	32 09 19.2	91 13 47.0
Trestle 229, 700 feet north of, second-class crossing.....	32 08 57.3	91 13 49.4
Balmoral, 1.2 miles north of, station, 200 feet north of trestle, at second-class crossing.....	32 08 37.2	91 13 54.0
Balmoral, 500 feet south of station, public crossing.....	32 07 32.5	91 14 08.8
Balmoral, 500 feet south of station, on south edge of road, 45 feet east of railway crossing, 5 feet east of crossing signboard; iron post stamped "Prim. Trav. Sta. No. 73 1909 LA".....	32 07 32.1	91 14 08.6

QUADRANGLE XVI.

Geographic positions along St. Louis, Iron Mountain & Southern Ry.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Cohns, 3 miles south of Newellton, at crossing sign on south side of road, 25 feet east of crossing; iron post stamped "Prim. Trav. Sta. No. 76 1909 LA".....	32 01 46.4	91 15 03.9
Cohns, center of track.....	32 01 46.4	91 15 04.2
Cohns, 0.8 mile south of station, center of trestle 254.....	32 01 12.3	91 15 08.3
Lake Bruin station, 0.7 mile north of, at crossing.....	32 00 05.9	91 15 16.4

Geographic positions along highways.

Cohns, 1 mile west of station, 300 feet north of Blanch's sawmill, center of bridge over Clark Bayou.....	32 01 45.0	91 16 04.9
Cohns, 1.5 miles southwest of station, gate across road.....	32 01 26.6	91 16 16.2
Blanch's mill, 1.25 miles southwest of; at end of barbed-wire gate at forks, 800 feet south of west from a row of negro cabins, dead forked gum tree.....	32 00 51.6	91 16 57.2
Cohns, 3 miles southwest of station, at southeast corner of house occupied and owned by Ollie Williams (colored), on Clarks Bayou at end of second-class road; iron post stamped "Prim. Trav. Sta. No. 90 1909 LA".....	32 00 55.7	91 17 21.7
Saranac store, at northwest corner of; 1 mile southeast of the Saddletree Lake, near T road south to Delta bridge; iron post stamped "Prim. Trav. Sta. No. 85 1909 LA".....	32 00 38.8	91 21 12.0
Saranac store, T road south near.....	32 00 39.4	91 21 12.0
Saranac store, 1.25 miles southwest of; center of bridge over Youngs Bayou.....	32 00 15.2	91 22 13.7

NEWELLTON QUADRANGLE.

Geographic positions along railroad.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Balmoral, 0.8 mile south of; crossing between trestles 235 and 236.....	32 06 58.3	91 14 16.8
Franklin spur, in corner of wire fence on south edge of road, 60 feet west of railway crossing, 300 feet northwest to shingle mill; iron post stamped "Prim. Trav. Sta. No. 74 1909 LA".....	32 06 03.1	91 14 30.2
Franklin spur, crossing.....	32 06 03.0	91 14 29.5
Franklin spur, 0.6 mile south of, crossing at trestle.....	32 05 33.4	91 14 36.2
Newellton, 0.8 mile north of; 20 feet north of trestle, at crossing.....	32 04 55.1	91 14 41.1
Newellton, north of, crossing.....	32 04 16.6	91 14 45.8
Newellton, 150 feet east of station, at northwest corner of store porch, southeast of railway crossing; iron post stamped "Prim. Trav. Sta. No. 75 1909 LA".....	32 04 13.9	91 14 44.0
Newellton, 0.5 mile south of, crossing.....	32 03 48.4	91 14 49.3
Newellton, 1.25 miles south of; 30 feet south of trestle 249, crossing.....	32 03 10.1	91 14 53.9
Trestle 252, 40 feet north of, crossing.....	32 02 35.3	91 14 58.2

NEWELLTON QUADRANGLE—Continued.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Forks at south end of straight road through rice field.....	32 00 39.3	91 11 55.5
Raritan plantation, 50 feet northwest of store, and 200 feet east of residence, 150 feet south of pumping station, on south edge of road along south side of St. Joseph Lake, beside wire fence; iron post stamped "Prim. Trav. Sta. No. 81 1909 LA".....	32 01 20.1	91 11 27.8
Hollywood store, at T road southwest to St. Joseph.....	32 02 00.9	91 12 27.3
Second-class road south.....	32 01 07.3	91 13 36.9
Second-class road northeast through gate.....	32 00 19.7	91 14 24.3

LAKE BRUIN QUADRANGLE.

Geographic positions along railroad.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Trestle 261, second-class crossing.....	31 57 18.7	91 14 45.2
St. Joseph, 50 feet north of station, crossing.....	31 55 34.9	91 14 37.3

Geographic positions along highways.

St. Joseph, 75 feet west of levee, at T street west; 30 feet southwest to street lamp at Joseph Moore & Co.'s store, 60 feet northwest to door of Kirshard's store....	31 55 01.8	91 13 54.9
St. Joseph, 50 feet west of the west end of the old courthouse, 40 feet north to Mississippi River Commission bench mark, and 600 feet west to the east end of the new courthouse; iron post stamped "Prim. Trav. Sta. No. 78 1909 LA".....	31 54 47.1	91 14 05.5
St. Joseph, Mississippi River Commission bench mark, 50 feet west of the west end of old courthouse.....	31 54 47.5	91 14 05.5
St. Joseph, middle 1 of 3 cottonwood trees 200 feet southwest of the warehouse at lower St. Joseph Landing, on river side of old levee, to which is nailed the high-water portions of Mississippi River Commission gauge, which reads from 39 to 51 feet and is marked "A".....	31 53 56.6	91 14 22.2
St. Joseph, 1 mile northeast of, at T road through gate; 45 feet northwest to gate, 80 feet north to corner of porch of negro cabin.....	31 55 56.1	91 12 50.8
St. Joseph, 2.25 miles northeast of; forks; 40 feet southeast to stable door, 110 feet southwest to 2 large cottonwood trees.....	31 56 18.5	91 12 24.5
St. Joseph, 2.8 miles northeast of (by levee road; in corner of levee at 80° angle north, on east edge of road, 60 feet east of corner of cotton field on the Woodstock plantation, 1 mile south of Pleasantview (colored) Church; iron post stamped "Prim. Trav. Sta. No. 79 1909 LA".....	31 56 25.6	91 11 44.0
Pleasantview (negro) Church, cupola.....	31 57 30.4	91 11 54.4
Bayou Catfish, center of bridge over.....	31 58 34.2	91 11 20.6
Bayou Catfish, center of bridge over; on north edge of road, at sharp bend northwest and second-class fork southeast, 110 feet north of and 50 feet south of negro cabin; iron post stamped "Prim. Trav. Sta. No. 80 1909 LA".....	31 58 35.2	91 11 20.0
Woodyard, just east of; top of levee at second-class road crossing.....	31 59 05.5	91 11 05.0
Vacant negro cabin, 400 feet north of; center of bridge.....	31 59 57.0	91 11 30.6
Church, 700 feet north of; 3 corners; 60 feet southwest to corner of garden, 80 feet west to gate, 30 feet east to telephone pole.....	31 59 56.7	91 14 54.4

• Magnetic declination of line, 6° 27' E.

Positions of Mississippi River Commission bench marks near St. Joseph.

Worrell bench mark, Mississippi River Commission, on right bank, about 150 meters above lower St. Joseph Landing, 3.8 meters back of center of old levee, at point 47 meters below angle in it, 112 meters below line of ditch running out toward river; tile and pipe.....	31 54 02.1	91 14 24.2
Bench mark 291, Mississippi River Commission, about 500 meters below lower St. Joseph Landing, on right bank, on Duck Pond plantation, 41 meters back of center of levee at a point 105 meters below an angle in levee, on north face of chimney, in fifth brick from northeast edge of chimney, and in seventh course below projecting course; copper bolt. There is a copper plate beside the bolt, bearing the numbers "208" and "96.42".....	31 53 44.0	91 14 43.0

Geographic position on St. Louis, Iron Mountain & Southern Ry.

St. Joseph, 0.5 mile southwest of; railway crossing.....	31 55 16.6	91 14 56.6
--	------------	------------

WATERPROOF QUADRANGLE.**Geographic positions along highways.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Lake St. Peter, west end of; iron bridge over Little Choctaw Bayou	31 52 20.3	91 23 33.7
L'Argent, 1.5 miles northwest of; center of bridge over bayou, on line between Tensas and Concordia parishes	31 45 12.5	91 25 02.3
L'Argent, 1.5 miles northwest of; 1,200 feet northwest of bridge, T road southeast.	31 45 20.8	91 25 13.1
Consuello, 0.8 mile northwest of; T road northwest	31 45 10.9	91 25 43.5
Azucema, 1 mile southeast of; center of bridge over bayou	31 45 49.3	91 26 03.6

Magnetic declination of line, 6° 34' E.

Geographic positions along highways.

Cross Keys, 1 mile west of; center of wooden bridge	31 53 08.8	91 22 20.9
Cross Keys, 2.5 miles west of; north of store on west edge of road, 500 feet south- west of iron bridge; iron post stamped "Prim. Trav. Sta. No. 93 1909 LA"	31 52 16.5	91 23 36.0
Sandy Bayou, center of bridge over	31 51 32.8	91 23 32.3
Second-class T road to west, 20 feet north to small plank bridge, 40 feet southwest to pecan tree	31 50 35.1	91 23 32.7

Geographic positions along St. Louis, Iron Mountain & Southern Ry.

Goldman, 1 mile northwest of station, at 3 corners; 15 feet north to bridge, 25 feet west to bridge	31 50 15.4	91 23 32.8
Goldman, in southwest corner of lot 100 feet west of E. S. Collins & Co.'s store, 55 feet east of railway crossing, 300 feet south of station board, 30 feet north of road; iron post stamped "Prim. Trav. Sta. No. 95 1909 LA"	31 49 41.0	91 22 47.6
Goldman, 0.8 mile southwest of; second-class crossing	31 49 08.5	91 23 08.4
Waterproof, 1,400 feet north of station, crossing	31 48 37.1	91 23 27.6
Waterproof, in southwest corner of open grass lot, 70 feet east of north end of sta- tion, 25 feet north of road east from station to town; iron post stamped "Prim. Trav. Sta. No. 96 1909 La"	31 48 25.3	91 23 33.3
Waterproof, 0.8 mile southwest of; crossing	31 47 56.4	91 23 58.3
Waterproof, 1.8 miles southwest of; cupola on water tank	31 47 27.7	91 24 50.6
Graveyard, crossing at; 500 feet southwest to mile pole 588	31 47 12.9	91 25 17.3
Azucema, on north edge of public road near corner of wire fence, 90 feet east of station and 40 feet south of crossing; iron post stamped "Prim. Trav. Sta. No. 97 1909 LA"	31 46 40.8	91 26 15.5
Lucket spur signboard, 75 feet northeast of; second-class crossing	31 46 00.5	91 27 30.4
Whistling post, 60 feet northeast of; second-class crossing	31 45 34.5	91 28 14.4

DELTABRIDGE QUADRANGLE.**Geographic positions along railroad near east border of quadrangle.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Lake Bruin, 200 feet north of station, crossing	31 59 34.4	91 15 20.2
Lake Bruin, 1 mile south of station, second-class crossing	31 58 39.1	91 15 26.1
Lake Bruin, 1.8 miles south of station, center of trestle 259	31 58 09.3	91 15 11.9
Lake Bruin, 2 miles south of station, north edge of second-class road, 30 feet north of railway crossing, 40 feet southeast of trestle over irrigating canal, 2 miles north of St. Joseph; iron post stamped "Prim. Trav. Sta. No. 77 1909 LA" ..	31 57 51.6	91 15 02.3

Geographic positions along highways.

Lake Bruin, 30 feet west of the Lake Bruin Front road, near corner of wire fence, in southwest corner of junction with T road to station, 100 feet southeast of negro cabin; iron post stamped "Prim. Trav. Sta. No. 82 1909 LA"	31 59 29.9	91 15 11.3
Lake Bruin, 50 feet southwest to bench mark 82, 1909, T road west	31 59 30.2	91 15 10.9

Geographic position near levee.

Ground in front of gate at second-class fork, southwest at bend of levee, south....	31 53 06.3	91 15 05.3
---	------------	------------

DELTABRIDGE QUADRANGLE—Continued.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
St. Joseph, 1 mile northwest of, at 3 corners; 30 feet north to gate.....	31 56 10.8	91 15 23.3
Anandale plantation, T road north at store and blacksmith shop, 40 feet north-east to corner of store porch, 40 feet south to corner of shop.....	31 56 25.5	91 16 22.2
St. Joseph, 3.1 miles northwest of, in northwest corner of forks; 20 feet south to Deltabridge road, 20 feet east to Newlight road, 100 feet north to bridge over Choctaw Bayou; iron post stamped "Prim. Trav. Sta. No. 83 1909 LA".....	31 56 10.5	91 17 24.6
Ridgeland House, 1,000 feet northwest of, at 4 corners; 15 feet northeast to corner of wire fence, 30 feet southeast to corner of wire fence.....	31 56 33.2	91 18 06.7
Main road at second-class T road, southwest.....	31 56 50.8	91 19 03.2
Ruth Bayou, center of bridge over.....	31 57 48.8	91 19 41.2
Gold Bell (negro) Church, 300 feet east of and 800 feet northwest of the Crimea House, beside paling fence on east edge of road near forks; iron post stamped "Prim. Trav. Sta. No. 84 1909 LA".....	31 58 41.4	91 20 10.8
Bayou, center of bridge over.....	31 59 57.7	91 20 42.8
Deltabridge, bridge over Bayou Van Buren, 130 feet west of post office at cross-roads.....	31 56 04.9	91 22 12.6
Negro church, second-class T road west at, 45 feet west to corner of wire fence, 50 feet southwest to gate.....	31 55 18.6	91 22 05.0
Maryland plantation, 300 feet southeast of gin, 3 corners; 20 feet northeast to gate. Hedgerow crossing, center of road at.....	31 55 05.3	91 21 58.0
Oneonta plantation, near telephone pole in southwest corner of crossroads, 55 feet southeast of the southeast corner of store, 65 feet north of platform scales, 300 feet northwest of Oneonta House, 300 feet south of bridge over Bayou Van Buren; iron post stamped "Prim. Trav. Sta. No. 88 1909 LA".....	31 54 44.3	91 21 24.4
Pump, 40 feet east of; second-class T road west.....	31 54 38.1	91 20 28.5
Second-class crossroad.....	31 53 55.9	91 20 25.4
Cross Keys, in southwest corner of crossroads at store; 60 feet east to store door, 25 feet southeast to corner of ice house; iron post stamped "Prim. Trav. Sta. No. 89 1909 LA".....	31 53 19.0	91 20 53.4
Cross Keys, crossroads near store.....	31 52 59.4	91 21 26.6
	31 52 59.4	91 21 26.9

Geographic positions along the St. Louis, Iron Mountain & Southern Ry.

St. Joseph, 1 mile southwest of, at trestle 271; railway crossing.....	31 54 56.0	91 15 31.0
Trestle 272, center of.....	31 54 34.3	91 16 16.7
Telegraph pole 576/5, 300 feet south of; railway crossing.....	31 54 12.0	91 17 03.6
Trestle 275, center of.....	31 53 54.4	91 18 01.7
Milepost 578, 650 feet south of; second-class crossing.....	31 53 23.0	91 18 47.0
Locust Ridge, 1.5 miles north of station, crossing.....	31 53 08.1	91 19 14.7
Second-class road crossing.....	31 52 53.9	91 19 36.4

Magnetic declination of line, 6° 30' E.

DICKARD QUADRANGLE.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Honeysuckle House, forks at; 20 feet east to double gum tree, 30 feet southwest to gum tree.....	31 59 30.1	91 22 56.8
Hard Bargain plantation, 1.8 miles north of Wesley Chapel, 3 corners.....	31 58 31.5	91 23 28.8
Hard Bargain plantation, 3 miles southwest of Saranac store, on west edge of road, 600 feet south of Hard Bargain House, 30 feet east of doctor's office near junction of roads; iron post stamped "Prim. Trav. Sta. No. 86 1909 LA".....	31 58 31.3	91 23 29.1
Choctaw Bayou, center of bridge over.....	31 57 59.1	91 23 37.8
Wesley Chapel, 600 feet southeast of, T road west, 40 feet west to old gate post, 100 feet southeast to bridge.....	31 57 06.5	91 23 20.3
Deltabridge, inside wire fence, 15 feet south of office building at northwest corner of forks of road, 160 feet east to center of iron bridge and 30 feet south to gate; iron post stamped "Prim. Trav. Sta. No. 87 1909 LA".....	31 56 04.8	91 22 12.3

Magnetic declination of line, 6° 30' E.

Geographic positions along highways.

Cross Keys, 1.25 miles west of; cupola of white church.....	31 53 07.6	91 22 30.8
---	------------	------------

GUM RIDGE QUADRANGLE.

Geographic positions along St. Louis, Iron Mountain & Southern Ry.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Locust Ridge, railway crossing at station.....	31 52 25.1	91 20 20.1
Locust Ridge, 380 feet west of station, at southeast corner of porch to Locust Ridge plantation store; iron post stamped "Prim. Trav. Sta. No. 94 1909 LA".....	31 52 28.2	91 20 22.4
Locust Ridge, 0.8 mile southwest of station, south end of railway crossing.....	31 52 02.1	91 20 55.2
Gate at second-class fork southwest.....	31 52 22.7	91 15 29.9
Upper Beeler Landing, road to, at crossing of levee.....	31 51 16.6	91 15 25.7
China Grove (negro) Church, 0.8 mile south of Upper Beeler Landing, on west side of levee road, 100 feet west of wall on Joe Curry's plantation, set at southeast corner of church; iron post stamped "Prim. Trav. Sta. No. 91 1909 LA".....	31 51 05.5	91 15 40.7
Villa Clara House, southeast corner picket fence in front of, at 3 corners.....	31 50 45.0	91 15 59.0
Villa Clara plantation, at lower side of steps leading into front door of house, about 200 meters back of levee at a point about 60 meters above prominent angle, at back side of grove of live oaks, about 1 mile above the present Beeler Landing, on right bank; marble post P.B.M. 297 (Mississippi River Commission).....	31 50 50.4	91 16 04.1
Old gin, 300 feet southwest of, center of levee at forks, 35 feet north to negro cabin.....	31 50 56.1	91 16 48.8
Small clearing, at 3 corners, 400 feet north to negro cabin, 60 feet east to gate to cow lot.....	31 51 37.5	91 18 10.3
Levee, at sharp bend to west, 4-inch iron pipe on edge of top of.....	31 51 42.3	91 18 17.0
Kemps Bend, about the middle of, about 500 meters back of river bank at a point about 600 meters below lower end of revetment, 109 meters back of levee at a point 60 meters above upper end of a long, straight stretch of levee, 428 meters below junction of old and new levees, at lower end of loop, at southwest corner of yard surrounding cabin, on right bank; tile under iron post (Mississippi River Commission bench mark).....	31 51 33.6	91 20 04.7
Locust Ridge, 2 miles south of station, at east edge of road leading northwest to Cross Keys, at south corner of lot where Kemp's store stood, 225 feet north of road crossing levee; iron post stamped "Prim. Trav. Sta. No. 92 1909 LA".....	31 51 07.5	91 20 32.6
Plank bridge at forks south of bridge over lake, 0.8 mile northwest of levee.....	31 51 42.3	91 20 52.8

Magnetic declination of line, 6° 27' E.

Geographic positions along the St. Louis, Iron Mountain & Southern Ry.

Gibson, 100 feet south of, trestle 281, railway crossing near station.....	31 51 41.6	91 21 26.3
Trestle 283, center of.....	31 51 04.8	91 21 57.1
Trestle 285, center of.....	31 50 35.7	91 22 15.0
Trestle 286, center of.....	31 50 24.3	91 22 21.9

MABLE QUADRANGLE.

Geographic positions along St. Louis, Iron Mountain & Southern Ry.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Tanglewood, 1,200 feet northeast of station, second-class crossing.....	31 44 57.1	91 29 11.5
Tanglewood, 4 feet south of station signboard, on south edge of road, 30 feet west of railway crossing; iron post stamped "Prim. Trav. Sta. No. 98 1909 LA".....	31 44 49.5	91 29 23.4
Tanglewood, 0.8 mile south west of station, 60 feet south west of trestle 304; second-class crossing.....	31 44 31.2	91 29 50.8

Geographic positions along highways.

Small store, 750 feet east of, at 3 corners; 15 feet west to bridge.....	31 40 49.1	91 28 55.8
Pittsfield plantation, about 200 feet south of Pittsfield's house, at northwest corner of barnyard, on north edge of levee road in southeast corner of wire fence around orchard, 20 feet north of gate, on land owned by C. L. Pullen; iron post stamped "Prim. Trav. Sta. No. 105 1909 LA".....	31 40 29.6	91 28 25.7
Plank bridge over ditch at bend of levee south.....	31 39 49.2	91 28 05.8
Grassmere plantation, 275 feet west of store, toe of vamp south across levee.....	31 38 42.2	91 27 39.4
Bullitts Bayou Landing, 1,350 meters northeast of, 24.6 meters back of levee at a point 165 meters above a prominent angle in levee where old levee from Bullitts Bayou Landing joins main levee 2 meters inside fence, in front of Grassmere plantation, 101 meters below road crossing back across plantation; tile under iron post (Mississippi River Commission bench mark No. 129-4).....	31 38 41.5	91 27 43.1
St. James (negro) Church, near; in southwest corner of picket fence around church, which is on north edge of levee road on the Rifle Point plantation; iron post stamped "Prim. Trav. Sta. No. 109 1909 LA".....	31 38 53.0	91 26 11.7
Rifle Point plantation, 0.5 mile east of house, T road northwest, 60 feet northwest to gate, 15 feet northwest to small bridge.....	31 38 59.4	91 25 48.8

MABLE QUADRANGLE—Continued.

Geographic positions along highways—Continued.

Stations.	Latitude.	Longitude.
Old milestone on west edge of road at forks, 20 feet south to chinaberry tree, 30 feet west to chinaberry tree.....	° ' "	° ' "
St. Johns Landing, 1 mile west of, near pole fence in northwest corner of intersection of levee road and road from St. Johns Landing around outside of Lake St. John, 60 feet west to gate, 100 feet west to negro cabin, 130 feet east to top of levee; iron post stamped "Prim. Trav. Sta. No. 110 1909 LA".....	31 39 44.2	91 24 56.6
Store, 100 feet northeast of, at 4 corners; 30 feet southwest to plank bridge, 210 feet northeast to top of levee at road crossing.....	31 40 31.4	91 24 30.4
Canebreak plantation, 200 feet northeast of house, T road west through gate.....	31 41 17.7	91 24 35.5
Delhi plantation, about 1.25 miles above Gibson's Landing and about 2.5 miles below L'Argent Landing, about 0.8 mile from river bank, about 0.5 mile from old river bank back of bar and 95 meters back of center of levee at a point 33 meters above a road crossing; tile under iron post (Mississippi River Commission bench mark "Delhi").....	31 41 56.6	91 24 38.5
Leeola plantation, on west edge of levee road, in northeast corner of wire fence around yard of plantation house, 75 feet southeast of store, 30 feet southwest of forks of road; iron post stamped "Prim. Trav. Sta. No. 111 1909 LA".....	31 42 31.7	91 24 47.0
Leeola, 600 feet north of store, T road west.....	31 43 28.4	91 24 24.4
Monona plantation, 300 feet northeast of barn, at 4 corners, 30 feet west to gate.....	31 43 35.3	91 24 26.7
L'Argent, 75 feet northeast of store, toe of vamp at 4 corners.....	31 44 17.8	91 24 10.9
L'Argent, 160 feet north of northwest corner of L'Argent store and post office, 110 feet northwest of forks of roads, 90 feet east of gate across road, at south corner of barn-yard fence; iron post stamped "Prim. Trav. Sta. No. 112 1909 LA".....	31 44 50.5	91 23 48.7
	31 44 51.7	91 23 49.1

Magnetic declination of line, 6° 31' E.

FERRIDAY QUADRANGLE.

Geographic positions along St. Louis, Iron Mountain & Southern Ry.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Trestle 306, center of.....	31 43 50.6	91 30 52.7
Trestle 307, 60 feet south of; second-class crossing.....	31 43 18.5	91 31 41.1
Clayton Junction, 0.8 mile north of, 40 feet south of trestle 308; crossing.....	31 42 56.0	91 31 59.3
Clayton Junction, point of switch at.....	31 42 21.4	91 32 06.3
Trestle 42, center of.....	31 41 17.8	91 32 16.1
M. Junk, residence of; southwest corner of front yard fence, at Cypress Bayou, on north side of road, 50 feet east of railway, 150 feet north of Cypress Bayou, 125 feet southwest of Mr. Junk's house; iron post stamped "Prim. Trav. Sta. No. 99 1909 LA".....	31 40 42.2	91 32 21.0
Pecania, second-class crossing at station.....	31 40 29.9	91 32 23.4
Trestle 36, 70 feet north of; second-class crossing.....	31 39 34.6	91 32 31.6
Panola, 800 feet north of station, between trestles 33 and 34; crossing.....	31 39 10.1	91 32 51.8
Ferriday, 1 mile north of; crossing of Texas & Pacific Ry. and dummy track.....	31 38 32.2	91 33 08.4
Ferriday, 0.8 mile north of; crossing.....	31 38 21.6	91 33 04.8
Ferriday, in northeast corner of wire fence around public school at west end of street west from station; iron post stamped "Prim. Trav. Sta. No. 100 1909 LA".....	31 37 46.6	91 33 21.3

Geographic positions along highways.

Lamarque plantation, 1.5 miles northeast of store, in small depression on south edge of road between road and levee; dead 3-pronged locust tree.....	31 44 03.2	91 37 18.8
Rotiquita plantation, 1.2 miles west of store, in center of road opposite negro cabin; large spreading live oak tree.....	31 44 09.5	91 36 46.1
Rotiquita plantation, on south edge of Lamarque-Clayton public road, 3.4 miles west of Clayton, at northwest corner of store; iron post stamped "Prim. Trav. Sta. No. 118 1909 LA".....	31 44 12.6	91 35 35.3
Clayton, 1.8 miles west of, 200 feet northwest of Moss Gier plantation house, road crossing old levee at T road south, center of old levee at crossing.....	31 43 58.2	91 34 10.1
Clayton, 1.25 miles northwest of; 800 feet west of church, T lane south, 10 feet east to small bridge; center of public road.....	31 43 39.1	91 33 45.0
Clayton, 600 feet north of railroad station, center of triangle at T road east, 30 feet east to center of siding to warehouse, 50 feet west to gate to front yard of dwelling.....	31 43 19.8	91 32 40.7
Clayton, 200 feet southwest of railroad station, at southeast corner of Clayton Methodist Church, on west edge of first street west of St. Louis, Iron Mountain & Southern Ry.; iron post stamped "Prim. Trav. Sta. No. 119 1909 LA".....	31 43 15.0	91 32 38.2
Ferriday, 1.5 miles northwest of; 3 corners in edge of swamp, T road north, 50 feet northeast to dead oak, 35 feet south to pecan tree on south side of old tram road.....	31 38 08.2	91 34 19.2
Black Bayou, just west of Dalgin sawmill site, center of wooden bridge over.....	31 38 21.1	91 34 36.1
Black Bayou, 0.5 mile northwest of bridge, center of plank bridge over old slough.....	31 38 39.6	91 34 42.6

FERRIDAY QUADRANGLE—Continued.**Geographic positions along highways—Continued.**

Stations.	Latitude.	Longitude.
Ferriday, 3 miles northwest of, on north edge of "Doty" road leading northwest from Ferriday, at southeast corner of front yard fence around the easternmost of 2 negro cabins situated in first clearing northwest of Dalgin sawmill site, 50 feet southeast of the southeast corner of the negro cabin, 70 feet east of a water oak tree in center of road; plantation is known as the Jenkins Ridge place and house is now occupied by Oliver Green (colored); iron post stamped "Prim. Trav. Sta. No. 125 1909 LA."	° ' "	° ' "
Large sweetgum tree on the north edge of road, 40 feet southeast of the southeast corner of a negro cabin and 35 feet east of front gate.	31 39 30.7	91 35 02.9
Log railroad crossing, 0.4 mile southeast of; forks of public roads northwest and southwest, 25 feet south to water oak, 30 feet west to small locust, 25 feet north to large sweet gum.	31 39 51.3	91 36 06.3
Log railroad crossing, center of public road at.	31 39 44.6	91 36 43.8
	31 39 50.4	91 37 02.5

Magnetic declination of line, 6° 31' E.

Geographic positions along highways.

Ferriday, 1 mile northeast of; levee road under dummy railway.	31 38 14.0	91 32 39.4
Negro church, 150 feet northeast of; T road northwest, 20 feet northwest to gate.	31 38 41.3	91 32 19.2
Pecony plantation, T road northwest at house, 20 feet northwest to gate through wire fence.	31 39 27.5	91 31 19.0
Bethel Chapel, 3 corners at; 20 feet west to wire gate, 50 feet north to bench mark post 104.	31 39 44.4	91 31 00.9
Ferriday, 4 miles northeast of; in line with and 35 feet east of the southeast corner of Bethel Chapel on levee road at junction with road leading northwest to Clayton; iron post stamped "Prim. Trav. Sta. No. 104 1909 LA."	31 39 44.8	91 31 00.6
Wechermore plantation, 130 feet northeast of store; second-class road fork to northwest.	31 40 17.9	91.30 16.8

Magnetic declination of line, 6° 27' E.

LAMARQUE QUADRANGLE.**Geographic positions along highways.**

Stations.	Latitude.	Longitude.
Frogmore, 2.5 miles northwest of station, in bend of levee, west of Brushy Bayou road, 80 feet west of center of triangle at fork leading to Chirippa cotton gin, 500 feet north of Brushy Bayou negro church, 50 feet southwest of a negro cabin; iron post stamped "Prim. Trav. Sta. No. 115 1909 LA."	° ' "	° ' "
Frogmore, 2.5 miles northwest of station, 550 feet north of Brushy Bayou negro church, center of triangle formed by forks of road and garden fence, fork northeast to cotton gin, 40 feet north to garden fence.	31 38 19.1	91 40 32.9
Frogmore, 2 miles northwest of station, forks, center of main road at second-class T road southeast.	31 38 19.1	91 40 31.5
Ballina, 0.6 mile west of post office, 3 corners, T road east, 30 feet north to pecan tree, 30 feet southeast to corner of picket fence.	31 39 02.6	91 40 55.6
Ballina, 200 feet south of store and post office, 100 feet west of the south end of Ballina plantation house, in southeast corner of a 90° bend north, and on the east edge of the Frogmore-Clayton road; iron post stamped "Prim. Trav. Sta. No. 116 1909 LA."	31 39 57.6	91 41 16.9
Ballina, 1 mile north of, at 4 corners; second-class east-west road, 15 feet east to center of triangle, 20 feet northeast to corner of wire fence.	31 39 57.0	91 40 41.8
Ballina, 1.6 miles northeast of; second-class T road east, center of main road, 25 feet southeast to large post at corner of fence, 10 feet east to center of triangle.	31 40 46.5	91 40 33.5
Lamarque, 0.9 mile southwest of; small pole and plank bridge across ditch, 400 feet north of a negro cabin, center of.	31 41 13.8	91 40 27.6
Lamarque, 100 feet northeast of the northeast corner of Dunbarton plantation store, 50 feet east of a meat market, on inside edge of levee on south bank of Tensas River, on north edge of river road from Lamarque to Clayton, 30 feet north of T road south to Ballina; iron post stamped "Prim. Trav. Sta. No. 117 1909 LA."	31 42 52.3	91 39 45.8
Lamarque, 75 feet northeast of Dunbarton store, public T road south, 30 feet north to Prim. Trav. Sta. No. 117.	31 43 38.0	91 39 28.9
Lamarque, 200 feet west of plantation store, public T road south, 40 feet northwest to corner of old warehouse.	31 43 37.7	91 39 28.9
Ballina, 3.5 miles east of; forks, second-class road west along wire fence at slight bend of main road southwest, 25 feet south to large hackberry tree, 60 feet west to crooked sweet-gum tree.	31 43 36.6	91 38 28.9
Ballina, 3.2 miles east of; in southeast corner of wire fence around negro cabin in edge of woods, on north edge of road from Ferriday to Ballina, 30 feet southeast of the southeast corner of negro cabin, 20 feet east of a forked live oak tree standing in yard, 350 feet east of a gate; iron post stamped "Prim. Trav. Sta. No. 126 1909 LA."	31 40 25.8	91 37 38.4
Ballina, 2.5 miles northeast of; center of triangle at forks in field.	31 40 15.2	91 38 06.9
Ballina, 0.8 mile east of; 4 corners in field, north and south second-class cross road, 25 feet west to pole bridge over ditch.	31 40 16.5	91 38 14.6
Ballina, 75 feet north of store and post office, 3 corners, T road east to Ferriday, 20 feet east to gate.	31 39 58.6	91 40 01.4
	31 40 00.0	91 40 41.2

Magnetic declination of east border of quadrangle, 6° 36' E.

FROGMORE QUADRANGLE.

Geographic positions along St. Louis, Iron Mountain & Southern Ry.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Frogmore, 3.25 miles northeast of; public road crossing, center of track.....	31 36 22.6	91 37 38.9
Bayou Cocodrie, center of trestle over.....	31 36 17.2	91 38 32.7
Frogmore, 1.6 miles east of; second-class road crossing, 100 feet west of trestle, center of track at.....	31 36 13.8	91 39 34.4
Frogmore, 50 feet west of station, at public road crossing, center of main track.....	31 36 11.6	91 40 12.9
Frogmore, in southeast corner of wire fence around dwelling of B. Y. Wade, on north side of railroad, 300 feet northwest of station, 100 feet west of Frogmore plantation store, 30 feet southeast of the southeast corner of Wade's house, 80 feet north of center of main track; iron post stamped "Prim. Trav. Sta. No. 114 1909 LA.".....	31 36 12.3	91 40 14.7
Frogmore, 380 feet west of station, 157 feet southwest of Prim. Trav. Sta. No. 114, 15 feet north of center of main track; U. S. Engineers' bench mark post marked "U.S.E.B.M.".....	31 36 11.5	91 40 16.3

Geographic positions along highways.

Frogmore, 0.8 mile northeast of station, forks, 300 feet south of cotton gin, center of triangle.....	31 36 41.8	91 39 57.9
Frogmore, 1.4 miles northeast of station, on east edge of Brushy Bayou road, opposite 34° bend of road to west, summit of small Indian mound.....	31 37 22.3	91 40 02.3
Cohns, 400 feet southeast of clubhouse, center of pole bridge over Cocodrie Bayou at its junction with Cross Bayou.....	31 35 08.2	91 37 41.1
Cohns, on top of small mound 30 feet north and nearly in front of the north entrance to clubhouse, at the junction of Cocodrie and Cross bayous, about 1.5 miles south of Turtle Lake station on the St. Louis, Iron Mountain & Southern Ry.; iron post stamped "Prim. Trav. Sta. No. 122 1909 LA.".....	31 35 10.8	91 37 43.7
Turtle Lake, 0.8 mile southwest of station, center of wire gate across road leading Cohns clubhouse, at small elm tree in old deadening.....	31 36 03.1	91 37 37.6

Magnetic declination of east border of quadrangle, 6° 30' E.

SYCAMORE LANDING QUADRANGLE.

Geographic positions along St. Louis, Iron Mountain & Southern Ry.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Ferriday, 0.25 mile south of station, at point of switch at junction of St. Louis, Iron Mountain & Southern Ry. and Texas & Pacific Ry.....	31 37 23.0	91 33 00.2
Ferriday station, 0.5 mile south of; crossing of St. Louis, Iron Mountain & Southern Ry. and Texas & Pacific Ry.....	31 37 15.0	91 33 00.2
Sycamore, 0.5 mile west of station, second-class crossing.....	31 36 51.0	91 32 11.7
Sycamore, 0.25 mile southeast of station, crossing.....	31 36 29.5	91 31 29.4
Ferriday, 3.5 miles southeast of, at corner of wire fence, 15 feet east of southeast corner of negro church on south side of levee road; iron post stamped "Prim. Trav. Sta. No. 101 1909 LA.".....	31 36 10.8	91 30 48.2
Trestle 11, second-class crossing.....	31 35 29.1	91 30 11.9
Ferriday, 0.5 mile south of, T road north, 125 feet south of center of dirt ramp across Bayou Cocodrie, 35 feet E. to telegraph pole, 15 feet northeast to center of triangle, 25 feet south to wire fence.....	31 37 18.1	91 33 17.7
Ferriday, 0.9 mile south of; center of track at public road crossing.....	31 37 03.4	91 33 27.9
Little Cocodrie Bayou, center of trestle over.....	31 36 53.7	91 33 59.4
Milepost 11-12, 300 feet west of; center of track at east end of trestle.....	31 36 43.5	91 35 11.5
Milepost 12-13, center of track opposite.....	31 36 35.5	91 36 08.1
Turtle Lake, 0.25 mile west of station, at southwest corner of New Mount Sinai Church, on north edge of the Ferriday-Frogmore road, about 4 miles southwest of Ferriday, 4 miles northeast of Frogmore station; iron post stamped "Prim. Trav. Sta. No. 113 1909 LA.".....	31 36 29.9	91 37 03.1

SYCAMORE LANDING QUADRANGLE—Continued.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
Bash, 0.5 mile west of station, 4 corners, at west edge of clearing, 25 feet east to small bridge.....	° ' " 31 31 46.8	° ' " 91 32 30.6
Bash, 0.9 mile west of station, center of gate across road, 100 feet north of negro cabin, 60 feet west of T road to south.....	31 31 50.3	91 32 58.0
Bash, 2.8 miles northwest of station, large live oak tree in center of road, 50 feet northwest of field road through gate to south, 300 feet north of a negro cabin in field.....	31 32 24.5	91 34 12.0
Bash, 2.6 miles northwest of station, in Sunflower Church yard, 25 feet northwest of northwest corner of church, 30 feet south of center of public road; iron post stamped "Prim. Trav. Sta. No. 120 1909 LA".....	31 32 37.2	91 34 28.1
Bash's sawmill, 400 feet north of; second-class T road southwest, 30 feet south to water oak, 15 feet southwest to 2 stumps, 35 feet west to dead water oak.....	31 33 26.5	91 35 11.7
Bash's sawmill, 1.6 miles northwest of, on outside of the northeast corner of front yard around the McCormick plantation house, 1,000 feet south of the junction of Cocodrie Bayou with Hoover Slough, 60 feet northeast of the northwest corner of the McCormick house, 20 feet south of a T road to east, 85 feet southeast of the northeast corner of a cow shed; iron post stamped "Prim. Trav. Sta. No. 121 1909 LA".....	31 34 21.1	91 35 56.8
McCormick plantation, 0.8 mile northwest of house, old gateway at edge of swamp and at the northeast corner of an old field, 10 feet southwest to forked ash, 10 feet northeast to a small hackberry.....	31 34 56.1	91 36 15.0
Bash's sawmill, 1 mile southwest of; large leaning ash tree on the south edge of road at a 65° bend west, 2,400 feet northeast of pole bridge over old slough; tree painted "U.S.P.T.".....	31 32 55.0	91 35 51.6
Bash's sawmill, 1.5 miles southwest of; center of mud and pole bridge over old slough.....	31 32 45.6	91 36 15.1
Bash's sawmill, 2.4 miles southwest of; at northwest corner of porch to the west-ermmost of 2 tenant houses (now used for hunting and fishing camp), on old York plantation, on the north bank of Cocodrie Bayou, at south edge of pasture, about 500 feet north of the bayou, 1,500 feet southeast of point where the road from Bash's mill strikes the opening; iron post stamped "Prim. Trav. Sta. No. 123 1909 LA".....	31 31 58.6	91 36 15.6
Primary traverse station No. 123, 1 mile southeast of; on south edge of road at northwest corner of clearing, 500 feet east of Bayou Cocodrie; 18-inch pecan tree blazed and painted "U.S.P.T.".....	31 31 28.8	91 35 28.5
Primary traverse station No. 123, 1.25 miles southeast of; center of gate across road, 125 feet northwest of a negro cabin.....	31 31 20.7	91 35 23.7
Morville, about 3.5 miles west of Texas & Pacific Ry. station, on north edge of road east from Bayou Cocodrie through swamp to Kinmore plantation on the river front, 100 feet northwest of a negro cabin on the Boss Gowan plantation (now occupied by Thomas Singleton, colored), 10 feet south of a sweet-gum tree at the corner of a small blacksmith shop, 15 feet northwest of gate and 400 feet east of Bayou Cocodrie; iron post stamped "Prim. Trav. Sta. No. 124 1909 LA".....	31 30 52.3	91 34 59.4
Primary traverse station No. 124, 1,300 feet east of; center of gate across road at west edge of swamp.....	31 30 52.9	91 34 44.4
Primary traverse station No. 124, 0.5 mile east of; on the north edge of road in swamp, 24-inch oak tree blazed and painted "U.S.P.T.", with arrows showing direction of line.....	31 30 51.9	91 34 28.3
Morville, about 2.5 miles west of Texas & Pacific Ry. station, on the north edge of old road across cypress brake, large cypress tree painted fore and aft "U.S.P.T." with arrow showing direction of line.....	31 31 20.8	91 34 03.4
Texas & Pacific Ry., 1 mile west of; center of small levee at road crossing, in swamp, 20 feet east to hackberry tree painted "U.S.P.T.X".....	31 31 10.3	91 32 58.6
Morville 0.5 mile north of station, 0.5 mile south of Bash station, center of track at road crossing.....	31 31 14.8	91 32 01.7

Magnetic declination, 6° 29' E.

Geographic positions along highways.

Genevieve plantation, telephone pole on northwest edge of road at T road north-west.....	31 32 08.1	91 30 40.5
Lucerna plantation, directly back of the head of Natchez Island, opposite the 6-mile post below Vidalia, 111 meters back of center of levee, 5 meters back of road, 9 meters above center of a ditch from a metal covered gin, 124 meters above a road crossing levee and running back past plantation house, about 75 meters above a string of cabins; tile under iron post on west bank. (Mississippi River Commission bench mark "Lucerna").....	31 31 50.2	91 31 03.5
Bash, 0.9 mile east of station, 100 feet west of center of levee, 50 feet west of center of levee road, 15 feet north of T road leading west between Lucerna and Sanghy plantations, 0.5 mile southeast of Lucerna plantation house; iron post stamped "Prim. Trav. Sta. No. 107 1909 LA".....	31 31 28.6	91 31 16.4

SYCAMORE LANDING QUADRANGLE—Continued.

Geographic positions along Texas & Pacific Ry.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Bash, 0.9 mile east of station, T road west.....	31 31 28.4	91 31 16.1
Bash, 600 feet north of station, railway crossing.....	31 31 45.8	91 32 06.9
Lucerna, railway crossing at station.....	31 32 26.9	91 32 13.6
Trestle 194-A, center of.....	31 33 06.4	91 32 20.0
Milepost 196, 50 feet east of; center of railway opposite.....	31 34 53.8	91 32 37.5
Two negro cabins, second-class crossing near.....	31 35 48.4	91 32 46.2
Ferriday, 2 miles south of; in northwest corner of yard of negro cabin just east of railway, 20 feet west to 16-inch elm tree, northernmost of 2 negro cabins, 60 feet northeast of property of Mr. Smith, on Texas Pacific Ry.; iron post stamped "Prim. Trav. Sta. No. 108 1909 LA".....	31 35 50.1	91 32 45.6
Ferriday, 1 mile south of; second class crossing.....	31 36 39.1	91 32 54.6

Magnetic declination of line, 6° 36' E.

NATCHEZ QUADRANGLE.

Geographic positions along St. Louis, Iron Mountain & Southern Ry.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Minorea, crossing at station board.....	31 34, 53.6	91 29 18.7
Taconey, 350 feet west of station board; second-class crossing.....	31 34 32.4	91 28 04.6
Taconey plantation, near; 5 feet north of telephone pole at angle in road, 25 feet south to gate, 100 feet southwest of top of levee at bend in levee, 150 feet east to gate, 500 feet east of Taconey plantation house; iron post stamped "Prim. Trav. Sta. No. 102 1909 LA".....	31 34 48.7	91 28 19.6

Geographic positions along highways.

Mount Olive negro church, 300 feet northwest of; center of levee road at second-class road; 15 feet south to gate.....	31 34 46.0	91 27 51.8
Negro cabin, 50 feet north of; second-class fork, 15 feet southwest to yard gate, 35 feet south to big gate.....	31 34 48.0	91 26 57.8
Center of toe of ramp northwest at elbow in main road, 70 feet northwest to top of levee at road crossing, 70 feet west to telephone pole.....	31 34 51.6	91 26 18.1
Vidalia, 452 meters back of levee along Trinity Street, on southwest side of street, 6 meters from center of road or street, 11.3 meters in front of front tree of 2 large pecan trees standing about 40 meters apart above upper side of road; old iron post and stone slab. (Mississippi River Commission bench mark 132/3.).....	31 33 52.2	91 25 25.2
Vidalia, in lot immediately back of courthouse and jail, 80 meters back of levee, 55 meters above Lake Concordia road, 54 meters from upper back corner of courthouse, 24.1 meters from upper back corner of iron fence surrounding courthouse and jail; stone post 14 inches square. (Coast and Geodetic Survey triangulation station, east base).....	31 33 44.4	91 25 15.5
Vidalia, inside of and at southwest corner of iron picket fence around courthouse, 140 feet southwest of southwest corner of courthouse, 30 feet northeast of center of Trinity Street; iron post stamped "Prim. Trav. Sta. No. 103 1909 LA".....	31 33 42.6	91 25 16.5

Magnetic declination, 6° 14' E.

Geographic positions along highways.

Vidalia, at south edge of; west end of road crossing the St. Louis, Iron Mountain & Southern Ry.....	31 33 17.6	91 26 03.7
White Hall Lake, at east end of; bridge over ditch at T road southeast.....	31 32 55.4	91 27 23.5
Vidalia, 3 miles southwest of; 5 feet northeast of china-berry tree on north edge of levee road, 50 feet east of southeast corner of White Hall plantation store, 60 feet northeast of junction of roads; iron post stamped "Prim. Trav. Sta. No. 106 1909 LA".....	31 32 45.3	91 28 17.8
White Hall Lake, T road south across hill to White Hall Landing.....	31 32 44.9	91 28 18.2
White Hall Lake, at west end of; T road north through gate, 25 feet north to gate.....	31 32 44.4	91 28 51.9
Scotland plantation, 400 feet southwest of house, T road northwest, 20 feet northwest to telephone pole, 20 feet northeast to corner of picket fence.....	31 32 32.1	91 29 45.5

Magnetic declination of line, 6° 32' E.

MAINE.

TRIANGULATION STATIONS.

Bryant Pond, Buckfield, Livermore, and Songo Pond quadrangles.

ANDROSCOGGIN, FRANKLIN, KENNEBEC, AND OXFORD COUNTIES.

During the season of 1910 E. L. McNair extended triangulation control over the quadrangles mentioned above from stations Moose Hill and Sabattus. Four old stations and seven new ones were occupied, and five positions of the points were determined by intersection.

The work was done in cooperation with the State.

ABRAM, OXFORD COUNTY, ME.

On a prominent, partly timbered knob in town of Greenwood, about 4 miles south-east of Bethel. Lines of sight were cut to Curtis Hill, Streaked, and Caribou. The land is owned by Joe Harrington, who lives on the west side of the hill and from whose home the ascent may be made mostly through open pasture.

Signal: Quadripod of poles erected over the station mark and anchored to four iron eye bolts set in solid rock.

Station mark: Aluminum tablet set in solid rock on highest point of summit.

[Latitude 44° 22' 10.07". Longitude 70° 42' 48.92'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Caribou.....	79 32 26.46	259 23 18.77	4.2466929	10.966
Black.....	128 38 44.83	308 32 17.666	4.1947952	9.731
Curtis Hill.....	282 16 37.95	102 21 51.96	4.0077636	6.326

BEAR, OXFORD COUNTY, ME.

A bare, rocky hill in town of Hartford, close to the Androscoggin County line, about 2 miles northwest of North Turner. Station may be reached from the north side by means of a private road from the highway all the way to the summit. The land belongs to C. A. Merrill, who lives at foot of mountain on northwest side.

Signal: Quadripod of poles anchored to solid rock by means of eye bolts sunk in rock.

Station mark: Aluminum tablet set in solid rock.

[Latitude 44° 21' 53.33". Longitude 70° 16' 40.87'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Streaked.....	42 28 59.25	222 22 51.94	4.2374015	10.734
Hutchinson.....	57 44 05	237 42 00	3.67640	2.950
Speckled.....	114 19 01.45	294 09 12.32	4.3103303	12.696
Moose Hill.....	220 59 12.90	41 05 17.15	4.2438585	10.895
Pisgah.....	287 46 31.09	107 57 08.93	4.3272363	13.200
Leeds.....	300 37 17	120 43 25	4.13229	8.426
Sabattus.....	326 59 21.14	147 07 41.59	4.4662326	18.180

BLACK, OXFORD COUNTY, ME.

A bald mountain ridge about 5 miles northwest of Bethel, the eastern end of Black Mountain, locally known as Bald Mountain. Black Mountain lies on the north side of Androscoggin River between Bethel and West Bethel. A good view can be obtained in all directions except to the west, the view in that direction being cut off by

154 TRIANGULATION AND PRIMARY TRAVERSE FOR 1909 AND 1910.

the higher mountain ridge. The station is best reached from Mr. Williamson's place on Sunday River, from which the mountain can be climbed in an hour and a quarter.

Signal: Quadripod of poles erected over the station mark and anchored to four eye bolts sunk in solid rock.

Station mark: Aluminum tablet set in solid rock.

[Latitude 44° 27' 26.54". Longitude 70° 52' 02.15".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Caribou.....	21 25 42.42	201 23 01.37	4.1448228	8.673
Puzzle.....	210 57 33	31 00 37	4.05161	6.998
Zircon.....	265 28 16	85 41 12	4.39024	15.261
Speckled.....	273 42 47.81	93 57 43.67	4.4525651	17.616
Curtis Hill.....	298 11 52.35	118 23 33.70	4.4012351	15.653
Abram.....	308 32 17.67	128 38 44.83	4.1947952	9.731
Bethel Universalist Church.....	314 06 55			
Grover.....	331 49 00	151 54 12	4.32128	13.021

CARIBOU, OXFORD COUNTY, ME.

A high, bald mountain ridge about 5 miles southwest of West Bethel. Station can be reached by driving to Fred L. Ordway's place, thence to a point about 2.5 miles above, from which point a well-cleared patch leads to summit. A cabin built by Mr. Ordway near the summit is supplied with stove, cooking utensils, water from near-by spring, and telephone connections.

Signal: Quadripod of poles erected over station mark and anchored to four eye bolts set in solid rock.

Station mark: Aluminum tablet set in solid rock.

Reference mark: Old Coast and Geodetic Survey drill hole within a chiseled triangle; distance 2.2 feet, true azimuth 331° 17'.

[Latitude 44° 20' 25.52". Longitude 70° 55' 52.35".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Black.....	201 23 01.37	21 25 42.42	4.1448228	8.673
Puzzle.....	205 38 19	25 44 04	4.40025	15.617
Zircon.....	243 10 20	63 25 56	4.52033	20.591
Speckled.....	251 28 44.65	71 46 20.60	4.5466084	21.876
Abram.....	259 23 18.77	79 32 26.463	4.2466929	10.966
Curtis Hill.....	267 40 06.81	87 54 28.34	4.4365120	16.977
Streaked.....	283 45 15.34	104 06 30.28	4.6201314	25.911
Grover.....	290 01 11	110 09 04	4.20317	9.920

CURTIS HILL, OXFORD COUNTY, ME.

A bare hill about 2 miles north of West Paris, known locally as Curtis Hill. It is on land of Mr. Cummins, who lives at foot of hill on south side.

Signal: Quadripod of poles erected over the station mark and anchored to eyebolts sunk in solid rock.

Station mark: Aluminum tablet set in solid rock.

[Latitude 44° 20' 59.69". Longitude 70° 35' 19.80".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Caribou.....	87 54 28.34	267 40 06.81	4.4365120	16.977
Abram.....	102 21 51.96	282 16 37.95	4.0077636	6.326
Black.....	118 23 33.70	298 11 52.35	4.4012351	15.653
Speckled.....	211 22 08.18	31 25 21.94	4.0706207	7.311
Streaked.....	310 06 04.961	130 12 59.18	4.2355917	10.689

GROVER, OXFORD COUNTY, ME.

A low mountain ridge about 9 miles south of Bethel, 3 miles south of Albany town house, and 1 mile south of Hunts Corners. The hill is bare on the south side but somewhat timbered on north. The view is good toward the south and west, but is cut off on the north to east by higher mountains.

Signal: Quadripod of poles erected over station mark and anchored to four iron eyebolts set in solid rock.

Station mark: Aluminum tablet set in solid rock, approximately 4.3 feet S. 36° E. of Hawkin's location of 1894.

Reference marks: Four old chiseled cross marks, the distances and bearings of which are as follows: (1) Distance 16 feet, true azimuth 18° 16'; (2) distance 16.8 feet, true azimuth 76° 32'; (3) distance 24.9 feet, true azimuth 164° 40'; (4) distance 9.8 feet, true azimuth 258° 06'.

[Latitude 44° 17' 27.9". Longitude 70° 44' 35.8".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Caribou.....	110 09 04	290 01 11	4.20317	9.920
Black.....	151 54 12	331 49 00	4.32128	13.021
Puzzle.....	171 47 13	351 45 05	4.45371	17.663
Streaked.....	280 01 37	100 14 59	4.41312	16.087

HUTCHINSON, OXFORD COUNTY, ME. (Not occupied.)

A bare hill about 5 miles northeast of Buckfield.

Station mark: Cairn 10 feet high.

[Latitude 44° 20' 31.2". Longitude 70° 19' 42.1".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Streaked.....	36 49 38	216 45 38	4.10572	7.926
Speckled.....	126 49 04	306 41 22	4.26134	11.342
Bear.....	237 42 00	57 44 05	3.67640	2.950

LEEDS, ANDROSCOGGIN COUNTY, ME.

Universalist Church, on hill about 0.2 mile west of Leeds Center railway station.

Station mark: Center of church steeple.

[Latitude 44° 18' 09.2". Longitude 70° 07' 54.4".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Bear.....	120 43 25	300 37 17	4.13229	8.426
Pisgah.....	267 16 52	87 21 22	3.93302	5.326
Sabattus.....	346 29 06	166 31 19	4.25854	11.270

MOOSE HILL, FRANKLIN COUNTY, ME.

A prominent bare hill in town of East Livermore, about 3 miles east of Livermore Falls, on land owned by F. A. Record and brothers.

Station mark: Bronze triangulation tablet cemented in solid rock.

Signal: Quadripod of poles and sawed lumber erected over station mark.

Reference marks: A hole drilled 1 inch deep in large boulder 38.5 feet distant, true azimuth 292° 43'; another hole drilled 8 inches deep in solid ledge 51.8 feet distant, true azimuth 305° 16'.

156 TRIANGULATION AND PRIMARY TRAVERSE FOR 1909 AND 1910.

[Latitude 44° 29' 01.78". Longitude 70° 08' 00.48".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Norland.....	35 40 50	215 37 35	4.02225	6.540
Bear.....	41 05 17.15	220 59 12.90	4.2438585	10.895
Speckled.....	81 00 27.29	260 44 33.04	4.4843457	18.954
Blue.....	148 38 11.41	328 29 22.86	4.5027541	19.774
Baumwick.....	194 54 05.13	14 58 01.34	4.4591095	17.884
York.....	225 10 42.76	45 17 25.10	4.2513055	11.083
Quaker.....	280 28 45.10	100 43 48.54	4.4625629	18.027
Pisgah.....	336 13 29.74	156 17 55.19	4.3337787	13.401
Sabattus.....	353 23 49.26	173 26 06.70	4.5801167	23.630

NORLAND, ANDROSCOGGIN COUNTY, ME.

Norland Church, about 2.5 miles northeast of Livermore.

Station mark: Center of church steeple.

[Latitude 44° 24' 24.7". Longitude 70° 12' 37.9".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Moose Hill.....	215 37 35	35 40 50	4.02225	6.540
Pisgah.....	306 57 51	127 05 39	4.26903	11.545
Sabattus.....	340 09 49	160 15 20	4.49220	19.300

PISGAH, KENNEBEC COUNTY, ME.

A high, bare hill in southwestern part of town of Winthrop, 4 miles north of the village of Winthrop. The station is best reached from south end of hill by farm road.

Signal: Pole quadripod erected over station mark and fastened to ledge by eyebolts.

Station mark: Aluminum tablet cemented in solid rock.

Reference mark: Cairn 10 feet high; distance 15.4 feet, true azimuth 0° 20'. This cairn is the old station mark and position of 1890.

[Latitude 44° 18' 22.20". Longitude 70° 01' 28.19".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Sabattus.....	13 32 57.72	193 30 41.33	4.2683818	11.527
Streaked.....	79 05 01.66	258 48 17.36	4.5119338	20.197
Leeds.....	87 21 22	267 16 52	3.93302	5.326
Bear.....	107 57 08.93	287 46 31.09	4.3272363	13.200
Norland.....	127 05 39	306 57 51	4.26903	11.545
Moose Hill.....	156 17 55.19	336 13 20.74	4.3337787	13.401

PUZZLE, OXFORD COUNTY, ME. (Not occupied.)

A bald mountain near North Newry post office. Station can be reached by road from Bethel to North Newry, where there is a summer hotel, thence on foot 3 miles to summit of mountain.

Station mark: Cairn.

[Latitude 44° 32' 39.3". Longitude 70° 47' 39.7".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Caribou.....	25 44 04	205 38 19	4.40025	15.617
Black.....	31 00 37	210 57 33	4.05161	6.998
Speckled.....	297 06 42	117 18 35	4.40250	15.698
Grover.....	351 45 05	171 47 13	4.45371	17.663

SABATTUS, ANDROSCOGGIN COUNTY, ME.

Coast and Geodetic Survey station on Sabattus Hill, in town of Wales, 4.5 miles south of Leeds Junction.

Signal: Pole quadripod erected over station mark.

Station mark: Copper bolt sunk in solid rock.

[Latitude 44° 08' 37.833". Longitude 70° 04' 43.738".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Woodbury.....	47	42	01	227	35	03	4.25777	11.249
High.....	91	11	49	271	00	10	4.34834	13.858
Streaked.....	113	16	25.263	293	01	58.747	4.4774098	18.653
Merrill Hill.....	130	31	59	310	28	11	3.98233	5.966
Bear.....	147	07	41.59	326	59	21.14	4.4662326	18.180
Norland.....	160	15	20	340	09	49	4.49220	19.300
Blue.....	162	10	18.59	341	59	13.88	4.8340499	42.403
Leeds.....	166	31	19	346	29	06	4.25854	11.270
Moose Hill.....	173	26	06.70	353	23	49.26	4.5801167	23.630
York.....	189	22	31.33	9	26	54.88	4.7077893	31.706
Pisgah.....	193	30	41.33	13	32	57.72	4.2583818	11.527
Quaker.....	216	39	30.16	36	52	13.48	4.6073824	25.161
Lone Elm.....	220	16	51	.....	.....	.....	3.84834	4.382
Shiloh.....	352	03	41	.....	.....	.....	4.26260	11.375

SPECKLED, OXFORD COUNTY, ME.

A high, bare mountain in town of Peru, about 6 miles southwest of Dixfield, from which place it may be reached by driving to a cleared pasture at base of mountain on north side, thence on foot to summit, a 45-minute climb.

Signal: Quadripod of poles erected over the station mark and anchored to eyebolts sunk in solid rock.

Station mark: Aluminum tablet set in solid rock.

[Latitude 44° 26' 25.06". Longitude 70° 30' 42.85".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Curtis Hill.....	31	25	21.94	211	22	08.18	4.0706207	7.311
Caribou.....	71	46	20.60	251	28	44.65	4.5466084	21.876
Black.....	93	57	43.67	273	42	47.81	4.4525551	17.616
Puzzle.....	117	18	35	297	06	42	4.40250	15.698
Zircon.....	135	00	32	314	58	32	3.72933	3.332
Dixfield Church.....	202	06	40	.....	.....	.....	.....	.....
Moose Hill.....	260	44	33.04	81	00	27.29	4.4843457	18.954
Bear.....	294	09	12.32	114	19	01.45	4.3103303	12.696
Hutchinson.....	306	41	22	126	49	04	4.26134	11.342
Buckfield Town Hall.....	325	06	00	.....	.....	.....	.....	.....
Streaked.....	341	38	23.50	161	42	04.47	4.3476605	13.836

STREAKED, OXFORD COUNTY, ME.

On a high, bare mountain (elevation 1,770), about 5 miles east of Paris village. Station can be reached by driving to Ambrose Swan's place on east side of mountain, thence on foot to summit (about a 25-minute walk).

Signal: Quadripod of poles erected over the station mark and anchored to eyebolts sunk in solid rock.

Station mark: Aluminum tablet set in solid rock.

158 TRIANGULATION AND PRIMARY TRAVERSE FOR 1909 AND 1910.

Reference mark: Large cross chiseled in solid rock; distance 34 feet, true azimuth $264^{\circ} 20'$.

[Latitude $44^{\circ} 15' 00.26''$. Longitude $70^{\circ} 25' 26.72''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Grover.....	100 14 59	280 01 37	4.41312	16.087
Caribou.....	104 06 30.28	283 45 15.34	4.6201314	25.911
Curtis Hill.....	130 12 59.18	310 06 04.96	4.2355917	10.689
Speckled.....	161 42 04.47	341 38 23.50	4.3476605	13.836
Hutchinson.....	216 45 38	36 49 38	4.10572	7.926
Bear.....	222 22 51.94	42 28 59.25	4.2374015	10.734
Pisgah.....	258 48 17.36	79 05 01.66	4.5119338	20.197
Sebattus.....	293 01 58.747	113 10 25.26	4.4774098	18.653

ZIRCON, OXFORD COUNTY, ME. (Not occupied or visited.)

A bald mountain top, 4 or 5 miles southwest of Rumford Falls. From the north side of mountain a road leads well up toward the top.

Station mark: Square pile of rock.

[Latitude $44^{\circ} 28' 27.9''$. Longitude $70^{\circ} 33' 34.4''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Caribou.....	63 25 56	243 10 20	4.52033	20.591
Black.....	85 41 12	265 28 16	4.39024	15.261
Moose Hill.....	268 04 58	88 22 52	4.53040	21.074
Speckled.....	314 58 32	135 00 32	3.72933	3.332

MARYLAND.

TRIANGULATION STATIONS.

Hagerstown and Williamsport quadrangles.

WASHINGTON COUNTY.

In the spring of 1910 George T. Hawkins located by triangulation four additional points for the control of the Hagerstown and Williamsport quadrangles, based upon Fairview and Lookout, United States standard datum.

The State cooperated in the work.

FAIRVIEW, WASHINGTON COUNTY, MD.

On the highest part of a prominent peak about midway between Hagerstown and Hancock, and about 0.5 mile north of the National Road. The summit was cleared of all timber except a small chestnut oak, which was trimmed and used for the signal.

Station mark: Small chestnut oak tree.

Reference mark: Copper bolt cemented in solid rock; distance from station 3.8 feet, azimuth from station $104^{\circ} 10'$.

[Latitude $39^{\circ} 39' 21.99''$. Longitude $77^{\circ} 58' 11.00''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Birch.....	21 26 40.67	201 22 06.71	4.4495832	17.496
Sleepy.....	72 32 44.79	252 27 05.50	4.1237931	8.263
Sideling.....	89 37 12.94	269 23 35.17	4.4850085	18.983
Martin (new).....	271 30 26	91 39 08	4.29010	12.119
North Tank.....	275 32 09	95 41 14	4.31111	12.719
South Tank.....	279 25 21	99 34 40	4.32568	13.153
Williamsport.....	290 20 07	110 25 08	4.07936	7.460
Lookout.....	308 02 37.93	128 15 41.11	4.5721983	23.203
Maryland Heights.....	328 01 28.55	148 11 08.06	4.6149155	25.602

HAGERSTOWN, NORTH TANK, WASHINGTON COUNTY, MD. (Not occupied; sighted from four stations.)

Large iron tank on steel tower at silk mill situated in the southwest part of Hagerstown.

Signal and station mark: Center of tank.

[Latitude 39° 38' 17.10". Longitude 77° 43' 56.95'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Williamsport.....	76 35 28	256 31 24	3.97182	5.823
Fairview.....	95 41 14	275 32 09	4.31111	12.719
Martin (new).....	149 08 12	329 07 49	3.23191	1.060
Lookout.....	336 54 50	156 58 54	4.35972	14.226

HAGERSTOWN, SOUTH TANK, WASHINGTON COUNTY, MD. (Not occupied; sighted from two primary triangulation stations.)

Large iron tank on steel tower at the Hagerstown Metallic Casket Co.'s works, in the south part of Hagerstown.

Signal and station mark: Center of tank.

[Latitude 39° 37' 28.71". Longitude 77° 43' 35.38'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Fairview.....	99 34 40	279 25 21	4.32568	13.153
Martin (new).....	154 57 27	334 56 50	3.51363	2.028

LOOKOUT, WASHINGTON COUNTY, MD.

On line between Frederick and Washington counties, about 2 miles northeast of Rohrsersville. The instrument was raised 60 feet above ground for observing. Lines of sight were cut through timber to Sugar Loaf, Maryland Heights, Birch, and Fairview. Station mark: Copper bolt in stone set in ground.

[Latitude 39° 26' 53.98". Longitude 77° 37' 41.10'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Sugar Loaf.....	15 31 51.51	135 40 46.85	4.4607793	17.953
Maryland Heights.....	32 39 51.61	212 36 29.27	4.1506384	8.790
Birch.....	85 36 59.23	265 19 24.65	4.6002185	24.750
Fairview.....	128 15 41.11	308 02 37.93	4.5721983	23.203
Martin (new).....	156 26 30	336 22 08	4.39069	15.277
North Tank.....	156 58 54	336 54 50	4.35972	14.226

MARTIN (NEW), WASHINGTON COUNTY, MD.

On south end of reservoir dam of Hagerstown waterworks, near old triangulation station Martin, which is now in reservoir.

Signal: Cupola of barn 138 feet southwest of station.

Station mark: Dressed stone post 7 by 7 by 30 inches, set 28 inches in ground. Aluminum tablet cemented in top of post.

Reference marks: East stone gate post of barn 85 feet southwest. Northwest corner of stone house 101 feet south.

[Latitude 39° 39' 04.56". Longitude 77° 44' 33.26".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Williamsport.....	66 12 04	246 08 23	3.95498	5.602
Fairview.....	91 39 08	271 30 26	4.29010	12.119
North Tank.....	329 07 49	149 08 12	3.23191	1.050
South Tank.....	334 56 50	154 57 27	3.51363	2.028
Lookout.....	336 22 08	156 26 30	4.39069	15.277

WILLIAMSPORT, WASHINGTON COUNTY, MD.

On land owned by T. Flora in cultivated field about 1.5 miles northwest of Williamsport and about 250 yards southeast of Mr. Flora's house.

Signal: Sawed lumber tripod over center.

Station mark: Dressed stone post 7 by 7 by 30 inches, set 28 inches in ground. Aluminum tablet cemented in top of post.

Reference mark: Cherry tree 8 inches in diameter, 122 feet southwest (nearly west), 251 feet N. 70° W. to 8-inch cherry tree. Both trees on fence line.

[Latitude 39° 37' 06.47". Longitude 77° 50' 19.08".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Fairview.....	110 25 08	290 20 07	4.07936	7.460
Martin (new).....	246 08 23	66 12 04	3.95498	5.602
North Tank.....	256 31 24	76 35 28	3.97182	5.823

MARYLAND-PENNSYLVANIA.**PRIMARY TRAVERSE.**

Emmitsburg and Hagerstown quadrangles.

CARROLL, FREDERICK, AND WASHINGTON COUNTIES, MD., ADAMS AND FRANKLIN COUNTIES, PA.

The following geographic positions were determined by George T. Hawkins from primary traverse run in 1909.

The line starts from Quirauk triangulation station and follows highways west, south, east, and north near the borders of the quadrangle. Another line was run through the center of the quadrangle from south to north, and a tie was also obtained by a line run from the southeast corner of quadrangle to a point near Hansonville, located by primary traverse in 1907.

The States cooperated in the work.

HAGERSTOWN QUADRANGLE (PA).

Geographic positions along highways in northern part of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Greenerton (station on Western Maryland Ry.), 0.25 mile south of, road west at 3 corners.....	39 43 50.2	77 40 01.3
Trolley line crossing 1.25 miles west of Greenerton.....	39 43 51.3	77 41 31.4
Good road to north, 3 corners, 450 feet east of house.....	39 43 38.6	77 42 43.9
Maryland-Pennsylvania State line, 4 corners.....	39 43 20.4	77 43 28.8

Magnetic declination of north border of quadrangle, 5° 06' W.

HAGERSTOWN QUADRANGLE (MD.).**Geographic positions along highways in northern part of quadrangle.**

Stations.	Latitude.	Longitude.
Quirauk triangulation station, on line between Frederick and Washington counties, about 2 miles south of Penmar, Pa., and about 2 miles southeast of Blue Mountain, Md. On highest point of mountain locally known as Quirauk Mountain. Station mark: A bronze tablet marked "U. S. Geol. Survey-Penna.", countersunk in a dressed stone 4 feet long and 10 inches square, set flush with top of ground under center of tower, which is 84 feet high and made of iron.	39 41 47.92	77 30' 45.72
Ringold, 0.8 mile east of; T road west.	39 41 49.2	77 33 05.6
Ringold, crossroads at.	39 42 34.6	77 34 01.9
T road south near row of large willows.	39 42 28.1	77 34 46.6
Second-class road north.	39 42 05.9	77 36 18.7
Leitersburg, center of crossroads.	39 41 33.5	77 37 22.6
Leitersburg, 850 feet north of crossroads, in solid limestone ledge on east side of road north from town and 30 feet from front door of Mr. Meyers; aluminum tablet.	39 41 40.1	77 37 29.4
Cross pikes 1 mile north and 1 mile west of Leitersburg.	39 42 39.2	77 38 37.2
Maryland-Pennsylvania State line; stone 12 inches square marked "M" on south and "P" on north.	39 43 14.2	77 39 14.1
Maryland-Pennsylvania State line, on west side of pike, 15 feet from middle of pike, 60 feet northwest of pike and State line road leading to railway stations, set in solid rock on State line; aluminum tablet.	39 43 17.1	77 43 28.6
Maryland-Pennsylvania State line, 1 mile south of; forks of roads northeast, north, and south.	39 42 18.4	77 43 23.0
Maryland-Pennsylvania State line; concrete post marked "M" on south and "P" on north.	39 43 15.5	77 43 28.0
Tollgate 3 miles south of State line.	39 40 13.8	77 43 11.4
Hagerstown, about 1.5 miles north of; on county farm, in driveway from pike to main building; south stone, marble, 8 by 8 by 42 inches set 38 inches in ground, stamped "Prim. Trav. Sta. No. MD."	39 39 50.0	77 43 07.0
Hagerstown, corner of West North and Jonathan streets.	39 38 53.2	77 43 08.6
Hagerstown, corner North Locust and East Franklin streets, 1 block north and 1 block east of square.	39 38 31.2	77 43 02.3
Hagerstown, south part of crossing of Sharpsburg pike and Baltimore & Ohio R. R.	39 37 40.3	77 43 35.9

Magnetic declination of north border of quadrangle, 5° 06' W.

Geographic positions along highways near west border of quadrangle.

Tollgate on Sharpsburg pike at road west.	39 37 23.3	77 43 43.3
Crossroads, log house in southeast corner.	39 36 43.8	77 43 52.8
T road west, gate on east side road.	39 35 48.0	77 43 50.9
Three corners near schoolhouse.	39 35 16.0	77 43 55.7
Tollgate and T road east.	39 33 55.7	77 43 52.8
Crossing of Sharpsburg-Hagerstown pike and Williamsport-Boonsboro pike.	39 33 13.3	77 44 16.8
Tilghman, about 0.25 mile north of; on east side of pike, 720 feet toward Hagerstown pike crossroad, 15 feet to telephone pole on east side of road, on top of little hill, in solid rock; aluminum tablet.	39 32 23.9	77 44 22.2
Bitner, 300 feet south of station, road crossing of Baltimore & Ohio R. R.	39 31 26.8	77 43 14.6
East end of iron bridge over Antietam Creek.	39 31 02.2	77 42 07.0
Monroe Church, 200 yards northeast of; first 3 corners from church.	39 31 01.2	77 41 26.2
Hotel Boonsboro, 4 corners at.	39 30 22.1	77 39 09.4

Geographic positions along highways near south border of quadrangle.

Three corners 200 feet east of 2 mail boxes.	39 30 57.9	77 37 54.0
Narrow summit where road crosses divide, old fields north and south of road.	39 31 39.1	77 36 47.6
Center of triangle at 3 corners, north of creek, 600 feet southeast of house, on west side of road.	39 31 42.8	77 35 33.9
Crossing of electric railway just west of 3 corners.	39 31 06.2	77 34 47.3
Myersville, in north part of town, 3 corners at Mount Zion Church.	39 30 43.1	77 34 10.5
Churchhill, 600 feet southeast of St. John Lutheran Church, 3 corners at small bridge.	39 31 28.5	77 33 09.2
Ellerton, south end of iron bridge.	39 31 36.7	77 32 37.2
Three corners on top of hill.	39 31 05.9	77 31 30.4
Highland Church, 500 feet north of, T road east.	39 31 24.7	77 31 07.8
Second-class road fork north.	39 32 01.3	77 30 37.1

HAGERSTOWN QUADRANGLE (MD.)—Continued.

Geographic positions along north-south line through center of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Iron bridge.....	39 40 57.0	77 37 45.0
T road southwest, 400 feet northwest of big stone house.....	39 39 32.7	77 37 48.7
Chewsville, forks south of pike, at post office.....	39 38 34.2	77 38 07.8
Chewsville, 0.5 mile south of, at 3 corners.....	39 38 05.2	77 37 52.4
Crossroads near Beaver Creek, 30 feet southeast to Barnhart's mail box.....	39 37 21.2	77 36 32.9
Mount Etna, crossroads at schoolhouse.....	39 36 08.0	77 37 28.1
Three corners north end of Beaver Creek.....	39 34 59.4	77 38 35.3
Four corners at street railway junction at crossroads post office.....	39 34 25.9	77 38 48.8
Forks to southeast at trolley station.....	39 33 08.0	77 38 48.2
Mapleville, T road west at Brown Church.....	39 32 29.3	77 38 51.1
Second-class T road east between house and barn.....	39 31 37.9	77 38 50.8
Boonsboro, north part of; junction of Smithburg road and Hagerstown pike.....	39 30 44.5	77 39 22.2

Geographic positions along highways near east border of quadrangle.

Big Spring, 200 feet north of 5 forks at; on east side of north-south lane, 50 feet northwest of Mrs. Jackson's house and 20 feet east of large cherry tree, in large rock in place 4 by 6 feet; aluminum tablet.....	39 32 57.7	77 30 04.9
Five forks at Big Springs.....	39 32 55.7	77 30 05.4
Forks of road east, 70 feet north to mail boxes 47 and 48.....	39 35 29.6	77 30 00.2
Forks of roads northwest and northeast.....	39 36 01.4	77 30 16.3
Well-traveled road southeast at mail box of G. B. Green.....	39 36 30.6	77 30 04.0
Forks of roads on top of hill.....	39 39 45.4	77 30 17.9
Forks of roads about 200 feet southeast of 2-story brown house.....	39 39 48.9	77 31 51.4
Edgemont, 0.5 mile southwest of; road under trestle of Western Maryland Ry... ..	39 39 57.9	77 33 01.2
Three corners at Lutheran Church and schoolhouse.....	39 40 28.2	77 33 12.7
T road at brick schoolhouse.....	39 41 25.5	77 33 23.0

EMMITSBURG QUADRANGLE (MD.)

Geographic positions along highways near west border of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Big Spring, 1.5 miles north of; road west down hill.....	39 34 10.0	77 29 58.4
Well-traveled road at forks northeast near sharp bend west.....	39 34 46.0	77 29 54.7
Crossroads, lanes east and north, roads south and west.....	39 37 17.3	77 29 29.9
Fox's store, 1,070 feet north to; crossroads at Foxville, pike east and west, 60 feet north and east to small store.....	39 38 10.2	77 29 50.0
T road east, south of Lutheran Church.....	39 38 50.0	77 29 45.6

Geographic positions along highways near south border of quadrangle.

Second-class road north.....	39 32 04.8	77 28 25.6
Second-class road to south, 500 feet to sawmill.....	39 31 38.7	77 28 11.1
Three corners north of creek near old sawmill site.....	39 31 11.3	77 27 05.4
Mountindale, crossroads at concrete church.....	39 31 12.3	77 26 13.7
Railway crossing at flag station on Frederick R. R.....	39 31 05.3	77 25 32.5

MICHIGAN.**PRIMARY TRAVERSE.**

Charlotte, De Witt, Lansing, and Springport quadrangles.

CLINTON, EATON, AND INGHAM COUNTIES.

The following geographic positions on approximate United States standard datum were determined from primary traverse by J. R. Ellis in 1909.

Lines were run around the borders of the Lansing quadrangle, starting from points located by primary traverse near the western

border of the Mason quadrangle, and a line was also run through that quadrangle from west to east.

The State cooperated in the work.

LANSING QUADRANGLE.

Geographic positions along highways near north border of quadrangle.

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
Lansing, corporation line, quarter corner between secs. 14 and 15, T. 4 N., R. 2 W.	42	44	0.5	84	31	23.6
Lansing, intersection of Michigan and Capitol avenues	42	44	0.5	84	33	14.4
Ingham, Eaton county line, corner of secs. 7, 12, 13, and 18, T. 4 N., Rs. 2 and 3 W., center of crossroads	42	44	27.3	84	36	10.8
T. 4 N., R. 3 W., corner of secs. 11, 12, 13, and 14, center of T road north	42	44	27.1	84	37	21.0

Geographic positions along highways east-west through center of quadrangle.

T. 3 N., R. 4 W., corner of secs. 23, 24, 25, and 26, center of crossroads at Pottersville	42	37	31.9	84	44	20.4
T. 3 N., Rs. 3 and 4 W., corner of secs. 19, 24, 25, and 30, center of T road south	42	37	31.6	84	43	10.4
Steel and concrete bridge over ditch	42	37	31.6	84	42	03.4
T. 3 N., R. 3 W., corner of secs. 20, 21, 28, and 29, center of crossroads	42	37	31.6	84	40	52.8
T. 3 N., R. 3 W., corner of secs. 21, 22, 27, and 28, center of crossroads	42	37	31.7	84	39	42.2
Dimondale, 1.5 miles south of; 20 feet west and 20 feet north to corner of secs. 22, 23, 26, and 27, T. 3 N., R. 3 W., at southeast corner of crossroads, center of crossroads; iron post stamped "Prim. Trav. Sta. No. 4 1909 MICH."	42	37	31.8	84	38	31.0
T. 3 N., R. 3 W., corner of secs. 23, 24, 25, and 26, intersection of road, 35 feet east to corner of fence	42	37	32.0	84	37	20.6
Eaton-Ingham county line, corner of secs. 19, 24, 25, and 30, T. 3 N., Rs. 2 and 3 W., center of crossroads	42	37	32.2	84	36	10.0
T. 3 N., R. 2 W., corner of secs. 19, 20, 29, and 30, center of crossroads	42	37	32.2	84	34	56.6
T. 3 N., R. 2 W., corner of secs. 20, 21, 28, and 29, center of crossroads	42	37	32.6	84	33	45.5
T. 3 N., R. 2 W., corner of secs. 21, 22, 27, and 28, T road west	42	37	32.5	84	32	34.4
T. 3 N., R. 2 W., corner of secs. 15, 16, 21, and 22, center of crossroads	42	38	24.6	84	32	35.0
T. 3 N., R. 2 W., near stone at corner of secs. 14, 15, 22, and 23, center of crossroads	42	38	24.1	84	31	24.5

Magnetic declination of north border of quadrangle, 0° 22' W.; of east-west line through center of quadrangle, 0° 28' W.

CHARLOTTE QUADRANGLE.

Geographic positions along highways near east border of quadrangle.

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
T. 4 N., R. 4 W., corner of secs. 7, 8, 17, and 18, center of crossroads	42	44	27.2	84	49	05.7
T. 4 N., R. 4 W., corner of secs. 17, 18, 19, and 20, center of crossroads	42	43	34.9	84	49	05.8
T. 4 N., R. 4 W., corner of secs. 19, 20, 29, and 30, center of crossroads	42	42	42.7	84	49	05.9
T. 4 N., R. 4 W., corner of secs. 29, 30, 31, and 32, center of crossroads	42	41	50.4	84	49	06.0
T. 4 N., R. 4 W., corner of secs. 28, 29, 32, and 33, center of T road south	42	41	50.2	84	47	55.3
T. 4 N., R. 4 W., south corner of secs. 32 and 33, center of T road north	42	40	58.1	84	47	55.4
T. 3 N., R. 4 W., north corner of secs. 4 and 5	42	40	58.0	84	47	53.0
Center of steel bridge over creek west	42	39	16.6	84	47	52.3
T. 3 N., R. 4 W., corner of secs. 16, 17, 20, and 21, center of crossroads	42	38	24.9	84	47	51.9
Pottersville, 2.5 miles west of; 30 feet east and 25 feet south to corner of secs. 20, 21, 28, and 29, T. 3 N., R. 4 W., northwest corner of crossroads at schoolhouse; iron post stamped "Prim. Trav. Sta. No. 3 1909 MICH"	42	37	33.0	84	47	52.4
T. 3 N., R. 4 W., corner of secs. 21, 22, 27, and 28, center of road at fence north	42	37	32.7	84	46	41.6
T. 3 N., R. 4 W., corner of secs. 22, 23, 26, and 27, center of road at fence north-south	42	37	31.8	84	45	30.9
T. 3 N., R. 4 W., corner of secs. 28, 29, 32, and 33, center of crossroads	42	36	40.6	84	47	52.2
Tps. 2 and 3 N., R. 4 W., corner of secs. 4, 5, 32, and 33, center of T road east	42	35	48.4	84	47	52.5
T. 2 N., R. 4 W., corner of secs. 4, 5, 8, and 9, center of T road north	42	34	54.8	84	47	52.0
Pottersville, 3 miles south and 2.25 miles west of, center of T road south	42	34	54.9	84	46	59.2
T. 2 N., R. 4 W., quarter corner between secs. 9 and 16, center of T road south	42	34	02.5	84	47	17.6
T. 2 N., R. 4 W., corner of secs. 16, 17, 20, and 21, 40 feet north to corner stone in schoolhouse yard; center of T road south	42	33	09.7	84	47	51.9
T. 2 N., R. 4 W., corner of secs. 20, 21, 28, and 29, center of T road west	42	32	17.7	84	47	51.2
T. 2 N., R. 4 W., corner of secs. 28, 29, 32, and 33, center of T road west	42	31	25.5	84	47	51.4
T. 2 N., R. 4 W., south corner of secs. 32 and 33, center of T road north	42	30	33.1	84	47	51.9

Magnetic declination near northeast border of quadrangle, 0° 10' W.; near southeast border of quadrangle, 0° 03' E.

DE WITT QUADRANGLE.

Geographic positions along highways near south border of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
T. 4 N., R. 3 W., corner of secs. 1, 2, 11, and 12, center of T road south.....	42 45 19.3	84 37 21.1
T. 4 N., R. 3 W., corner of secs. 2, 3, 10, and 11, center of T road south.....	42 45 19.3	84 38 31.7
Grand Ledge, 4 miles east of, 35 feet north and 35 feet west to stone at corner of secs. 3, 4, 9, and 10, T. 4 N., R. 3 W., at southwest corner of T road west; iron post stamped "Prim. Trav. Sta. No. 1 1909 MICH".....	42 45 19.1	84 39 42.8
T. 4 N., R. 3 W., corner of secs. 4, 5, 8, and 9, center of T road south.....	42 45 19.3	84 40 53.2
T. 4 N., R. 3 W., corner of secs. 5, 6, 7, and 8, center of T road south.....	42 45 19.1	84 42 03.8
Grand Ledge, center of crossing of Jefferson and Bridge streets.....	42 45 11.1	84 44 46.6
T. 4 N., R. 4 W., corner of secs. 2, 3, 10, and 11.....	42 45 18.8	84 45 33.6
T. 4 N., R. 4 W., corner of secs. 3, 4, 9, and 10, center of crossroads.....	42 45 19.0	84 46 44.6
T. 4 N., R. 4 W., corner of secs. 4, 5, 8, and 9.....	42 45 19.2	84 47 55.2
Grand Ledge, 3 miles west of, in northeast corner of church, 25 feet north and 25 feet east to stone at corner of secs. 5, 6, 7, and 8, T. 4 N., R. 4 W., at center of crossroads; iron post stamped "Prim. Trav. Sta. No. 2 1909 MICH".....	42 45 19.4	84 49 06.0

Magnetic declination of south border of quadrangle, 0° 22' W.

SPRINGPORT QUADRANGLE.

Geographic positions along highways near north border of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
T. 1 N., R. 4 W., 25 feet east to corner of secs. 4, 5, 8, and 9, at northwest corner of crossroads; iron post stamped "Prim. Trav. Sta. No. 5 1909 MICH".....	42 29 39.0	84 47 49.7
T. 1 N., R. 4 W., corner of secs. 3, 4, 9, and 10, center of crossroads at schoolhouse.....	42 29 38.6	84 46 38.6
T. 1 N., R. 4 W., corner of secs. 2, 3, 10, and 11, center of T road north.....	42 29 38.4	84 45 28.4
T. 1 N., R. 4 W., corner of secs. 1, 2, 11, and 12, at fence north-south, center of road.....	42 29 38.5	84 44 17.8
T. 1 N., R. 4 W., east corner of secs. 1 and 2, center of crossroads.....	42 29 37.5	84 43 07.4
Spencerville, schoolhouse, district 13, forks of road, 40 feet east and 15 feet south to telegraph pole at corner of fence.....	42 29 28.6	84 41 40.5
T. 1 N., R. 3 W., corner of secs. 4, 5, 8, and 9, center of T road north.....	42 29 39.3	84 40 47.0
T. 1 N., R. 3 W., corner of secs. 3, 4, 9, and 10, center of T road north.....	42 29 39.4	84 39 38.1
Eaton Rapids, 1 mile south of, at southwest corner of junction of east-west road with road northwest-southeast, 25 feet north and 20 feet east to junction of road; iron post stamped "Prim. Trav. Sta. No. 6 1909 MICH".....	42 29 39.1	84 39 24.3
Michigan Central R. R., north-south road crossing.....	42 29 39.3	84 38 29.4
T. 1 N., R. 3 W., quarter corner between secs. 11 and 12, 60 feet west to road crossing Michigan Central R. R.....	42 29 13.9	84 37 14.2
Eaton-Ingham county line, corner of secs. 1, 6, 7, and 12, T. 1 N., Rs. 2 and 3 W., center of T road south.....	42 29 40.3	84 36 04.1
T. 1 N., R. 2 W., corner of secs. 5, 6, 7, and 8, center of crossroads.....	42 29 40.6	84 34 51.3
T. 1 N., R. 2 W., corner of secs. 4, 5, 8, and 9, center of T road south at schoolhouse.....	42 29 40.7	84 33 39.8
William Thorn's mail box, 15 feet west to, center of T road west.....	42 29 39.9	84 32 46.6
T. 1 N., R. 2 W., quarter corner between secs. 3 and 4, center of road at fence north-south.....	42 30 05.8	84 32 29.1
T. 1 N., R. 2 W., stone north corner secs. 2 and 3, 20 feet west to center of crossroads.....	42 30 33.5	84 31 19.0
Aurelius, corner of secs. 26, 27, 34, and 35, T. 2 N., R. 2 W., center of cross streets.....	42 31 25.7	84 31 20.7

Magnetic declination of north border of quadrangle, 0° 28' W.

MINNESOTA.

TRIANGULATION STATIONS.

Ashby, Barrett, Chokio, Fergus Falls, Herman, Morris, Urness, Wendell, and Wheaton quadrangles.

DOUGLAS, GRANT, OTTER TAIL, AND STEVENS COUNTIES.

During the season of 1909, E. M. Douglas, geographer, extended triangulation over six 15' quadrangles. Forty-five stations were occupied and 46 points were located, based upon Bullis, Dalton, Elbow, and Holmes stations of the Coast and Geodetic Survey.

Nearly all primary and secondary stations were connected with corners of the public land survey.

The State cooperated in the work.

AASTAD, OTTER TAIL COUNTY, MINN.

About 25 feet north of the township line between Tps. 130 and 131 N., R. 43 W. (county line), and between secs. 3 and 34. It is in the roadway 1,280 feet east of the northwest corner of sec. 3. The Aastad Church is about 0.8 mile east.

Signal: Lumber tripod with target.

Station mark: Iron post set 3 feet in ground and in center of a mound of earth.

[Latitude 46° 06' 31.0". Longitude 96° 04' 32.0".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Western.....	111 27 54	291 23 41	3.907098	5.017
Koppang.....	178 44 35	358 44 22	4.233156	10.629
Dalton.....	236 18 44	56 24 45	4.111162	8.026

AASTAD CHURCH, GRANT COUNTY, MINN. (Not occupied.)

In sec. 2, T. 130 N., R. 43 W., 109-feet south and 805 feet west of the section corner. The latitude of the corner is 46° 06' 30.8'', and its longitude 96° 03' 35.7''.

Station mark: Church spire.

[Latitude 46° 06' 29.7''. Longitude 96° 03' 24.3''.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Western.....	108 29 30	288 24 29	3.97570	5.876
Dalton.....	232 13 16	52 18 28	4.07043	7.308

ALBERTA ELEVATOR, STEVENS COUNTY, MINN. (Not occupied.)

In south part of sec. 3, T. 124 N., R. 43 W.

Station mark: South gable of west elevator.

[Latitude 45° 34' 28.6''. Longitude 96° 02' 54.3''.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Barry.....	36 49 16	216 46 36	3.91042	5.056
Loehr.....	114 59 53	294 57 53	3.60482	2.501

ASHBY CHURCH, GRANT COUNTY, MINN. (Not occupied.)

In the town of Ashby, T. 130 N., R. 41 W.

Station mark: Church steeple.

[Latitude 46° 05' 36.6''. Longitude 95° 49' 17.1''.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Elbow.....	45 15 19	225 10 24	4.09376	7.711
Johnson.....	342 11 46	162 13 48	4.07605	7.403

BARRY, STEVENS COUNTY, MINN.

Near the middle of sec. 30, T. 124 N., R. 43 W., Scott Township, on edge of cultivated field and prairie, possibly on the line through the middle of section north-south. No house or well-defined line within 0.5 mile. Owner of land not known.

Signal: Lumber tripod with triangular target on pole above.

Station mark: Iron post set in mound of earth 5 feet in diameter and 2 feet high. Post set flush with top of mound.

[Latitude 45° 30' 57.52". Longitude 96° 06' 38.98".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Catholic Church, Chokio.....	139 02 29.1	318 59 31.2	3.916354	5.125
Loehr.....	188 27 03.1	8 27 43.3	3.919382	5.161
Linsley.....	260 27 39.0	80 32 24.7	3.944980	5.474

BARRY CHURCH, STEVENS COUNTY, MINN. (Not occupied.)

Near Barry in NE. $\frac{1}{4}$ NE. $\frac{1}{4}$ sec. 32, T. 124 N., R. 43 W.

Station mark: Spire.

[Latitude 45° 30' 38.7". Longitude 96° 04' 35.9".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Barry.....	102 15 26	282 13 58	3.43670	1.698
Loehr.....	170 39 24	350 38 36	3.95006	5.539

BARRY, SCHOOL NEAR, STEVENS COUNTY, MINN. (Not occupied.)

In NE. $\frac{1}{4}$ NE. $\frac{1}{4}$ sec. 30, T. 124 N., R. 43 W.

Station mark: Chimney sighted.

[Latitude 45° 31' 38.2". Longitude 96° 05' 49.8".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Barry.....	40 21 38	220 21 03	3.21673	1.023
Loehr.....	181 15 54	1 16 49	3.84274	4.326

BARTON, STEVENS COUNTY, MINN.

In cultivated field in NE. $\frac{1}{4}$ NW. $\frac{1}{4}$ sec. 14, T. 126 N., R. 43 W. Middle of graded road along middle of section is 145 feet east. Middle of road along north edge of section is 467 feet north.

Signal: Lumber tripod with target on central pole, top 28 feet from ground.

Station mark: Quart beer bottle buried bottom up 12 inches below surface of ground. Two other similar bottles lie horizontally, with bottoms touching central bottle, one pointing east and the other west.

Reference marks: Iron post set 4 feet in ground, in line with a church spire 1.5 miles east, 137.3 feet from station, and bears N. 78° E. magnetic.

[Latitude 45° 43' 44.92". Longitude 96° 02' 15.09".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Felt.....	85 42 36.0	265 37 44.6	3.945695	5.483
Herman Water Tower.....	138 27 37.8	318 23 11.9	4.082146	7.508
Boerner.....	212 36 17.9	32 38 21.0	3.838399	4.283
McCanney.....	269 04 36	89 09 23	3.952221	5.566
Searle.....	294 53 55	114 58 25	3.966013	5.746

BEHLE, OTTER TAIL COUNTY, MINN.

On land belonging to Andrew P. Burseth in NW. $\frac{1}{4}$ SW. $\frac{1}{4}$ sec. 16, T. 132 N., R. 42 W., Dane Prairie Township. It is 3 feet south of fence line east-west through middle of section, 481 feet east of fence corner and 514 feet east of section line at quarter corner. Mr. Behle is the renter.

Signal: Lumber tripod with target.

Station mark: Aluminum tablet cemented in the middle of top of large stone boulder weighing about 500 pounds, which is set edgewise in the ground and projects about 6 inches above it.

[Latitude 46° 14' 48.51". Longitude 95° 58' 34.39'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Western.....	50 47 37.7	230 39 07.0	4.2923255	12.181
Koppang.....	102 16 11.9	282 11 40.9	3.9149036	5.108
Asylum Smokestack, Fergus Falls.....	126 09 00	306 04 36	4.005580	6.294
Dalton.....	339 26 21.3	159 28 04.9	3.942621	5.445

BEHLE, CHURCH SOUTH OF, OTTER TAIL COUNTY, MINN. (Not occupied.)

In NW. $\frac{1}{4}$ sec. 21, T. 132 N., R. 42 W.

Station mark: Center of church spire.

[Latitude 46° 14' 21.8". Longitude 95° 58' 23.6'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Koppang.....	107 17 20	287 12 41	3.93726	5.378
George.....	358 52 59	178 53 09	4.17522	9.302

BOERNER, GRANT COUNTY, MINN.

On the east-west line through middle of sec. 30, T. 127 N., R. 43 W., 369.5 feet east of a fence corner of pasture lot. Land north of station owned by Albert Boerner. The middle of section road between secs. 29 and 30 is 1,167 feet east of station.

Signal: Lumber tripod, with 15-foot central pole carrying target. A platform 4 feet above ground was used in order to get sights over a cornfield south of station.

Station mark: Iron post set 3 feet in ground with a mound of earth 1 foot high and 4 feet in diameter around it.

[Latitude 45° 46' 52.95". Longitude 95° 59' 23.16'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Barton.....	32 38 21.0	212 36 17.9	3.838399	4.283
Herman Water Power.....	105 27 57.3	285 21 28.0	4.085108	7.559
Gord.....	171 12 44.3	351 11 57.7	3.962662	5.702
McCanney.....	287 14 09	137 16 53	3.887435	4.795

BORGEN, STEVENS COUNTY, MINN.

On low ridge in SE. $\frac{1}{4}$ NE. $\frac{1}{4}$ sec. 9, T. 128 N., R. 41 W., on land owned by August Borgen, 2 miles east of Barrett, in Elk Lake Township; 2.5 feet west of quarter section line fence, 158 feet north of middle of road along quarter section line. Mark is about 60 yards south of highest part of ridge.

168 TRIANGULATION AND PRIMARY TRAVERSE FOR 1909 AND 1910.

Signal: Lumber tripod with central pole and 30 by 30 inch targets.

Station mark: Iron post projecting 12 inches above surface of ground.

[Latitude 45° 54' 46.07". Longitude 95° 49' 51.37".]

To station—	Azimuth.	Back azimuth.	Distance.	
			Log. meters.	Miles.
McCanney.....	19 21 37	199 17 38	4.332147	13.350
Poplar.....	81 24 46.13	261 21 39.75	3.7525709	3.515
Elbow.....	144 33 28.5	324 28 58.6	4.1439107	8.655
Johnson.....	206 36 47.36	26 39 13.64	3.9902353	6.076
Holmes.....	291 52 38	112 01 50	4.2497288	11.043
Stevenson.....	309 30 07.51	129 34 09.2	3.9737431	5.849

BOYNTON, STEVENS COUNTY, MINN.

In SE. $\frac{1}{4}$ NE. $\frac{1}{4}$ sec. 16, T. 125 N., R. 43 W., Pepperton Township, in open grassland owned by Mr. Boynton, of St. Paul. There is no tree, house, or fence within quarter of a mile of the station, which is on a small mound over a lot of fox holes.

Signal: Lumber tripod.

Station mark: Iron post projecting about 2 inches above ground.

Reference mark: Quarter corner between secs. 15 and 16; distance 240.5 feet, magnetic bearing from station S. 52° E.

[Latitude 45° 38' 12.92". Longitude 96° 04' 04.32".]

To station—	Azimuth.	Back azimuth.	Distance.	
			Log. meters.	Miles.
Loehr.....	22 11 16.4	202 10 06.1	3.751616	3.507
Peck.....	94 16 14.4	274 11 46.7	3.910224	5.053
Clark.....	261 09 02.4	81 15 17.9	4.0610487	7.152

BRISBANE, STEVENS COUNTY, MINN.

Near the center of sec. 10, T. 125 N., R. 41 W., Framnar Township, on land owned by Mrs. Brisbane, in middle of cultivated field.

Signal: Lumber tripod.

Station mark: Quart beer bottle set bottom up 1 foot below surface of ground. Two similar bottles lie horizontally touching center bottle, one east and the other west.

Reference marks: Concrete post with aluminum tablet in top set 3 feet in ground, 1 foot east of fence line and 202.2 feet west of station; magnetic bearing is N. 87° E.

A stone projecting 6 inches above ground and marked by a chiseled cross on top is 1 foot north of fence and 388 feet south of station; bearing of station is N. 6° E.

[Latitude 45° 39' 05.31". Longitude 95° 48' 31.60".]

To station—	Azimuth.	Back azimuth.	Distance.	
			Log. meters.	Miles.
Logue.....	17 45 24.3	197 42 43.6	4.2045045	9.951
Rock.....	18 11 54.5	198 10 38.7	3.8672590	4.577
Clark.....	90 33 54.9	270 29 03.5	3.9456743	5.483
Searle.....	116 23 34.3	296 18 22.6	4.0222230	6.540
Winter.....	175 50 26.4	355 50 10.5	3.8227554	4.131

BROWN, GRANT COUNTY, MINN.

In SW. $\frac{1}{4}$ SW. $\frac{1}{4}$ sec. 18, T. 127 N., R. 44 W., Logan Township. Land owned by a banker of Herman, occupied by Mr. Brown as tenant. Station is in cultivated field east of house and northeast of a patch of timber, 227 feet north by 917 feet east of the

southwest corner of sec. 18. The corner is not marked, but the center of intersecting roads is assumed to be the point.

Signal: Lumber tripod with target.

Station mark: Quart beer bottle buried bottom up 1 foot below surface of ground. Two similar bottles lie horizontally, one north and the other south of station mark.

Reference mark: Iron post 6 inches north of fence line, on south side of road, 259.5 feet from station; magnetic bearing to station N. 3° W.

[Latitude 45° 48' 14.54". Longitude 96° 15' 01.11".]

To station—	Azimuth.	Back azimuth.	Distance.	
			Log. meters.	Miles.
Setter.....	178 13 39	358 13 29	3.975382	5.871
Herman Water Tower.....	265 10 30	85 15 13	3.932372	5.318
Curts.....	314 54 33	134 57 03	3.804704	3.964

BULLIS, GRANT COUNTY, MINN.

A Coast and Geodetic Survey station on grass land at the north side of NW. $\frac{1}{4}$ sec. 31, T. 129 N., R. 43 W., on land belonging to heirs of former owner, living in Iowa. The agent in charge of the land lives in Herman. It is 9 paces west of center of old State road along top of small ridge from Hereford to Herman and 7 paces south of center of section line road at north side of section. A. H. Bullis, who lives 0.5 mile north of station, has "grass rights" on this land, and can point out station. Hereford, 5 miles north and 0.8 mile west, on Great Northern Railway, is the nearest railway town.

Station mark: Two sections of terra-cotta pipe, 2 feet long, set in cement, sand, and broken rock, one above the other, 6 inches of sand between, each filled with cement. A nail was placed in top of each to mark the station. The top of the upper pipe is level with the surface.

Reference mark: Pipe similar to that taken as station mark, only one section being used. The mark is 14.350 meters north of station across section line road.

	°	'	"
Elbow.....	0	00	00
House (Mr. Wilcox), center of chimney, ± 1 mile west....	199	00	50
Hereford, tallest elevator, ± 5 miles.....	285	24	55
House (A. H. Bullis), center of chimney, $\pm \frac{3}{8}$ mile north....	295	44	22
Reference mark, 14/350 meters.....	296	05	48
Schoolhouse (district 17), center of chimney, ± 1.25 miles northeast.....	350	32	57

[Latitude 45° 56' 56.474". Longitude 96° 07' 46.935".]

To station—	Azimuth.	Back azimuth.	Distance.	
			Log. meters.	Miles.
Herman Water Tower.....	3 08 53.9	183 08 25.8	4.188183	9.584
Setter.....	55 23 25.0	235 18 03.4	4.069291	7.289
Oscarson.....	77 35 09.03	257 17 59.78	4.5001501	19.656
Lone Elevator.....	89 29 24.3	269 23 26.1	4.030800	6.670
Foss.....	118 38 27.78	298 21 01.15	4.5513666	22.117
Western.....	170 51 34.23	350 49 42.59	4.3213203	13.022
Old Church, Wendell.....	193 53 47.9	13 55 08.1	3.999404	6.205
Dalton.....	210 56 02.52	31 04 23.71	4.4630590	18.047
Elbow.....	244 02 06.63	64 10 30.10	4.2240720	10.409
Elbow Lake Water Tower.....	248 01 03.6	68 07 44.6	4.112095	8.044
Pikop.....	261 16 33.1	81 19 31.0	3.731896	3.352

170 TRIANGULATION AND PRIMARY TRAVERSE FOR 1909 AND 1910.

CHURCH, DOUGLAS COUNTY, MINN. (Not occupied.)

In south part of sec. 31, T. 129 N., R. 40 W.

Station mark: Church spire.

[Latitude 45° 56' 02.5". Longitude 95° 45' 22.3".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Holmes.....	310 05 15	130 11 11	4.14515	8.680
Stevenson.....	350 05 35	170 06 24	3.92833	5.268

BARTON CHURCH SPIRE, STEVENS COUNTY, MINN. (Not occupied.)

Church east of Barton station, about 260 feet east and 75 feet north of the southwest corner of sec. 7, T. 126 N., R. 42 W.

Station mark: Center of church spire.

[Latitude 45° 43' 50.7". Longitude 96° 00' 17.2".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Barton.....	85 58 36	265 57 12	3.40755	1.588
Boerner.....	191 43 05	11 43 44	3.75932	3.570

CHURCH, OTTER TAIL COUNTY, MINN.

Church, 5 miles north of Indian spire.

Station mark: Center of spire.

[Latitude 46° 30' 55.113". Longitude 96° 13' 10.517".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Indian.....	0 15 52.5	180 15 51.2	3.932892	5.324
Meadows.....	67 27 13.6	247 14 45.0	4.377827	14.831
Barnesville.....	135 01 02.3	314 50 20.1	4.424486	16.513
Tansem.....	180 36 07.6	0 36 15.1	4.314192	12.810

CLARK, STEVENS COUNTY, MINN.

In a meadow in SW. $\frac{1}{4}$ NW. $\frac{1}{4}$ sec. 11, T. 125 N., R. 42 W., Morris Township. Land owned by T. W. Clark.

Signal: Lumber tripod.

Station mark: Quart white glass beer bottle, buried bottom up, 12 inches below surface of ground. A similar bottle and an olive bottle are buried horizontally, one east and one west, touching center mark.

Reference mark: Concrete post 6 by 6 inches and 4 feet long, set 3 feet in ground, 1 foot west of fence line along east side of section line road, 255.4 feet from station; magnetic bearing from station N. 84°.5 E. The line of fence from the reference point bears N. 8° E., and the middle of the section line road is 286 feet west of station.

[Latitude 45° 39' 09.93". Longitude 95° 55' 19.11".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Linsley.....	23 48 29.5	203 45 09.9	4.1767877	9.336
Loehr.....	62 42 48.8	242 35 23.2	4.1820989	9.450
Boynton.....	81 15 17.9	261 09 02.4	4.0610487	7.152
Gunther.....	84 22 07	264 17 27	3.931084	5.302
Searle.....	172 25 20.5	352 25 00.3	3.6656888	2.878
Winter.....	231 48 09.6	51 52 45.2	4.0254025	6.588
Brisbane.....	270 29 03.5	90 33 54.9	3.9456743	5.483
Rock.....	317 17 01.0	137 20 36.4	3.9836550	5.984
Logue.....	345 30 48.6	165 32 59.0	4.1996510	9.840

CURTS, GRANT COUNTY, MINN.

On the west side of a roadway between secs. 33 and 34, T. 127 N., R. 44 W., Logan Township, 1,332 feet north of the county and township line and on the westward prolongation of a fence line east of roadway. Barn belonging to John Curts is about 400 feet northeast.

Signal: Lumber tripod bearing target.

Station mark: Iron post set 3.5 feet in ground, with small mound of earth around it.

[Latitude 45° 45' 48.62". Longitude 96° 11' 32.05'']

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Brown.....	134	57	03	314	54	33	3.804764	3.964
Herman Water Tower.....	217	33	12	37	35	25	3.818558	4.092
Felt.....	324	06	50	144	08	37	3.743141	3.439

DALTON, OTTER TAIL COUNTY, MINN.

A Coast and Geodetic Survey station on a knoll in pasture in the NE. $\frac{1}{4}$ SE. $\frac{1}{4}$ sec. 10, T. 131 N., R. 42 W., about 90 meters south of the northeast corner of the quarter section on land owned by Iri Vik, who lives about $\frac{3}{8}$ mile west of south across small lake from station. The station is 2.42 meters west of fence bordering east side of this section.

Station mark: Two sections of terra-cotta pipe, 2 feet long, set in cement, sand, and broken rock, one above the other with 6 inches of sand between. Each pipe is filled with cement, and in top of each is a nail placed to mark the station. The top of the upper pipe is level with the surface.

Reference marks: Single section of pipe similar to that used for station mark. It is 85.278 meters north of station in corner of pasture close to road from Dalton west along half-section line. It is 1 foot south of north fence, 1 foot west of east fence corner, and about 4 paces south of road. Dalton, on the Great Northern Railway, is 1 mile due east of station.

	°	'	"
Leaf.....	00	00	00
Barn cupola (Iri Vik), $\pm\frac{3}{8}$ mile west of south.....	99	30	50
House (A. Johnson), south gable $\pm\frac{3}{8}$ mile west of north.....	244	18	17
Reference mark.....	263	03	39
West gable $\pm\frac{3}{8}$ mile northeast.....	307	15	46
Dalton astronomical station.....	350	53	19.86
Schoolhouse (Dalton), spire, 1 mile northeast.....	344	52	35
Elevator (Dalton), center of top, 1 mile east.....	352	54	46

[Latitude 46° 10' 22.770". Longitude 95° 56' 10.926'']

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
George.....	18	37	53.4	198	36	27.5	3.9034161	4.975
Bullis.....	31	04	23.71	210	56	02.52	4.4630590	18.047
Aastad.....	56	24	46	236	18	44	4.111162	8.026
Western.....	77	07	06.75	256	56	52.93	4.2727947	11.645
Nelson.....	96	50	17.2	.....	.....	.....	4.3257103	13.154
Soo.....	100	52	59.7	280	45	45.5	4.118631	8.165
Koppang.....	131	52	44.9	311	46	30.6	4.1736287	9.268
Fergus Falls Asylum Smokestack.....	141	34	53	321	28	33	4.257751	11.249
Behle.....	159	28	04.9	.....	.....	.....	3.942621	5.445
Robertson.....	256	36	43.2	76	43	58.8	4.1239552	8.266
Stene.....	325	05	26.7	145	09	05.9	4.0573679	7.091
Holmes.....	325	12	14.49	145	25	57.55	4.6359849	26.874
Elbow.....	359	42	42.66	179	42	45.62	4.2449929	10.923

172 TRIANGULATION AND PRIMARY TRAVERSE FOR 1909 AND 1910.

DALTON, CHURCH EAST OF, OTTER TAIL COUNTY, MINN. (Not occupied and not checked.)

In SE. $\frac{1}{4}$ sec. 7, T. 131 N., R. 41 W.

Station mark: Church spire.

[Latitude $46^{\circ} 10' 22.8''$. Longitude $95^{\circ} 52' 28.6''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Elbow.....	14 56 58	194 54 21	4.25993	11.305
Dalton.....	90 00 12	269 57 32	3.67836	2.963

DALTON, CHURCH SOUTH OF, OTTER TAIL COUNTY, MINN. (Not occupied.)

In sec. 22, T. 131 N., R. 42 W.

Station mark: Center of church spire.

[Latitude $46^{\circ} 08' 38.8''$. Longitude $95^{\circ} 56' 23.5''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
George.....	27 36 34	207 35 17	3.69360	3.069
Koppang.....	140 32 36	320 26 31	4.23180	10.596

DALTON PUBLIC SCHOOL, OTTER TAIL COUNTY, MINN. (Not occupied.)

Flagpole on school in town of Dalton, sec. 11, T. 131 N., R. 42 W.

Station mark: Center of flagpole.

[Latitude $46^{\circ} 10' 29.6''$. Longitude $95^{\circ} 54' 50.6''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
George.....	28 46 54	208 44 30	3.94918	5.528
Stene.....	333 20 32	153 23 13	4.02979	6.655

DENTON, GRANT COUNTY, MINN.

In cultivated field owned by N. S. Denton, in NW. $\frac{1}{4}$ NE. $\frac{1}{4}$ of sec. 10, T. 130 N., R. 43 W.

Signal: Lumber tripod with central pole and target.

Station mark: Four glass (quart) bottles; the central one is set upside down and marks the center of station, and the others lie horizontally 120° apart, 1 foot below the surface of the ground.

Reference mark: Iron post set 2 feet from southwest corner of Denton's barn; distance from station 733.8 feet.

[Latitude $46^{\circ} 05' 28.1''$. Longitude $96^{\circ} 11' 34.4''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Lone Elevator.....	20 09 35	200 06 20	4.22867	10.520
Western.....	197 37 31	17 38 23	3.71038	3.190
Old Church Wendell.....	309 55 06	129 59 10	3.97798	5.906

DONELLY, CATHOLIC CHURCH, STEVENS COUNTY, MINN. (Not occupied.)

Station mark: Center of church spire.

[Latitude 45° 44' 20.7". Longitude 95° 58' 42.8".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Barton.....	76 29 47	256 27 15	3.67400	2.933
Searle.....	322 48 36	142 50 42	3.79786	3.901

EKLEY, GRANT COUNTY, MINN.

On bare knoll in SE. $\frac{1}{4}$ sec. 23, T. 129 N., R. 42 W., 299 feet west of section-line fence, 790 feet north of center of section-line road between secs. 23 and 26 where road crosses the line between secs. 23 and 24 and secs. 26 and 27, about 900 feet north from pole on cupola on schoolhouse. It is 3.5 miles north by 1.5 miles west of Barrett, on land owned by Peter Ekley, whose half-brother Johnson lives about 0.5 mile north.

Signal: Square platform 11 feet above ground with central pole and target.

Station mark: Aluminum tablet set in top of concrete post, 6 by 6 inches at top and 9 by 13 inches at bottom and 4 feet long, set 3 feet in ground.

[Latitude 45° 57' 54.08". Longitude 95° 55' 13.72".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Elbow.....	168 20 34.5	348 19 56.3	3.7523689	3.513
Johnson.....	255 24 41.7	75 30 59.9	4.0679824	7.267
Poplar.....	348 29 16.6	168 30 01.7	3.8317806	4.218

ELBOW LAKE, GRANT COUNTY, MINN.

A Coast and Geodetic Survey station in a pasture on ridge in SE. $\frac{1}{4}$ NE. $\frac{1}{4}$ sec. 3, T. 129 N., R. 42 W., on land owned by Niels N. Olson, who lives about $\frac{3}{8}$ mile northwest of the station. It is 5.5 paces west of east fence line of this section and about 85 meters north of the east quarter corner of sec. 3. Elbow Lake, 2 miles west and 1.5 miles south, on Minneapolis, St. Paul & Sault Ste. Marie Railway, is the nearest town.

Signal: Lumber tripod with target.

Station mark: Two sections of terra-cotta pipe, 2 feet long, set in cement, sand, and broken rock, one above the other, 6 inches of sand between, each filled with cement. In top of each a nail is placed to mark the station. The top of the upper pipe is level with surface.

Reference mark: Similar to station mark, only one section of pipe being used. It is situated in fence corner at southeast corner of pasture, 1 foot west of east fence, 1.5 feet north of south fence, 2,430 meters west of stone said by Mr. Olson to mark east quarter corner of sec. 3, and 84.767 meters from station.

	° ' "
Western.....	0 00 00
House (N. N. Olson), east gable, end of ridge, $\pm\frac{3}{8}$ mile north.....	38 23 19
Schoolhouse (district 38) flagstaff, $\pm\frac{3}{8}$ mile southeast.....	221 58 19
East quarter corner of sec. 3, 85.252 meters.....	229 50 02
Reference mark, 84.767 meters.....	231 26 20
Barn (E. J. Colmark), west gable, ± 0.5 mile south.....	241 08 03

174 TRIANGULATION AND PRIMARY TRAVERSE FOR 1909 AND 1910.

[Latitude 46° 00' 53.431". Longitude 95° 56' 06.816"']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Elbow Lake Water Tower.....	50 59 37	230 57 55	3.595775	2.450
Bullis.....	64 10 30.10	244 02 06.63	4.2240720	10.409
Western.....	126 07 44.61	305 57 28.65	4.3565722	14.123
George.....	165 10 05.4	345 08 36.7	4.0143830	6.423
Dalton.....	179 42 45.62	359 42 42.66	4.2449929	10.923
Stene.....	218 05 19.0	38 08 54.86	4.0188637	6.490
Johnson.....	281 44 27.1	101 51 23.6	4.1047153	7.908
Holmes.....	306 06 28.63	126 20 07.64	4.4834326	18.914
Borgen.....	324 28 58.6	144 33 28.5	4.1439107	8.655
Ekley.....	348 19 56.3	168 20 34.5	3.7523689	3.513

ELBOW LAKE WATER TOWER, GRANT COUNTY, MINN. (Not occupied.)

In SW. $\frac{1}{4}$ sec. 9, T. 129 N., R. 42 W., 350 feet east and 50 feet north of section corner. This point can be seen from any other high point within 10 miles.

Station mark: Short pole in center of top of iron water tank.

[Latitude 45° 59' 33.0". Longitude 95° 58' 29.2"']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Bullis.....	68 07 44.6	248 01 03.6	4.112095	8.044
Oscarson.....	74 55 21.7	254 31 31.2	4.6478877	27.620
Foss.....	105 53 08.3	285 28 59.7	4.652574	27.921
Elbow.....	230 57 54.7	50 59 37.1	3.595775	2.450

FELT, STEVENS COUNTY, MINN.

In roadway between secs. 13 and 14, T. 126 N., R. 44 W., Eldorado Township, 3.3 feet from east fence line, 30 feet from center of road. An east-west fence, which appears to go through the middle of sec. 13, is 167 feet north.

Signal: Lumber tripod with large target on central pole 10 feet above top.

Station mark: Iron post set 3.5 feet in ground and 3.3 feet west of fence line.

[Latitude 45° 43' 23.34". Longitude 96° 09' 02.01"']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Curts.....	144 08 37.4	324 06 49.9	3.743141	3.439
Herman Water Tower.....	184 33 35.2	4 34 00.9	3.988360	6.049
Barton.....	265 37 44.6	85 42 36.0	3.945695	5.483

FERGUS FALLS ASYLUM SMOKESTACK, OTTER TAIL COUNTY, MINN. (Not occupied.)

Station mark: Center of smokestack on asylum at Fergus Falls.

[Latitude 46° 18' 01.797". Longitude 96° 04' 56.557"']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Western.....	20 49 04.8	200 45 09.8	4.293534	12.215
Behle.....	306 04 36	126 09 00	4.005580	6.294
Dalton.....	321 28 33.1	141 34 52.8	4.257751	11.249
Elbow.....	340 15 01.4	160 21 23.4	4.527954	20.956
Koppang.....	357 56 57	.....	3.626393	2.629

FERGUS FALLS, OTTER TAIL COUNTY, MINN. (Not occupied.)

Station mark: Center of Northwestern College tower at Fergus Falls.

[Latitude 46° 16' 33.335". Longitude 96° 04' 03.407".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Dalton.....	318 26 38.8	138 32 19.9	4.185092	9.516
Fox.....	92 09 56.8	271 58 43.0	4.300431	12.410
Indian.....	147 00 34.7	326 53 57.4	4.332900	13.374

GEORGE, GRANT COUNTY, MINN.

On land owned by Ole T. Jerjord in NW. $\frac{1}{4}$ sec. 4, T. 131 N., R. 42 W., Pomme de Terre Township. It is about on the line between land of two owners, Jerjord being the owner of land to the south. There is no fence nor any well-defined line near. The northwest corner of sec. 4 is 2,471 feet toward the northwest from the station.

Signal: Lumber tripod with triangular targets.

Station mark: Iron post.

[Latitude 46° 06' 17.04". Longitude 95° 58' 10.02".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Koppang.....	153 59 58	333 55 11	4.290359	12.126
Behle.....	178 06 17	358 06 06	4.198669	9.818
Dalton.....	198 36 27.5	18 37 53.4	3.9034161	4.975
Stene.....	281 00 35.6	101 05 40.5	3.9666043	5.754
Elbow.....	345 03 36.7	165 10 05.4	4.0143830	6.423

GEORGE, CHURCH NEAR, GRANT COUNTY, MINN. (Not occupied.)

This point is 19 meters west and 22.6 meters north of the southeast corner of sec. 4, T. 131 N., R. 42 W.

Station mark: Church spire.

[Latitude 46° 05' 38.6". Longitude 95° 57' 24.5".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Dalton.....	190 11 48	10 12 41	3.95018	5.540
Stene.....	274 06 03	94 10 35	3.91023	5.053

GORD, GRANT COUNTY, MINN.

In cultivated field in SE. $\frac{1}{4}$ SE. $\frac{1}{4}$ sec. 25, T. 128 N., R. 43 W., Delaware Township. Land owned by J. H. Spink, who lives in Paynesville, Minn.; renter's name is T. O. Gord.

Signal: Lumber tripod with target 10 feet high above platform and observing tripod 4 feet from ground.

Station mark: Quart beer bottle 1 foot below surface of ground, bottom up. Three similar bottles lie horizontally, touching central bottle.

Reference mark: Iron post set on (or very near) the township line, distant 425.3 feet and exactly on the line to Herman water tower prolonged eastward. Gord's house bears N. 17° W. and the reference mark N. 54° 30' E., and the nearest white house south bears S. 37° E. from station. These bearings are all magnetic.

[Latitude 45° 51' 46.68". Longitude 96° 00' 28.15'"]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Herman Water Tower.....	60 33 10.9	240 27 28.0	4.073806	7.365
Pikop.....	158 21 56.4	338 19 39.0	4.048008	6.940
Boerner.....	351 11 57.7	171 12 44.3	3.962662	5.702

GUNTHER, STEVENS COUNTY, MINN.

In cultivated field in SE. $\frac{1}{4}$ sec. 11, T. 125 N., R. 43 W., Pepperton township. Land is owned by Gunther Bros. It is 636 feet north of center of section line road and 1,239 feet west of southeast corner of sec. 11.

Signal: Platform 7 feet high.

Station mark: Quart beer bottle set bottom up 10 inches below surface of ground. Two similar bottles were placed on opposite sides of the first as reference marks.

Reference mark: Square concrete post set 3 feet in ground, 2 feet from line of fence around a pond. Distance from station 182.6 feet, and bearing (magnetic) to station N. 55° E.

[Latitude 45° 38' 42.62". Longitude 96° 01' 51.23'"]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Searle.....	235 21 52.4	55 26 12.4	3.980875	5.946
Clark.....	264 17 27.0	84 22 07.4	3.931084	5.302

HANCOCK WATER TOWER, STEVENS COUNTY, MINN.

Water tower in town of Hancock, Minn., 150 feet south of township line between Tps. 123 and 124 N., and 450 feet west of northwest corner of sec. 2, T. 123 N., R. 41 W. Under favorable conditions this point can be seen from Holmes station.

Station mark: Center of water tower.

[Latitude 45° 29' 55.26". Longitude 95° 47' 37.67'"]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Linsley.....	101 55 57	281 47 08	4.215727	10.211
Logue.....	106 30 05	286 26 46	3.800321	3.923
Rock.....	160 56 54	340 55 00	4.026469	6.604

HELLER, STEVENS COUNTY, MINN.

On a knoll 2.5 miles east by 0.5 mile north of Morris; land is owned by Fred Heller. It is in the NW. $\frac{1}{4}$ sec. 32, T. 125 N., R. 41 W., about 5 feet east of fence line between secs. 31 and 32. This station is of very little value.

Station mark: Iron post projecting about 1 foot above ground.

[Latitude 45° 35' 40.46". Longitude 95° 51' 41.04'"]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Logue.....	4 48 29	184 58 04	3.949403	5.530
Rock.....	288 42 44	108 43 44	3.280327	1.185

HERMAN WATER TOWER, GRANT COUNTY, MINN. (Not occupied.)

Near the center of sec. 13, T. 127 N., R. 44 W. The center of section, according to the town plat, is 90 feet east and 30 feet north of the tower. Under favorable conditions this point can be seen from Holmes station.

Station mark: Short pole in top of circular iron water tank on high tower.

[Latitude 45° 48' 37.67". Longitude 96° 08' 26.16".]

To station—	Azimuth.			Back azimuth.		Distance.	
	°	'	"	°	'	Log. meters.	Miles.
Felt	4	34	01	184	33	3.988360	6.049
Curts	37	35	25	217	33	3.818558	4.092
Brown	85	15	13	265	10	3.923372	5.318
Setter	134	46	02	314	41	4.093632	7.709
Bulls	183	08	25.8	3	08	4.188183	9.584
Elbow	214	58	27.3	35	07	4.443229	17.242
Gord	240	27	28	60	33	4.073806	7.365
Boerner	285	21	28	105	27	4.085108	7.559
Barton	318	23	12	138	27	4.082146	7.508

HOLMES, DOUGLAS COUNTY, MINN.

A Coast and Geodetic Survey station in Moe Township, near the center of the N. $\frac{1}{4}$ SE. $\frac{1}{4}$ sec. 31, T. 128 N., R. 39 W., on land of C. G. Rusk, who lives $\frac{3}{8}$ mile south. The main part of Lake Oscar is 0.8 mile southeast. Kensington, on the Minneapolis, St. Paul & Sault Ste. Marie Railway, is 3.8 miles west by 5.5 miles south (about 8 miles by road). Holmes City is a small town 4.5 miles east by 2 miles south of Kensington. The station is on a clearing at the crest of a hill, the north edge of which is heavily timbered. There is a good view from the ground to the south and west except from S. 40° W. to S. 60° W. (magnetic).

Signal: Triangle with 12 by 12 foot sides, facing west, covered with white cloth. The Coast and Geodetic Survey tower has been torn down.

Station mark: Two terra-cotta pipes 2 feet long, set in cement and filled with cement, one above the other; nail in top marking station.

Reference marks: Similar to station mark, only one pipe used; north of station 24.547 meters.

	°	'	"
Elbow	0	00	00
Flagstaff schoolhouse (district 45) ± 1 mile northwest at northwest corner of sec. 31	355	21	25
Spire on barn (John P. Edman), $+\frac{1}{2}$ mile northwest	350	10	52
Spire of Swedish church, Holmes City, $4\frac{1}{2}$ miles	160	50	21
East gable of barn (C. G. Rusk), $+\frac{3}{8}$ mile south	243	13	58
Reference mark, 24.547 meters	82	46	07

[Latitude 45° 51' 10.856". Longitude 95° 37' 06.983".]

To station—	Azimuth.			Back azimuth.		Distance.	
	°	'	"	°	'	Log. meters.	Miles.
Stevenson	94	05	01.3	273	59	3.9061554	5.748
Borgen	112	01	50.3	291	52	4.2497289	11.043
Elbow	126	20	07.64	306	06	4.4834326	18.914
Johnson	141	54	09.2	321	47	4.2914531	12.156
Dalton	145	25	57.55	325	12	4.6359849	26.874

8283°—Bull. 496—12—12

JOHNSON, GRANT COUNTY, MINN.

On high grassy knoll in Erdahl Township, in N. $\frac{1}{4}$ sec. 13, T. 129 N., R. 41 W., on land owned by N. G. Johnson, about 1.5 miles east of Erdahl village, on the Great Northern Railway. It is 120 feet south of section line road and 1,346 feet east of fence along middle of section north and south. The northeast corner of section is 1,278 feet distant.

Signal: Lumber tripod with pole and target.

Station mark: Aluminum tablet set in the top of concrete post 4 feet long, 6 by 6 inches on top and 9 by 13 inches at bottom, set 3 feet in ground.

[Latitude 45° 59' 29.15''. Longitude 95° 46' 27.85'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Borgen.....	26 39 13.6	206 36 47.4	3.9902353	6.076
Poplar.....	46 10 27.4	226 04 54.7	4.1409347	8.596
Ekley.....	75 30 59.9	255 24 41.7	4.0679824	7.267
Elbow.....	101 51 23.6	281 44 27.1	4.1047153	7.908
Stene.....	151 00 39.2	330 57 18.3	4.0924344	7.687
Holmes.....	321 47 28.3	141 54 09.2	4.2914531	12.156
Stevenson.....	348 57 54.5	168 59 30.2	4.1763561	9.326

KOPPANG, OTTER TAIL COUNTY, MINN.

In middle of a cultivated field on the middle one of three knolls of about equal height, in SW. $\frac{1}{4}$ NW. $\frac{1}{4}$ sec. 10, T. 132 N., R. 43 W., Brice Township. The southwest corner of sec. 10 is 2,876 feet south of reference mark.

Signal: Lumber tripod with target.

Station mark: Quart glass bottle set bottom up 1 foot below surface of ground. A second quart bottle lies horizontally pointing toward the reference mark.

Reference mark: Iron post 6 inches east of fence line, the west line of sec. 10, south of west on the ridge from the station 535.5 feet; distance measured on the slope.

[Latitude 46° 15' 44.92''. Longitude 96° 04' 49.46'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Soo.....	13 25 51.1	193 24 51	3.8858810	4.778
Western.....	26 46 27.5	206 42 27.5	4.1999407	9.847
Nelson.....	53 01 21.4	232 55 48	4.0931670	7.700
Asylum Smokestack, Fergus Falls.....	177 56 50	357 56 57	3.626393	2.629
Asylum Tower, Fergus Falls.....	179 27 52	.....	3.613040	2.549
Behle.....	282 11 40.9	102 16 11.9	3.9149036	5.108
Dalton.....	311 46 30.6	131 52 44.9	4.1736287	9.268
George.....	333 55 11	153 59 58	4.290359	12.126
Aastad.....	358 44 22	178 44 35	4.233156	10.629

LAKE, OTTER TAIL COUNTY, MINN.

On the range line between T. 131 N., R. 43 W., and T. 131 N., R. 44 W., 191 feet due north of the township corner.

A temporary target was erected on line to western triangulation station, and this point was sighted from there.

[Latitude 46° 06' 32.4''. Longitude 96° 08' 29.8'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Western.....	140 21 25	320 20 04	3.57697	2.346
Aastad.....	270 27 52	90 30 43	3.70830	3.174

LINSLEY, STEVENS COUNTY, MINN.

In meadow in SE. $\frac{1}{4}$ SE. $\frac{1}{4}$ sec. 24, T. 124 N., R. 43 W., Scott Township; land is owned by Neil Linsley. Station is 368 feet north by 1,470 feet west of center of section line roads, the east road being the township line. It is 4 miles south by 4 miles west of Morris.

Signal: Lumber tripod 15 feet high and platform 11 feet high with railing around it 4.5 feet high covered with cloth.

Station mark: Aluminum tablet in top of concrete post set 3 feet in ground.

[Latitude 45° 31' 44.61". Longitude 95° 59' 58.60".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
	° ' "	° ' "		
Barry.....	80 32 24.7	260 27 39	3.944980	5.474
Loehr.....	132 12 48.8	312 08 43.2	4.003027	6.257
Clark.....	203 45 09.9	23 48 29.5	4.176788	9.336
Rock.....	242 02 47.7	62 09 42.4	4.153956	8.857
Logue.....	278 56 23.4	99 01 53	4.006515	6.308
Hancock Water Tower.....	281 47 08	101 55 57	4.215727	10.211

LOEHR, STEVENS COUNTY, MINN.

In cultivated field in SE. $\frac{1}{4}$ sec. 32, T. 125 N., R. 43 W., Pepperton Township; land owned by Mr. Loehr, who lives south of station.

Signal: Platform 15 feet from ground. View from the platform to north and north-west is poor.

Station mark: Aluminum tablet in top of concrete post 6 by 6 inches on top, 4 feet long, and set 3 feet 10 inches in ground.

[Latitude 45° 35' 23.63". Longitude 96° 05' 42.67".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
	° ' "	° ' "		
Barry.....	8 27 43.3	188 27 03.1	3.919382	5.161
Catholic Church, Chokio.....	73 19 23.3	253 15 45	3.840029	4.299
Peck.....	134 16 14	314 12 56.8	3.921783	5.190
Boynton.....	202 10 06.1	382 11 16.4	3.751616	3.507
Clark.....	242 35 23.2	62 42 48.8	4.182099	9.450
Linsley.....	312 08 43.2	132 12 48.8	4.003027	6.257

LOEHR'S BARN, STEVENS COUNTY, MINN. (Not occupied.)

Station is in SE. $\frac{1}{4}$ sec. 32, T. 125 N., R. 43 W.

Station mark: Cupola (near Loehr station).

[Latitude 45° 35' 11.4". Longitude 96° 05' 32.8".]

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
	° ' "	° ' "		
Loehr.....	150 12 21	330 12 20	2.63818	0.270
Boynton.....	198 51 22	18 52 25	3.77248	3.680

180 TRIANGULATION AND PRIMARY TRAVERSE FOR 1909 AND 1910.

LOEHR, CHURCH, STEVENS COUNTY, MINN. (Not occupied.)

Station is near Loehr in east side of sec. 27, T. 125 N., R. 43 W., 137 feet west of section line. The section line is longitude $96^{\circ} 02' 47''$.

Station mark: Center of spire.

[Latitude $45^{\circ} 36' 30.0''$. Longitude $96^{\circ} 02' 49.7''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Loehr.....	61 22 01	241 19 57	3.63061	2.654
Boynton.....	153 02 43	333 01 52	3.55220	2.216

LOGUE, STEVENS COUNTY, MINN.

In SE. $\frac{1}{4}$ SE. $\frac{1}{4}$ sec. 25, T. 124 N., R. 42 W., 144 feet north of center of schoolhouse, 73 feet west of center of township road, and 400 feet north of section line, on land owned by Mrs. Logue, who lives in Morris. Very prominent hill in southeast part of Davnen Township.

Signal: Lumber tripod covered with cloth down to point 7 feet from ground.

Station mark: Aluminum tablet in center of top of concrete post 6 by 6 inches at top, set 3 feet in ground.

[Latitude $45^{\circ} 30' 53.25''$. Longitude $95^{\circ} 52' 16.60''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Linsley.....	99 01 53.1	278 56 23.4	4.0065155	6.308
Morris Water Tower.....	160 22 12	340 20 36	3.937992	5.387
Clark.....	165 32 59	345 30 48.6	4.199651	9.840
Heller.....	184 58 04	4 58 29	3.949403	5.530
Rock.....	197 20 09.1	17 21 33.9	3.936921	5.374
Brisbane.....	197 42 43.6	17 45 24.3	4.2045045	9.951
Hancock Water Tower.....	286 26 46	106 30 05	3.800321	3.923

LONE ELEVATOR, TRAVERSE COUNTY, MINN. (Not occupied.)

On a siding of the Great Northern Railway, about 6.5 miles northwest of Norcross.

Station mark: East gable of lone elevator.

[Latitude $45^{\circ} 56' 53.1''$. Longitude $96^{\circ} 16' 05.3''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Denton.....	200 06 20	20 09 35	4.228669	10.520
Bullis.....	269 23 26	89 29 24	4.030800	6.670
Setter.....	350 33 27	170 34 04	3.823154	4.135

LONE TREE, STEVENS COUNTY, MINN. (Not occupied.)

Near McCanney. There are several trees close together, but from a distance they look like a single one. They are N. $54^{\circ} 24'$ W. from McCanney, distant 660 feet, in east part of sec. 10, T. 126 N., R. 42 W.

[Latitude $45^{\circ} 43' 53.2''$. Longitude $95^{\circ} 55' 28.4''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Searle.....	5 38 36	185 38 22	3.62071	2.595
Winter.....	284 23 33	104 28 15	3.94491	5.473

MCCANNEY, STEVENS COUNTY, MINN.

On low part of high ridge in NW. $\frac{1}{4}$ NW. $\frac{1}{4}$ sec. 14, T. 126 N., R. 42 W., Rendsville Township, and in proposed section line road north of sec. 14 and north of land owned by Thomas McCanney. There are some prominent trees north and west near a house and a small grove, and higher ground 300 yards west of station. It is 6 inches north of section line fence and 134 feet east of middle of section line road between secs. 11 and 14 and secs. 10 and 15.

Signal: Platform 11 feet from ground with a tripod 16 feet high.

Station mark: Aluminum tablet in top of concrete post set 30 inches in ground.

[Latitude $45^{\circ} 43' 49.38''$. Longitude $95^{\circ} 55' 20.77''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Searle.....	8 06 18.74	188 05 59.72	3.6104253	2.534
Boydton.....	47 32 07			
Barton.....	89 09 23	269 04 36	3.952221	5.566
Poplar.....	184 26 07.28	4 26 57.41	4.2897245	12.108
Borgen.....	199 17 38	19 21 37	4.332147	13.350
Stevenson.....	225 08 26.18	45 16 23.65	4.3068952	12.596
Winter.....	283 54 14.85	103 58 51.85	3.9355372	5.357

MORRIS COURTHOUSE, STEVENS COUNTY, MINN. (Not occupied.)

Station mark: Cupola on Stevens County courthouse.

[Latitude $45^{\circ} 35' 16.3''$. Longitude $95^{\circ} 54' 32.1''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Rock.....	268 35 15	88 38 17	3.74165	3.428
Logue.....	340 05 18	160 06 55	3.93636	5.367

MORRIS WATER TOWER, STEVENS COUNTY, MINN.

Center of water tower in the city of Morris. Tower is 920 feet east by 965 feet north of northwest corner of sec. 2, T. 124 N., R. 42 W. Under favorable conditions this point can be seen from Holmes triangulation station.

Station mark: Center of tower.

[Latitude $45^{\circ} 35' 17.72''$. Longitude $95^{\circ} 54' 30.95''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
McCanney.....	176 05 56	356 05 21	4.199583	9.839
Rock.....	269 02 12	89 05 13	3.739580	3.411
Logue.....	340 20 36	160 22 12	3.937992	5.387

182 TRIANGULATION AND PRIMARY TRAVERSE FOR 1909 AND 1910.

NELSON, OTTER TAIL COUNTY, MINN.

In NW. $\frac{1}{4}$ NE. $\frac{1}{4}$ sec. 4, T. 131 N., R. 44 W., Western Township, 3.2 feet south of fence line and 504 feet west of fence corner. It is 1,182 feet west and 36 feet south of northeast corner of section.

Signal: Lumber tripod with target.

Station mark: Tablet set in top of a rock weighing about 300 pounds, set about 30 inches in ground. The top of the rock is about 6 by 6 feet and is flush with the surface of the ground.

[Latitude 46° 11' 43.24". Longitude 96° 12' 31.18".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Fergus Falls, Asylum Tower.....	220 23 02	.....	4.181624	9.440
Koppang.....	232 55 48.0	53 01 21.4	4.093167	7.700
Soo.....	270 05 01	90 09 35	3.909268	5.042
Dalton.....	276 38 29.9	96 50 17.2	4.3257103	13.154
Western.....	337 29 15.3	157 30 48.5	3.859791	4.499

NORCROSS ELEVATOR, STEVENS COUNTY, MINN. (Not occupied.)

Station mark: South gable of middle elevator.

[Latitude 45° 52' 06.7". Longitude 96° 11' 49.0".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Brown.....	30 03 34	210 01 16	3.91812	5.146
Setter.....	117 10 44	297 08 16	3.69763	3.097

OSCAR CHURCH, OTTER TAIL COUNTY, MINN.

Station mark: Spire of church.

[Latitude 46° 23' 50.963". Longitude 96° 12' 48.916".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Western.....	353 49 41.3	173 51 27.5	4.467293	18.224
Fox.....	34 15 37.3	214 10 43.0	4.189439	9.611
Meadows.....	99 50 46.0	279 44 02.4	4.358865	14.198
Indian.....	173 41 25.9	353 41 09.0	3.658606	2.831

PARKDALE CHURCH, OTTER TAIL COUNTY, MINN. (Not occupied.)

In sec. 4, T. 131 N., R. 42 W.

Station mark: Steeple.

[Latitude 46° 11' 10.6". Longitude 95° 58' 20.8".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Dalton.....	297 55 53	117 57 27	3.49886	1.960
George.....	358 31 55	178 32 03	3.95751	5.635

PECK, STEVENS COUNTY, MINN.

In meadow owned by G. N. Boynton, of Iowa, in NE. $\frac{1}{4}$ NE. $\frac{1}{4}$ sec. 15, T. 125 N., R. 44 W., Everglade Township. It is 150 feet west of the center line of the road along the line between secs. 14 and 15, and 539 feet south of line road between secs. 10 and 15.

Signal: Platform 12 feet high with a triangular target 8 feet in length above it.

Station mark: Three 1-quart glass bottles, the central one set bottom up, the other two horizontal, one lying east and the other west.

Reference mark: Iron post 125.3 feet from station on line with a church in sec. 27, T. 125 N., R. 43 W., 6 miles east. Station bears N. 75° W. (magnetic) from reference point.

[Latitude 45° 38' 32.37". Longitude 96° 10' 18.80'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Catholic Church, Chokio.....	4 40 47.2	184 40 22.5	3.894432	4.873
Boynton.....	274 11 46.7	94 16 14.4	3.910225	5.053
Loehr.....	314 12 56.7	134 16 14.0	3.921783	5.190

PIKOP, GRANT COUNTY, MINN.

On land owned by Anders O. Pikop, in sec. 27, T. 129 N., R. 43 W., Elbow Lake Township. It is 434 feet west of fence corner and 2 feet north of fence along the quarter section line, 467 feet to middle of section-line road to east.

Signal: Lumber tripod with target.

Station mark: Iron post.

[Latitude 45° 57' 22.90". Longitude 96° 03' 39.36'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Herman Water Tower.....	20 54 15.5	200 50 49.6	4.2394381	10.784
Bullis.....	81 19 31.0	261 16 33.1	3.7318963	3.352
Gord.....	338 19 39.0	158 21 56.4	4.0480081	6.940

POPLAR, GRANT COUNTY, MINN.

Near northeast corner of sec. 14, T. 128 N., R. 42 W., Lien Township, 0.5 mile west by 0.5 mile south of Barrett, on low ridge in highway 4.4 feet from fence east and 11.6 feet south of section line. The northeast corner of sec. 14 is 11.6 feet north by 30 feet west in middle of road.

Signal: Lumber tripod with central pole and target.

Station mark: Aluminum tablet in top of stone 6 by 8 by 18 inches, set with top 6 inches above ground.

[Latitude 45° 54' 18.63". Longitude 95° 54' 10.87'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
McCanney.....	4 26 57.4	184 26 07.3	4.2897245	12.108
Herman Water Tower.....	60 22 38	.....	4.327215	13.200
Ekley.....	168 30 01.7	348 29 16.6	3.8317806	4.218
Johnson.....	226 04 54.7	46 10 27.4	4.1409347	8.596
Borgen.....	261 21 39.7	81 24 46.1	3.7525709	3.515
Stevenson.....	291 45 06.3	111 52 14.3	4.1413654	8.604
Staff.....	306 03 30	126 10 49	4.212437	10.134

ROBERTSON, OTTER TAIL COUNTY, MINN.

On south edge of a high ridge in sec. 31, T. 132 N., R. 40 W., Clitherall Township; land owned by Mr. Robertson. The station is not on the highest point of the ridge, there being two other points slightly higher, one about 50 yards north and the other about 0.2 mile northeast. It can be reached from Ashby by taking the Ashby-Battle Lake road northeast to crossroads with signboard reading "Axel P. O. 4 miles, Dalton 7 miles, Battle Lake 8 miles, Ashby 8 miles," thence eastward around north edge of a lake to a second lake, close by the first house on the north side of the road. At this point route is north between house and barn through woods and up hill, thence through cultivated fields to summit on the left. The house and farm belong to the Robertson heirs. From Fergus Falls route is via Battle Lake road as far as the Ashby road, thence south to the signboard described above and along route indicated by the description thereafter given.

Signal: Lumber tripod with target.

Station mark: Four quart bottles, one standing vertically with bottom up marking the center. The three others are placed horizontally with their ends touching the center bottle. All are placed a foot below the surface of ground.

Reference mark: Iron post set on line between wood lot and cultivated field, 148.6 feet distant measured on the slope from top of post. Post is exactly on line between station and church on a ridge about 5 miles west of south.

[Latitude 46° 12' 02.09". Longitude 95° 46' 07.32".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Stene.....	27 23 11.2	207 19 35.1	4.1459328	8.095
Dalton.....	76 43 58.8	256 36 43.2	4.1239552	8.266

ROCK, STEVENS COUNTY, MINN.

On a high knoll in cultivated field in SW. $\frac{1}{4}$ sec. 33, T. 125 N., R. 41 W.; higher ground 0.25 mile west. It is near section lines and corners, but they are so poorly defined that connections can not be made with them with any accuracy.

Signal: Tripod made of lumber and covered with red and white cloth on two sides to point 7 feet from ground.

Station mark: Aluminum tablet set in top of large granite boulder weighing about a ton, which projects about 10 inches above ground.

[Latitude 45° 35' 20.62". Longitude 95° 50' 17.73".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Logue.....	17 21 33.92	197 20 09.06	3.9369209	5.374
Linsley.....	62 09 42.44	242 02 47.71	4.1539560	8.857
Morris Water Tower.....	89 05 13	269 02 12	3.7959580	3.411
Heller.....	108 43 44	288 42 44	3.280327	1.185
Clark.....	137 20 36.42	317 17 01.01	3.9836550	5.984
Searle.....	148 34 45.2	328 30 49.5	4.1360858	8.500
Brisbane.....	198 10 38.66	18 11 54.52	3.8672590	4.577
Hancock Water Tower.....	340 55 00	160 56 54	4.026469	6.604

SCHOOL, STEVENS COUNTY, MINN. (Not occupied.)

Near middle of sec. 22, T. 125 N., R. 43 W.

[Latitude 45° 36' 25.2". Longitude 96° 05' 52.4".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Peck.....	124 14 19	304 11 09	3.84385	4.337
Loehr.....	353 41 38	173 41 45	3.28198	1.189

SEARLE, STEVENS COUNTY, MINN.

Near middle of sec. 27, T. 126 N., R. 42 W., Rendsville Township, in meadow on a low rise in ground, on land belonging to Mr. Searle. An old line of fence is 6 feet south and about 6 inches west from station.

Signal: Platform 10 feet high.

Station mark: Aluminum cooperative tablet in top of concrete post 4 feet long set 2.5 feet in ground. Post is 6 by 6 inches on top and 9 by 13 inches at bottom.

[Latitude 45° 41' 38.61". Longitude 95° 55' 47.34".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Gunther.....	55 26 12	235 21 52	3.980875	5.946
Barton.....	114 58 25	294 53 55	3.966013	5.746
McCanney.....	188 05 59.72	8 06 18.74	3.6104253	2.534
Winter.....	257 35 56.04	77 40 51.96	3.9617243	5.690
Brisbane.....	296 18 22.56	116 23 34.28	4.0222230	6.540
Rock.....	328 30 49.5	148 34 45.2	4.1360858	8.500
Clark.....	352 25 00.27	172 25 20.46	3.6656888	2.878

SETTER, TRAVERSE COUNTY, MINN.

In NE. $\frac{1}{4}$ NE. $\frac{1}{4}$ sec. 24, T. 128 N., R. 45 W., on land owned by Frank Setter. It is in cultivated field 17 feet west of a fence line and 586 feet south of fence line on south side of sec. 18. Center of road between secs. 18 and 19 is 619 feet north.

Signal: Lumber tripod with target. Platform and observing tripod 4 feet high.

Station mark: Iron post set 3 feet in ground.

[Latitude 45° 53' 20.44". Longitude 96° 15' 14.67".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Lone Elevator.....	170 34 04	350 33 27	3.823154	4.135
Bullis.....	235 18 03	55 23 25	4.009291	7.289
Herman Water Tower.....	314 41 09	134 46 02	4.093632	7.709
Brown.....	358 13 29	178 13 39	3.975382	5.871

SOO, OTTER TAIL COUNTY, MINN.

In cultivated field near northeast corner of sec. 5, T. 131 N., R. 43 W., Aastad Township.

Signal: A 12-foot pole with target.

Reference mark: Iron post set on fence line on east side of road, distant 456.8 feet, measured on the slope and exactly on the line to Dalton triangulation station. This reference mark is 165 feet south of the township line.

[Latitude 46° 11' 42.69". Longitude 96° 06' 12.77".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Western.....	38 44 16	218 41 21	3.932065	5.314
Nelson.....	90 09 35	270 05 01	3.909268	5.042
Koppang.....	193 24 51	13 25 51	3.885881	4.778
Dalton.....	280 45 45	100 53 00	4.118631	8.165

SQUIER CHURCH, OTTER TAIL COUNTY, MINN. (Not occupied.)

Near the southeast corner of sec. 21, T. 131 N., R. 43 W.

Station mark: Church spire.

[Latitude 46° 08' 15.8". Longitude 96° 05' 01.0".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Western.....	87 39 24	267 35 33	3.83800	4.285
Koppang.....	181 01 25	1 01 33	4.14202	8.617

STAFF, DOUGLAS COUNTY, MINN.

On a low knoll in cultivated field in SW. $\frac{1}{4}$ sec. 8, T. 127 N., R. 40 W., Salem Township, on land owned by Ole Staffenson and brother. It is 1 mile south by 2.5 miles east of Hoffman and 269 feet north of center of section line road and east of section line.

Signal: Lumber tripod with pole in center, on which is a 30 by 30 inch target.

Station mark: Aluminum tablet in top of concrete post 6 by 6 inches on top and 4 feet long, set 3 feet in ground.

[Latitude 45° 49' 07.25". Longitude 95° 44' 00.12".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Poplar.....	126 10 49	306 03 30	4.212437	10.134
Stevenson.....	175 58 54	355 58 44	3.651272	2.784

STONE, GRANT COUNTY, MINN.

In NW. $\frac{1}{4}$ sec. 9, T. 130 N., R. 41 W., Pelican Lake Township, 1.8 miles west of Ashby. It is in a pasture owned by C. J. Stene, 276 feet east and 1,679 feet south of northwest corner of sec. 8.

Signal: Tripod made of lumber with a central target.

Station mark: Aluminum tablet set in a granite rock about 12 by 12 by 12 inches.

Reference mark: Iron post on fence line 51.1 feet north and exactly in line with a church about 3 miles north.

[Latitude 46° 05' 19.55". Longitude 95° 51' 06.94".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Elbow.....	38 08 54.9	218 05 19.0	4.0188637	6.490
George.....	101 05 40.5	281 00 35.6	3.9666043	5.754
Dalton.....	145 09 05.9	325 05 26.8	4.0573679	7.091
Robertson.....	207 19 35.1	27 23 11.2	4.1459328	8.695

STONE, CHURCH NORTH OF, OTTER TAIL COUNTY, MINN. (Not occupied.)

In sec. 21, T. 131 N., R. 41 W.

Station mark: Church spire.

[Latitude 46° 08' 43.3". Longitude 95° 51' 38.8".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Stene.....	5 30 00	185 29 40	3.80067	3.927
Dalton.....	113 20 55	293 16 55	3.88993	4.823

STEVENSON, DOUGLAS COUNTY, MINN.

On a high grassy knoll in SW. $\frac{1}{4}$ NW. $\frac{1}{4}$ sec. 32, T. 128 N., R. 40 W., Urness Township-306 feet north of center of east-west road along quarter section line and 220 feet east of center line of road between secs. 31 and 32. The land is owned by John J. Stevenson, who lives 2.7 miles northwest of Hoffman. Red Rock Lake is 1 mile east of station.

Signal: Tripod made of lumber with central pole and target.

Station mark: Aluminum tablet, set in granite boulder weighing about 600 pounds and projecting 10 inches above surface of ground.

[Latitude $45^{\circ} 51' 31.99''$. Longitude $95^{\circ} 44' 14.68''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
McCanney.....	45 16 23.65	225 08 26.18	4.3068952	12.596
Poplar.....	111 52 14.28	291 45 06.27	4.1413654	8.604
Borgen.....	129 34 09.2	309 30 07.5	3.973743	5.849
Johnson.....	168 59 30.19	348 57 54.52	4.1763561	9.326
Holmes.....	273 59 54.4	94 05 01.3	3.9661554	5.748
Staff.....	355 58 44	175 58 54	3.651272	2.784

STICKNEY, GRANT COUNTY, MINN.

In cultivated field in SE. $\frac{1}{4}$ sec. 26, T. 130 N., R. 43 W., Lawrence Township. School-house cupola is N. $12^{\circ} 06'$ E., distant 404.1 meters, latitude of school is $46^{\circ} 02' 35.1''$ longitude $96^{\circ} 09' 47.3''$. The quarter corner between secs. 25 and 26 is in latitude $46^{\circ} 02' 35.6''$, longitude $96^{\circ} 09' 44.5''$.

Signal: Pole with triangular target.

Station mark: A 2 by 4 inch stake driven about 12 inches in the ground. This is a temporary mark only, for this point was needed only to locate two schoolhouses.

[Latitude $46^{\circ} 02' 22.3''$. Longitude $96^{\circ} 09' 51.2''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Lone Elevator.....	38 26 08	218 21 39	4.112718	8.055
Denton.....	158 51 49	338 50 35	3.788918	3.822

THREE POINT No. 2, GRANT COUNTY, MINN.

On line between secs. 3 and 4, T. 127 N., R. 41 W.; the northwest corner of sec. 3 is distant 700 feet from the station, which distance is equivalent to 6.9 seconds of latitude north and 0.3 second of longitude west.

[Latitude $45^{\circ} 50' 42.4''$. Longitude $95^{\circ} 49' 53.7''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Poplar.....	136 12 20	316 08 47	3.96634	5.750
Johnson.....	192 22 47	12 24 46	4.22147	10.347

THREE POINT No. 3, DOUGLAS COUNTY, MINN.

Near southeast corner of sec. 1, T. 127 N., R. 41 W. The corner, which is a point on the Grant-Douglas county line, is 1.1 seconds of latitude north and 3.1 seconds of longitude west of the station.

[Latitude $45^{\circ} 49' 56.2''$. Longitude $95^{\circ} 45' 26.8''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Poplar.....	125 41 17	305 35 01	4.14328	8.642
Stevenson.....	207 44 04	27 44 56	3.52410	2.077

THREE POINT No. 5, STEVENS COUNTY, MINN.

Point 10 feet north of the southwest corner of sec. 32, T. 125 N., R. 41 W.

[Latitude 45° 35' 07.7". Longitude 95° 51' 40.9".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Logue.....	5 37 59	185 37 54	3.89726	4.905
Rock.....	257 30 05	77 31 04	3.26643	1.148

THREE POINT No. 12, STEVENS COUNTY, MINN.

Point 0.2 second of latitude north and 2.3 seconds of longitude west of the northeast corner of sec. 6, T. 124 N., R. 42 W.

[Latitude 45° 35' 08.1". Longitude 95° 58' 28.2".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Clark.....	208 44 43	28 47 03	3.93025	5.292
Morris Tank.....	266 41 17	86 44 07	3.71200	3.201

THREE POINT No. 13, STEVENS COUNTY, MINN.

Point 0.8 second south and 0.5 second west of the southwest corner of sec. 35, T. 125 N., R. 44 W.

[Latitude 45° 35' 07.6". Longitude 96° 10' 14.5".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Loehr.....	265 08 15	85 11 29	3.77089	3.666
Church near Barry.....	318 30 11	138 34 13	4.04427	6.881

THREE POINT No. 14, STEVENS COUNTY, MINN

At southwest corner of T. 124 N., R. 43 W.

[Latitude 45° 29' 55.4". Longitude 96° 07' 01.2".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Barry.....	194 09 03	14 09 19	3.29598	1.228
Church near Barry.....	247 01 05	67 02 49	3.53487	2.129

THREE POINT No. 15, STEVENS COUNTY, MINN.

In center of crossroads, at southwest corner of sec. 1, T. 126 N., 44 W.

[Latitude 45° 44' 43.6". Longitude 96° 09' 03.2".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Curts.....	122 00 22	301 58 35	3.57888	2.356
Felt.....	359 22 59	179 23 00	3.39385	1.539

THREE POINT No. 17, TRAVERSE COUNTY, MINN.

At the northwest corner of T. 127 N., R. 44 W.

[Latitude 45° 50' 49.3". Longitude 96° 15' 14.0'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Elevator at Norcross.....		61 36 44	3.70136	
Setter.....		359 49 21	3.66905	

THREE POINT No. 23, GRANT COUNTY, MINN.

Near the northwest corner of T. 130 N., R. 42 W. This corner is a point on the Grant-Otter Tail county line, and is 449 feet north and 1,200 feet west of the station.

[Latitude 46° 06' 26.5". Longitude 96° 00' 49.5'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
George.....	274 49 48	94 51 43	3.53630	2.136
Elbow.....	329 23 22	149 26 46	4.07712	7.421

THREE POINT No. 26, OTTER TAIL COUNTY, MINN.

Near the northeast corner of T. 131 N., R. 43 W. The northeast corner of the township is distant 655 feet and is N. 56° 50' E., or 3.5 seconds of latitude north and 7.8 seconds of longitude east from the station.

[Latitude 46° 11' 39.8". Longitude 96° 01' 16.6'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Behle.....	210 48 15	30 50 12	3.83147	4.215
Dalton.....	289 55 01	109 58 42	3.84344	4.333

WENDELL (OLD) CHURCH, GRANT COUNTY, MINN.In SW. $\frac{1}{4}$ sec. 28, T. 130 N., R. 44 W., on north side of main street, 87 feet from center of roadway (section line) and 455 feet east of southwest corner of sec. 28. The public school spire is 86 feet east and 237 feet south.

Station mark: Spire of church.

[Latitude 46° 02' 10.4". Longitude 96° 05' 55.4'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Bullis.....	13 55 08.1	193 53 47.9	3.999404	6.205
Western.....	152 30 34.5	332 27 22.5	4.093374	7.704
Dalton.....	219 29 29.0	39 36 30.2	4.294786	12.250
Elbow.....	280 34 39.1	100 41 42.7	4.109944	8.004

WENDELL CHURCH, GRANT COUNTY, MINN. (Not occupied.)

On the north side of the main street of Wendell. The corner common to secs. 28, 29, 32, and 33, T. 130 N., R. 44 W., is 87 feet south and 455 feet west.

Station mark: Center of spire.

[Latitude 46° 02' 10.43". Longitude 96° 05' 55.41'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Bullis.....	13 55 08	193 53 48	3.999404	6.205
Denton.....	129 59 10	09 55 06	3.977983	5.907
Western.....	152 30 34	332 27 22	4.093374	7.704
Elbow.....	280 34 39	100 41 43	4.109944	8.004

WENDELL SCHOOLHOUSE, GRANT COUNTY, MINN. (Not occupied.)

In sec. 33, T. 130 N., R. 44 W. The northwest corner of section is 150 feet north and 541 feet west.

Station mark: Flagpole on spire of schoolhouse.

[Latitude 46° 02' 08.08". Longitude 96° 05' 54.29'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Bullis.....	14 09 14.0	194 07 53.0	3.996580	6.165
Western.....	152 34 00.2	332 30 47.4	4.096011	7.751
Elbow.....	280 16 42.7	100 23 45.5	4.108707	7.981
Dalton.....	219 18 14.9	39 25 15.4	4.295688	12.275

WESTERN, OTTER TAIL COUNTY, MINN.

A Coast and Geodetic Survey station in open field under cultivation on private road along half section line from the north quarter corner of sec. 26, T. 131 N., R. 44 W., to the house of William B. Dewey, near the center of this section. The land is owned by Mr. Dewey. The station is not located on the highest ground, which is about 75 yards eastward. The nearest railway town is Fergus Falls, about 10 miles north and 5 miles east. The route from Fergus Falls is along the main traveled road southwest to Western post office, which is about 0.5 mile west and 0.8 mile north of station.

Signal: Lumber tripod with target.

Station mark: Two sections of terra-cotta pipe, 2 feet long, set in cement, sand, and broken rock, one above the other, 6 inches of sand between each; pipes are filled with cement, and in top of each a nail was placed to mark the station. The top of the upper pipe is level with surface.

Reference mark: Similar to station mark, only one pipe being used. It is situated at the northwest corner of Deweys Grove, 253.495 meters south of station and about 6 feet west of 12-inch tree at northwest corner of grove.

	° ' "	
Dalton.....	0 00 00	
Center of wheel, windmill (William Dewey) ± 0.25 mile south.....	84 47 00	
Reference mark, 253.495 meters south.....	99 26 33	
House (F. Smith), center of chimney, ± 0.5 mile west.....	196 49 14	
House, south gable (Mr. Davenport, of Western), ± 1 mile west.....	248 06 02	
North quarter corner of sec. 26, T. 131 N., R. 44 W., 262.79 meters north.....	281 57 45	

[Latitude 46° 08' 06.573". Longitude 96° 10' 22.023'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Denton.....	17 38 23	197 37 31	3.710381	3.190
Oscarson.....	45 02 46.71	224 47 27.42	4.5902895	24.190
Foss.....	82 33 31.70	262 17 55.21	4.4493847	17.488
Wahpeton.....	111 36 36.77	291 20 24.58	4.4920486	19.293
Nelson.....	157 30 48.5	337 29 15.3	3.8597913	4.499
Western Presbyterian Church.....	158 28 01	338 27 36	3.313061	1.278
Fergus Falls, Asylum Smokestack.....	200 45 10	20 49 05	4.293534	12.215
Koppang.....	206 42 27.5	26 46 27.5	4.1999407	9.847
Soo.....	218 41 21	38 44 16	3.932065	5.314
Behle.....	230 39 07.0	50 47 37.7	4.2923255	12.181
Dalton.....	256 56 52.93	77 07 06.75	4.2727947	11.645
Aastad.....	291 23 41	111 27 54	3.907098	5.017
Elbow.....	305 57 28.65	126 07 44.61	4.3565722	14.123
Lake.....	320 20 04	140 21 25	3.57697	2.346
Bullis.....	350 49 42.59	170 51 34.23	4.3213203	13.022

WESTERN, CATHOLIC CHURCH, OTTER TAIL COUNTY, MINN. (Not occupied.)

In southeast corner of sec. 15, T. 131 N., R. 44 W. The section corner is 97 feet southeast.

Station mark: Church spire.

[Latitude 46° 09' 08.5". Longitude 96° 10' 59.2".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Koppang.....	212 53 40	32 58 07	4.16380	9.060
Western.....	337 20 30	157 20 58	3.31671	1.288

WESTERN, PRESBYTERIAN CHURCH, OTTER TAIL COUNTY, MINN. (Not occupied.)

The southwest corner of sec. 14, T. 131 N., R. 44 W., is 100 feet southwest.

Station mark: Presbyterian Church spire.

[Latitude 46° 09' 08.518". Longitude 96° 10' 57.192".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Dalton.....	263 02 10.8	83 12 50.0	4.282229	11.901
Western.....	338 27 35.6	158 28 00.9	3.313061	1.278

WINTER, STEVENS COUNTY, MINN.

On land owned by Herman Winter in NW $\frac{1}{4}$ sec. 22, T. 126 N., R. 41 W., Swan Lake Township. It is on east line of public roadway north through the middle of the quarter section 8.25 miles north by 5 miles east of Morris. It is 20 feet east of center of road.

Signal: Platform 10 feet from ground.

Station mark: Aluminum tablet in top of concrete post set 3 feet in ground and projecting 1 foot above surface of soil.

[Latitude 45° 42' 42.10". Longitude 95° 48' 53.89".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Clark.....	51 52 45.2	231 48 09.6	4.0254025	6.588
Searle.....	77 40 52.0	257 35 56.0	3.9617243	5.690
McCanney.....	103 58 51.8	283 54 14.8	3.9355372	5.357
Stevenson.....	200 12 36.4	20 15 56.4	4.2414500	10.835
Brisbane.....	355 50 10.5	175 50 26.4	3.8227554	4.131

WOLD'S BARN, GRANT COUNTY, MINN. (Not occupied.)

Barn owned by Eric Wold, in sec. 12, T. 131 N., R. 41 W., near Johnson triangulation station.

Station mark: Pole at center of cupola.

[Latitude 45° 59' 34.8". Longitude 95° 46' 55.5".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Poplar.....	43 53 32	223 48 19	4.13145	8.410
Johnson.....	286 14 55	106 15 15	2.79263	0.385

PRIMARY TRAVERSE.

Ashby, Axel, Barnesville, Battle Lake, Campbell, Dora, Fergus Falls, Henning, New York Mills, Pelican Rapids, Perham, Rothsay, Underwood, and Wendell quadrangles.

BECKER, CLAY, DOUGLAS, GRANT, OTTER TAIL, TRAVERSE, AND WILKIN COUNTIES.

The geographic positions in the following list were determined by C. B. Kendall in 1910. The work is based on United States Geological Survey triangulation stations Behle, Koppang, and Robertson, and Coast and Geodetic Survey triangulation stations Fox and Fergus Falls.

The State cooperated in the work.

BATTLE LAKE QUADRANGLE.

Geographic positions along highways near west border.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Primary Traverse station No. 13.....	46 15 10.5	95 43 27.1	.....
T. 132 N., R. 40 W., corner of secs. 4, 5, 8, and 9, in center of a 90° bend of public road from east to north.....	46 16 00.8	95 43 47.6	5,300
T. 132 N., R. 40 W., north quarter corner of sec. 4, stone in center of east-west street, 250 feet north of Northern Pacific Ry. crossing and south of Battle Lake public school building.....	46 16 56.0	95 43 11.4	6,142
T. 133 N., R. 40 W., south corner of secs. 33 and 34, center of east-west street at wire fence north, 500 feet east of T street south crossing Northern Pacific Ry. (500 feet east of above position).....	.....	.....	500
Battle Lake, in southeast corner of public school yard, 50 feet south and 160 feet east of southeast corner of school building; iron post stamped "Prim. Trav. Sta. No. 14, MINN, 1910".....	46 17 00.1	95 43 08.0	479
T. 133 N., R. 40 W., quarter corner between secs. 22 and 27, center of east-west road opposite fence north and public T road south, 30 feet north to end of fence.....	46 18 41.2	95 42 27.8	10,615
T. 133 N., R. 40 W., corner of secs. 21, 22, 27, and 28, at T fence west, on west edge of second-class road south, in line with center of public road east, and west edge of public road north, 55 feet northeast to old blaze on oak tree.....	46 18 41.1	95 43 05.2	2,620
T. 133 N., R. 40 W., corner of secs. 15, 16, 21, and 22, center of north-south road at second-class T road west, 15 feet southeast to telephone pole, 20 feet northwest to corner of wire fence.....	46 19 33.2	95 43 04.9	5,280
T. 133 N., R. 40 W., corner of secs. 9, 10, 15, and 16, center of intersection of crossroads, 200 feet northwest of church.....	46 20 25.7	95 43 04.7	5,320
T. 133 N., R. 40 W., 40 feet north by 30 feet west of corner of sec. 9, 20 feet north of corner of wire fence on west edge of T road north, 45 feet northwest of junction with east-west road; iron post stamped "Prim. Trav. Sta. No. 15, MINN, 1910".....	46 20 52.1	95 43 42.8	3,779
T. 133 N., R. 40 W., center of sec. 9, center of east-west road at T road north (40 feet north by 30 feet east of above position).....	.....	.....	50
Center of north end of highway bridge over Red River at the west end of Otter Tail Lake.....	46 21 34.3	95 43 59.7	4,440
Tps. 133 and 134 N., R. 40 W., 0.2 mile west of corner of secs. 4, 5, 32, and 33, 3 corner public T road west, center of north-south road at west end of Otter Tail Lake, 15 feet northwest to corner post of old wire fence (section corner is in lake).....	46 22 08.3	95 44 38.1	4,372
T. 134 N., R. 40 W., 0.2 mile east of center of sec. 32, near telephone pole on east edge of north-south road, 40 feet northeast of center of north-south road at T road west; iron post stamped "Prim. Trav. Sta. No. 16, 1910, MINN".....	46 22 35.1	95 44 39.8	2,721
T. 134 N., R. 40 W., corner of secs. 28, 29, 32, and 33, in lake.....	46 23 00.6	95 44 21.5	2,889
T. 134 N., R. 40 W., 0.2 mile west of quarter corner between secs. 28 and 29, 4 corners south of Amor store, center of east-west road at public crossroads, 12 feet south to guide post, 15 feet north of center of triangle.....	46 23 26.5	95 44 40.3	2,931
T. 134 N., R. 40 W., corner of secs. 20, 21, 28, and 29.....	46 23 52.8	95 44 21.7	2,968
T. 134 N., R. 40 W., 55 feet northeast of corner of secs. 16, 17, 20, and 21, 0.2 mile east of Amor store, near telephone pole in northeast corner of public T road north, southwest of church; iron post stamped "Prim. Trav. Sta. No. 17, MINN, 1910".....	46 24 45.2	95 44 21.6	5,316
T. 134 N., R. 40 W., quarter corner between secs. 8 and 9, 15 feet west to center of north-south road at T road west, at pipe culvert.....	46 26 02.8	95 44 23.0	7,856
T. 134 N., R. 40 W., corner of secs. 4, 5, 8, and 9 (corner is not marked).....	46 26 29.4	95 44 22.9	2,690

BATTLE LAKE QUADRANGLE—Continued.

Geographic positions along highways near west border—Continued.

Stations.	Latitude.	Longitude.	Distance between stations.
T. 134 N., R. 40 W., 300 feet northeast of corner of secs. 4, 5, 8, and 9, 125 feet east of schoolhouse, 700 feet southwest of bridge, at public T road southeast, and second-class road north, center of main north-east-southwest road.....	° ' "	° ' "	<i>Feet.</i>
Public T road north, center of east-west road, 25 feet northeast to guide post.....	46 26 28.5	95 44 21.0	153
Tps. 134 and 135 N., R. 40 W., corner of secs. 3, 4, 33, and 34, at corner of old fence south, 250 feet east of road at turn northeast, 200 feet west of a drainage ditch.....	46 26 55.0	95 43 45.3	3,674
Tps. 134 and 135 N., R. 40 W., corner of secs. 2, 3, 34, and 35, center of east-west road at fence north-south.....	46 27 20.4	95 43 08.4	3,642
Tps. 134 and 135 N., R. 40 W., 0.2 mile east of corner of secs. 2, 3, 34, and 35, 175 feet south of Basswood store, center of intersection.....	46 27 20.2	95 41 52.9	5,284
Tps. 134 and 135 N., R. 40 W., corner of secs. 1, 2, 35, and 36, center of east-west road at T road north, 12 feet northeast to corner of wire fence.....	46 27 20.1	95 41 32.8	1,410
Center of triangle at three corners, on edge of Long Lake, 0.5 mile west of sawmill, 20 feet southeast to 2 mail boxes.....	46 27 19.9	95 40 38.2	3,820
Dead Lake and Lake Alice, 1,100 feet southwest of pass between; center of triangle at public T road southeast.....	46 27 25.6	95 39 33.0	4,603
T. 135 N., Rs. 39 and 40 W., 20 feet south by 1,180 feet east of corner of secs. 19, 24, 25, and 30, in southwest corner of intersection of old State road and public road west, 180 feet northeast of schoolhouse; iron post stamped "Prim. Trav. Sta. No. 18, MINN, 1910".....	46 28 22.8	95 39 52.4	5,953
	46 29 02.8	95 39 07.7	5,111

Magnetic declination along west border of quadrangle, 10° 15' E.

Geographic positions along highways near north border.

T. 135 N., R. 40 W., corner of secs. 9, 10, 15, and 16.....	46 30 49.2	95 43 08.1	.....
T. 135 N., R. 40 W., corner of secs. 15, 16, 21, and 22, center of east-west road at T road north, 30 feet northeast to mail box 18.....	46 29 57.1	95 43 07.4	5,280
T. 135 N., R. 40 W., corner of secs. 14, 15, 22, and 23, 10 feet south of center of east-west road in first hollow east of house on south side of road and 15 feet west of a point opposite corner of wire fence north and west.....	46 29 56.5	95 41 52.1	5,270
T. 135 N., R. 40 W., near corner of secs. 13, 14, 23, and 24, at old T road south, on edge of lake and 15 feet south of main road.....	46 29 54.4	95 40 39.3	5,102
T. 135 N., R. 40 W., quarter corner between secs. 13 and 24, center of north-south road at T road west, 30 feet east to corner of wire fence.....	46 29 54.6	95 40 02.2	2,599
T. 135 N., Rs. 39 and 40 W., quarter corner between secs. 13 and 18.....	46 30 20.5	95 39 26.0	.....
T. 135 N., R. 39 W., corner of secs. 17, 18, 19, and 20, center of north-south road at T road west, 0.5 mile south of Richville, 30 feet east to corner of wire fence.....	46 29 56.2	95 38 10.6	5,830
Primary traverse station No. 18.....	46 29 02.8	95 39 07.7	6,725

Geographic positions along highways near south border.

T. 132 N., R. 38 W., 600 feet east of corner of secs. 7, 8, 17, and 18.....	46 15 10.0	95 29 59.8	.....
T. 132 N., R. 38 W., corner of secs. 7, 8, 17, and 18, stake on south edge of east-west road at north and south fences, 600 feet west of crossroads. Three corners, center of east-west road at T road north, 10 feet south to gate, 12 feet northeast to mail box.....	46 15 09.9	95 30 08.2	590
Vining, 200 feet southwest of public school building, center of intersection at 4 corners.....	46 15 11.0	95 31 14.6	4,670
Vining, 1 mile west of; 15 feet south of center of east-west road at T road south, signpost "Vining 1 mile, Leaf Mtn. 6 miles".....	46 15 37.3	95 32 14.2	4,956
T. 132 N., R. 40 W., corner of secs. 4, 5, 8, and 9.....	46 15 19.8	95 33 14.2	4,574
T. 132 N., R. 40 W., 0.2 mile east of corner of secs. 8, 9, 16, and 17, near wire fence on south side of east-west road in the southeast corner of intersection of crossroads and in line with the east edge of north-south road, 35 feet southeast of intersection of crossroads, 40 feet south of 2 mail boxes; iron post stamped "Prim. Trav. Sta. No. 13, MINN, 1910".....	46 16 00.8	95 43 47.6	.....
T. 132 N., R. 40 W., corner of secs. 8, 9, 16, and 17, center of east-west road at north-south wire fence, 0.2 mile west of 4 corners.....	46 15 10.5	95 43 27.1	5,300
T. 132 N., R. 40 W., corner of secs. 7, 8, 17, and 18.....	46 15 10.4	95 43 46.2	1,342
	46 15 10.4	95 45 02.3	5,350

BATTLE LAKE QUADRANGLE—Continued.

Geographic positions along highways west from corner of secs. 27, 28, 33, and 34, T. 134 N., R. 38 W., to center of sec. 9, T. 133 N., R. 40 W.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	<i>Feet.</i>
Primary traverse station No. 23.....	46 23 02.4	95 28 09.6	.....
T. 134 N., R. 38 W., corner of secs. 28, 29, 32, and 33, center of crossroads.....	46 23 01.8	95 29 24.4	5,240
T. 134 N., R. 38 W., corner of secs. 29, 30, 31, and 32, 15 feet north to road, in fence line, opposite T road south.....	46 23 01.5	95 30 40.7	5,350
East-west road crossing the Minneapolis, St. Paul & Sault Ste. Marie Ry., center of track.....	46 23 01.0	95 31 03.6	1,601
T. 134 N., Rs. 38 and 39 W., corner of secs. 30, 31, 25, and 36, center of crossroads.....	46 23 00.6	95 31 54.2	3,550
Center of west end of old bridge across neck of Gourd Lake.....	46 23 43.9	95 32 15.6	4,632
Public roads east, west, and north, second-class road south; center of intersection.....	46 23 52.6	95 33 15.3	4,282
Public T road south, 20 feet southwest to center of triangle.....	46 23 48.1	95 33 48.1	2,337
T. 134 N., R. 39 W., corner of secs. 22, 23, 26, and 27, 200 feet southwest of schoolhouse, 30 feet northwest to guidepost, center of crossroads.....	46 23 53.2	95 34 24.0	2,568
T. 134 N., R. 39 W., corner of secs. 21, 22, 27, and 28, center of road at 90° bend south, 12 feet north to post, 20 feet southeast to fence post.....	46 23 52.5	95 35 39.3	5,280
T. 134 N., R. 39 W., 20 feet southeast of quarter corner between secs. 27 and 28, on east edge of north-south road, 20 feet southeast of T road west; iron post stamped "Prim. Trav. Sta. No. 26, MINN, 1910".....	46 23 26.5	95 35 39.3	2,638
T. 134 N., R. 39 W., quarter corner between secs. 28 and 29, center of east-west road at T road south, 15 feet north to guidepost "Battle Lake 11.5 miles, Clitherall 11 miles, Balmoral 3.5 miles, Otter Tail 4.5 miles".....	46 23 27.5	95 36 55.4	5,341
T. 134 N., R. 39 W., corner of secs. 28, 29, 32, and 33, center of crossroads, 40 feet northwest to corner of wire fence, 40 feet northeast to corner of wire fence.....	46 23 01.4	95 36 55.2	2,640
Tps. 133 and 134 N., R. 39 W., corner of secs. 4, 5, 32, and 33, center of north-south road at T road west, 30 feet east to end of T fence east.....	46 22 09.0	95 36 54.6	5,310
Tps. 133 and 134, R. 39 W., corner of secs. 5, 6, 31, and 32, center of east-west road at T road north, 20 feet northwest to 2 mail boxes.....	46 22 09.0	95 38 10.0	5,283
Tps. 133 and 134 N., Rs. 39 and 40 W., 300 feet east of corner of secs. 1, 6, 31, and 36, center of northeast-southwest road at T road east (corner of secs. 1, 6, 31, and 36 is an iron post with iron plate on top bearing the inscription "sec. 1, T. 133 N., R. 40'"), stake in center of second-class road, 25 feet east of corner of fence.....	46 22 09.2	95 39 19.3	4,860
Mail box (Englewood), in triangle at T road south.....	46 21 50.6	95 39 31.4	2,065
T. 133 N., R. 40 W., corner of secs. 2, 3, 10, and 11, corner post of wire fence in line with center of roads south and east at 90° bend to south.....	46 21 18.3	95 41 50.9	10,315
T. 133 N., R. 40 W., quarter corner between secs. 10 and 11, center of north-south road at T road west, 30 feet east to corner of wire fence.....	46 20 52.1	95 41 50.6	2,650
Primary traverse station No. 15.....	46 20 52.1	95 43 42.8	7,863

Magnetic declination near west border, 10° 15' E.; near north border, 10° 26' E.; near south border, 10° 00' E.; near center line, 10° 11' E.

UNDERWOOD QUADRANGLE.

Geographic positions along highways near west border of quadrangle.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	<i>Feet.</i>
T. 132 N., R. 42 W., 590 feet north by 40 feet west of quarter corner between secs. 8 and 17, near southeast corner of schoolhouse yard, 35 feet north and 5 feet west of center of triangle at public T road west to Fergus Falls, 195 feet southeast of schoolhouse, 0.8 mile northwest of Behle triangulation station; iron post stamped "Prim. Trav. Sta. No. 1, MINN, 1910".....	46 15 20.5	95 59 19.0	.....
Three corners, public T road west to Fergus Falls, 230 feet southeast of schoolhouse, 0.8 mile northwest of Behle triangulation station (35 feet south by 5 feet east of above position).....			.....
T. 132 N., R. 42 W., center of sec. 5, center of east-west road, 20 feet east of wire fence south, 20 feet west of wire fence north, 140 feet west of a telephone pole on south edge of main road, at T road south.....	46 16 32.7	95 59 20.1	7,317
T. 133 N., R. 42 W., south quarter corner of sec. 33, center of road at 90° bend north and second-class road southeast to farmhouse on Wall Lake, 10 feet east to mail box 12.....	46 16 57.1	95 58 37.6	3,874
T. 132 N., R. 42 W., north corner of secs. 4 and 5, corner on hedgerow 370 feet west of a 90° bend in road north, 200 feet east of Red River and in line with fence south produced north (360 feet west of above position).....			.....

UNDERWOOD QUADRANGLE—Continued.

Geographic positions along highways near west border of quadrangle—Continued.

Stations.	Latitude.	Longitude.	Distance between stations,
T. 133 N., R. 43 W., 120 feet north of center of sec. 33, at north-south road crossing the Northern Pacific Ry. (sec. 33 is in old road 40 feet west of public T road east).....	46 17 30.0	95 58 37.5	<i>Feet.</i> 3,333
T. 133 N., R. 42 W., stone at quarter corner of secs. 21 and 28; stone is in hole in northwest corner of crossroads, is 60 feet west of center of north-south road, 40 feet north of center of east-west road and 60 feet northwest of center of crossroads.....	46 18 42.8	95 58 37.7	7,372
T. 133 N., R. 42 W., quarter corner between secs. 16 and 21, iron stake in ground, 4 feet north of intersection of crossroads, 110 feet southwest to church.....	46 19 33.8	95 58 38.5	5,168
T. 133 N., R. 42 W., quarter corner between secs. 9 and 16, center of north-south road at wire fence west.....	46 20 26.5	95 58 38.7	5,342
T. 133 N., R. 42 W., stake at corner of secs. 4, 5, 8, and 9, on west edge of north-south road, in line with wire fence west, 10 feet north of end of pipe culvert, 35 feet northwest of center of north-south road at T road east.....	46 21 18.8	95 59 16.9	5,943
Tps. 133 and 134 N., R. 42 W., 25 feet south by 25 feet west of corner of secs. 4, 5, 32, and 33, in the southwest corner of crossroads, 35 feet southwest of intersection, 1.5 miles west of old Friberg post office; iron post stamped "Prim. Trav. Sta. No. 2, MINN, 1910".....	46 22 10.1	95 59 17.9	5,199
Center of north-south road opposite 90° bend in field ditch and 90 feet north of a short fence west; may be corner of secs. 28, 29, 32, and 33, T. 134 N., R. 42 W.....	46 23 02.4	95 59 18.3	5,300
Red River, center of middle pier of highway bridge over.....	46 23 17.5	95 59 21.9	1,547
T. 134 N., R. 42 W., corner of secs. 20, 21, 28, and 29, center of crossroads.....	46 23 54.6	95 59 18.8	3,768
T. 134 N., R. 42 W., line between secs. 17 and 20, center of north-south road at T road west along line between sections, 200 feet west of schoolhouse, 30 feet southwest to Joseph Elliott's mail box (section corner is in lake).....	46 24 46.5	95 59 34.3	5,368
T. 134 N., R. 42 W., corner of secs. 8, 9, 16, and 17; stone is in old stump in triangle in northwest corner of crossroads, is 15 feet northwest of intersection.....	46 25 38.5	95 59 18.6	5,375
Three corners, T road east, 15 feet southeast to two mail boxes, 10 feet east to center of triangle.....	46 26 29.0	95 59 18.3	5,118
Leeper's store, cupola of schoolhouse near.....	46 26 55.7	95 59 17.7	2,705
Leeper's store, 95 feet northwest of schoolhouse, 4 corners, public roads north, south, and east, and second-class road west, 10 feet west to quarter corner, 10 feet southeast to M. Peterson's mail box.....	46 26 56.5	95 59 18.3	95
Tps. 134 and 135 N., R. 42 W., 80 feet south of east-west line between townships, 5 feet west to center of triangle, 30 feet west to stone painted "U. S. B. M. 1428.9".....	46 27 22.1	95 59 24.5	2,626
Tps. 134 and 135 N., R. 42 W., corner of secs. 4, 5, 32, and 33, stake at wire fence post in line with T fence east and 20 feet west of a blazed tree and 410 feet east of main road, at top of hill, 80 feet north of T road west.....	46 27 22.8	95 59 18.4	438
Mail boxes 35 and 36, on west edge of road at second-class T road east.....	46 27 49.0	95 59 26.9	2,719
Mail box 34, in triangle at second-class T road west to house, post painted "1477".....	46 28 31.7	95 59 19.8	4,352
T. 135 N., R. 42 W., 90 feet north by 20 feet west of corner of secs. 20, 21, 28, and 29, in northwest corner of crossroads, 40 feet northwest of intersection; iron post stamped "Prim. Trav. Sta. No. 3, 1910, MINN, elev. 1439".....	46 29 08.5	95 59 20.3	3,733
Erhard, 5 miles east of; 4 corners, public crossroads, 15 feet southwest to telephone pole, 40 feet northwest to primary traverse station No. 3 (30 feet south and 30 feet east of above position).....			
T. 135 N., R. 42 W., 20 feet northeast of corner of secs. 16, 17, 20, and 21, near fence corner in northeast corner of crossroads, 20 feet northeast of intersection and in southwest corner of sec. 16, about 0.2 mile northwest of north end of lake 21, 1 mile north by 5 miles east of Erhard, 4 miles west of Star Lake; iron post stamped "Prim. Trav. Sta. No. 4, MINN, 1910".....	46 29 59.2	95 59 19.0	5,140

Geographic positions along highways near south border.

Primary traverse station No. 1.....	46 15 20.5	95 59 19.0	.....
T. 132 N., R. 42 W., corner of secs. 8, 9, 16, and 17, at fence corner in clump of trees.....	46 15 14.3	95 58 41.7	2,697
Signpost "Battle Lake 13 m., Fergus Falls 7 m., Underwood 5 m." 33 feet southwest of, 15 feet north to center of triangle, center of east-west road at T road north.....	46 15 29.7	95 56 22.4	9,912
Public T road south, center of triangle at.....	46 15 27.4	95 55 32.4	3,524
C. A. Tollifrou's mail box 36, 40 feet northwest of; 10 feet north to corner of wire fence, T road south.....	46 15 25.3	95 54 36.7	3,926
T. 132 N., Rs. 41 and 42 W., corner of secs. 7, 12, 13, and 18, stone near corner post of wire fence, 20 feet south to center of east-west road at public T road south, 10 feet southwest to blazed oak, 12 feet northeast and 15 feet northeast to 2 blazed oaks.....	46 15 11.8	95 53 41.4	4,122

UNDERWOOD QUADRANGLE—Continued.

Geographic positions along highways near south border—Continued.

Stations.	Latitude.	Longitude.	Distance between stations.
Public T road south, center of east-west road at, 25 feet south to center of triangle, 15 feet north to guidepost "Fergus Falls 11 M., Battle Lake 10.5 M., Dalton 7.25 M."	° ' "	° ' "	<i>Feet.</i>
T. 132 N., R. 42 W., corner of secs. 8, 9, 16, and 17, at corner of wire fence, in east edge of lake, in line with road south, 280 feet west of T road north and primary traverse station No. 12.	46 15 01.6	95 52 38.6	4,536
T. 132 N., R. 42 W., 15 feet south by 270 feet east of corner of secs. 8, 9, 16, and 17, on south edge of east-west road, 12 feet south of center and in line with public T road north, 3.2 miles southeast of Underwood; iron post stamped "Prim. Trav. Sta. No. 12, MINN, 1910"	46 15 10.9	95 51 11.8	6,170
T. 132 N., R. 42 W., corner of secs. 9, 10, 15, and 16, corner is 10 feet southwest of intersection of crossroads, 100 feet northwest of Hall Building	46 15 10.8	95 51 08.0	269
T. 132 N., R. 42 W., corner of secs. 10, 11, 14, and 15, on the south edge of traveled part of east-west road opposite wire T fence north and west of schoolhouse.	46 15 10.9	95 49 56.7	5,015
Public T road south, 5 feet north to center of east-west road, 15 feet southwest to 2 mail boxes	46 15 10.3	95 48 41.5	5,288
T. 132 N., R. 42 W., corner of secs. 11, 12, 13, and 14, on the east edge of small lake on south side of main road, at point where north-south fences and fence east would meet if produced.	46 15 10.8	95 48 04.4	2,608
T. 132 N., Rs. 41 and 42 W., corner of secs. 7, 12, 13, and 18, on north-south wire fence line opposite wire fence up hill to west and on the east edge of T road south at a point 220 feet south of east-west road.	46 15 09.4	95 47 26.2	2,686
T. 132 N., R. 40 W., corner of secs. 7, 8, 17, and 18, center of crossroads.	46 15 10.6	95 46 11.2	5,273
	46 15 10.4	95 45 02.3	4,845

Geographic positions along highways near north border.

Three corners.	46 30 10.9	95 47 26.3	-----
T. 135 N., R. 41 W., corner of secs. 13, 14, 23, and 24, stake near wire fence on hedgerow 38 feet northwest of the northwest corner of H. M. Hancock's residence, 180 feet south of main road at 90° bend west.	46 29 56.2	95 48 03.8	3,013
T. 135 N., R. 41 W., 15 feet north by 30 feet west of corner of secs. 22, 23, 26, and 27, near tall witness tree; corner of sections is in center of east-west road, 890 feet west of center of triangle at public T road west and opposite private T road south.	46 29 05.0	95 49 17.0	7,297
Three corners, center of large triangle at public T road west, 20 feet north to Jury's mail box, 35 feet east to guidepost "Pelican Rapids 23 M., Fergus Falls 23 M., Perham 13 M." (850 feet east of corner of secs. 22, 23, 26, and 27).			
T. 135 N., R. 41 W., corner of secs. 21, 22, 27, and 28, on west edge of north-south road in line with center of T road east.	46 29 05.4	95 50 31.9	5,242
Public T road west, 17 feet northwest to 3 mail boxes, 15 feet east to center of north-south road, 32 feet southwest to dead snag.	46 28 39.5	95 50 38.9	2,674
T. 135 N., R. 41 W., 25 feet southwest of quarter corner between secs. 28 and 29, near guidepost in southwest corner of crossroads and northeast corner of the SE. $\frac{1}{4}$ sec. 29, 25 feet southwest of intersection of crossroads; iron post stamped "Prim. Trav. Sta. No. 20, MINN, 1910"	46 28 40.4	95 51 48.2	4,850
T. 135 N., R. 41 W., quarter corner between secs. 29 and 30, center of east-west road opposite fence north.	46 28 41.5	95 53 03.4	5,264
Forks of roads southwest and east, center of road west and south, 25 feet southwest to small tree, 30 feet east to oak.	46 28 41.8	95 53 46.5	3,020
Andrew Anderson's mail box in northeast corner of crossroads.	46 28 42.2	95 54 18.3	2,226
Two mail boxes in center of triangle at public T road north.	46 29 08.1	95 54 57.8	3,808
T. 134 N., R. 42 W., corner of secs. 23, 23, 25, and 26; center of east-west road at T road north, 20 feet south to tree near wire fence, 70 feet east to Wm. Selck's mail box.	46 29 07.8	95 55 53.6	3,907
T. 135 N., R. 42 W., 50 feet east of corner of secs. 22, 23, 26, and 27, 3 corners at foot of hill, 230 feet west of schoolhouse, center of triangle at public T road east.	46 29 07.8	95 56 50.2	3,966
Maplewood Presbyterian Church cupola, on top of hill, 200 feet southwest of T. 135 N., R. 42 W., corner of secs. 2, 23, 26, and 27.	46 29 06.7	95 56 53.8	278
Guidepost near center of triangle at forks, east of T. 135 N., R. 42 W., corner of secs. 21, 22, 27, and 28, public roads west and southwest, "Fergus Falls 17 mi., Edwards 3 mi."	46 29 07.5	95 58 00.8	4,686
T. 135 N., R. 42 W., corner of secs. 21, 22, 27, and 28, stake 90 feet south of center of east-west road in line with fence north up hill, on north edge of road, 340 feet west of guidepost at forks, 60 feet north of road south at bend northeast.	46 29 07.0	95 58 05.4	332
Primary traverse station No. 3.	46 29 08.5	95 59 20.3	5,245

UNDERWOOD QUADRANGLE—Continued.

Geographic positions along highways west from 4 corners south of Amor store and 0.2 mile west of quarter corner between secs. 28 and 29, T. 134 N., R. 40 W., to corner of secs. 4, 5, 32, and 33, Tps. 133 and 134 N., R. 42 W.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	<i>Feet.</i>
T. 134 N., R. 40 W., quarter corner of secs. 28 and 29.....	46 23 26.5	95 44 40.0	.....
T. 134 N., R. 40 W., quarter corner between secs. 29 and 30, center of north-south road at T road east, 450 feet north of T road west, 15 feet southwest to oak tree.....	46 23 26.4	95 45 35.6	3,900
Public T road east, 460 feet south of T. 134 N., Rs. 40 and 41 W., quarter corner between secs. 30 and 25, center of north-south road at, 15 feet southeast to milk stand.....	46 23 21.5	95 46 46.0	4,960
T. 134 N., Rs. 40 and 41 W., corner of secs. 25, 30, 31, and 36, center of north-south road at T road west, 30 feet west to corner of wire fence, 20 feet northwest to mail box in center of triangle.....	46 23 00.2	95 46 45.7	2,156
T. 134 N., R. 41 W., corner of secs. 25, 26, 35, and 36, center of north-south road at T road east, 25 feet west to end of fence west.....	46 23 00.3	95 48 01.0	5,280
Public T road south, center of east-west road at, 35 feet southwest to guidepost "Perham 24 miles, Main Mills 2 miles, etc.".....	46 22 47.4	95 48 32.9	2,589
Four corners, 100 feet southeast of mill at Monitor Falls, 85 feet northwest to corner of mill, 30 feet southeast to telephone pole, 90 feet west to east end of bridge.....	46 22 49.4	95 49 13.0	2,823
Tps. 133 and 134 N., R. 41 W., quarter corner between secs. 3 and 34, 20 feet northwest to blazed tree, 20 feet northeast to blazed tree, crossroads.....	46 22 08.7	95 49 53.6	5,010
Tps. 133 and 134 N., R. 41 W., corner of secs. 3, 4, 33, and 34, center of east-west road at hedgerow north, 12 feet northwest to blazed oak.....	46 22 09.0	95 50 31.3	2,640
Tps. 133 and 134 N., R. 41 W., 40 feet northwest of corner of secs. 4, 5, 32, and 33, near corner of churchyard fence, in southeast corner of sec. 32, 40 feet northwest of intersection of crossroads, 215 feet northwest of northwest corner of schoolhouse; iron post stamped "Prim. Trav. Sta. No. 27, 1910, MINN".....	46 22 09.7	95 51 47.2	5,323
Tps. 133 and 134 N., R. 41 W., corner of secs. 5, 6, 31, and 32, center of east-west road at T road south, 25 feet south to telephone pole with arrow.....	46 22 09.5	95 53 01.6	5,219
Tps. 133 and 134 N., Rs. 41 and 42 W., corner of secs. 1, 6, 31, and 36, public T road north, 23 feet south to end of wire fence, 5 feet northeast to center of triangle, 35 feet northeast to forked tree.....	46 22 09.7	95 54 17.1	5,295
Tps. 133 and 134 N., R. 42 W., corner of secs. 1, 2, 35, and 36, corner is at cross fences, in a small lake, 125 feet south of east-west road.....	46 22 10.2	95 55 31.8	5,240
Three corners, 50 feet southeast of Pane Shoals store, center of east-west road at public T road north, 50 feet northwest to corner of store, 35 feet northeast to the southernmost of 6 mail boxes.....	46 22 10.3	95 56 16.8	3,150
Tps. 133 and 134 N., R. 42 W., corner of secs. 2, 3, 34, and 35, center of east-west road at T road south, 35 feet southeast to mail box.....	46 22 10.3	95 56 47.3	2,140
Tps. 133 and 134 N., R. 42 W., corner of secs. 3, 4, 33, and 34, stone is in clump of small bushes, 10 feet south of east-west road at T road north.....	46 22 10.5	95 58 02.6	5,280
Primary traverse station No. 2.....	46 22 10.1	95 59 17.9	5,283

Magnetic declination of west border, 10° 56' E.; of south border, 10° 09' E.; of north border, 11° 00' E.; of east-west center line, 10° 48' E.

DORA QUADRANGLE.

Geographic positions along highways near south border.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	<i>Feet.</i>
Mail box.....	46 30 55.4	95 44 55.4	.....
Schoolhouse, 250 feet northwest of, center of east-west road at T road north, 25 feet northeast to A. Dietline's mail box.....	46 30 54.2	95 45 01.8	458
Helling's summer hotel, 200 feet west of, on Dead Lake, 5 feet north to center of triangle, 25 feet northwest to 2 mail boxes, second-class T road north, 3 corners.....	46 30 46.6	95 45 40.4	2,813
T. 135 N., Rs. 40 and 41 W., 320 feet north of quarter corner between secs. 13 and 18, center of east-west road at T road south, 40 feet southeast to telephone pole (quarter corner between secs. 13 and 18 is in center of north-south range line road at east-west fence line and 10 feet north of small bridge).....	46 30 25.3	95 46 49.2	5,273
Star Creek, 400 feet southwest of bridge over, 25 feet southwest to telephone pole, 20 feet west to stone 1½ rods north of quarter corner between secs. 13 and 24, 3 corners at T road south.....	46 30 10.9	95 47 26.3	2,980

Magnetic declination of south border of quadrangle, 10° 54' E.

PERHAM QUADRANGLE.

Geographic positions along highways near north border.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
E. Hungerford's mail box.....	46 30 55.4	95 44 55.4	.....
Three corners, center of main road at second-class road through gate west, 35 feet southwest to mail box 78.....	46 31 38.9	95 43 54.2	6,147
T. 135 N., R. 40 W., 0.2 mile northwest of corner of secs. 3, 4, 9, and 10, inside fence corner, 30 feet west of center of triangle at junction of Star Lake and Perham road with public road north to Dent station, 500 feet west of junction with road south to Richville and 2 miles south of Dent station; iron post stamped "Prim. Trav. Sta. No. 19, MINN, 1910".....	46 31 51.9	95 42 58.9	4,091
T. 135 N., R. 40 W., corner of secs. 9, 10, 15, and 16, center of road at second-class fork southeast to house, in northwest corner of clearing.....	46 30 49.2	95 43 08.1	6,389
T. 135 N., R. 40 W., quarter corner between secs. 13 and 24.....	46 29 54.6	95 40 02.2	.....
T. 135 N., Rs. 39 and 40 W., quarter corner between secs. 13 and 18, center of east-west road at T road south.....	46 30 20.5	95 39 26.0	3,645
T. 135 N., R. 39 W., corner of secs. 17, 18, 19, and 20.....	46 29 56.2	95 38 10.6	5,830
T. 135 N., R. 39 W., quarter corner between secs. 17 and 18, iron stake in center of crossroads at west edge of Richville.....	46 30 21.8	95 38 10.6	2,600
Richville, 40 feet west of the southwest corner of station, set near telegraph pole, 45 feet south of the center of the Minneapolis, St. Paul & Sault Ste. Marie Ry. main track; iron post stamped "Prim. Trav. Sta. No. 21, MINN, 1910".....	46 30 28.6	95 37 29.8	2,938
Richville, 0.8 mile east of, center of intersection of public crossroads, 25 feet northwest to corner post of wire fence.....	46 30 23.8	95 36 36.1	3,787
T. 135 N., R. 39 W., stone at quarter corner between secs. 15 and 16, on south edge of east-west road opposite wire fence north and 0.2 mile east of T road north.....	46 30 23.8	95 35 39.6	3,950
T. 135 N., R. 39 W., quarter corner between secs. 14 and 15, 4 corners, public roads north, south, and west, second-class road east to lake, center of intersection.....	46 30 22.7	95 34 24.6	5,249
T. 135 N., R. 39 W., corner of secs. 10, 11, 14, and 15, center of crossroads, 20 feet northwest to mail box 41.....	46 30 48.8	95 34 25.2	2,650
T. 135 N., R. 39 W., corner of secs. 11, 12, 13, and 14, center of crossroads, 22 feet southeast to guidepost "Perham 6 mi.—Otter Tail 6 mi.".....	46 30 48.7	95 33 09.8	5,270
T. 135 N., Rs. 38 and 39 W., corner of secs. 7, 12, 13, and 18, center of east-west road at T road north, 1,800 feet west of church, 20 feet south to corner of wire fence, 25 feet northeast to telephone pole.....	46 30 49.0	95 31 54.8	5,253
T. 135 N., Rs. 38 and 39 W., corner of secs. 1, 6, 7, and 12, 100 feet southeast of schoolhouse, 25 feet northeast to telephone pole, center of crossroads.....	46 31 41.0	95 31 54.7	5,267
West end of bridge over Otter Tail River.....	46 31 40.8	95 31 44.3	728
T. 135 N., R. 38 W., corner of secs. 5, 6, 7, and 8, 40 feet northwest to guidepost "Perham 6 mi.—Henning 18 mi.", center of crossroads.....	46 31 41.1	95 30 46.4	4,047
T. 135 N., R. 38 W., corner of secs. 7, 8, 17, and 18, in center of main road at 90° bend east and second-class road west, 38 feet northeast to corner of wire fence.....	46 30 49.0	95 30 46.9	5,280
T. 135 N., R. 38 W., quarter corner between secs. 8 and 17, center of east-west road at T road south, 35 feet north to guidepost "Leaf Lake 6 mi.—Perham 8 mi., N. Y. Mills 7 mi.", 23 feet southeast to corner of wire fence.....	46 30 48.8	95 30 09.3	2,630

Magnetic declination of north border of quadrangle, 10° 26' E.

NEW YORK MILLS QUADRANGLE.

Geographic positions along highways near southwest corner.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
T. 135 N., R. 38 W., quarter corner between secs. 8 and 17.....	46 30 48.8	95 30 09.3	.....
T. 135 N., R. 38 W., 15 feet east of corner of secs. 9, 10, 15, and 16, on east edge of north-south road, 20 feet east of center and in line with center of T road west; iron post stamped "Prim. Trav. Sta. No. 22, MINN, 1910".....	46 30 50.5	95 28 15.0	7,996

Magnetic declination of southwest corner of quadrangle, 10° 20' E.

HENNING QUADRANGLE.

Geographic positions along highways near west border.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Primary traverse station No. 22.....	46 30 50.5	95 28 15.0	
T. 135 N., R. 38 W., corner of secs. 15, 16, 21, and 22, center of crossroads.	46 29 57.9	95 28 14.6	5,329
Forks 90 feet south of small plank bridge, roads south and southeast.....	46 28 42.3	95 28 12.2	7,664
T. 135 N., R. 38 W., corner of secs. 27, 28, 33, and 34, 100 feet northwest of schoolhouse, 18 feet southeast to gulldepost "Otter Tail 7 mi.—N. Y. Mills 7 mi.—Perham 13 mi.—Leaf Lake 1.7 mi.", center of cross- roads.....	46 28 13.4	95 28 12.9	2,930
Tps. 134 and 135 N., R. 38 W., corner of secs. 3, 4, 33, and 34, center of east-west road at T road south, 60 feet southwest to clump of willow trees, 30 feet southeast to center of bars.....	46 27 21.1	95 28 11.0	5,299
T. 134 N., R. 38 W., corner of secs. 3, 4, 9, and 10, center of crossroads.....	46 26 29.6	95 28 11.4	5,220
T. 134 N., R. 38 W., corner of secs. 9, 10, 15, and 16, center of crossroads, 8 feet east and 8 feet west to plank bridges.....	46 25 38.2	95 28 10.9	5,210
T. 134 N., R. 38 W., corner of secs. 15, 16, 21, and 22, stone in center of north-south road at T road west, 30 feet north of intersection of crossroads, 120 feet south of town hall.....	46 24 46.4	95 28 09.8	5,250
Forks in pass between East and West Leaf lakes, roads north and northeast, 23 feet southwest to telephone pole.....	46 24 28.0	95 27 59.9	1,986
T. 134 N., R. 38 W., corner of secs. 21, 22, 27, and 28, east edge of north- south road at T road west, 40 feet northeast to telephone pole, 32 feet southeast to small blazed oak.....	46 23 54.4	95 28 09.6	3,476
T. 134 N., R. 38 W., 30 feet northwest of corner of secs. 27, 28, 33, and 34, set at corner of fence in the northwest corner of crossroads and 30 feet northwest of the intersection; iron post stamped "Prim. Trav. Sta. No. 23, MINN, 1910".....	46 23 02.4	95 28 09.6	5,264
Tps. 133 and 134 N., R. 38 W., corner of secs. 3, 4, 33, and 34, center of in- tersection of crossroads.....	46 22 10.1	95 28 10.1	5,300
T. 133 N., R. 38 W., corner of secs. 3, 4, 9, and 10, center of north-south road at east-west wire fences.....	46 21 17.5	95 28 09.7	5,330
T. 133 N., R. 38 W., quarter corner between secs. 9 and 10, center of in- tersection of crossroads.....	46 20 51.4	95 28 09.3	2,650
T. 133 N., R. 38 W., corner of secs. 9, 10, 15, and 16, stone in center of north-south road at second-class T road west, 430 feet south of north- south road crossing the Minneapolis, St. Paul & Sault Ste. Marie Ry.....	46 20 25.4	95 28 08.9	2,630
T. 133 N., R. 38 W., corner of secs. 15, 16, 21, and 22, crossroads at town hall, 1 mile west of Henning, center of intersection, 25 feet southwest to 2 mail boxes, 65 feet northwest to southeast corner of town hall.....	46 19 33.0	95 28 08.0	5,310
T. 133 N., R. 38 W., corner of secs. 21, 22, 27, and 28, 20 feet northwest to old stump, 30 feet northeast to double oak, center of crossroads.....	46 18 40.7	95 28 08.1	5,300
T. 133 N., R. 38 W., corner of secs. 27, 28, 33, and 34, center of east-west road at T road north, 450 feet south of Northern Pacific Ry. crossing, 12 feet south to corner of wire fence.....	46 17 48.7	95 28 07.9	5,270
T. 133 N., R. 38 W., quarter corner between secs. 28 and 33, center of east-west road at T road south.....	46 17 48.6	95 28 45.6	2,650
Tps. 132 and 133 N., R. 38 W., south quarter corner of sec. 33, center of east-west road at T road north, 15 feet north to center of triangle, 35 feet southwest to 2 mail boxes.....	46 16 56.7	95 28 44.9	5,260
Tps. 132 and 133 N., R. 38 W., north corner of secs. 4 and 5, center of east-west road at T road south, 540 feet west of a T road north (point is on the eighth standard parallel).....	46 16 56.6	95 28 52.6	540
T. 132 N., R. 38 W., corner of secs. 4, 5, 8, and 9, center of crossroads, 35 feet northeast to corner of fence, 22 feet northwest to corner of fence.....	46 16 02.2	95 28 54.1	5,511
T. 132 N., R. 38 W., 25 feet southwest of quarter corner between secs. 8 and 17, inside wire fence corner, 25 feet southwest of junction of north- south road with T road west; iron post stamped "Prim. Trav. Sta. No. 24, 1910, MINN".....	46 15 09.9	95 29 30.8	5,896
T. 132 N., R. 38 W., 600 feet east of corner of secs. 7, 8, 17, and 18, center of crossroads.....	46 15 10.0	95 29 59.8	2,039

Magnetic declination of west border of quadrangle, 10° 00' E.

AXEL QUADRANGLE.

Geographic positions along highways near north border.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Signpost.....	46 15 19.8	95 33 14.2	.....
T. 132 N., R. 39 W., 910 feet west of quarter corner between secs. 14 and 23, center of crossroads, public roads northeast and west, second-class road south, 15 feet southeast to corner of wire fence.....	46 14 19.3	95 33 21.2	6,147
T. 132 N., R. 39 W., corner of secs. 14, 15, 22, and 23, center of east-west road at north-south fences.....	46 14 19.2	95 33 46.4	1,770
T. 132 N., R. 39 W., corner of secs. 15, 16, 21, and 22, stake in edge of bushes, 15 feet south of center of east-west road.....	46 14 19.8	95 35 01.6	5,288
Spire of Lutheran Church, on top of hill in NE. $\frac{1}{4}$ sec. 21, T. 132 N., R. 39 W.....	46 14 11.9	95 35 20.4	1,546
T. 132 N., R. 39 W., quarter corner between secs. 16 and 17, center of crossroads.....	46 14 46.2	95 36 16.2	5,243
T. 132 N., R. 39 W., quarter corner between secs. 17 and 18, 125 feet southeast of schoolhouse, 23 feet west to post, center of crossroads.....	46 14 46.2	95 37 32.9	5,390
T. 132 N., R. 39 W., corner of secs. 17, 18, 19, and 20, stone 5 feet west of center of north-south road at fences east and west, 0.5 mile south of 4 corners at schoolhouse.....	46 14 19.7	95 37 32.9	2,680
T. 132 N., R. 39 W., 35 feet northeast of stone at corner of secs. 19, 20, 29, and 30, near telephone pole in northeast corner of crossroads, 25 feet northeast of intersection, 30 feet north and 5 feet east of sign "Clitherall 3.25 miles—Leaf Mtn. 2 miles—Henning 6 miles—Axel 2 miles," in the southwest corner of sec. 20; iron post stamped "Prim. Trav. Sta. No. 25, MINN. 1910".....	46 13 27.4	95 37 32.4	5,302
T. 132 N., Rs. 39 and 40 W., corner of secs. 19, 24, 25, and 30, stone 4 feet northeast of intersection of crossroads.....	46 13 26.3	95 38 43.1	4,970
T. 132 N., R. 40 W., corner of secs. 23, 24, 25, and 26, in center of east-west road opposite oak tree at corner of wire fence on south edge of road and 30 feet east of bend to southwest, 450 feet west of bridge.....	46 13 26.0	95 39 58.8	5,321
T. 132 N., R. 40 W., 0.2 mile north of corner of secs. 26, 27, 34, and 35, 12 feet southwest to 2 mail boxes, center of crossroads.....	46 12 46.8	95 41 12.7	6,534
T. 132 N., R. 40 W., 0.2 mile north of corner of secs. 27, 28, 33, and 34, iron stake in center of north-south road, in line with north edge of T road east, 20 feet southeast to center of triangle, 26 feet northeast to guidepost, schoolhouse in northeast corner of T road east.....	46 12 46.2	95 42 28.4	5,318
Forks at bottom of hill, center of main road at second-class forks to northwest, 20 feet west to 2 mail boxes.....	46 13 25.6	95 42 31.1	3,992
T. 132 N., R. 40 W., corner of secs. 15, 16, 21, and 22, on south edge of east-west road in line with T fence north and 25 feet west of guidepost at T road south, 30 feet north to end of T fence north.....	46 14 18.2	95 42 29.6	5,330
T. 132 N., R. 40 W., quarter corner between secs. 16 and 21, center of east-west road at road north, 75 feet northwest to schoolhouse, 20 feet north to center of triangle.....	46 14 18.1	95 43 07.3	2,649
Primary traverse station No. 13.....	46 15 10.5	95 43 27.1	5,487
Iron stake.....	46 12 46.2	95 42 28.4	.....
T. 132 N., R. 40 W., corner of secs. 28, 29, 32, and 33, center of crossroads, 15 feet southwest to mail box, 25 feet northeast to guideboard "Ashley 10 mi.—Battle Lake 6 mi.".....	46 12 33.4	95 43 43.4	5,436
T. 132 N., R. 40 W., corner of secs. 29, 30, 31, and 32, stone on south edge of east-west road, 50 feet east of forks, 12 feet northwest of oak tree and 280 feet west of crossroads.....	46 12 33.6	95 44 59.1	5,320
Robertson triangulation station.....	46 12 02.09	95 46 07.32	5,765

Magnetic declination of north border of quadrangle, 10° 07' E.

PELICAN RAPIDS QUADRANGLE.

Geographic positions along highways near south border.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
T. 135 N., Rs. 42 and 43 W., corner of secs. 13, 18, 19, and 24.....	46 29 58.3	96 01 50.4	.....
Groudrud Lake, at north edge of, 10 feet southeast to Gilbert A. Fosø's mail box, 5 feet north to center of triangle; center of east-west main road at T road north.....	46 30 00.2	96 03 02.0	5,019
T. 135 N., R. 43 W., corner of secs. 14, 15, 22, and 23.....	46 29 59.9	96 04 22.0	.....
T. 135 N., R. 43 W., corner of secs. 15, 16, 21, and 22, corner of wire fence in Pelican River flat about 250 feet northeast of bridge and 1,000 feet east of church.....	46 30 00.6	96 05 37.6	5,286
Center of Great Northern Ry. track.....	46 29 58.0	96 05 50.1	.....
T. 135 N., R. 43 W., corner of secs. 17, 18, 19, and 20, 10 feet south of large stone near John Kowalsh's mail box, center of east-west road at second-class T road north.....	46 30 02.4	96 08 10.1	9,807

PELICAN RAPIDS QUADRANGLE—Continued.**Geographic positions along highways near south border—Continued.**

Stations.	Latitude.	Longitude.	Distance between stations.
T. 135 N., R. 43 W., 210 feet east of quarter corner between secs. 18 and 19, 1 mile north by 2.5 miles west of Erhard, in center of large triangle on east-west line between secs. 18 and 19, at east side of a small lake with road around it from which public roads lead north, south, east and west; quarter corner is near center of lake; iron post stamped "Prim. Trav. Sta. No. 5, 1910, MINN".....	° ' "	° ' "	<i>Feet.</i>
T. 135 N., Rs. 43 and 44 W., corner of secs. 13, 18, 19, and 24, stone in center of east-west road opposite corner of fence south and west.....	46 30 02.6	96 08 44.9	2,433
T. 135 N., R. 44 W., quarter corner between secs. 13 and 24, center of east-west road at T fence south.....	46 30 02.6	96 09 20.0	2,460
T. 135 N., R. 44 W., corner of secs. 13, 14, 23, and 24, center of east-west road at public T road north, 65 feet northeast to telephone pole, 55 feet northwest to Ole P. Ourenson's mail box.....	46 30 01.8	96 09 57.6	2,631
T. 135 N., R. 44 W., quarter corner between secs. 14 and 23, center of east-west road at fences north-south.....	46 30 01.5	96 10 35.8	2,670
T. 135 N., R. 44 W., corner of secs. 14, 15, 22, and 23; corner in lake.....	46 30 01.2	96 11 13.5	2,640
T. 135 N., R. 44 W., corner of secs. 15, 16, 21, and 22, center of crossroads.....	46 30 00.9	96 11 51.2	2,640
T. 135 N., R. 44 W., corner of secs. 16, 17, 20, and 21, center of east-west road at T road north, 200 feet southeast of schoolhouse, 35 feet northwest to corner of schoolhouse fence, 30 feet southwest to telephone pole.....	46 30 02.1	96 13 07.7	5,352
	46 30 02.7	96 14 23.4	5,291

Magnetic declination of south border of quadrangle, 11° 02' E.

BARNESVILLE QUADRANGLE.**Geographic positions along highways near southeast corner.**

Stations.	Latitude.	Longitude.	Distance between stations.
T. 135 N., R. 44 W., corner of secs. 16, 17, 20, and 21.....	° ' "	° ' "	<i>Feet.</i>
T. 135 N., R. 44 W., 35 feet southwest of corner of secs. 17, 18, 19, and 20, 1.5 miles north by 1.2 miles east of Rothsay, near corner of wire fence in the southwest corner of crossroads, 25 feet southwest of intersection, in northeast corner of sec. 19; iron post stamped "Prim. Trav. Sta. No. 6, 1910, MINN".....	46 30 02.7	96 14 23.4	.....
T. 135 N., R. 44 W., corner of secs. 17, 18, 19, and 20, stone is under ground, 10 feet northeast of intersection of crossroads (35 feet northeast of above position).	46 30 02.8	96 15 39.2	5,303

Magnetic declination of line, 11° 02' E.

ROTHSAY QUADRANGLE.**Geographic positions along highways near east border.**

Stations.	Latitude.	Longitude.	Distance between stations.
Primary traverse station No. 6.....	° ' "	° ' "	<i>Feet.</i>
T. 135 N., R. 44 W., corner of secs. 19, 20, 29, and 30, 7 feet north and 3 feet west of intersection of crossroads, 0.5 mile north by 1.2 miles east of Rothsay; iron stake.....	46 30 02.8	96 15 39.2	.....
T. 135 N., R. 44 W., corner of secs. 29, 30, 31, and 32, stone in center of crossroads.....	46 29 10.9	96 15 38.0	5,260
Tps. 134 and 135 N., R. 44 W., corner of secs. 5, 6, 31, and 32, center of crossroads.....	46 28 18.7	96 15 37.3	5,290
T. 134 N., R. 44 W., on north-south line between secs. 5 and 6, center of Great Northern Ry., at north-south road crossing.....	46 27 26.6	96 15 36.6	5,280
T. 134 N., R. 44 W., 40 feet southeast of corner of secs. 5, 6, 7, and 8, near corner of wire fence in southwest corner of crossroads, in the northwest corner of sec. 8, 2.5 miles south by 1.2 miles east of Rothsay, 2,050 feet south of north-south road crossing the Great Northern Ry. and about 1,000 feet west of east-west road crossing railway; iron post stamped "Prim. Trav. Sta. No. 7, 1910, MINN, 1188".....	46 26 51.6	96 15 36.1	3,540
	46 26 31.4	96 15 35.6	2,049

ROTHSAY QUADRANGLE—Continued.

Geographic positions along highways near east border—Continued.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
T. 134 N., R. 44 W., corner of secs. 7, 8, 17, and 18, center of crossroads.	46 25 39.4	96 15 35.6	5,260
T. 134 N., R. 44 W., corner of secs. 17, 18, 19, and 20, center of north-south road at T road west, 35 feet northwest to signpost "Elizabeth 8 mi., Rothsay 5 mi.," post painted "U. S. B. M. 1146.2".....	46 24 47.1	96 15 35.7	5,300
T. 134 N., R. 44 W., 25 feet south by 60 feet west of corner of secs. 19, 20, 29, and 30, in southwest corner of public T road west, 40 feet west of center of north-south road, 20 feet south of center of T road west; iron post stamped "Prim. Trav. Sta. No. 8, 1910, MINN, 1161".....	46 23 54.6	96 15 37.0	5,315
T. 134 N., R. 44 W., corner of secs. 29, 30, 31, and 32, center of east-west road at T road north, on north edge of dry lake, 200 feet south of schoolhouse, 35 feet southeast to bowlder painted "U. S. B. M. 1152.1," 30 feet southwest to telephone pole, 30 feet east to crossroad, 25 feet north to center of triangle.....	46 23 03.2	96 15 36.0	5,212
Tps. 133 and 134 N., R. 44 W., corner of secs. 5, 6, 31, and 32, center of north-south road at public T road west, opposite fence east on north edge of second-class T road east.....	46 22 11.1	96 15 35.4	5,279
T. 133 N., R. 44 W., 30 feet southeast of corner of secs. 5, 6, 7, and 8, in southeast corner of crossroads, 30 feet southeast of intersection, in northwest corner of sec. 8, 3.2 miles west by 0.8 mile south of Carlisle; iron post stamped "Prim. Trav. Sta. No. 9, 1910, MINN, 1124".....	46 21 18.7	96 15 36.0	5,305
T. 133 N., R. 44 W., corner of secs. 7, 8, 17, and 18, stone 5 feet southwest of intersection of crossroads.....	46 20 26.3	96 15 35.8	5,310
T. 133 N., R. 44 W., corner of secs. 17, 18, 19, and 20, center of north-south road at east-west wire fence, on south edge of dry lake.....	46 19 33.6	96 15 34.5	5,330
T. 133 N., R. 44 W., corner of secs. 19, 20, 29, and 30, center of east-west road at public T road north, 200 feet south of bridge.....	46 18 41.3	96 15 34.4	5,300
T. 133 N., R. 44 W., corner of secs. 29, 30, 31, and 32, stake with flag in meadow, 15 feet north of center of east-west road, 30 feet northeast of a small ditch south.....	46 17 48.8	96 15 34.2	5,320
Tps. 132 and 133 N., R. 44 W., probably south corner of secs. 31 and 32; in center of east-west drainage canal, 30 feet north of center of east-west road at a point 30 feet east of a small culvert and 240 feet west of a small plank bridge, 2,900 feet east of bridge over canal.....	46 16 56.6	96 15 34.1	5,290
Tps. 132 and 133 N., Rs. 44 and 45 W., north corner of secs. 1 and 6.....	46 16 56.6	96 15 55.0	1,470
Foxhome, 2 miles east of, center of highway bridge over north-south drainage canal.....	46 16 56.2	96 16 15.2	1,420
T. 132 N., R. 44 W., corner of secs. 1, 6, 7, and 12, 2 stakes in east edge of lake in line with and 120 feet west of public T road east.....	46 16 04.4	96 15 45.2	5,640
Bridge.....	46 16 56.2	96 16 15.2	.....
Center of track opposite milepost 60.....	46 16 53.5	96 16 58.7	3,067
Foxhome, 50 feet west of station, center of Northern Pacific Ry. main track at street crossing.....	46 16 45.7	96 18 34.9	6,805
Fox triangulation station, in S. $\frac{1}{2}$ SE. $\frac{1}{4}$ sec. 34, T. 133 N., R. 45 W., near edge of field; both underground mark and surface mark are nails in center of iron posts.....	46 16 56.72	96 19 35.66	4,408

Magnetic declination of east border of quadrangle, 11° 24' E.

CAMPBELL QUADRANGLE.

Geographic positions along highways near northeast corner.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
T. 132 N., R. 44 W., corner of secs. 1, 6, 7, and 12.....	46 16 04.4	96 15 45.2	.....
T. 132 N., R. 44 W., 20 feet north by 70 feet east of corner of secs. 13, 18, 19, and 24, on north edge of east-west road, 2 feet east of first electric power line pole east of bridge over drainage canal at section corner; iron post stamped "Prim. Trav. Sta. No. 10, 1910, MINN".....	46 14 19.2	96 15 51.5	10,667

Magnetic declination of line, 11° 24' E.

WENDELL QUADRANGLE.

Geographic positions along highways near north border.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Primary traverse station No. 10.....	46 14 19.2	96 15 51.5	.....
Center of east-west road at private T road north.....	46 14 19.9	96 14 23.1	6,209
T. 132 N., R. 44 W., corner of secs. 16, 17, 20, and 21, center of east-west road at T road south, 15 feet northeast to T. A. Moulton's mail box, 40 feet southwest to telephone pole painted "1063.3".....	46 14 20.4	96 13 32.3	3,571
T. 132 N., R. 44 W., corner of secs. 15, 16, 21, and 22, center of cross- roads, 200 feet west of old crossroads.....	46 14 20.5	96 12 17.2	5,280
T. 132 N., R. 44 W., corner of secs. 14, 15, 22, and 23, stone 5 feet south- east of intersection of crossroads.....	46 14 20.8	96 11 01.7	5,300
T. 132 N., R. 44 W., corner of secs. 13, 14, 23, and 24, stone in center of crossroads, 0.5 mile north of schoolhouse at point where electric power lines turn south.....	46 14 20.6	96 09 46.2	5,309
T. 132 N., R. 44 W., quarter corner between secs. 23 and 24, center of north-south road at T road east, 75 feet east of schoolhouse, in line with fence west, 25 feet west to telephone pole painted "T. B. M. 1127.408," electric power line turns east.....	46 13 54.5	96 09 45.8	2,640
T. 132 N., Rs. 43 and 44 W., quarter corner between secs. 19 and 24, stone 5 feet northeast of intersection of crossroads.....	46 13 53.2	96 08 30.2	5,310
Otter Tail Power Co.'s power house, 0.2 mile northwest of; 3 corners, public T road west.....	46 13 53.9	96 07 17.2	5,135
Otter Tail Power Co.'s power house, 800 feet east of, center of triangle at roads east and south.....	46 13 54.4	96 06 52.2	1,756
T. 132 N., R. 43 W., 25 feet east of quarter corner between secs. 20 and 21, on east edge of north-south road, 25 feet east of and in line with public T road west, 0.5 mile east of the Ottertail Power Co.'s plant; iron post stamped "Prim. Trav. Sta. No. 11, 1910, MINN".....	46 13 55.0	96 06 11.0	2,897
T. 132 N., R. 43 W., corner of secs. 16, 17, 20, and 21, center of north- south road at T road east.....	46 14 21.4	96 06 11.1	2,677
P. M. Engquith's mail box at forks 0.2 mile northeast of schoolhouse, public roads south and southwest.....	46 14 25.9	96 05 01.7	4,901

Magnetic declination of north border of quadrangle, 11° 03' E.

FERGUS FALLS QUADRANGLE.

Geographic positions along highways near north border.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Primary traverse station No. 4.....	46 29 59.2	95 59 19.0	.....
Ole Moen's mail box in triangle at second-class T road north.....	46 29 59.0	96 00 24.0	4,550
T. 135 N., R. 42 W., T road south along north-south line between secs. 19 and 20, 3 corners, 5 feet southeast to center of triangle.....	46 29 49.8	96 00 35.3	1,218
T. 135 N., Rs. 42 and 43 W., corner of secs. 13, 18, 19, and 24, center of east-west road at fences north and south, 800 feet west of public T road north.....	46 29 58.3	96 01 50.4	5,319
Three corners.....	46 30 00.2	96 03 02.0	.....
T. 135 N., R. 43 W., corner of secs. 13, 14, 23, and 24, stake in northwest edge of Groudrud Lake, 60 feet south of main road at edge of clearing about 500 feet west of T road north.....	46 29 58.1	96 03 06.2	362
Erland Johnson's mail box, 30 feet west of, public T road south, 3 cor- ners, 25 feet southwest to telephone pole.....	46 29 58.7	96 03 38.5	2,265
T. 135 N., R. 43 W., corner of secs. 14, 15, 22, and 23, stake in north- south fence line at wire fence west, 90 feet north of center of main road at point 270 feet west of top of hill.....	46 29 59.9	96 04 22.0	3,043
T. 135 N., R. 43 W., corner of secs. 15, 16, 21, and 22.....	46 30 00.6	96 05 37.6	.....
Erhard, 1 mile north of, center of Great Northern Ry. at east-west road crossing, 400 feet southeast of church.....	46 29 58.0	96 05 50.1	912

FERGUS FALLS QUADRANGLE—Continued.

Geographic positions along highways near south border.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Mail box.....	46 14 25.9	96 05 01.7	.....
T. 132 N., R. 43 W., corner of secs. 9, 10, 15, and 16, second-class T road east, opposite center of small lake.....	46 15 13.5	96 04 55.6	4,842
T. 132 N., R. 43 W., in SW. $\frac{1}{4}$ NW. $\frac{1}{4}$ sec. 10, in middle of cultivated field, on the middle one of three knolls of about equal height; station mark, quart glass bottle set bottom up 1 foot below surface of ground; a second quart bottle lies horizontally pointing toward the reference mark (Koppany triangulation station).....	46 15 44.92	96 04 49.46	3,219
Fergus Falls, cupola of Northwestern College.....	46 16 33.3	96 04 03.4	5,884
Forks, road south and east, 30 feet southwest to telephone pole.....	46 16 24.4	96 03 23.0	2,983
T. 132 N., R. 43 W., corner of secs. 1, 2, 11, and 12, stone at wire fence corner, on east edge of the Battle Lake road, 1 mile southeast of Fergus Falls, 80 feet east of mail box 71.....	46 16 04.7	96 02 23.2	4,655
T. 132 N., Rs. 42 and 43 W., quarter corner between secs. 7 and 12, stone in center of east-west road at north-south wire fences, 20 feet east of public T road south.....	46 15 38.1	96 01 08.4	5,911
Primary traverse station No. 1.....	46 15 20.5	96 59 19.0	7,897

Geographic positions along highways from corner of secs. 4, 5, 32, and 33, T. 133 N., R. 42 W., west
to corner of secs. 29, 30, 31, and 32, T. 134 N., R. 44 W.

Primary traverse station No. 2.....	46 22 10.2	95 59 18.0	.....
T. 133 N., R. 42 W., 300 feet south of corner of secs. 5, 6, 31, and 32, large stone in center of triangle at 3 corners, T road east.....	46 22 07.9	96 00 32.5	5,236
Tps. 133 and 134 N., R. 42 W., corner of secs. 5, 6, 31, and 32, stake at corner of wire fence, 50 feet northeast of road at bend to northwest and 300 feet north of T road east.....	46 22 10.8	96 00 33.3	291
Tps. 133 and 134 N., Rs. 42 and 43 W., corner of secs. 1, 6, 31, and 36, 500 feet west of church and schoolhouse, center of crossroads, 25 feet northwest to 3 mail boxes, 25 feet northeast to corner of wire fence.....	46 22 10.9	96 01 48.2	5,249
Tps. 133 and 134 N., R. 43 W., quarter corner between secs. 1 and 36, center of east-west road at T road north, 10 feet north to mail box.....	46 22 11.1	96 02 25.3	2,600
Tps. 133 and 134 N., R. 43 W., corner of secs. 1, 2, 35, and 36, center of crossroads, 15 feet north to Henry Frick's mail box.....	46 22 11.5	96 03 02.4	2,600
Tps. 133 and 134 N., R. 43 W., corner of secs. 2, 3, 34, and 35, center of crossroads, 23 feet northwest to oak tree, 40 feet southwest to tele- phone pole.....	46 22 11.6	96 04 16.9	5,224
Tps. 133 and 134 N., R. 43 W., quarter corner between secs. 3 and 34, center of north-south road at T road east, 15 feet southeast to tele- phone pole.....	46 22 11.4	96 04 54.4	2,630
T. 134 N., R. 43 W., quarter corner between secs. 32 and 33, center of east-west road in line with fence south.....	46 22 37.0	96 06 28.5	7,090
T. 134 N., R. 43 W., center of sec. 32, center of north-south road at T road east, 5 feet west to fence post.....	46 22 37.0	96 07 05.9	2,627
Elizabeth, 600 feet north of public school, center of intersection of streets, 35 feet southwest to street light, 40 feet southeast to tele- phone pole.....	46 22 48.0	96 07 48.4	3,176
Elizabeth, in northwest corner of public school yard, 200 feet north- west of school building, iron post stamped "Prim. Trav. Sta. No. 28, MINN 1910".....	46 22 43.9	96 07 47.7	411
T. 134 N., R. 43 W., corner of secs. 29, 30, 31, and 32, center of east-west road at north-south fences, 0.2 mile north of Elizabeth, 300 feet north of cemetery, 340 feet east of old railroad grade.....	46 23 03.7	96 08 02.8	2,269
T. 134 N., Rs. 43 and 44 W., probably corner of secs. 25, 30, 31, and 36, point 40 feet south of east-west road at T road south.....	46 23 06.4	96 09 20.1	5,429
T. 134 N., R. 44 W., corner of secs. 25, 26, 35, and 36, center of east-west road at old hedgerow south, 600 feet east of second-class T road north.....	46 23 02.3	96 10 34.2	5,213
T. 134 N., R. 44 W., quarter corner between secs. 26 and 35, center of east-west road at second-class crossroads, 30 feet north to end of wire fence, 25 feet south to mail box.....	46 23 02.1	96 11 11.9	2,640
T. 134 N., R. 44 W., corner of secs. 26, 27, 34, and 35, 200 feet northwest of church, center of crossroads.....	46 23 02.1	96 11 50.1	2,680
T. 134 N., R. 44 W., corner of secs. 27, 28, 33, and 34, in center of north- south road, 80 feet south of public crossroads.....	46 23 02.1	96 13 05.4	5,280
T. 134 N., R. 44 W., corner of secs. 28, 29, 32, and 33, in north end of lake, 160 feet south of center of east-west road at T road north.....	46 23 02.8	96 14 20.5	5,260
T. 134 N., R. 44 W., corner of secs. 29, 30, 31, and 32.....	46 23 03.2	96 15 36.0	5,295

Magnetic declination of north border, 11° 02' E.; of south border, 10° 40' E.; of
east-west center line, 11° 15' E.

ASHBY QUADRANGLE.

Geographic positions along highways near northwest corner.

Stations.	Latitude.	Longitude.	Distance between stations.
Primary traverse station No. 1.....	° ' "	° ' "	Feet.
T. 132 N., R. 42 W., in NW. $\frac{1}{4}$ SW. $\frac{1}{4}$ sec. 16, on land belonging to Andrew Burseth, 3 feet south of fence line east-west through middle of section, 481 feet east of fence corner and 514 feet east of section line at quarter corner; is aluminum tablet cemented in middle of top of large stone boulder weighing about 500 pounds.....	46 15 20.5	95 59 19.0	.....
	46 14 48.51	95 58 34.39	4,511

Geographic positions along highways near northeast corner.

T. 132 N., R. 40 W., corner of secs. 29, 30, 31, and 32.....	46 12 33.6	95 44 59.1	.....
T. 132 N., R. 40 W., in sec. 31, on south edge of high ridge, on land of Mr. Robertson; station is not on highest point of ridge, there being 2 other points slightly higher, 1 about 50 yards north and the other about 0.2 mile northeast; station mark consists of 4 quart bottles, 1 standing vertically, bottom up, marking the center; the 3 others are placed horizontally with their ends touching center bottle, about a foot below surface of ground.....	46 12 02.09	95 46 07.32	5,765

Magnetic declination of northwest corner, 11° 30' E.; of northeast corner, 11° 00' E.

MISSOURI.

PRIMARY TRAVERSE.

Centerville, Edina, Green City, Kirksville, Moulton, Queen City, Unionville, and Winigan quadrangles.

ADAIR, KNOX, LINN, MACON, PUTNAM, SCHUYLER, SCOTLAND, AND SULLIVAN COUNTIES.

The following positions, on approximate United States standard datum, were determined by C. B. Kendall in 1910, and are based upon positions determined by G. T. Hawkins in 1900.

The State cooperated in the work.

KIRKSVILLE QUADRANGLE.

Geographic positions along highways from Kirksville north to north border of quadrangle.

Stations.	Latitude.	Longitude.	Distance between stations.
Kirksville, 600 feet west of, crossing of Quincy, Omaha & Kansas City R. R. and Wabash R. R. (old traverse point).....	° ' "	° ' "	Feet.
Kirksville, 0.8 mile north of, township line, center of Wabash R. R. track at road crossing.....	40 12 05.0	92 35 09.1	.....
Tps. 62 and 63 N., R. 15 W., south quarter corner of sec. 33, center of east-west road at T road north.....	40 12 49.3	92 35 09.4	4,478
T. 63 N., R. 15 W., 1,320 feet north of quarter corner between secs. 28 and 33, center of north-south road at T road west.....	40 12 49.4	92 34 56.7	990
T. 63 N., R. 15 W., quarter corner between secs. 21 and 28, center of north-south road at T road east.....	40 13 55.0	92 34 56.6	6,630
	40 14 34.3	92 34 56.4	3,990

KIRKSVILLE QUADRANGLE—Continued.

Geographic positions along highways near north border of quadrangle.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	<i>Feet.</i>
Danforth, 0.5 mile west of, center of track at road crossing at trestle 80-1.	40 14 33.1	92 44 43.5	3,729
T. 63 N., Rs. 16 and 17 W., within a few feet of corner of secs. 19, 24, 25, and 30 (corner is in creek and could not be found).....	40 14 28.3	92 44 30.6	1,107
Danforth, 0.2 mile east of, 10 feet east of east end of trestle 79-2; 130 feet north of crossing to T road west, 40 feet west to center of bridge, 70 feet north to T road east, center of north-south road.....	40 14 25.3	92 43 45.6	3,500
T. 63 N., R. 16 W., corner of secs. 28, 29, 32, and 33, at 90° bend in road east, 730 feet south of Quincy, Omaha & Kansas City R. R. at point 200 feet east of small coal mine.....	40 13 37.7	92 42 19.4	8,246
Novinger, 230 feet west of road crossing, center of track at crossing of Iowa & St. Louis Ry. and Quincy, Omaha & Kansas City R. R.....	40 13 49.2	92 42 04.7	1,624
Novinger, 1 mile east of, 160 feet west of center of iron bridge and 2,970 feet west of milepost Q-76, KC172; point on Quincy, Omaha & Kansas City R. R. under west end of trestle over Chariton River.....	40 14 10.7	92 41 12.0	4,630
T. 63 N., R. 16 W., on line between secs. 22 and 23, north-south road crossing Quincy, Omaha & Kansas City R. R., center of track.....	40 14 31.1	92 40 02.1	5,801
T. 63 N., R. 17 W., corner of secs. 22, 23, 26, and 27, 5 feet south of center of Quincy, Omaha & Kansas City R. R. track where west cattle guard crosses and 30 feet west of north-south road crossing..	40 14 30.9	92 40 02.5	36
T. 63 N., R. 15 W., center of sec. 20, center of crossroads.....	40 14 59.3	92 36 04.6	
T. 63 N., R. 15 W., quarter corner between secs. 20 and 21, center of Wabash R. R. at east-west road crossing (old primary traverse point).	40 14 59.7	92 35 30.1	2,673

Magnetic declination of north border of quadrangle, 7° 52' E.

QUEEN CITY QUADRANGLE.

Geographic positions along highways near southeast corner of quadrangle.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	<i>Feet.</i>
T. 63 N., R. 15 W., center of sec. 21, center of crossroads.....	40 15 00.2	92 34 56.4	.....
T. 63 N., R. 15 W., quarter corner between secs. 21 and 22, center of crossroads.....	40 15 00.8	92 34 22.1	2,661
T. 63 N., R. 15 W., stone at quarter corner between secs. 22 and 23, center of crossroads.....	40 15 02.0	92 33 14.9	5,210
T. 63 N., R. 15 W., center of sec. 23, 1,500 feet west of bridge, center of east-west road at T road south.....	40 15 02.2	92 32 40.7	2,650
T. 63 N., Rs. 14 and 15 W., corner of secs. 13, 18, 19, and 24, 960 feet west of bridge, center of crossroads.....	40 15 28.8	92 30 57.1	8,477

Geographic positions along highways near east border of quadrangle.

T. 64 N., R. 14 W., 4,000 feet west of quarter corner between secs. 7 and 8, stone in center of east-west road at T road north.....	40 22 01.0	92 30 43.1	.....
Second-class east-west road, center of north-south road at, 15 feet west to gate, 20 feet southeast to gate.....	40 22 40.1	92 30 43.3	3,960
Tps. 64 and 65 N., Rs. 14 and 15 W., 15 feet south of corner of secs. 1, 6, 31, and 36, on south edge of road on township line in line with center of T road north, 15 feet south of center of east-west road at junction; iron post stamped "Prim. Trav. Sta. No. 2, 1910 MO".....	40 23 19.3	92 30 57.4	4,110
Tps. 64 and 65 N., Rs. 14 and 15 W., corner of secs. 1, 6, 31, and 36.....	40 23 19.4	92 30 57.4	15
T. 65 N., R. 14 W., west corner of secs. 30 and 31, center of north-south road at T road east.....	40 24 12.4	92 30 58.0	5,365
T. 65 N., R. 15 W., east corner of secs. 25 and 26, center of north-south road at T road west.....	40 24 12.0	92 30 58.0	40
T. 66 N., R. 14 W., corner of secs. 29, 30, 31, and 32, stone at T fence west, 540 feet south of road.....	40 29 25.8	92 30 06.0	1,372

QUEEN CITY QUADRANGLE—Continued.

Geographic positions along highways near south border of quadrangle.

Stations.	Latitude.	Longitude.	Distance between stations.
T road south, center of east-west road at, 20 feet south to center of triangle, 25 feet southeast to corner post of wire fence.	° ' "	° ' "	Feet.
T. 63 N., R. 16 W., corner of secs. 14, 15, 22, and 23, at small white oak in wire fence corner at gate across second-class road, 1,010 feet west of T road south.	40 15 35.6	92 39 50.0	.....
T. 63 N., R. 16 W., corner of secs. 13, 14, 23, and 24, in ravine at cross fences about 100 feet southeast of road at sharp turn north.	40 15 35.9	92 40 02.8	990
T. 63 N., R. 16 W., about 0.2 mile north of corner of secs. 13, 14, 23, and 24, on north-south section line between secs. 13 and 14, at T road north, center of triangle at junction.	40 15 22.8	92 38 54.8	5,433
T. 63 N., R. 16 W., on east-west line between secs. 13 and 24, 820 feet west of bridge, 1,250 feet west of second bridge, center of triangle.	40 15 37.8	92 38 52.8	1,523
T. 63 N., R. 16 W., corner of secs. 13, 18, 19, and 24, 120 feet east of bridge and 40 feet northeast of old well, center of east-west road at fence north-south.	40 15 23.6	92 38 20.5	2,889
T. 63 N., Rs. 15 and 16 W., 1,320 feet east of corner to secs. 13, 18, 19, and 24, just inside of corner of wire fence in northeast corner of crossroads, 25 feet northeast of intersection of roads; iron post stamped "Prim. Trav. Sta. No. 6, 1910, MO"	40 15 24.4	92 37 46.4	2,640
T. 63 N., Rs. 15 and 16 W., center of intersection of roads at 4 corners.	40 15 24.8	92 37 29.4	1,320
T. 63 N., R. 15 W., corner of secs. 17, 18, 19, and 20, center of east-west road at T road north, 20 feet south to end of wire fence, 25 feet northeast to telephone pole, 500 feet west of bridge.	40 15 24.7	92 37 29.6	25
	40 15 25.0	92 36 38.3	3,978

Geographic positions along highways east through center of quadrangle, via Worthington to Queen City.

Crossroads, stone in center of intersection.	40 24 41.6	92 44 55.0	.....
T. 64 N., R. 17 W., east corner of secs. 24 and 25, 30 feet south of west corner of secs. 19 and 30, T. 64 N., R. 16 W.	40 24 54.5	92 44 37.8	1,869
T. 64 N., R. 16 W., 0.2 mile south by 0.2 mile east of west corner of secs. 19 and 30, 510 feet east of bridge, center of east-west road at T road north.	40 24 41.9	92 44 19.9	1,887
T. 64 N., R. 16 W., corner of secs. 19, 20, 29, and 30, 320 feet north of main road, at W. Hayne's mail box; stone is at wire T fence north.	40 24 55.8	92 43 28.6	4,208
Worthington, 1.5 miles west of, center of triangle at forks of road, north-west and southwest, 25 feet southeast to corner of board fence.	40 24 39.9	92 42 56.6	2,955
T. 64 N., R. 16 W., quarter corner between secs. 28 and 29, 0.8 mile west of Worthington, corner in second-class road south, at west end of straight road into Worthington.	40 24 30.4	92 42 20.4	2,959
Worthington, quarter corner between secs. 27 and 28, T. 64 N., R. 16 W., cross streets, 540 feet west of railroad crossing.	40 24 31.2	92 41 12.2	5,280
Worthington, 900 feet south of railroad station, 1,580 feet west of bridge, center of track at road crossing the Iowa & St. Louis Ry.	40 24 31.3	92 41 05.3	540
Worthington, 1 mile east of, center of iron bridge over Chariton River on line between Putnam and Schuyler counties.	40 24 29.2	92 40 21.9	3,366
T. 65 N., R. 16 W., center of sec. 26, 0.8 mile east of Chariton River bridge, center of crossroads.	40 24 32.2	92 39 29.7	4,054
T. 65 N., R. 16 W., quarter corner between secs. 26 and 35, 0.2 mile south of 4 corners, center of north-south road opposite wire fence west.	40 24 06.2	92 39 29.6	2,635
T. 65 N., R. 16 W., 0.2 mile south of center of sec. 35, 1,000 feet south of bridge over creek, 805 feet west of second-class road fork, 875 feet west of bridge, center of crossroads.	40 23 27.1	92 39 29.1	3,957
Hartford, in southwest corner of schoolhouse yard, 160 feet south of schoolhouse door, 140 feet west of T road south, 12 feet north of center of east-west road, 700 feet east of south corner of secs. 35 and 36, T. 65 N., R. 16 W. (section corner is in cornfield and could not be located); iron post stamped "Prim. Trav. Sta. No. 15, 1910, MO"	40 23 14.5	92 38 46.8	3,513
Tps. 64 and 65 N., Rs. 15 and 16 W., north corner of secs. 1 and 6, stone on south side of east-west road opposite corner of fence south, 80 feet west of south corner of secs. 31 and 36, T. 65 N., Rs. 15 and 16 W., opposite wire fence north.	40 23 15.0	92 37 46.4	4,682
Forks of road east and southeast, 10 feet south to large corner post of wire fence (road east continues only 0.8 mile farther).	40 23 15.4	92 37 20.5	1,999
T road south, on north-south line between secs. 5 and 6, 1,430 feet north of corner of secs. 5, 6, 7, and 8, center of east-west road at east-west fence.	40 22 36.9	92 36 36.9	5,154
T. 64 N., R. 15 W., corner of secs. 4, 5, 8, and 9, center of crossroads.	40 22 22.6	92 35 27.8	5,544
T. 64 N., R. 15 W., corner of secs. 3, 4, 9, and 10, 10 feet east to 2 mail boxes, center of north-south road.	40 22 23.7	92 34 20.6	5,201

QUEEN CITY QUADRANGLE—Continued.

Geographic positions along highways east through center of quadrangle, via Worthington to Queen City—Continued.

Stations.	Latitude.	Longitude.	Distance between stations.
T. 64 N., R. 15 W., north corner of secs. 3 and 4, 50 feet northeast of northeast corner of schoolhouse, center of east-west road.....	° ' " 40 23 16.5	° ' " 92 34 20.6	<i>Feet.</i> 5,340
T. 65 N., R. 15 W., south corner of secs. 33 and 34.....	° ' " 40 23 16.5	° ' " 92 34 22.6	160
Queen City, 1.5 miles south of, east-west road on line between secs. 3 and 34, Tps. 64 and 65 N., R. 15 W., crossing of Wabash R. R., center of track.....	° ' " 40 23 17.0	° ' " 92 33 46.6	2,791
T. 65 N., R. 15 W., south corner of secs. 34 and 35, center of east-west road at T road north.....	° ' " 40 23 17.4	° ' " 92 33 14.3	2,500
T. 64 N., R. 15 W., north corner of secs. 2 and 3, 340 feet west of bridge, 1,830 feet west of second bridge, center of east-west road at T road south.....	° ' " 40 23 17.4	° ' " 92 33 11.8	190
T. 65 N., R. 15 W., 60 feet west of corner of secs. 35 and 36, center of east-west road at T road south.....	° ' " 40 23 18.3	° ' " 92 32 06.5	5,060
Tps. 64 and 65 N., R. 15 W., south corner of secs. 35 and 36, center of east-west road, opposite wire fence north.....	° ' " 40 23 18.3	° ' " 92 32 05.7	60
Queen City, south edge of, east-west road crossing, south of station, center of Wabash R. R. track, 970 feet south along track from street crossing.....	° ' " 40 24 09.3	° ' " 92 34 02.3	5,429
Queen City, Wabash R. R. station, center of main track opposite center of telegraph operator's window.....	° ' " 40 24 28.7	° ' " 92 34 08.2	2,010

Magnetic declination of line through center of quadrangle, 7° 45' E.; of east border of quadrangle, 7° 26' E.; of north border of quadrangle, 7° 51' E.; of west border of quadrangle, 7° 43' E.; of south border of quadrangle, 7° 52' E.

EDINA 30' QUADRANGLE.

Geographic positions along highways north near west border of quadrangle, via Sperry and Germania.

Stations.	Latitude.	Longitude.	Distance between stations.
T. 63 N., Rs. 14 and 15 W., corner of secs. 13, 18, 19, and 24, 960 feet west of bridge, center of crossroads.....	° ' " 40 15 28.8	° ' " 92 30 57.1	<i>Feet.</i>
Sperry, 1.5 miles south by 0.8 mile west of, in southwest corner of sec. 17 and 30 feet northeast of center of east-west road at T road north; iron post stamped "Prim. Trav. Sta. No. 1, 1910, MO".....	° ' " 40 15 29.7	° ' " 92 29 51.0	5,130
T. 63 N., R. 14 W., corner of secs. 17, 18, 19, and 20.....	° ' " 40 15 29.4	° ' " 92 29 51.1	29
T. 63 N., R. 14 W., center of sec. 17, 1 mile south of Sperry, 750 feet south of bridge over North Fork of Salt River, 15 feet west to small bridge and 28 feet northeast to corner of fence, center of east-west road at T road north.....	° ' " 40 15 56.2	° ' " 92 29 16.9	3,796
Sperry, center of crossroads at store, 25 feet northeast to corner of store porch and 40 feet southeast to another store porch, center of sec. 8, T. 63 N., R. 14 W.....	° ' " 40 16 48.2	° ' " 92 29 17.2	5,260
T. 64 N., R. 14 W., south quarter corner of sec. 32; stone in center of east-west road at T road north.....	° ' " 40 17 27.3	° ' " 92 29 17.4	3,960
T. 63 N., R. 14 W., north quarter corner of sec. 5, 5 feet to center of triangle, center of east-west road at T road south.....	° ' " 40 18 06.2	° ' " 92 29 18.2	3,938
T. 64 N., R. 14 W., quarter corner between secs. 32 and 33, 20 feet south to gate, center of crossroads at second-class road south.....	° ' " 40 18 06.2	° ' " 92 29 17.8	35
T. 64 N., R. 14 W., corner of secs. 28, 29, 32, and 33, center of north-south road at T road east, 10 feet east to center of triangle, 1,340 feet south of 3 corners; bridge is 1,480 feet north of 3 corners.....	° ' " 40 18 32.5	° ' " 92 28 44.1	3,728
T. 64 N., R. 14 W., corner of secs. 20, 21, 28, and 29, 80 feet south of bridge, center of crossroads.....	° ' " 40 18 58.5	° ' " 92 28 44.2	2,640
T. 64 N., R. 14 W., corner of secs. 16, 17, 20, and 21, line between Schuyler and Adair counties; stone in intersection of crossroads, 1,270 feet south of bridge.....	° ' " 40 19 50.0	° ' " 92 28 43.8	5,210
T. 64 N., R. 14 W., corner of secs. 8, 9, 16, and 17, center of east-west road at T road north.....	° ' " 40 20 43.3	° ' " 92 28 44.3	5,400
T. 64 N., R. 14 W., quarter corner between secs. 7 and 8, 150 feet southeast of church, 20 feet northeast to telephone pole, 30 feet southeast to corner post of wire fence, crossroads.....	° ' " 40 21 35.3	° ' " 92 28 44.6	5,260
	° ' " 40 22 01.5	° ' " 92 29 51.6	5,827

EDINA 30' QUADRANGLE—Continued.

Geographic positions along highways north near west border of quadrangle, via Sperry and Germania.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
T. 65 N., R. 15 W., east corner of secs. 25 and 26, center of north-south road at T road west.....	40 24 12.0	92 30 58.0	.....
T. 65 N., R. 14 W., corner of secs. 29, 30, 31, and 32, just east of Barr schoolhouse, center of east-west road at fence north-south.....	40 24 12.6	92 29 59.0	4,570
T. 65 N., R. 14 W., corner of secs. 28, 29, 32, and 33, center of east-west road opposite end of hedgerow north, 20 feet west of T road north and 30 feet east of T road south.....	40 24 13.3	92 28 50.7	5,281
T. 65 N., R. 14 W., quarter corner between secs. 28 and 29, stake in ground in center of east-west road, 10 feet southwest of crossroads, 960 feet south of bridge.....	40 24 40.0	92 28 51.8	2,702
T. 65 N., R. 14 W., corner of secs. 20, 21, 28, and 29; stone in center of north-south road at hedge west and wire fence east.....	40 25 06.0	92 28 52.4	2,638
T. 65 N., R. 14 W., quarter corner between secs. 20 and 21, 0.2 mile southwest of Germania, center of east-west road at T road south....	40 25 32.3	92 28 53.3	2,661
T. 65 N., R. 14 W., quarter corner between secs. 16 and 21; center of east-west road at T road north, 5 feet south to mail box and 10 feet north to center of triangle.....	40 25 59.3	92 28 19.9	3,765
Fabius River, 90 feet south of center of iron bridge over, 30 feet south to south end of bridge, 540 feet north of center of iron bridge over New River, 940 feet south of 3 corners, 400 feet north of iron bridge over New Run, center of north-south road at T road west.....	40 27 04.7	92 28 20.9	6,621
T. 65 N., R. 14 W., center of sec. 9, center of north-south road at fork, 400 feet north of T road east, 15 feet to end of wire fence, 65 feet to oak in point of forks.....	40 27 17.9	92 28 22.3	1,345
Germania, near the center of NW $\frac{1}{4}$ sec. 9, T. 65 N., R. 14 W., center of cupola of Germania Methodist Episcopal Church.....	40 27 31.7	92 28 41.6	2,041
T. 65 N., R. 14 W., corner of secs. 4, 5, 8, and 9, stone in center of north-south road at fences east-west, 10 feet northwest of oak tree in road..	40 27 43.4	92 28 58.1	1,740
T. 66 N., R. 14 W., 1,000 feet west of quarter corner between secs. 32 and 33, center of east-west road at T road south.....	40 29 00.8	92 29 09.4	7,894
Tippecanoe, 600 feet north of schoolhouse, 30 feet south of locust tree at gate, 20 feet north of center of triangle, center of east-west road at T road south.....	40 29 31.4	92 29 49.8	4,393

Magnetic declination of north half of west border of the quadrangle, 7° 26' E.

MOULTON QUADRANGLE.

Geographic positions along highways west near north border of quadrangle, via Lancaster, Glenwood, and Livonia.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Three corners, T road east, 20 feet west to gate, 20 feet southeast to corner fence, 10 feet east to center of triangle.....	40 30 18.3	92 30 30.2	5,631
T. 66 N., R. 14 W., near buried stone marking the east corner of secs. 13 and 24, in center of road at fences north-south between the last 2 lanes on south side of road to Tippecanoe.....	40 31 09.3	92 31 12.9	6,130
T. 66 N., R. 14 W., west corner of secs. 18 and 19, marked by railroad iron at cross fences.....	40 31 10.8	92 31 12.9	151
Lancaster, in southeast corner of Schuyler County courthouse yard, about 70 feet northwest of intersection of Washington and Green streets and about 100 feet east and a little south of the center of cupola of Schuyler County courthouse; iron post stamped "Prim. Trav. Sta. No. 3, 1910, MO".....	40 31 21.3	92 31 37.1	2,151
Lancaster, center of clock tower of courthouse.....	40 31 21.4	92 31 38.4	100
Lancaster, west of, 3 corners; center of east-west road at T road north..	40 31 21.2	92 32 31.4	4,097
Center of east-west road at T road south, 15 feet north to end of fence north.....	40 31 07.5	92 33 11.4	3,385
Glenwood, 1 mile east of; corner of secs. 14, 15, 22, and 23, T. 66 N., R. 15 W., center of east-west road at fences north-south.....	40 31 07.4	92 33 28.5	1,320
Glenwood, intersection of Main and Fourth streets, 45 feet northwest to corner of store.....	40 31 12.7	92 34 23.5	4,282
Glenwood, 800 feet south of station, center of main track of Wabash R. R. at road crossing.....	40 31 09.6	92 34 33.0	800
T. 66 N., R. 15 W., corner of secs. 16, 17, 20, and 21, stone 5 feet south of center of east-west road at T road south, 240 feet east of bridge, 1,490 feet east of second bridge.....	40 31 06.6	92 35 45.4	5,601

MOULTON QUADRANGLE—Continued.

Geographic positions along highways west near north border of quadrangle, via Lancaster, Glenwood, and Livonia—Continued.

Stations.	Latitude.	Longitude.	Distance between stations.
T. 66 N., R. 15 W., corner of secs. 17, 18, 19, and 20; corner is hole filled with broken crockery in center of east-west road at wire fence north-south, 350 feet west of Edward Ford's residence and 380 feet east of stream.....	° ' " 40 31 05.6	° ' " 92 36 54.8	<i>Feet.</i> 5,360
Glenwood, 3 miles west of; about 0.1 mile east of corner of secs. 13, 18, 19, and 24, T. 66 N., Rs. 15 and 16 W., 15 feet north of center of east-west road, 25 feet east of center of north-south road, 40 feet north of center of large triangle at junction of north-south road with T road east, in northwest corner of T road east; iron post stamped "Prim. Trav. Sta. No. 4, 1910, MO".....	40 31 04.5	92 37 56.2	4,742
T road east, center of north-south road at.....	40 31 04.4	92 37 56.5	29
Forks of road on top of hill, east of McGoldrick's Ford, roads southwest and northwest, 10 feet northeast to oak, 30 feet west to gate.....	40 31 01.1	92 38 59.0	4,839
T. 66 N., R. 16 W., corner of secs. 13, 14, 23, and 24, 130 feet north of gate at forks of road, at cross fences.....	40 31 02.4	92 38 59.5	141
McGoldricks Ford of Chariton River, 0.2 mile east of; oak tree at forks of road near south end of triangle.....	40 31 17.4	92 40 15.6	6,068
McGoldricks Ford, middle of Chariton River, on line between Schuyler and Putnam counties.....	40 31 23.4	92 40 27.1	1,073
T. 66 N., R. 16 W., corner of secs. 15, 16, 21, and 22.....	40 31 01.1	92 41 27.2	5,162
Livonia, 2.2 miles north of; east-west road crossing Iowa & St. Louis Ry., center of track.....	40 31 14.0	92 41 39.9	1,627
Owl Creek, 910 feet north of bridge over, center of north-south road at T road east to McGoldricks Ford.....	40 31 06.9	92 42 18.1	3,038
T. 66 N., R. 16 W., corner of secs. 16, 17, 20, and 21, gate across second-class road, 250 feet north of bridge over Owl Creek.....	40 31 00.4	92 42 35.3	1,479
Livonia, 2 miles northwest of, 30 feet northwest to corner of wire fence, 50 feet southwest to corner post of front yard fence, crossroads.....	40 30 47.1	92 42 19.0	1,845
T road north, center of east-west road at, 20 feet northeast to 3-pronged oak, 5 feet northwest to center of triangle.....	40 30 31.7	92 43 24.2	5,272
T. 66 N., R. 16 W., center of east-west road at, T road south on line between secs. 19 and 20.....	40 30 27.2	92 43 43.5	1,560
T. 66 N., R. 16 W., quarter corner between secs. 19 and 20, cross fences at old house.....	40 30 32.2	92 43 43.5	500
T. 66 N., Rs. 16 and 17 W., on north-south line between secs. 19 and 24, 0.2 mile north of bridge over Shoal Creek, center of north-south roads at T road to west, 20 feet northeast to corner post of fence, 30 feet southeast to wire fence post.....	40 30 18.2	92 44 52.2	5,496

Geographic positions along highways near southwest corner of quadrangle.

Brush Creek, 300 feet east of bridge over, center of north-south road at T road west, 15 feet southwest to corner of wire fence, 25 feet west to telephone pole.....	40 30 53.2	92 45 43.6	.....
T. 66 N., R. 17 W., east corner of secs. 13 and 24, in stream, almost 30 feet east of north-south road and 40 feet northeast of bridge, in line with wire fence west along abandoned road.....	40 30 57.2	92 44 52.5	3,966
T. 66 N., Rs. 16 and 17 W., 3 corners, on north-south line between secs. 19 and 24.....	40 30 18.2	92 44 52.2	3,944
T. 66 N., Rs. 16 and 17 W., 0.2 mile north of corner of secs. 19, 24, 25, and 30, on west edge of north-south road in line with center of T road east; iron post stamped "Prim. Trav. Sta. No. 13, 1910, MO".....	40 30 18.2	92 44 52.5	24

Magnetic declination of south border of quadrangle, 7° 51' E.

GREEN CITY QUADRANGLE.

Geographic positions along highways south near west border of quadrangle, via Martinstown, Shibleys Point, and Stahl.

Stations.	Latitude.	Longitude.	Distance between stations.
T. 66 N., Rs. 16 and 17 W., on north-south line between secs. 19 and 24, 0.2 mile north of bridge over Shoal Creek, center of north-south road at T road west, 20 feet northeast to corner post of fence, 30 feet southeast to wire fence post.....	° ' " 40 30 18.2	° ' " 92 44 52.2	<i>Feet.</i>
T road north, middle of 3 mail boxes in triangle.....	40 29 44.1	92 45 26.6	4,359
Glendale, center of east-west road at T road south, 35 feet west of wheel with 3 mail boxes, 30 feet northwest of corner post of wire fence.....	40 29 13.1	92 45 59.7	4,050
T. 66 N., R. 17 W., corner of secs. 25, 26, 35, and 36, 25 feet west by 5 feet north of center of east-west road at T road south.....	40 29 13.1	92 46 00.1	25

GREEN CITY QUADRANGLE—Continued.

Geographic positions along highways south near west border of quadrangle, via Martinstown, Shibleys Point, and Stahl—Continued.

Stations.	Latitude.	Longitude.	Distance between stations.
T. 66 N., R. 17 W., 1,330 feet north of center of sec. 35, 1,400 feet west of bridge over Shoal Creek, center of east-west road at T road south; 25 feet northeast of corner post of wire fence, 25 feet northwest of wire fence, 2,130 feet north of bridge; center of sec. 35 is center of north-south road at wire fence west.....	40 29 00.1	92 46 34.2	<i>Feet.</i> 2,954
T. 66 N., R. 17 W., 50 feet west of north-south road through center of sec. 35 at quarter corner between secs. 35 and 2; stone beside fence post near northeast corner of garden fence near top of hill, 1.5 miles southwest of Glendale.....	40 28 21.0	92 46 33.9	3,960
Graysville, 600 feet east of stores and 150 feet northeast of schoolhouse, 25 feet southwest of corner wire-fence post, 25 feet southeast of wire-fence post; center of east-west road at T road north.....	40 26 45.8	92 46 38.5	9,635
Forks of roads south and northwest with second-class road north, center of north-south road at.....	40 26 32.4	92 45 47.4	4,181
T. 65 N., R. 17 W., corner of secs. 11, 12, 13, and 14 at T fence east.....	40 26 40.0	92 45 47.4	773
T. 65 N., R. 17 W., quarter corner between secs. 13 and 14, center of north-south road at T road east.....	40 26 13.7	92 45 47.1	2,660
T. 65 N., R. 17 W., corner of secs. 13, 14, 23, and 24; stone at center of crossroads.....	40 25 47.4	92 45 47.0	2,660
T. 65 N., R. 17 W., corner of secs. 23, 24, 25, and 26, center of north-south road opposite wire fence east, 120 feet north of stream crossing..	40 24 55.3	92 45 46.4	5,280
Martinstown, 0.2 mile east of, center of east-west road at T road north, 10 feet northwest of mail box, 10 feet southwest of center of triangle..	40 24 35.0	92 45 51.4	2,091
T. 65 N., R. 17 W., corner of secs. 25, 26, 35, and 36 at T fence east, 140 feet north of small stream and 1,010 feet north of main road at 45° angle northwest.....	40 24 02.7	92 45 45.6	3,298
T. 65 N., R. 17 W., quarter corner between secs. 35 and 36, 5 feet south of center of east-west road at T road north.....	40 23 36.0	92 45 45.4	2,700
Tps. 64 and 65 N., R. 17 W., about 0.25 mile west of corner of secs. 1, 2, 35, and 36 at fence line on top of hill, 780 feet north of 90° bend in main road south, 2,420 feet north of second-class T road east, center of main road.....	40 23 10.2	92 46 00.9	2,879
T. 64 N., R. 17 W., 1,310 feet west of corner of secs. 1, 2, 11, and 12, in Blackbird Creek, about 20 feet northwest of a blazed walnut tree, 1,330 feet east of north-south road at T road west, on line between secs. 2 and 11, on edge of north-south road and in line with T road west, 440 feet south of center of iron bridge over Blackbird Creek; iron post stamped "Prim. Trav. Sta. No. 5, 1910, MO".....	40 22 17.6	92 46 01.3	5,326
Blackbird Creek, 1 mile south of bridge over; 150 feet east of 90° bend east, 30 feet southeast to oak in corner of fence, 25 feet southwest to corner post of wire fence, T road south.....	40 21 38.0	92 45 59.9	4,006
Forks of road, forked hickory tree in angle 0.5 mile north of county line, 700 feet west of 90° bend to south.....	40 20 59.2	92 46 09.1	3,989
Line between Putnam and Adair counties, center of road at crossing of, at corner of wire fence south and east and at a double oak on west edge of road.....	40 20 32.9	92 45 39.6	3,506
T. 64 N., R. 17 W., corner of secs. 13, 14, 23, and 24.....	40 20 32.9	92 45 45.8	480
Second-class T road east, 5 feet north to J. W. Sander's mail box.....	40 19 33.9	92 45 26.2	6,167
Shibleys Point, 125 feet northwest of store, 10 feet south to mail-box wheel, 40 feet northwest to sign post, T road north.....	40 18 48.4	92 45 38.5	4,702
Shibleys Point, 0.8 mile southwest of; 300 feet west of bridge over Shuteye Creek and 60 feet south of bridge over branch of Shuteye Creek, center of north-south road at T road east, 15 feet east to box culvert.....	40 18 51.9	92 46 07.2	2,248
Stahl, 1 mile northeast of; forks of road northeast and southeast, oak post at west point of large triangle.....	40 18 02.2	92 46 13.1	5,052
Tps. 63 and 64 N., R. 17 W., at or near quarter corner between secs. 2 and 35, center of road at fence east-west, 870 feet northeast of a second-class fork southwest.....	40 17 56.0	92 46 25.1	1,129
Stahl, 0.5 mile northeast of; forks of road north and northeast at top of hill, 60 feet east to double oak, 45 feet south to northwest corner of house.....	40 17 43.6	92 46 53.5	2,529
Stahl, 100 feet northwest of Quincy, Omaha & Kansas City R. R., center of main track.....	40 17 21.7	92 47 23.6	3,220
Stahl, 1 mile southeast of; east-west road crossing Quincy, Omaha & Kansas City R. R., center of track, southeast along track 220 feet to milepost "83 K. C. 165," 250 feet to trestle 83, 1,970 feet to center of creek on trestle 82-1 over Spring Creek.....	40 16 37.2	92 46 28.0	6,233
T. 63 N., R. 17 W., at or near quarter corner between secs. 11 and 14, center of track of Quincy, Omaha & Kansas City R. R. at crossing at fences east-west, 910 feet southeast of bridge over Spring Creek, 1,512 feet along track to center of creek span of trestle 82-2 over Spring Creek.....	40 16 12.7	92 46 09.2	2,882
T. 63 N., R. 17 W., quarter corner between secs. 13 and 14, 50 feet a little northwest of center of railroad at second-class road crossing.....	40 15 47.0	92 45 47.6	3,096
Northeast-southwest road crossing of Quincy, Omaha & Kansas City R. R., center of track, 230 feet southeast of milepost "Q 81, K. C. 167".....	40 15 00.6	92 45 15.4	5,309

GREEN CITY QUADRANGLE—Continued.

Geographic positions along highways near southwest corner of quadrangle.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	<i>Fect.</i>
T. 63 N., R. 19 W., corner of secs. 23, 24, 25, and 26.....	40 14 23.3	92 59 18.2	30
Kirksville, 1,320 feet east of corner of secs. 13, 14, 23, and 24, T. 63 N., R. 19 W., center of crossroads; corner is center of east-west road at fences north-south.....	40 15 15.4	92 59 01.5	5,425
T. 63 N., R. 19 W., 0.2 mile east of quarter corner between secs. 13 and 14, 25 feet northeast of telephone pole, 30 feet northwest to corner of wire fence, 270 feet east of bridge; center of road at 3 corners..	40 15 41.5	92 59 01.6	2,640

Geographic positions along highways east near north border of quadrangle.

Unionville, in northwest corner of Putnam County courthouse square, 75 feet southeast of intersection of Seventeenth and Main streets; iron post stamped "Prim. Trav. Sta. No. 11, 1910, MO".....	40 28 37.2	93 00 10.6	.....
Unionville, south corner of secs. 35 and 36, T. 66 N., R. 19 W., stone in center of Tenth Street at junction with Garfield Street east.....	40 28 20.7	92 59 41.8	2,783
Unionville, 2 miles north of, highest of a clump of trees just west of the residence of W. O. Robbins.....	40 29 38.4	92 59 34.1	7,880
T. 66 N., Rs. 18 and 19 W., corner of secs. 30, 31, 25, and 36, center of north-south road at T road east.....	40 29 13.1	92 58 33.0	5,439
T. 66 N., R. 18 W., quarter corner between secs. 30 and 31, stone in center of east-west road, 120 feet east of bridge.....	40 29 13.2	92 57 58.9	2,630
T. 66 N., R. 18 W., corner of secs. 29, 30, 31, and 32, in center of east-west road near top of small hill at wire fence north, and about equidistant from 2 small bridges.....	40 29 13.0	92 57 24.8	2,639
T. 66 N., R. 18 W., quarter mile east of corner of secs. 29, 30, 31, and 32, center of east-west road at T road north.....	40 29 13.1	92 57 07.7	1,320
T. 66 N., R. 18 W., corner of secs. 28, 29, 32, and 33, stone about 5 feet southwest of intersection of traveled part of crossroads, 10 feet southwest of mail box 15.....	40 29 12.9	92 56 16.3	3,973
T. 66 N., R. 18 W., 0.2 mile south of corner of secs. 20, 21, 28, and 29, center of north-south road at public T road west.....	40 29 52.0	92 56 16.7	3,957

Geographic positions along highways east through center of quadrangle.

T. 66 N., Rs. 16 and 17 W., 0.2 mile north of corner of secs. 19, 24, 25, and 30, on west edge of north-south road in line with center of T road east, iron post stamped "Prim. Trav. Sta. No. 13, 1910 MO".....	40 30 18.2	92 44 52.5	.....
T. 64 N., R. 19 W., quarter corner between secs. 11 and 12, crossroads, second-class road north, road south abandoned, 5 feet west to small hickory tree.....	40 21 47.9	92 59 15.7	5,309
T. 64 N., Rs. 18 and 19 W., quarter corner between secs. 12 and 7, center of north-south road at T road west just southwest of schoolhouse, 12 feet east to corner of wire fence, 20 feet southwest to telephone pole.....	40 21 47.7	92 58 06.1	5,390
T. 64 N., Rs. 18 and 19 W., quarter corner between secs. 7 and 8, 0.2 mile west of Pennville, stone in center of east-west road at fence north-south.....	40 21 47.0	92 56 58.6	5,229
Pennville, 35 feet northwest to southeast corner of store porch, 35 feet southwest to corner of front yard fence, 1,365 feet west of center of sec. 8, center of public crossroads.....	40 21 46.9	92 56 42.5	1,245
Pennville, 1 mile southeast of, center of triangle at forks of road, south and southeast, 25 feet northeast to small oak, 20 feet southeast to corner of wire fence.....	40 21 11.8	92 55 39.9	6,006
T. 64 N., R. 18 W., corner of secs. 9, 10, 15, and 16, center of main road at north-south fence, 500 feet west of bridge over Spring Creek.....	40 21 19.8	92 54 44.0	4,401
T. 64 N., R. 18 W., on north-south line between secs. 10 and 11, 0.4 mile southwest of schoolhouse, T road south.....	40 21 55.3	92 53 35.8	6,396
T. 64 N., R. 18 W., quarter corner between secs. 10 and 11, stone in center of north-south road at east-west fence.....	40 21 48.8	92 53 35.8	660
T. 64 N., R. 18 W., 1,300 feet south of quarter corner between secs. 2 and 11, in corner of wire fence opposite and in line with T road north on line through the center of sec. 11, 20 feet south of stone in center of east-west road at T road north, 400 feet east of Thompson schoolhouse; iron post stamped "Prim. Trav. Sta. No. 14, MO 1910".....	40 22 03.0	92 53 01.5	3,014
T. 64 N., R. 18 W., quarter mile south of quarter corner between secs. 2 and 11, at public T road north, 400 feet east of Thompson schoolhouse, stone in center of east-west road.....	40 22 03.2	92 53 01.5	20
Thompson schoolhouse, 0.6 mile east of, center of 4 corners, 25 feet southeast to C. R. Sear's mail box, 12 feet north to telephone pole.....	40 22 03.9	92 52 27.2	2,659
T. 64 N., R. 18 W., corner of secs. 1, 2, 11, and 12, center of north-south road at fences east and west, 0.2 mile north of crossroads, 620 feet south of bridge, 1,010 feet south of second bridge.....	40 22 17.0	92 52 27.2	1,330

GREEN CITY QUADRANGLE—Continued.

Geographic positions along highways east through center of quadrangle—Continued.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Tps. 64 and 65 N., R. 18 W., corner of secs. 1, 2, 35, and 36, on line between Putnam and Sullivan counties, 10 feet east to plank bridge, 15 feet west to bridge, 4 corners.....	40 23 10.1	92 52 26.4	5,371
T. 64 N., Rs. 17 and 18 W., on line between secs. 1 and 6, center of road, on line between Putnam and Sullivan counties, 200 feet east of a house on south side of road, 570 feet west of T road north.....	40 22 47.1	92 51 17.7	5,803
T. 64 N., Rs. 17 and 18 W., 570 feet east of line between secs. 1 and 6, center of main road at 3 corners, 15 feet north to center of triangle.....	40 22 44.9	92 51 10.8	570
T. 64 N., R. 17 W., corner of secs. 5, 6, 7, and 8, stone in woods at corner of rail fence west and wire fence south, 380 feet north of road on point where second-class T road leads east.....	40 22 18.7	92 50 16.2	4,991
Three corners, center of east-west road at T road south, 12 feet southeast to corner of wire fence, 23 feet north to wire fence.....	40 22 14.5	92 49 59.0	1,402
Three corners, center of fenced-in triangle, 400 feet south of school-house, at T road west.....	40 22 13.4	92 49 44.2	1,150
Sidney, 300 feet southeast of store, center of triangle at roads east and southeast, 30 feet northeast to yard gate, 25 feet southeast to gate.....	40 21 15.1	92 49 04.0	6,670
T. 64 N., R. 17 W., T road south, on north-south line between secs. 15 and 16, 10 feet north of center of triangle, 1,150 feet south of corner of secs. 9, 10, 15, and 16, stone marking which is at cross fences in bottom.....	40 21 13.6	92 47 59.8	4,972
T. 64 N., R. 17 W., 0.2 mile east of corner of secs. 9, 10, 15, and 16, center of north-south road at T road west, 15 feet west to center of triangle, 20 feet southeast to fence east.....	40 21 24.9	92 47 40.3	1,897
Four corners, in creek bottom, center of intersection of roads.....	40 22 16.8	92 47 38.0	5,252
T. 64 N., R. 17 W., corner of secs. 3, 4, 9, and 10, in center of east-west road at north-south fence, 1,620 feet west of 4 corners.....	40 22 16.8	92 47 59.0	1,620
T. 64 N., R. 17 W., corner of secs. 2, 3, 10, and 11, center of east-west road at wire fence north-south.....	40 22 17.2	92 46 50.7	5,280
Primary traverse station No. 5.....	40 22 17.6	92 46 01.3	3,824
Martinstown, 0.2 mile east of, 3 corners, center of east-west road at T road north.....	40 24 35.0	92 45 51.4	.....
Martinstown, 0.6 mile east of, center of bridge over Wildcat Creek.....	40 24 41.5	92 45 07.6	3,453

Magnetic declination along the east border of quadrangle, 7° 43' E.; north border, 7° 50' E.; west border, 7° 50' E.; south border, 8° 06' E.

WINIGAN QUADRANGLE.

Geographic positions along highways west near north border of quadrangle.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
T. 63 N., R. 17 W., center of main ridge road at T road north (may be center of sec. 25).....	40 13 58.9	92 45 08.9	3,984
T. 63 N., R. 17 W., near south edge of SW $\frac{1}{4}$ sec. 25, 3.2 miles west of Novinger, in large triangle at junction of Novinger and Greencastle roads with road leading south to Pure Air, on ridge 6 miles north of Pure Air; iron post stamped "Prim. Trav. Sta. No. 7, 1910, MO".....	40 13 42.8	92 45 25.5	2,072
T. 63 N., R. 17 W., corner of secs. 25, 26, 35, and 36, at T fence east, 1,460 feet south of main road at second-class T road south.....	40 13 35.3	92 45 42.8	1,543
Forks of road at church, center of triangle at roads north, southwest, and southeast, 20 feet northwest to signpost "Greencastle 7 miles," 15 feet northeast to W. J. Sander's mail box.....	40 14 14.5	92 46 29.2	5,358
T. 63 N., R. 17 W., corner of secs. 22, 23, 26, and 27, stone at T fence west, 340 feet north of main or ridge road, 1,300 feet northwest of T road south.....	40 14 28.0	92 46 50.8	2,159
T. 63 N., R. 17 W., within a few feet of corner of secs. 21, 22, 27, and 28, at cross fences, at clump of trees about half mile south of public road..	40 14 36.2	92 47 58.6	5,324
Union Church, northwest corner of, 150 feet southeast of T road south near the center of sec. 21.....	40 14 45.8	92 48 19.8	1,901
T. 63 N., R. 17 W., corner of secs. 20, 21, 28, and 29, center of east-west road at fences north-south, 300 feet southwest of house on north road and 700 feet east of bridge over small stream.....	40 14 28.4	92 49 06.3	4,010
T. 63 N., R. 17 W., corner of secs. 19, 20, 29, and 30, center of road at 90° bend to west and abandoned road to east, 15 feet southeast to corner of wire fence, 20 feet southwest to corner of wire fence.....	40 14 28.1	92 50 14.4	5,283
T. 63 N., R. 17 W., quarter corner between secs. 19 and 30, center of north-south road at T road east, 10 feet west to H. C. Lade's mail box.....	40 14 28.3	92 50 48.8	2,670

WINIGAN QUADRANGLE—Continued.

Geographic positions along highways west near north border of quadrangle—Continued.

Stations.	Latitude.	Longitude.	Distance between stations.
Adair and Sullivan counties, 0.5 mile east of line between center of crossroads, 15 feet southeast to Mary Hall's mail box, 23 feet north to corner of wire fence.....	° ' " 40 13 48.8	° ' " 92 50 49.5	<i>Feet.</i> 3,990
Adair and Sullivan counties, on line between, center of east-west road, in ravine, 1,280 feet north of west corner of secs. 30 and 31, T. 63 N. R. 17 W., which is at T fence east 50 feet north of east corner of secs. 25 and 36, T. 63 N., R. 18 W., at T fence west.....	40 13 48.3	92 51 19.4	2,319
Greencastle, 2 miles south by 0.8 mile east of, inside wire fence corner in southeast corner of crossroads and in the east center of SE. $\frac{1}{4}$ sec. 25, 0.5 mile west of county line, 30 feet southeast of intersection of crossroads; iron post stamped "Prim. Trav. Sta. No. 8, 1910, MO".....	40 13 47.3 40 13 47.5	92 51 53.1 92 51 53.4	2,616 30
Center of crossroads.....	40 13 46.7	92 52 27.1	2,619
T. 63 N., R. 17 W., 0.2 mile north of quarter corner between secs. 35 and 36, stone in center of crossroads.....	40 13 33.6	92 53 35.8	5,485
T. 63 N., R. 18 W., corner of secs. 26, 27, 34, and 35, center of north-south road at fence west, 20 feet south to T road east, 10 feet east to Homer Miller's mail box.....	40 13 46.1	92 54 44.3	5,464
T. 63 N., R. 18 W., 1,320 feet north of corner secs. 27, 28, 33, and 34, center of crossroads.....	40 13 57.9	92 55 53.2	5,474
T. 63 N., R. 18 W., quarter corner between secs. 28 and 29, center of east-west road at second-class road north, wire fence south, 50 feet west of bridge.....	40 13 57.5	92 56 27.2	2,639
T. 63 N., R. 18 W., center of sec. 29, center of north-south road at T road east, 300 feet north of schoolhouse, 30 feet north to bridge.....	40 14 23.2	92 57 02.2	3,760
T. 63 N., R. 18 W., corner of secs. 19, 20, 29, and 30, center of crossroads..			
T. 63 N., R. 18 W., west corner of secs. 19 and 30, center of east-west road opposite wire fence south, 90 feet west of bridge; east corner of secs. 24 and 25, T. 63 N., R. 19 W. is in small stream about 125 feet north of the above position, and was not located; as there is nothing to mark it.....	40 14 21.7	92 58 07.4	5,059
T. 63 N., R. 19 W., 900 feet west of east corner between secs. 24 and 25, center of crossroads, 40 feet southeast to oak tree in southeast corner, 15 feet southwest to corner of wire fence, 420 feet west to bridge over Daniel Branch.....	40 14 22.7	92 58 20.6	1,025
East-west road crossing the Quincy, Omaha & Kansas City R. R., center of track, 120 feet west to ford of stream.....	40 14 22.7	92 58 32.7	940
Yellow Creek Baptist Church, 1,100 feet west of, in southeast corner of sec. 23, T. 63 N., R. 19 W., inside wire fence corner in northwest corner of crossroads, 30 feet northwest of intersection of roads; iron post stamped "Prim. Trav. Sta. No. 9, 1910, MO".....	40 14 23.6	92 59 18.5	3,551
T. 63 N., R. 19 W., corner of secs. 23, 24, 25, and 26.....	40 14 23.3	92 59 18.2	30

Magnetic declination of north border of quadrangle, 8° 06' E.

UNIONVILLE QUADRANGLE.

Geographic positions along highways north near east border of quadrangle to Unionville.

Stations.	Latitude.	Longitude.	Distance between stations.
T. 63 N., R. 19 W., 0.2 mile east of corner between secs. 13 and 14, center of intersection of roads, 25 feet northeast to telephone pole, 30 feet northwest to corner of wire fence, 270 feet east of bridge.....	° ' " 40 15 41.5	° ' " 92 59 01.6	<i>Feet.</i>
T. 63 N., R. 19 W., 0.2 mile east of quarter corner between secs. 14 and 15, 25 feet northeast to telephone pole, 5 feet north to center of triangle, center of east-west road at T road north.....	40 15 42.0	93 00 10.8	5,369
T. 63 N., R. 19 W., 1,310 feet east of corner of secs. 10, 11, 14, and 15, center of east-west road at T fence north, 340 feet west of bridge, center of crossroads.....	40 16 08.2	93 00 09.7	2,651
T. 63 N., R. 19 W., 1,320 feet east of corner of secs. 2, 3, 10, and 11, in center of east road, center of crossroads.....	40 17 00.4	93 00 09.6	5,280
T. 64 N., R. 19 W., quarter corner between secs. 34 and 35, center of crossroads.....	40 18 20.6	93 00 26.8	8,222
T. 63 N., R. 19 W., north corner of secs. 2 and 3, center of road at 90° bend south, 65 feet east of south corner of secs. 34 and 35, T. 64 N., R. 19 W., in center of road at 90° bend to north.....	40 17 54.5	93 00 26.5	2,640
T. 64 N., R. 19 W., corner of secs. 26, 27, 34, and 35, center of north-south road at T road west, 12 feet east to telephone pole at corner of fence, 5 feet west to center of triangle, 2,150 feet south of bridge over Yellow Creek.....	40 18 46.6	93 00 26.2	5,280
T. 64 N., R. 19 W., 0.2 mile south of corner of secs. 22, 23, 26, and 27; stone in center of north-south road at T road west.....	40 19 25.9	93 00 25.5	3,970

UNIONVILLE QUADRANGLE—Continued.

Geographic positions along highways north near east border of quadrangle to Unionville—Con.

Stations.	Latitude.	Longitude.	Distance between stations.
T. 64 N., R. 19 W., corner of secs. 22, 23, 26, and 27, center of north-south road at wire fence east-west, 130 feet south of small bridge.....	° ' " 40 19 38.9	° ' " 93 00 25.3	<i>Feet.</i> 1,330
T. 64 N., R. 19 W., quarter corner between secs. 22 and 23, center of crossroads.....	40 20 05.0	93 00 25.1	2,640
T. 64 N., R. 19 W., corner of secs. 14, 15, 22, and 23, center of crossroads.....	40 20 31.1	93 00 24.8	2,640
T. 64 N., R. 19 W., 20 feet west of corner of secs. 10, 11, 14, and 15, center of east-west road; corner is in clump of willows, 20 feet east of north-south road now traveled, at T road west.....	40 21 23.1	93 00 24.9	5,260
T. 64 N., R. 19 W., in northwest corner of SW $\frac{1}{4}$ sec. 11, 10 feet south of corner of wire fence in southeast corner of T road east to Pennville, 175 feet southeast of Chappell schoolhouse, 3.2 miles west of Pennville; iron post stamped "Prim. Trav. Sta. No. 10, 1910 MO".....	40 21 48.9	93 00 24.3	2,614
T. 64 N., R. 19 W., quarter corner between secs. 10 and 11, center of north-south road at T road east.....	40 21 49.1	93 00 24.6	28
T. 64 N., R. 19 W., corner of secs. 2, 3, 10, and 11, center of north-south road at wire fence east-west, 1,170 feet south of bridge.....	40 22 15.2	93 00 24.5	2,640
T. 64 N., R. 19 W., quarter corner between secs. 2 and 3, center of north-south road at T road east, 270 feet north of bridge over Spring Creek, 10 feet north to hedge, 12 feet southeast to wire fence.....	40 22 41.4	93 00 24.4	2,650
T. 64 N., R. 19 W., north corner of secs. 2 and 3, at T road south, stone on north edge of east-west road near mail box, marking point on line between Putnam and Sullivan counties; 110 feet east of above corner is south corner of secs. 34 and 35, T. 65 N., R. 19 W., near fence at 90° bend in road to north.....	40 23 08.8	93 00 24.6	2,777
T. 65 N., R. 19 W., corner of secs. 26, 27, 34, and 35, center of crossroads.....	40 24 01.2	93 00 23.5	5,302
T. 65 N., R. 19 W., corner of secs. 22, 23, 26, and 27, center of crossroads, 210 feet south of bridge over branch of Spring Creek.....	40 24 53.8	93 00 23.7	5,320
T. 65 N., R. 19 W., corner of secs. 14, 15, 22, and 23, 40 feet north of bridge, center of north-south road at T road west, 1,360 feet south of T road east.....	40 25 46.0	93 00 24.2	5,290
T. 65 N., R. 19 W., corner of secs. 10, 11, 14, and 15, 700 feet north of bridge over Blackbird Creek, center of north-south road at T road east.....	40 26 38.5	93 00 24.3	5,310
T. 65 N., R. 19 W., corner of secs. 2, 3, 10, and 11; stone in center of north-south road, 20 feet south of T fence west, 130 feet south of T road east.....	40 27 30.7	93 00 24.7	5,280
Unionville, south edge of, north corner of secs. 2 and 3, T. 65 N., R. 19 W., T road south, 22 feet southwest to telephone pole, 20 feet south to cement walk.....	40 28 20.6	93 00 24.9	5,050
Unionville, center of Garfield Street (east-west) in line with west side of Eighteenth Street, about 25 feet southwest of the intersection of the centers of Garfield and Eighteenth streets, south quarter corner between secs. 34 and 35, T. 66 N., R. 19 W.....	40 28 20.7	93 00 15.7	705
Unionville, in northwest corner of Putnam County courthouse square, 75 feet southeast of intersection of Seventeenth and Main streets; iron post stamped "Prim. Trav. Sta. No. 11, 1910 MO".....	40 28 37.2	93 00 10.6	1,719

Magnetic declination of east border of quadrangle, 7° 50' E.

CENTERVILLE QUADRANGLE.

Geographic positions along highways east via Omaha near south border of quadrangle.

Stations.	Latitude.	Longitude.	Distance between stations.
T. 66 N., R. 18 W., 0.2 mile south of corner of secs. 20, 21, 28, and 29, center of north-south road at T road west, 100 feet south by 10 feet west of 3 corners at T road east.....	° ' " 40 29 52.0	° ' " 92 56 16.7	<i>Feet.</i>
T. 66 N., R. 18 W., corner of secs. 20, 21, 28, and 29, in center of north-south road opposite wire fence east and about 600 feet north of ford of north-south road over Blackbird Creek, 5 feet northwest to large elm tree.....	40 30 07.4	92 56 16.9	1,559
T. 66 N., R. 18 W., corner of secs. 16, 17, 20, and 21, center of crossroads.....	40 30 56.9	92 56 17.1	5,007
T. 66 N., R. 18 W., quarter corner between secs. 16 and 21, center of east-west road at T road north.....	40 30 56.8	92 55 42.8	2,643
T. 66 N., R. 18 W., corner of secs. 15, 16, 21, and 22, center of east-west road at north-south wire fence, 450 feet east of bridge.....	40 30 56.8	92 55 08.4	2,660
T. 66 N., R. 18 W., quarter corner between secs. 15 and 22, 300 feet west of church, center of east-west road, 150 feet west of T road south, 380 feet west to bridge; stone in center of east-west road at T road south.....	40 30 56.8	92 54 34.1	2,650

CENTERVILLE QUADRANGLE—Continued.

Geographic positions along highways east via Omaha near south border of quadrangle—Con.

Stations.	Latitude.	Longitude.	Distance between stations.
T. 66 N., R. 18 W., corner of secs. 14, 15, 22, and 23; stone in center of east-west road, at wire fence north-south, 0.5 mile east of T road north-south.....	° ' " 40 30 56.7	° ' " 92 53 59.3	<i>Feet.</i> 2,690
T. 66 N., R. 18 W., 1,770 feet south by 1,330 feet west of corner of secs. 13, 14, 23, and 24, inside corner of wire fence in southeast corner of T road south, 25 feet southeast of intersection of roads near north center of SW $\frac{1}{4}$ sec. 13; iron post stamped "Prim. Trav. Sta. No. 12, 1910, MO".....	40 31 14.4	92 52 33.2	6,883
T. 66 N., R. 18 W., corner of secs. 13, 14, 23, and 24.....	40 30 56.9	92 52 50.5	2,214
T road south, center of intersection.....	40 31 14.6	92 52 33.5	2,218
T. 66 N., R. 18 W., corner of secs. 13, 14, 23, and 24.....	40 30 57.1	92 52 50.0	2,183
T. 66 N., R. 18 W., quarter corner between secs. 13 and 24, stone in center of east-west road at wire fence north, 1,320 feet east of T road east.....	40 30 57.2	92 52 16.1	2,620
T. 66 N., Rs. 17 and 18 W., east corner of secs. 13 and 24, center of road west opposite fence west, 40 feet west of bottom of hill.....	40 30 57.4	92 51 41.9	2,640
T. 66 N., Rs. 17 and 18 W., west corner of secs. 18 and 19.....	40 30 57.1	92 51 41.9	25
T. 66 N., R. 17 W., roads northwest, southeast, and west, second-class road east, 5 feet northeast to corner of wire fence.....	40 30 57.2	92 50 36.4	5,060
T. 66 N., R. 17 W., corner of secs. 17, 18, 19, and 20, center of second-class east-west road at north-south fence.....	40 30 57.2	92 50 32.5	300
Petty's mill, forks of road at west end of bridge over Shoal Creek, 35 feet northeast to west end of bridge, 25 feet north to telephone pole.....	40 31 38.4	92 50 07.2	4,605
Petty's mill, center of bridge (creek span) over Shoal Creek.....	40 31 39.0	92 50 06.0	110
T. 66 N., R. 17 W., corner of secs. 8, 9, 16, and 17, T road east, 15 feet west to 3 mail boxes, 20 feet southeast to corner of wire and rail fence.....	40 31 49.6	92 49 26.0	3,270
Omaha, 0.2 mile west of, corner of secs. 9, 10, 15, and 16, T. 66 N., R. 17 W., stone at cross fences 230 feet south of main road at a point 130 feet east of T road south, in line with road south prolonged north after short jog east.....	40 31 49.8	92 48 17.6	5,286
Omaha, 4 corners between 2 stores, 60 feet southeast to corner of first, 50 feet southwest to corner of second.....	40 31 57.9	92 48 01.8	1,476
T. 66 N., R. 17 W., 1,110 feet west of corner of secs. 14, 15, 22, and 23, 1 mile south of Omaha, center of north-south road at T road east, 12 feet west to T fence west, 15 feet northeast to telephone pole.....	40 30 57.5	92 47 24.3	6,767
Three corners, T road north, 40 feet east of bridge, center of east-west road.....	40 30 57.6	92 46 51.4	2,540
T. 66 N., R. 17 W., corner of secs. 13, 14, 23, and 24, center of north-south road at T road west, 15 feet west to center of triangle.....	40 30 57.7	92 46 00.8	3,909
Brush Creek, 300 feet east of bridge over, center of north-south road at T road west, 15 feet southwest to corner of wire fence, 25 feet west to telephone pole.....	40 30 53.2	92 45 43.6	1,410

Magnetic declination of south border of quadrangle, 7° 50' E.

Aurora special quadrangle, Carthage and Greenfield 30' quadrangles, and Elsey, Monett, and Ritchey 15' quadrangles.

JASPER, LAWRENCE, AND NEWTON COUNTIES.

The following geographic positions were determined from primary traverse by J. R. Ellis in 1909, and are based upon the adjusted astronomic position of Reeds station, Jasper County, located in 1900 by G. T. Hawkins by a line from Springfield, Mo., astronomic pier to Oswego, Kans., astronomic pier.

Lines were run along highways around the borders of the quadrangle and a line was run east to west through the center of the special quadrangle. The part of the line from Verona to Pierce City run by Mr. Hawkins in 1900 was not redetermined, but forms part of the circuit of Mr. Ellis.

The State cooperated in the work.

AURORA SPECIAL QUADRANGLE.

Geographic positions along highways near east border of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
T. 27 N., R. 25 W., east corner of secs. 24 and 25; T road west.....	37 01 33.4	93 36 34.9
T. 27 N., R. 25 W., west corner of secs. 19 and 30; T road east.....	37 01 33.7	93 36 34.9
T. 27 N., R. 25 W., east corner of secs. 12 and 13; fence east Lawrence-Christian county line.....	37 03 19.1	93 36 33.6
T. 27 N., R. 25 W., T lane west at east corner of secs. 1 and 12, line between Lawrence and Christian counties.....	37 04 11.8	93 36 32.8
Tps. 27 and 28 N., Rs. 24 and 25 W., corner of secs. 1, 6, 31, and 36, T road south on county line.....	37 05 04.5	93 36 32.0
T. 28 N., R. 25 W., quarter corner between secs. 25 and 36, at T road west.....	37 05 57.4	93 37 04.3
T. 28 N., R. 25 W., quarter corner between secs. 24 and 25.....	37 06 50.9	93 37 03.6
T. 28 N., R. 25 W., corner of secs. 13, 14, 23, and 24, at crossroads.....	37 07 42.3	93 37 35.7
Sycamore schoolhouse, district 6, on north side of east and west road, opposite front door of schoolhouse; iron post stamped "Prim. Trav. Sta. No. 1 1909 MISSOURI".....	37 07 42.7	93 37 52.0

Magnetic declination of east border of quadrangle, 7° 12' E.

Geographic positions along highways near north border of quadrangle.

T. 28 N., R. 25 W., at sixteenth corner of secs. 15 and 16, 0.25 mile east of corner of secs. 15, 16, 21, and 22, at T road east; stone.....	37 07 44.6	93 39 31.8
Chesapeake schoolhouse, 0.25 mile north of and 0.8 mile east of, T road north.....	37 07 19.0	93 39 48.3
Chesapeake schoolhouse, forks of road.....	37 07 07.3	93 40 37.4
Chesapeake schoolhouse, 1 mile west of; 20 feet north to forked black oak, forks of road.....	37 06 55.8	93 42 12.7
Chesapeake schoolhouse, 2 miles west of, at southwest corner of T road west, on range line, 20 feet north and 20 feet east to east corner of secs. 24 and 25, T. 28 N., R. 26 W.; iron post stamped "Prim. Trav. Sta. No. 2 1909 MISSOURI".....	37 06 57.3	93 42 53.7
T. 28 N., R. 26 W., corner of secs. 23, 24, 25, and 26, crossroads.....	37 06 58.6	93 44 58.7
T. 28 N., R. 26 W., corner of secs. 22, 23, 26, and 27, crossroads.....	37 06 58.7	93 45 03.9
T. 28 N., R. 26 W., corner of secs. 14, 15, 22, and 23, crossroads.....	37 07 51.5	93 45 02.8
T. 28 N., R. 26 W., corner of secs. 15, 16, 21, and 22, T lane south.....	37 07 52.0	93 46 07.8
T. 28 N., R. 26 W., corner of secs. 16, 17, 20, and 21, T road south.....	37 07 53.0	93 47 13.2
T. 28 N., R. 26 W., corner of secs. 17, 18, 19, and 20, crossroads.....	37 07 54.0	93 48 18.2
Mount Vernon, 1.8 miles north of, on west side of north and south road at T road east, 15 feet east and 5 feet north to center of T road; iron post stamped "Prim. Trav. Sta. No. 3 1909 MO".....	37 07 54.5	93 49 06.4
T. 28 N., R. 27 W., east corner of secs. 13 and 24.....	37 07 54.5	93 49 19.6
T. 28 N., R. 27 W., corner of secs. 11, 12, 13, and 14.....	37 08 47.8	93 50 23.8
T. 28 N., R. 27 W., corner of secs. 10, 11, 14, and 15.....	37 08 48.9	93 51 28.9
T. 28 N., R. 27 W., corner of secs. 9, 10, 15, and 16, crossroads.....	37 08 49.7	93 52 33.3
T. 28 N., R. 27 W., corner of secs. 15, 16, 21, and 22, crossroads.....	37 07 57.0	93 52 35.0
North-south section line road at fork southwest, 5 feet south and 20 feet east to hickory on east side of road.....	37 07 13.7	93 52 36.4
Church, just west of, forks of road.....	37 06 48.9	93 53 12.3
T. 28 N., R. 27 W., corner of secs. 19, 20, 29, and 30.....	37 07 07.4	93 54 46.9
T. 28 N., R. 27 W., west corner of secs. 19 and 30.....	37 07 08.5	93 55 51.2
T. 28 N., R. 28 W., east corner of secs. 24 and 25, road south at jog.....	37 07 08.2	93 55 51.2
Stotts City, 1 mile north of, at northwest corner of crossroads, 15 feet south and 40 feet east to corner of secs. 23, 24, 25, and 26, T. 28 N., R. 28 W.; iron post stamped "Prim. Trav. Sta. No. 4 1909 MO".....	37 07 09.3	93 56 56.6
Stotts City, 1 mile west and 1 mile north of, crossroads.....	37 07 10.2	93 57 44.6
T. 28 N., R. 28 W., corner of secs. 21, 22, 27, and 28, near Eastview Church, crossroads.....	37 07 12.2	93 59 05.6
T. 28 N., R. 28 W., corner of secs. 15, 16, 21, and 22, T road east.....	37 08 01.9	93 59 04.2
Stotts City, 3 miles west and 2 miles north of, T road east.....	37 08 07.7	94 00 09.4
T road south.....	37 08 07.1	94 01 14.0
T. 28 N., R. 28 W., corner of secs. 17, 18, 19, and 20.....	37 08 07.4	94 01 14.0
Russell, 1.5 miles east and 0.5 mile south of station, in northwest corner of pasture at southeast corner of T road east, 30 feet west and 20 feet north to west corner of secs. 18 and 19, T. 28 N., R. 28 W., 35 feet west and 20 feet north to east corner of secs. 13 and 24, T. 28 N., R. 29 W.; iron post stamped "Prim. Trav. Sta. No. 5 1909 MO".....	37 08 08.4	94 02 17.8
T. 28 N., R. 29 W., east corner of secs. 13 and 24, T road north.....	37 08 09.6	94 02 18.2
T. 28 N., R. 29 W., corner of secs. 13, 14, 23, and 24, crossroads at Jasper-Lawrence county line.....	37 08 10.7	94 03 23.7
T. 28 N., R. 29 W., corner of secs. 22, 23, 26, and 27, crossroads.....	37 08 12.3	94 04 28.6
T. 28 N., R. 29 W., corner of secs. 15, 16, 21, and 22, crossroads.....	37 08 14.2	94 05 33.7
T. 28 N., R. 29 W., corner of secs. 16, 17, 20, and 21, T road east.....	37 08 15.8	94 06 39.7
T. 28 N., R. 29 W., corner of secs. 19, 20, 29, and 30, T road west.....	37 07 25.0	94 07 46.4
T. 28 N., R. 29 W., west corner of secs. 19 and 30.....	37 07 26.3	94 08 49.6
Reeds, 1 mile east and 0.5 mile north of, on north side of east-west road, 170 feet east and 20 feet south to east corner of secs. 24 and 25; iron post stamped "Prim. Trav. Sta. No. 6 1909 MISSOURI".....	37 07 27.4	94 08 51.5
T. 28 N., R. 30 W., T road north at corner of secs. 13, 14, 23, and 24.....	37 07 29.3	94 09 54.6
T. 28 N., R. 30 W., near corner of secs. 13, 14, 23, and 24, T road south.....	37 07 29.3	94 09 52.9
Reeds, St. Louis & San Francisco R. R. station, opposite telegraph window.....	37 07 06.1	94 10 04.5

Magnetic declination of north border of quadrangle, 7° 28' E.

AURORA SPECIAL QUADRANGLE—Continued.

Geographic positions along highways near west border of quadrangle.

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
T. 28 N., R. 30 W., corner of secs. 25, 26, 35, and 36, crossroads.....	37	06	37.1	94	09	56.9
T. 28 N., R. 30 W., south corner of secs. 35 and 36, near crossroads.....	37	05	44.8	94	09	59.4
T. 27 N., R. 30 W., north corner of secs. 1 and 2, near crossroads.....	37	05	44.8	94	09	59.0
Plymouth mine, T road east to.....	37	04	48.1	94	10	00.4
T. 27 N., R. 30 W., corner of secs. 11, 12, 13, and 14, crossroads.....	37	03	59.1	94	10	03.4
T. 27 N., R. 30 W., east corner of secs. 12 and 13.....	37	03	57.2	94	08	58.2
T. 27 N., R. 29 W., west corner of secs. 7 and 18, road south at jog in east-west road.	37	03	57.2	94	08	58.2
T. 27 N., Rs. 29 and 30, corner of secs. 13, 18, 19, and 24, crossroads, at Jasper-Newton county line.....	37	03	05.0	94	09	00.0
T. 27 N., R. 30 W., east corner of secs. 24 and 25.....	37	02	12.7	94	09	01.8
T. 27 N., R. 29 W., west corner of secs. 19 and 30, 10 feet north to T road north.....	37	02	12.4	94	09	01.8
T. 27 N., R. 29 W., west corner of secs. 30 and 31, at T road east.....	37	01	20.0	94	09	03.5
St. Agnes' Church, 4 miles south and 1.5 miles west of Sarcoux, set near southwest corner of crossroads, 20 feet east and 30 feet north to corner of secs. 1, 6, 31, and 36, Tps. 26 and 27 N., Rs. 29 and 30 W.; iron post stamped "Prim. Trav. Sta. No. 7 1909 MO".....	37	00	27.8	94	09	05.6
T. 26 N., R. 30 W., at east corner of secs. 1 and 12, T road west.....	36	59	35.8	94	09	07.0
T. 26 N., R. 29 W., west corner of secs. 6 and 7, T road east.....	36	59	35.0	94	09	07.0
T. 26 N., R. 30 W., east corner of secs. 12 and 13, T road west.....	36	58	43.5	94	09	08.6
T. 26 N., R. 29 W., west corner of secs. 7 and 18, T road east.....	36	58	42.6	94	09	08.6
T. 26 N., R. 30 W., east corner of secs. 13 and 24, T road west.....	36	57	51.0	94	09	10.4
T. 26 N., R. 29 W., west corner of secs. 18 and 19, T road east.....	36	57	50.5	94	09	10.4
T. 26 N., R. 30 W., east corner of secs. 24 and 25, T road west.....	36	56	58.8	94	09	11.9
T. 26 N., R. 29 W., west corner of secs. 19 and 30, T road east.....	36	56	58.3	94	09	11.9
Ritchey, about 2 miles east of, on south side of road crossing St. Louis & San Francisco R. R., 50 feet west and 60 feet north to crossing; iron post stamped "Prim. Trav. Sta. No. 8 1909 MO".....	36	56	11.7	94	08	46.4

Magnetic declination of west border of quadrangle, 8° 00' E.

Geographic positions along St. Louis & San Francisco R. R. near south border of quadrangle.

Milepost 294, 240 feet west of, north-south road crossing.....	36	56	24.6	94	07	34.0
Berwick, 190 feet west of crossing of St. Louis & San Francisco R. R.....	36	56	03.9	94	05	40.4
County line, crossing St. Louis & San Francisco R. R.....	36	56	16.9	94	03	45.4
T. 26 N., R. 29 W., T road west at corner of secs. 25, 26, 35, and 36, at corner of Newton, Lawrence, and Barry counties.....	36	55	58.6	94	03	46.2
T. 26 N., R. 29 W., corner of secs. 23, 24, 25, and 26, crossroads, on Newton-Lawrence county line.....	36	56	50.8	94	03	44.4
Pierce City, 2 miles west of, near southwest corner of crossroads, 25 feet east and 25 feet north to corner of secs. 19, 24, 25, and 30, T. 26 N., Rs. 28 and 29 W.; iron post stamped "Prim. Trav. Sta. No. 9 1909 MO".....	36	56	49.1	94	02	39.6
T. 26 N., R. 28 W., corner of secs. 19, 20, 29, and 30, crossroads.....	36	56	48.0	94	01	34.1
T. 26 N., R. 28 W., corner of secs. 17, 18, 19, and 20, T road east.....	36	57	40.3	94	01	32.4
T. 26 N., R. 28 W., quarter corner between secs. 17 and 18, T road west.....	36	58	06.5	94	01	31.6
Quinn, railway track at station.....	36	58	01.3	94	01	10.4
Pierce City, railway track at station.....	36	56	41.4	94	00	10.6
T. 26 N., R. 28 W., quarter corner between secs. 21 and 28.....	36	56	46.1	93	59	59.8
Monett, railway track at station.....	36	55	14.2	93	55	19.3
Globe, railway track at station.....	36	55	53.2	93	51	08.6
T. 26 N., Rs. 26 and 27 W., quarter corner between secs. 25 and 30.....	36	56	07.2	93	49	38.3
T. 26 N., R. 26 W., quarter corner between secs. 17 and 20.....	36	57	24.0	93	47	59.5
Verona, railway track at station.....	36	57	53.4	93	47	51.4
Milepost 275, 1,700 feet southwest of, north-south railway crossing.....	36	56	47.6	93	48	38.2

Geographic positions along highways near south border of quadrangle.

T. 26 N., R. 26 W., corner of secs. 29, 30, 31, and 32, 20 feet south to crossroads on Lawrence-Barry county line.....	36	55	40.0	93	48	36.0
T. 26 N., R. 26 W., corner of secs. 28, 29, 32, and 33, 20 feet south to T road south on Lawrence-Barry county line.....	36	55	39.3	93	47	30.9
T. 26 N., R. 26 W., corner of secs. 27, 28, 33, and 34, 10 feet south to crossroads.....	36	55	38.4	93	46	25.7
T. 26 N., R. 26 W., corner of secs. 26, 27, 34, and 35, crossroads.....	36	55	37.5	93	45	20.1
T. 26 N., R. 26 W., corner of secs. 25, 26, 35, and 36, crossroads.....	36	55	36.3	93	44	15.0
Aurora, 3.5 miles south of, on north side of east-west road, 20 feet south and 45 feet east to east corner of secs. 25 and 36, T. 26 N., R. 26 W.; 90 feet south and 45 feet east to west corner of secs. 30 and 31, T. 26 N., R. 25 W.; iron post stamped "Prim. Trav. Sta. No. 10 1909 MO".....	36	55	35.6	93	43	08.7
T. 26 N., R. 25 W., corner of secs. 29, 30, 31, and 32, crossroads on county line.....	36	55	33.7	93	42	05.2
T. 26 N., R. 25 W., corner of secs. 28, 29, 32, and 33, crossroads.....	36	55	32.1	93	40	59.9
T. 26 N., R. 25 W., corner of secs. 27, 28, 33, and 34, dim road south.....	36	55	30.4	93	39	54.8
Lawrence, Barry, and Stone counties, 1.25 miles west of corner of, 15 feet south and 25 feet west of crossroads; iron post stamped "Prim. Trav. Sta. No. 11 1909 MO".....	36	55	27.1	93	37	59.0
T. 26 N., R. 25 W., corner of secs. 25, 26, 35, and 36.....	36	55	26.8	93	37	44.5
T. 26 N., Rs. 24 and 25 W., corner of secs. 25, 30, 31, and 36, at corner of Lawrence, Barry, and Stone counties.....	36	55	25.6	94	36	39.2

Magnetic declination of south border of quadrangle, 7° 36' E.

AURORA SPECIAL QUÁDRANGLE—Continued.

Geographic positions along highways near east border of quadrangle.

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
Bonham, center of crossing under Missouri Pacific Ry.....	36	56	36.7	93	38	04.6
Road west.....	36	57	08.1	93	38	19.1
T. 26 N., R. 25 W., crossroads at center of sec. 14.....	36	58	04.3	93	38	14.6
T. 26 N., R. 25 W., quarter corner between secs. 11 and 12, crossroads.....	36	58	55.8	93	37	41.6
T. 26 N., R. 25 W., on line between secs. 11 and 12, crossroads.....	36	58	55.6	93	36	52.8
Tps. 26 and 27 N., R. 25 W., on township line, crossroads.....	36	59	48.3	93	36	52.3
Tps. 26 and 27 N., Rs. 24 and 25 W., corner of secs. 1, 6, 31, and 36, corner of Lawrence, Stone, and Christian counties.....	36	59	48.3	93	36	36.0
Marionville, 1.25 miles east of; 0.25 mile west of Lawrence-Christian county line, at southeast corner of crossroads; iron post stamped "Prim. Trav. Sta. No. 12 1909 MO".....	37	00	14.5	93	36	51.9
Logan, at station.....	37	00	51.8	93	36	58.5

Magnetic declination of east border of quadrangle, 7°06' E.

Geographic positions along highways near east and west line through middle of quadrangle.

T. 27 N., R. 25 W., corner of secs. 23, 24, 25, and 26, crossroads.....	37	01	32.8	93	37	40.3
T. 27 N., R. 25 W., corner of secs. 22, 23, 26, and 27, T road south.....	37	01	32.5	93	38	45.6
T. 27 N., R. 25 W., corner of secs. 21, 22, 27, and 28.....	37	01	34.8	93	39	50.8
T. 27 N., R. 25 W., corner of secs. 20, 21, 28, and 29, crossroads.....	37	01	37.9	93	40	56.2
T. 27 N., R. 25 W., corner of secs. 19, 20, 29, and 30, T road east.....	37	01	40.2	93	42	00.8
Aurora, 3.5 miles north of, at northwest corner of T road west, 20 feet east and 20 feet south to east corner of secs. 24 and 25 T. 27 N., R. 26 W., iron post stamped "Prim. Trav. Sta. No. 13 1909 MO".....	37	01	42.6	93	42	59.1
T. 27 N., R. 26 W., corner of secs. 23, 24, 25, and 26.....	37	01	44.0	93	44	04.4
St. Louis & San Francisco R. R. crossing, 4 telegraph poles south of milepost....	37	01	44.1	93	44	11.0
T. 27 N., R. 26 W., corner of secs. 22, 23, 26, and 27, crossroads.....	37	01	45.0	93	45	09.7
T. 27 N., R. 26 W., corner of secs. 21, 22, 27, and 28.....	37	01	45.8	93	46	15.0
T. 27 N., R. 26 W., corner of secs. 20, 21, 28, and 29, crossroads.....	37	01	46.5	93	47	20.0
T. 27 N., R. 26 W., corner of secs. 19, 20, 29, and 30.....	37	01	47.1	93	48	25.6
Mount Vernon, 5.5 miles south of, at the Thomas Hillhouse farm, at west end of T road east; iron post stamped "Prim. Trav. Sta. No. 14 1909 MO".....	37	01	35.1	93	49	25.6
T. 27 N., R. 27 W., corner of secs. 23, 24, 25, and 26, crossroads.....	37	01	49.1	93	50	34.5
T. 27 N., R. 27 W., corner of secs. 22, 23, 26, and 27, crossroads.....	37	01	50.1	93	51	39.7
T. 27 N., R. 27 W., corner of secs. 21, 22, 27, and 28, crossroads.....	37	01	51.3	93	52	45.2
T. 27 N., R. 27 W., corner of secs. 20, 21, 28, and 29, crossroads near schoolhouse.....	37	01	52.0	93	53	50.4
Freistatt, Lutheran Church spire.....	37	01	11.4	93	53	50.4
T. 27 N., R. 27 W., corner of secs. 19, 20, 29, and 30, crossroads.....	37	01	53.3	93	54	55.5
Freistatt, 1 mile north and 2 miles west of, at northeast corner of crossroads; 15 feet south and 35 feet west to west corner of secs. 19 and 30, T. 27 N., R. 27 W., 45 feet south and 35 feet west to east corner of secs. 24 and 25, T. 27 N., R. 28 W.; iron post stamped "Prim. Trav. Sta. No. 15 1909 MO".....	37	01	54.4	93	55	59.0
T. 27 N., R. 28 W., corner of secs. 23, 24, 25, and 26, T road south.....	37	01	55.0	93	57	04.4
T. 27 N., R. 28 W., corner of secs. 22, 23, 26, and 27, crossroads.....	37	01	56.4	93	58	09.5
T. 27 N., R. 28 W., corner of secs. 21, 22, 27, and 28, T road east.....	37	01	57.8	93	59	14.0
T. 27 N., R. 28 W., corner of secs. 20, 21, 28, and 29, T road west near schoolhouse.....	37	01	59.5	94	00	19.0
Clarkson, 1 mile south and 0.8 mile west of, crossroads.....	37	02	00.6	94	01	07.8
T. 27 N., R. 28 W., corner of secs. 19, 20, 29, and 30.....	37	02	01.1	94	01	24.1
Dry Valley Church and schoolhouse, 0.5 mile north of, at southeast corner of T road east; 35 feet west and 15 feet north to west corner of secs. 19 and 30, T. 27 N., R. 28 W.; 35 feet west and 80 feet north to east corner of secs. 24 and 25, T. 27 N., R. 29 W.; iron post stamped "Prim. Trav. Sta. No. 16 1909 MO".....	37	02	02.2	94	02	28.8
Dry Valley Church and schoolhouse, 0.5 mile south of, T road north.....	37	01	10.8	94	02	35.4
T. 27 N., R. 29 W., corner of secs. 25, 26, 35, and 36, crossroads Newton-Lawrence county line.....	37	01	12.3	94	03	36.0
T. 27 N., R. 29 W., corner of secs. 26, 27, 34, and 35, crossroads.....	37	01	13.9	94	04	40.9
T. 27 N., R. 29 W., corner of secs. 27, 28, 33, and 34, crossroads.....	37	01	15.4	94	05	45.9
T. 27 N., R. 29 W., corner of secs. 20, 21, 28, and 29.....	37	02	09.3	94	06	49.2
T. 27 N., R. 29 W., corner of secs. 19, 20, 29, and 30, crossroads.....	37	02	11.0	94	07	54.6

Magnetic declination of east and west line through center of quadrangle, 7° 24' E.

MONTANA.

TRIANGULATION STATIONS.

Fort Peck Indian Reservation; Brockton, Milk River, Poplar, and Wolf Point quadrangles.

VALLEY COUNTY.

During 1908 and 1909, in connection with surveys by the General Land Office, H. L. Baldwin extended triangulation over the Fort Peck Indian Reservation. The distances and azimuths depend upon

the line Box Elder-Deertail, as determined by the Missouri River Commission. The latitude adopted is that of United States and Canada Boundary Monument No. 318 corrected graphically for station error to the mean parallel $49^{\circ} 00' 04.90''$. The longitude depends upon the astronomic longitude of the church spire and schoolhouse at Chinook determined in 1903 by the Coast and Geodetic Survey. Connection with these points was made by extending the triangulation of 1902 and 1904 eastward to stations of the Missouri River Commission. A check azimuth was observed near station Windy, which agrees closely with the azimuth computed from Missouri River Commission station.

To reduce positions of Missouri River Commission to United States Geological Survey datum add 7.1 seconds to latitude and 3.1 seconds to longitude.

The following are final positions of section and quarter-section corners variously located:

	Latitude.	Longitude.
	° ' "	° ' "
T. 28 N., R. 50 E., quarter corner between secs. 26 and 27.....	48 09 06.06	105 14 11.24
Tps. 29 and 30 N., Rs. 50 and 51 E., corner of	48 18 13.29	105 08 52.21
T. 28 N., R. 53 E., closing corner of secs. 1 and 2.....	48 13 01.15	104 49 35.42
T. 30 N., Rs. 54 and 55 E., quarter corner between secs. 19 and 24.....	48 25 36.9	104 37 38.44
T. 31 N., Rs. 51 and 52 E., corner of secs. 7, 12, 13, and 18.....	48 26 54.87	105 01 03.53
T. 29 N., R. 50 E., standard quarter corner of sec. 35.....	48 13 00.89	104 10 49.47
T. 33 N., R. 50 E., standard corner between secs. 31 and 32.....	48 33 51.81	105 12 28.85
T. 32 N., Rs. 47 and 48 E., corner of secs. 25, 30, 31, and 36.....	48 30 21.04	105 32 17.16
T. 33 N., Rs. 47 and 48 E., standard township corner.....	48 33 52.02	105 29 48.22

BONE, VALLEY COUNTY, MONT.

On the southeast and highest end of ridge in sec. 6, T. 28 N., R. 47 E.

Station mark: Iron section corner post of the General Land Office projecting 6 inches above ground, the brass cap being marked with a triangle.

[Latitude $48^{\circ} 12' 58.38''$. Longitude $105^{\circ} 41' 44.00''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Reservoir.....	122 45 51.62	302 33 31.21	4.3855638	15.098
Only.....	157 04 19.75	336 58 06.67	4.4208776	16.377
Wait.....	206 56 25.82	26 58 43.69	3.9247504	5.225
Chelle.....	247 00 29.61	67 09 09.33	4.1933090	9.698

BOUNDARY, VALLEY COUNTY, MONT.

On a rounded knoll on the high ridge north of Wolf Creek, a little south of the north boundary of the Fort Peck Indian Reservation. An extended view is to be had in all directions, except from north to northwest and south to southwest.

Station mark: Iron township corner post of the General Land Office, set 2 feet 8 inches in the ground.

[Latitude $48^{\circ} 37' 53.04''$. Longitude $104^{\circ} 41' 08.7''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Smolar.....	17 49 59	197 47 51	4.060207	7.138
Cairn.....	348 58.14	169 00 58	4.372019	14.634

BOX ELDER, VALLEY COUNTY, MONT.

A station of the Missouri River Commission, situated 1,000 feet south and 490 feet west of the quarter section corner between secs. 13 and 18, Rs. 53 and 54 E., T. 28 N., and marked like other standard stations of that organization by a flat rock $3\frac{1}{2}$ feet below surface of ground with drill hole and triangle, surmounted by an iron post for surface mark. The station is about 500 feet southeast of and 10 feet lower than the highest ground in the vicinity.

[Latitude 48° 10' 40.90". Longitude 104° 48' 25.11".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Deertail.....	74 27 25.31	254 15 38.09	4.3091327	12.661
Syp.....	154 31 58.43	334 30 54.37	3.6155604	2.564

¹ Latitude by Missouri River Commission determination, 48° 10' 33.79"; longitude, 104° 48' 22.05".

BOXLAR, VALLEY COUNTY, MONT.

On central one of a group of buttes on divide between Boxelder Creek and Poplar River. It is 872 feet south by 284 feet west of northeast corner of sec. 26, T. 30 N., R. 49 E.

Station mark: Iron township corner post of General Land Office set 33 inches in ground. Post has a brass cap with triangle marked on it.

[Latitude 48° 19' 48.58". Longitude 105° 18' 03.06".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Chelle.....	66 14 46.76	246 05 46.01	4.2126367	10.139
Wait.....	78 38 42.40	258 23 19.35	4.4148564	16.151
Hale.....	117 40 43.40	297 25 07.81	4.4629239	18.042
Windy.....	140 11 49.47	320 02 05.01	4.3989169	15.569
Morgan.....	194 03 41.78	14 07 45.18	4.4384374	17.052
Escape.....	238 10 17.17	58 22 58.76	4.3916063	15.309
Polaris.....	285 15 12.42	105 22 12.99	4.0802516	7.475
Connection.....	343 14 22.23	163 17 39.94	4.2785184	11.800

BURN, VALLEY COUNTY, MONT.

On high ridge extending N. 60° W. and S. 60° E., 207 feet east by 1,040 feet south of the northwest corner of sec. 18, T. 29 N., R. 43 E. A fine, large spring of excellent water is located 0.8 mile north of station.

Station mark: Iron township corner post of the General Land Office, projecting 8 inches above ground.

[Latitude 48° 16' 31.58". Longitude 106° 11' 24.49".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Nashua.....	23 33 59.60	203 28 45.28	4.3389724	13.562
Tiger Butte.....	57 02 47.50	236 47 30.63	4.4815771	18.833
Porcupine.....	86 36 15.69	266 25 39.61	4.2457207	10.941
Orange.....	147 14 08.78	327 03 52.22	4.4951525	19.431
Rainbow.....	192 43 21.84	12 45 44.33	4.2503639	11.059
Return.....	217 32 13.53	37 40 06.26	4.3293220	13.264
Reservoir.....	248 01 48.75	68 11 36.39	4.2432814	10.880
White Rock.....	288 06 33.08	108 18 17.85	4.3127811	12.768

CAIRN, VALLEY COUNTY, MONT.

On a low but prominent mound in SW. $\frac{1}{4}$ sec. 19, T. 30 N., R. 55 E.

Station mark: A triangular drill hole one-third inch deep cut in the top of a gray granite boulder at summit of mound and surrounded by a pile of rocks.

222 TRIANGULATION AND PRIMARY TRAVERSE FOR 1909 AND 1910.

Reference mark: A railroad bridge spike driven in the cleft of a large split granite boulder. True azimuth from station is $52^{\circ} 57' 45''$, distance 14.9 feet.

[Latitude $48^{\circ} 25' 24.6''$. Longitude $104^{\circ} 37' 29.6''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Syp.....	33 01 28	212 52 15	4.448523	17.453
Smolar.....	146 40 25	326 35 33	4.163950	9.064
Boundary.....	169 00 58	348 58 14	4.372019	14.634

CHELLE, VALLEY COUNTY, MONT.

Station is 1,734 feet west by 1,404 feet south of the northeast corner of sec. 17, T. 29 N., R. 48 E., on the high ridge between Chelsea and Tule creeks, both of which creeks contain plenty of good water.

Station mark: Iron township corner post of the General Land Office, set 2.5 feet in ground. The cap on this post is marked with a triangle.

[Latitude $48^{\circ} 16' 15.15''$. Longitude $105^{\circ} 30' 07.30''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Bone.....	67 09 09.33	247 00 29.61	4.1933090	9.698
Wait.....	97 42 06.32	277 35 44.25	4.0273281	6.617
Hole.....	151 36 02.91	331 29 29.01	4.3573976	14.150
Windy.....	177 23 56.07	357 23 13.36	4.4123877	16.060
Boxlar.....	246 05 46.01	66 14 46.76	4.2126367	10.139
Connection.....	299 28 58.74	119 41 16.42	4.3707327	14.591

CONNECTION, VALLEY COUNTY, MONT.

On high ground about 4 miles northwest of Poplar, in NW. $\frac{1}{4}$ sec. 23, T. 30 N., R. 50 E.

Station mark: Iron section corner post driven 33 inches in ground.

Reference mark: Corner post at center of section; true azimuth $293^{\circ} 13'$, distance 408 feet, from station mark.

[Latitude $48^{\circ} 09' 59.80''$. Longitude $105^{\circ} 13' 38.04''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Poplar.....	23 30 03.02	203 29 37.16	3.2550513	1.118
Chelle.....	119 41 16.42	299 28 58.74	4.3707327	14.591
Boxlar.....	163 17 39.94	343 14 22.23	4.2785184	11.800
Polaris.....	202 15 28.98	22 19 11.35	4.2100752	10.079
Parallel.....	211 58 18.88	32 00 24.97	3.8192039	4.098
Deertail.....	289 52 27.78	109 59 27.56	4.0931260	7.700

DEERTAIL, VALLEY COUNTY, MONT.

A station of the Missouri River Commission, in NE. $\frac{1}{4}$ of sec. 1, T. 27 N., R. 51 E.

Station mark: Iron section corner post of the General Land Office. The point of this post rests in the drill hole of the flat rock which forms the subsurface mark of the Missouri River Commission triangulation point, and the brass cap of this post, which is flush with the surface of ground, is marked with a triangle. Over this post was placed a pile of rocks. The original iron post of the Missouri River Commission had been removed by Indians.

Reference mark: True azimuth to northeast corner of township is $253^{\circ} 12' 30''$, distance 1,776.1 feet.

[Latitude 48° 07' 43.031". Longitude 105° 04' 14.48'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Poplar.....	101 49 13.67	281 41 48.09	4.1015268	7.850
Connection.....	109 59 27.56	289 52 27.78	4.0931260	7.700
Polaris.....	164 07 32.33	344 04 14.41	4.3010021	12.427
Syp.....	242 34 58.24	62 45 41.61	4.3027885	12.478
Boxelder.....	254 15 38.09	74 27 25.31	4.3091327	12.661

DRY, VALLEY COUNTY, MONT.

On a prominent butte, the most westerly of a group, in SE. $\frac{1}{4}$ sec. 10, T. 32 N., R. 43 E., 2 miles west of Blink Springs.

Station mark: Iron section corner post set 32 inches in ground. Brass cap on post is marked with a triangle.

[Latitude 48° 32' 36.63''. Longitude 106° 06' 37.20'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Rainbow.....	9 03 51.61	189 02 39.26	4.1005863	7.833
Orange.....	81 18 07.09	261 04 13.99	4.3633405	14.345
Lost.....	253 00 23.19	73 10 17.90	4.2304101	10.562
Only.....	300 37 37.03	120 50 01.13	4.3754208	14.749
Return.....	331 09 32.40	151 13 50.99	4.1678445	9.145

ESCAPE, VALLEY COUNTY, MONT.

Station is 57 feet west of line between ranges 51 and 52 E., T. 31 N., in sec. 13, and is on the highest ground in the vicinity. Stations Polaris and Morgan can not be seen from the point except as they may be made visible by increased refraction in early morning or late evening.

Station mark: Iron township corner post set 32 inches in ground, the brass cap being marked with a triangle.

Reference mark: True azimuth from station to corner of secs. 7, 12, 13, and 18 is 185° 01' 30'', distance 700.9 feet.

[Latitude 48° 26' 47.99'', Longitude 105° 01' 04.43'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Polaris.....	30 12 25.20	210 06 44.73	4.2708494	11.593
Boxlar.....	58 22 58.76	238 10 17.17	4.3916063	15.309
Morgan.....	133 54 05.10	313 45 25.72	4.2950908	12.259
Smolar.....	245 20 34	65 33 21	4.364003	14.367
Syp.....	331 59 05.08	152 07 28.68	4.4712526	18.391

HOLE, VALLEY COUNTY, MONT.

On high prairie land in SW. $\frac{1}{4}$ sec. 7, T. 31 N., R. 47 E. Good water can be obtained from a spring about 2.5 miles south of station on the east side of the coulee.

Station mark: Iron township corner post set 2 feet 4 inches in ground.

[Latitude 48° 27' 03.33''. Longitude 105° 38' 54.37'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Only.....	82 28 17.23	262 19 56.52	4.1422012	8.621
Lost.....	130 35 17.91	310 24 26.44	4.3704472	14.581
Windy.....	238 57 24.33	59 03 16.17	4.0515020	6.996
Boxlar.....	297 25 07.81	117 40 43.40	4.4629239	18.042
Chelle.....	331 29 29.01	151 36 02.91	4.3573976	14.150
Wait.....	359 02 13.79	179 02 25.12	4.2696578	11.561

LOST, VALLEY COUNTY, MONT.

In SE. $\frac{1}{4}$ sec. 25, T. 33 N., R. 44 E., on a small round hill, the highest in the vicinity.
Station mark: Iron township corner post set $2\frac{1}{2}$ feet in ground.

[Latitude $48^{\circ} 35' 16.70''$. Longitude $105^{\circ} 53' 23.94''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Return.....	27 18 30.76	207 12 55.26	4. 3025638	12. 471
Dry.....	73 10 17.90	253 00 23.19	4. 2304101	10. 562
Windy.....	288 49 34.70	109 06 18.65	4. 4631606	18. 051
Hole.....	310 24 26.44	130 35 17.91	4. 3704472	14. 581
Only.....	346 25 56.86	166 28 27.01	4. 2445901	10. 913

MORGAN, VALLEY COUNTY, MONT.

On a gravelly butte of glacial origin in SW. $\frac{1}{4}$ sec. 32, T. 33 N., R. 50 E. It is about 6 miles a little east of north from the Frank Cuskus ranch. There is an excellent spring 1 mile S. 60° W. from station.

Station mark: Iron township corner post set $2\frac{1}{2}$ feet in ground.

[Latitude $48^{\circ} 34' 10.29''$. Longitude $105^{\circ} 12' 37.82''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Boxlar.....	14 07 45.18	194 03 41.78	4. 4384374	17. 052
Windy.....	72 04 58.44	251 51 09.17	4. 3779257	14. 835
Escape.....	313 45 25.72	133 54 05.10	4. 2950908	12. 259

NASHUA (NASSAU), VALLEY COUNTY, MONT.

A station of the Missouri River Commission about 3 miles southeast of Nashua.

Nashua, the Missouri River Commission station, is called Nassau by McLaughlin, of the United States Geological Survey, inasmuch as he had already called another station Nashua the preceding year.

Station mark: Iron post of the Missouri River Commission.

[Latitude $48^{\circ} 05' 43.67''$. Longitude $106^{\circ} 18' 26.22''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Tiger Butte.....	101 48 19.88	281 38 18.26	4. 2323134	10. 609
Porcupine.....	154 53 26.61	334 48 05.71	4. 3206989	13. 003
Burn.....	203 28 45.28	23 33 59.60	4. 3389724	17. 074
White Rock.....	244 10 51.91	64 27 49.86	4. 4964799	19. 491

¹ Latitude by Missouri River Commission, $48^{\circ} 05' 36.59''$; longitude, $106^{\circ} 18' 22.52''$. Latitude by U. S. Geological Survey determination in 1904, $48^{\circ} 05' 43.70''$; longitude, $106^{\circ} 18' 25.58''$.

ONLY, VALLEY COUNTY, MONT.

On the high divide between Cottonwood Creek on the north and Tule and Wolf creeks on the south, in NW. $\frac{1}{4}$ NE. $\frac{1}{4}$ sec. 23, T. 31 N., R. 45 E. Occasional pools of poor water in Wolf Creek, some 5 or more miles southeast, afford the nearest known supply.

Station mark: Iron township corner post set 28 inches in the ground.

[Latitude 48° 26' 03.94". Longitude 105° 50' 03.51'".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
White Rock.....	16 00 20.53	195 56 10.43	4.3991046	15.576
Reservoir.....	42 18 55.05	222 12 46.81	4.1780722	9.363
Return.....	86 46 20.82	266 38 15.76	4.1254768	8.295
Dry.....	120 50 01.13	300 37 37.03	4.3754208	14.749
Lost.....	166 28 27.01	346 25 56.86	4.2445901	10.913
Hole.....	262 19 56.52	82 28 17.23	4.1422012	8.621
Wait.....	319 53 48.97	140 02 20.36	4.3404597	13.608
Bone.....	336 58 06.67	157 04 19.75	4.4208776	16.377

ORANGE, VALLEY COUNTY, MONT.

In SE. $\frac{1}{4}$ sec. 20, T. 32 N., R. 41 E., on the divide between two branches of Porcupine Creek; the knoll upon which it is situated is the highest in the vicinity.

Station mark: Iron township corner post set 28 inches in the ground.

[Latitude 48° 30' 42.12". Longitude 106° 25' 09.06'".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Porcupine.....	1 11 55.25	181 11 34.51	4.4369148	16.993
Dry.....	261 04 13.99	81 18 07.09	4.3633405	14.345
Rainbow.....	293 02 02.91	113 14 42.96	4.3556066	14.092
Burn.....	327 03 52.22	147 14 08.78	4.4951525	19.431

PARALLEL, VALLEY COUNTY, MONT.

On the seventh standard parallel, 39.8 feet east of the quarter corner on the south side of sec. 35.

Station mark: Iron section corner post set 2 $\frac{1}{2}$ feet in the ground and marked with a triangle.

[Latitude 48° 13' 00.90". Longitude 105° 10' 48.88'".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Connection.....	32 00 24.97	211 58 18.88	3.8192039	4.098
Polaris.....	195 45 46.06	15 47 22.29	3.9905212	6.080
Syp.....	271 11 28.20	91 27 06.09	4.4145311	16.139

POLARIS, VALLEY COUNTY, MONT.

In NW. $\frac{1}{4}$ sec. 6, T. 29 N., R. 51 E., about 1,000 feet southeast of the northwest corner of the township.

Station mark: Iron township corner post set 30 inches in the ground.

[Latitude 48° 18' 05.73". Longitude 105° 08' 39.91'".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Parallel.....	15 47 22.29	195 45 46.06	3.9905212	6.080
Connection.....	22 19 11.35	202 15 28.98	4.2100752	10.079
Boxlar.....	105 22 12.99	285 15 12.42	4.0802516	7.475
Escape.....	210 06 44.73	30 12 25.20	4.2708494	11.593
Syp.....	293 09 17.26	113 23 19.54	4.4039301	15.750
Deertail.....	344 04 14.41	164 07 32.33	4.3010021	12.427

POPLAR, VALLEY COUNTY, MONT.

A triangulation station of the Missouri River Commission, about 3 miles northwest of Poplar, near the quarter corner on the east side of sec. 27.

Station mark: Iron township corner post of General Land Office resting upon flat stone, which forms the underground mark. The brass cap of post is marked by a triangle. The iron pipe forming the surface mark by the Missouri River Commission had disappeared and was replaced by the township corner post.

Reference mark: Quarter corner between secs. 26 and 27, marked by an iron post with brass cap, is distant 107.5 feet, azimuth $291^{\circ} 36'$.

[Latitude $48^{\circ} 09' 06.39''$. Longitude $105^{\circ} 14' 12.75''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Connection.....	203 29 37.16	23 30 03.02	3.2550513	1.118
Deertail.....	281 41 48.09	101 49 13.67	4.1015268	7.850

POPLAR MERIDIAN MARK, VALLEY COUNTY, MONT.

The meridian mark at Poplar consists of two iron township corner posts of the General Land Office, 988½ feet apart, projecting about 1 or 2 inches above the probable grade of ground which will subsequently be established. An arrow and cross (†) is cut on brass cap of each post. The south mark is about 50 feet west of the water tank. The north mark is about 1 foot south of the fence on south side of the Presbyterian Church, which fence has a bearing of about N. 80° E. and S. 80° W.

At the south mark the following true azimuths were observed:

	° ' "
Spire of Catholic Church.....	165 50 41
Spire of Indian school.....	173 05 10
Flagpole of Indian agency.....	179 19 41
Spire of Presbyterian Church.....	180 32 04

PORCUPINE, VALLEY COUNTY, MONT.

In the SW. ¼ sec. 13, T. 29 N., R. 40 W., on high bluff 1 mile west of West's ranch on Porcupine Creek.

Station mark: Iron post set 3 feet in ground.

Reference mark: Corner of secs. 13, 14, 23, and 24 is distant 1,540 feet, azimuth $62^{\circ} 02' 30''$.

[Latitude $48^{\circ} 15' 56.94''$. Longitude $106^{\circ} 25' 36.80''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Tiger Butte.....	26 46 59.38	206 42 17.93	4.2387250	10.766
Orange.....	181 11 34.51	1 11 55.25	4.4369148	16.993
Burn.....	266 25 39.61	86 36 15.69	4.2457207	10.941
Nashua.....	334 48 05.71	154 53 26.61	4.3206989	13.003
Nassau (U. S. G. S.).....	334 48 06.59	154 53 27.49	4.3207044	.....

¹ Latitude $48^{\circ} 15' 56.97''$, longitude $106^{\circ} 25' 36.17''$, by U. S. Geological Survey determination of 1904.

RAINBOW, VALLEY COUNTY, MONT.

On high prairie land in NW. ¼ sec. 21, T. 31 N., R. 43 E.

Station mark: Iron township corner post of the General Land Office set 2½ feet in ground. The brass cap is marked with a triangle.

[Latitude 48° 25' 53.59". Longitude 106° 08' 13.81'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Burn.....	12 45 44.33	192 43 21.84	4.2503639	11.059
Orange.....	113 14 42.96	293 02 02.91	4.3556066	14.092
Dry.....	189 02 39.26	9 03 51.61	4.1005863	7.833
Return.....	272 46 27.00	92 51 57.65	3.9588719	5.652
Reservoir.....	311 18 26.99	131 25 52.80	4.2145561	10.184

RESERVOIR, VALLEY COUNTY, MONT.

On a hill of glacial origin in NW. $\frac{1}{4}$ sec. 26, T. 30 N., R. 44 E., about a mile north of the north end of the Todd Lakes.

Station mark: Iron township corner post of the General Land Office, set 32 inches in the ground.

[Latitude 48° 20' 02.92". Longitude 105° 58' 16.05'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Burn.....	68 11 36.39	248 01 48.75	4.2432814	10.880
Rainbow.....	131 25 52.80	311 18 26.99	4.2145561	10.184
Return.....	162 51 34.25	342 49 37.77	4.0361435	6.753
Only.....	222 12 46.81	42 18 55.05	4.1780722	9.363
Wait.....	282 55 13.98	103 09 52.79	4.3900635	15.467
Bone.....	302 33 31.21	122 45 51.62	4.3855638	15.098
White Rock.....	345 53 07.85	165 55 05.57	4.1254862	8.295

RETURN, VALLEY COUNTY, MONT.

On flat prairie land in SW. $\frac{1}{4}$ sec. 21, T. 31 N., R. 44 E.

Station mark: Iron section corner post set 2 $\frac{1}{2}$ feet in ground.

[Latitude 48° 25' 39.10". Longitude 106° 00' 51.85'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Burn.....	37 40 06.26	217 32 13.53	4.3293220	13.264
Rainbow.....	92 51 57.65	272 46 27.00	3.9588719	5.652
Dry.....	151 13 50.99	331 09 32.40	4.1678445	9.145
Lost.....	207 12 55.26	27 18 30.76	4.3025638	12.471
Only.....	266 38 15.76	86 46 20.82	4.1254768	8.295
Reservoir.....	342 49 37.77	162 51 34.25	4.0361435	6.753

SMOLAR, VALLEY COUNTY, MONT.

On highest point of high ridge south of Wolf Creek, in NW. $\frac{1}{4}$ sec. 17, T. 32 N., R. 54 E. The post is 894 feet south by 682 feet east of the northwest corner of sec. 17.

Station mark: Iron township corner post of the General Land Office, set 32 inches in the ground.

[Latitude 48° 31' 59.0". Longitude 104° 44' 00.2".¹]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Syp.....	11 27 16	191 22 54	4.561992	22.664
Escape.....	65 33 21	245 20 34	4.364903	14.367
Boundary.....	197 47 51	17 49 59	4.060207	7.138
Cairn.....	326 35 33	146 40 25	4.163950	9.064

¹ Unadjusted value.

SYP, VALLEY COUNTY, MONT.

On high ridge in NE. $\frac{1}{4}$ sec. 2, T. 28 N., R. 53 E.

Station mark: Iron township corner post of the General Land Office set 2½ feet in ground.

Reference marks: Rock monument 5 feet at base, 4 feet high. The true azimuth from station to monument is 243° 06', and the distance is 22.6 feet. Closing corner of secs. 1 and 2 is in azimuth from station 207° 23' 30''; the distance is 2,242 feet.

[Latitude 48° 12' 41.50''. Longitude 104° 49' 51.05'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Deertail.....	62 45 41.61	242 34 58.24	4.3027885	12.478
Parallel.....	91 27 06.09	271 11 28.20	4.4145311	16.139
Polaris.....	113 23 19.54	293 09 17.26	4.4039301	15.750
Escape.....	152 07 28.68	331 59 05.68	4.4712526	18.391
Smolar.....	191 22 54	11 27 16	4.561992	22.664
Cairn.....	212 52 15	33 01 28	4.448523	17.453
Boxelder.....	334 30 54.37	154 31 58.43	3.6155604	2.564

TIGER BUTTE, VALLEY COUNTY, MONT.

A station of the United States Geological Survey situated on Tiger Butte.

Station mark: A 4-foot iron post set 3 feet in ground.

[Latitude 48° 07' 35.97''. Longitude 106° 31' 54.37'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Porcupine.....	206 42 17.93	26 46 59.38	4.2387250	10.766
Burn.....	236 47 30.63	57 02 47.50	4.4815771	18.833
Nashua.....	281 38 18.26	101 48 19.88	4.2323134	10.609
Willow ²	71 23 38.28	251 19 03.71	3.9058375	.....
Porcupine ²	206 42 24.29	26 47 05.77	4.2387358	.....
Nassau ²	281 38 18.09	101 48 19.74	4.2323317	.....
Galpin ²	299 38 36.81	119 42 52.76	3.9130999	.....

¹ Determinations by Missouri River Commission, latitude 48° 07' 29.3'', longitude 106° 31' 50.4''; by U. S. Geological Survey, 1904, latitude 48° 07' 35.99'', longitude 106° 31' 53.77''.

² U. S. Geological Survey sights.

WAIT, VALLEY COUNTY, MONT.

On the highest part of a gravel mound of glacial origin, half a mile southeast of a similar and somewhat lower one. Good water can be obtained from Tule Creek, 3 miles northeast.

Station mark: Iron township corner post of the General Land Office, set 2 feet 8 inches in the ground.

Reference mark: Quarter corner between secs. 7 and 8 is 890 feet distant; true azimuth from station, 42° 26'.

[Latitude 48° 17' 01.04''. Longitude 105° 38' 39.20'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Bone.....	26 58 43.69	206 56 25.82	3.9247504	5.225
White Rock.....	70 53 00.97	250 40 20.63	4.3476316	13.835
Reservoir.....	103 09 52.79	282 55 13.98	4.3960635	15.467
Only.....	140 02 20.36	319 53 48.97	4.3404597	13.008
Hole.....	179 02 25.12	359 02 13.79	4.2696578	11.561
Boxlar.....	258 23 19.35	78 38 42.40	4.4148564	16.151
Chelle.....	277 35 44.25	97 42 06.32	4.0273281	6.617

WHITE ROCK, VALLEY COUNTY, MONT.

On the highest point of low ridge in NW. $\frac{1}{4}$ sec. 4, T. 28 N., R. 45 E.

Station mark: Township corner post of the General Land Office, set 32 inches in the ground.

[Latitude 48° 13' 03.72". Longitude 105° 55' 38.34".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Nashua.....	64 27 49.86	244 10 51.91	4.4964799	19.491
Burn.....	108 18 17.85	288 06 33.08	4.3127811	12.768
Reservoir.....	165 55 05.57	345 53 07.85	4.1254862	8.295
Only.....	195 56 10.43	16 00 20.53	4.3991046	15.576
Wait.....	250 40 20.63	70 53 00.97	4.3476316	13.835

WINDY, VALLEY COUNTY, MONT.

On a high round-topped hill in NE. $\frac{1}{4}$ sec. 30, T. 32 N., R. 48 E.

Station mark: Iron township corner post set 32 inches in the ground. The brass cap of the post is marked with a triangle.

[Latitude 48° 30' 11.04". Longitude 105° 31' 04.44".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Hole.....	59 03 16.17	238 57 24.33	4.0515020	6.996
Lost.....	109 06 18.65	288 49 34.70	4.4631606	18.051
Morgan.....	251 51 09.17	72 04 58.44	4.3779257	14.835
Boxlar.....	320 02 05.01	140 11 49.47	4.3989169	15.569
Chelle.....	357 23 13.36	177 23 56.07	4.4123877	16.060

NEW YORK.**PRIMARY TRAVERSE.**

Carthage, Lowville, and Number Four quadrangles.

HERKIMER AND LEWIS COUNTIES.

The geographic positions in the following list were determined by D. H. Baldwin in 1910. The positions are based upon triangulation stations Rock, Stillwater, and McQuillen, and the routes taken followed highways and log roads.

The State cooperated in the work.

LOWVILLE QUADRANGLE.

Geographic positions along highways from Rock triangulation station southeast to Chase Lake, thence northeast via Sperryville to Crystal Lake schoolhouse, thence east to Brown's place.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Rock triangulation station, 8 miles east of Lowville, on land owned by George Venatti, on high, rocky point in Watson Township; bronze triangulation tablet cemented in solid rock.....	43 46 58.98	75 21 49.23
Rock triangulation station, about 0.8 mile southeast of, south side of road, opposite house.....	43 46 47.4	75 20 42.5
Independence Creek, center of iron bridge over.....	43 46 17.5	75 19 21.7
Chase Lake, in concrete carriage block in front of hotel; bronze tablet stamped "Prim. Trav. Sta. No. 1, 1910 N. Y.".....	43 45 43.1	75 18 51.8
Independence Creek, center of eastern iron bridge over.....	43 46 16.7	75 18 19.1
Sperryville, crossroads.....	43 46 23.8	75 18 23.8
Sperryville, 0.5 mile northeast of, at forks of road; road northeast.....	43 46 45.1	75 17 57.6
Primary traverse station No. 46, point occupied by buggy traverse.....	43 47 59.5	75 17 03.5
Crossroads.....	43 48 24.1	75 16 56.2
Beach's camp house.....	43 48 29.1	75 16 35.6
Primary traverse station No. 61, point occupied by buggy traverse.....	43 48 54.0	75 16 26.3
Crystal Lake, near, 25 feet east of road; nail in stump, elevation 1,274.4 feet.....	43 49 30.4	75 16 34.8
Crystal Lake, primary level elevation in road on southwest bank, elevation 1,252 feet; surface of water 1,244 feet.....	43 50 20.6	75 16 47.5
Crystal Lake schoolhouse, crossroads.....	43 50 35.0	75 16 49.2
Brown's house, 100 feet northwest of road.....	43 50 40.8	75 15 46.6

LOWVILLE QUADRANGLE—Continued.

Geographic positions from Crystal Lake schoolhouse north along highway to electric plant, thence northwest on Beaver River and Texas Mill road to Texas Mill.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Petrie's mill, tall chimney stack.....	43 51 18.1	75 15 40.4
Cabin, southeast of road, point opposite.....	43 51 49.6	75 16 08.5
Road fork southwest.....	43 51 49.6	75 16 38.7
Murrur Creek, center of bridge over.....	43 52 37.4	75 17 17.4
Road fork.....	43 52 45.6	75 17 17.7
Brown-colored house, southeast of road.....	43 53 22.7	75 17 00.3
Belfort, 2.5 miles east of; on north side of road, 330 feet west of house on south side of road, in large granite rock; aluminum tablet stamped "Prim. Trav. Sta. No. 2 N. Y. 1910"	43 54 43.1	75 17 04.1
Electric plant, north end of main dam in Beaver River.....	43 55 29.0	75 16 41.5
Electric plant, south end of main dam in Beaver River.....	43 55 23.3	75 16 38.2
Gold mine plant, center of building north side of road.....	43 56 16.6	75 16 49.8
Main road fork, primary traverse station 214.....	43 56 11.7	75 17 39.8
Cemetery on north side of road, point opposite.....	43 56 01.7	75 18 45.5
Belfort, on ridge north of, road fork to east.....	43 56 01.6	75 19 57.9
Prominent tree on top of wooded hill.....	43 56 48.3	75 20 16.8
Balsam Creek, center of wooden bridge over.....	43 57 08.8	75 20 24.2
Indian River village, south of iron bridge over Indian River, in large granite rock lying east of T road southeast; bronze tablet stamped "Prim. Trav. Sta. No. 3 1910 N. Y., B. M. el. 1241"	43 58 30.5	75 22 12.2
Red schoolhouse about 0.5 mile north of Indian River village.....	43 58 57.5	75 21 56.4
Indian River, center of iron bridge over.....	43 59 13.0	75 23 12.8
Indian River bridge, about 0.5 mile west of, on rock in road; elevation 929 feet.....	43 59 05.9	75 23 43.2
Indian River, near, top of hill, drill hole in rock in road near south wheel track; elevation 1,002 feet.....	43 58 50.4	75 25 20.2
Indian River, about 4 miles northwest of, on north side of Texas Mill road, west side of T road north, in large granite rock; bronze tablet stamped "Prim. Trav. Sta. No. 4, N. Y., 1910, el. 908.9"	43 59 01.7	75 26 02.9
Indian River, about 5.25 miles northwest of, on south side of road; T. B. M., elevation 961.....	43 58 58.3	75 27 13.1
Schoolhouse, north side of road.....	43 58 59.0	75 28 13.6
Yellow house, south side of road, opposite white house.....	43 59 03.8	75 29 28.6

Geographic positions along highways from point near Belfort northeast to Long Pond.

Balsam Creek, south bridge over; elevation 1,114 feet, surface of water 1,110 feet..	43 57 02.3	75 17 23.4
Balsam Creek, north bridge over.....	43 57 03.1	75 17 22.0
Balsam Creek, 680 feet from north bridge over; in northwest angle of T road to north.....	43 57 05.9	75 17 15.3
Gold mining plant (small), center of main building north of road and west of stream.....	43 57 09.4	75 17 01.0
T road to southeast.....	43 57 26.7	75 16 12.8
New house in angle of road.....	43 57 56.0	75 15 19.1
T road east to Goose Pond.....	43 58 05.8	75 15 14.4

Magnetic declination of southeast corner of quadrangle, $11^{\circ} 05' W.$; of north border, $10^{\circ} 40' W.$; of east border, $11^{\circ} 34' W.$; of northeast corner, $10^{\circ} 50' W.$

NUMBER FOUR QUADRANGLE.

Geographic positions along highways from Crystal Lake schoolhouse to Stillwater.

Stations	Latitude.	Longitude.
	° ' "	° ' "
Beach's mill, northeast corner of T road to; point on rock, elevation 1,404.7 feet..	43 50 54.2	75 14 45.6
Number Four, 3 miles west of; on Number Four road, in northwest end of south-west abutment of concrete bridge over Black Creek; bronze tablet stamped "Prim. Trav. Sta. No. 6, N. Y. 1910"	43 51 02.7	75 13 59.1
T road south.....	43 51 26.3	75 11 20.3
Number Four, in southwest corner of foundation of Turk's barn, northeast of house and north of road; aluminum tablet stamped "Prim. Trav. Sta. No. 7, N. Y. 1910, 1,583"	43 51 49.2	75 10 59.9
Outlet of Francis Lake, near; 40 feet north of forks of road.....	43 51 38.5	75 10 17.3
Creek crossing.....	43 51 38.3	75 09 30.6
Milepost 2.....	43 51 47.1	75 08 40.8
County line post 37, stamped "Herkimer-Lewis Co., 1899," 44 feet south of center of road.....	43 51 40.9	75 08 25.1
County line post 208.....	43 51 46.7	75 08 26.4
Number Four, 3 miles east of; on Number Four-Stillwater road, 21.6 feet west of milepost 3, on north side of road, in bowlder; aluminum tablet stamped "Prim. Trav. Sta. No. 8, N. Y. 1910, 1618"	43 51 42.5	75 07 36.0

NUMBER FOUR QUADRANGLE—Continued.

Geographic positions along highways from Crystal Lake schoolhouse to Stillwater—Continued.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Milepost 3.....	43 51 42.5	75 07 35.7
Milepost 4.....	43 51 53.3	75 06 28.2
Milepost 5.....	43 52 16.7	75 05 30.1
Stillwater, about 2.5 miles west of; on Number Four-Stillwater road, 137 feet east of milepost 6, on south side of road, in boulder; aluminum tablet stamped "Prim. Trav. Sta. No. 9, 1,777".....	43 52 31.6	75 04 24.5
Milepost 6.....	43 52 31.5	75 04 26.4
Milepost 7.....	43 52 42.8	75 03 22.1
Milepost 8.....	43 53 13.9	75 02 29.6
T road north, primary traverse station 450; junction point.....	43 53 24.7	75 02 07.8
Stillwater, 0.5 mile west of, on Number Four road, 0.5 mile west of Beaver River clubhouse, 200 feet west of center of bridge over slough, 137 feet east of Old Homestead, 17 feet north of center of road, in boulder; aluminum tablet stamped "Prim. Trav. Sta. No. 10, N. Y. 1910, 1672".....	43 53 24.6	75 02 01.4
Stillwater, near; bench mark 27.....	43 53 26.6	75 00 27.0
Stillwater Mountain, 2 miles southwest of still water in Beaver River, 11 miles west of Beaver station; bronze tablet cemented in solid rock.....	43 51 42.4	75 02 02.2

Geographic positions along highways from east of gold plant to Long Pond.

T road north.....	43 58 20.8	75 14 46.1
Long Pond, 3 miles west of; on Croghan road, in east concrete abutment of iron bridge over Oswegatchie River; bronze tablet stamped "Prim. Trav. Sta. No. 13, 1,343".....	43 58 32.0	75 14 04.8
Log road south to Mud Pond.....	43 58 48.9	75 13 38.3
Oswegatchie River, center of iron bridge over.....	43 58 48.9	75 13 01.4
Oswegatchie bridge, 0.8 mile west of; nail in root of beech tree; elevation 1,368.9 feet.....	43 59 15.9	75 12 22.9
Long Pond, just west of Bald Mountain House on Croghan road, in large boulder on north side of road; aluminum tablet stamped "Prim. Trav. Sta. No. 12, N. Y. 1910".....	43 59 33.7	75 11 47.6

Long Pond east along log and to tote roads to Cayer's camp.

Long Pond outlet, center of bridge over.....	43 59 34.3	75 11 30.2
Sawmill chimney, about 1 mile east of Long Pond outlet bridge.....	43 59 13.1	75 10 32.2
Fork of road.....	43 59 14.3	75 10 31.2
Oswegatchie River, center of corduroy bridge.....	43 59 35.8	75 09 40.9
County line post stamped "Lewis-Herkimer 1899"; iron I beam notched in top, west side of road, on hogback ridge (number plate has been shot off post).....	43 59 24.1	75 09 21.7
Fork of tote road.....	43 59 23.5	75 08 51.1
Oswegatchie River, center of corduroy bridge.....	43 59 13.8	75 08 47.1
Crossroads, center of.....	43 59 17.2	75 08 30.5
Oswegatchie River, center of corduroy bridge.....	43 59 41.0	75 07 25.9
Bridge over creek, center of.....	43 59 47.0	75 06 55.8
Bridge over creek, center of, 340 feet east of preceding position on log road.....	43 59 49.0	75 06 52.1
Bunk house, Cayer's camp.....	43 59 54.9	75 06 16.1

Geographic positions along highways from Stillwater to Cayer's camp.

Jim's house, on south bank of Beaver River.....	43 53 48.1	75 02 24.6
Tallest conical pine tree in timber on north part of summit locally known as Bald Mountain (south part of summit is bare and rocky).....	43 54 25.4	75 02 45.9
Richardson's camp, boathouse.....	43 55 39.4	75 02 07.0
White's camp, office.....	43 56 26.9	75 01 35.8
Corduroy bridge over creek, in meadow, about 4.5 miles north of Stillwater.....	43 57 21.9	75 01 38.1
Stillwater, about 5 miles north of, at intersection of Monahan's log and tote roads, in rock at northeast corner of crossroads 36 feet northeast of corduroy bridge over middle branch of Oswegatchie River; bronze tablet stamped "Prim. Trav. Sta. No. 11, N. Y. 1910".....	43 57 45.1	75 01 38.7
Spillway gate of dam used for flushing logs, center.....	43 58 45.4	75 02 27.7
Monahan's camp, center of main building (bunk and mess house).....	43 58 55.2	75 02 38.5
Griggs Lake outlet, center of bridge over.....	43 59 38.3	75 03 34.6
Point on sharp divide between middle and west forks of Oswegatchie River.....	43 59 27.0	75 03 58.6
Leon Kelly's camp, center of bunk house.....	43 59 23.6	75 04 12.5
Buck Pond, point on outlet stream from, 250 feet west of pond.....	43 59 46.1	75 04 09.8
Buck Pond, point on shore north of outlet.....	43 59 46.8	75 04 04.8
Fork of log road.....	43 59 54.3	75 04 36.1
Corduroy bridge over creek, on log road.....	43 59 59.7	75 05 32.3

Magnetic declination of line east-west through center of quadrangle, 12° 04' W.; of north border of quadrangle, 11° 53' W.; of east border of northeast quarter of quadrangle, 11° 52' W.

CARTHAGE QUADRANGLE.

Geographic positions along highway (Texas Mill road) from Texas Mill to McQuillen triangulation station.

Stations.	Latitude.	Longitude.
Carthage, about 5 miles east of, on south side of Texas Mill road, halfway between residences of F. Harvey and J. T. Harvey; in large granite boulder; aluminum tablet stamped "Prim. Trav. Sta. No. 5, N. Y. 1910, 913".....	° ' " 43 59 06.9	° ' " 75 30 19.5
Mount McQuillen, 1 mile northeast of Carthage, on bare rocky hill known as Mount McQuillen, on property of Mrs. Anna Harvey, who lives 500 yards west of station, bronze triangulation tablet set in solid rock. Good view in all directions.....	43 59 49.70	75 35 27.82

NORTH CAROLINA.

PRIMARY TRAVERSE.

Lincolnton and Shelby quadrangles.

CLEVELAND, GASTON, AND LINCOLN COUNTIES.

The line starts from an adjusted position at Bessemer City, located from a primary traverse line run by C. B. Kendall in 1906, follows highways north near the east border of the quadrangle to Lincolnton, and is there tied to Coast and Geodetic Survey triangulation position of the courthouse dome. From this position the line follows highways west and south near borders of the quadrangle and is tied to position at Shelby established by C. B. Kendall in 1906. Another line from Lincolnton follows the Seaboard Air Line Railway to a point on the west border of the quadrangle near Shelby. The field work was done by George T. Hawkins in 1909.

The State cooperated in the work.

LINCOLNTON QUADRANGLE.

Geographic positions along highways near east border of quadrangle.

Stations.	Latitude.	Longitude.
	° ' " 35 17 48.2	° ' " 81 17 15.4
Three corners at road east.....	35 18 36.7	81 17 08.7
Three corners, roads northeast, northwest, and south.....	35 19 17.2	81 18 28.3
New York store, 500 feet north of, at 3 corners; old house in southwest corner, shed in northwest corner.....	35 19 48.1	81 18 04.0
Crossroad near 2 wooden bridges.....	35 21 01.6	81 17 49.5
Crossroads, 60 feet northwest to 2 large trees.....	35 21 33.2	81 17 46.3
Forks at old store, 180 feet west to 4 mail boxes.....	35 21 24.7	81 16 40.4
Second-class road south near 2 big logs on south side of road.....	35 21 28.2	81 15 30.6
Forks in new gravel road.....	35 21 59.7	81 15 43.1
Catholic Church, 200 feet southeast of; second-class road southwest.....	35 23 24.0	81 15 06.5
Lander's Chapel, 5 forks at.....	35 23 25.9	81 15 06.0
Lander's Chapel, 25 feet northeast of northeast corner 30 feet east of tombstone of J. W. Sparge, 15 feet west of road; iron post stamped "Prim. Trav. Sta. No. 1 1909 N. C.".....	35 24 48.0	81 15 09.0
Carpenter's house, 3 corners.....	35 24 45.4	81 15 19.3
Lincoln and Gaston counties, stone on line between, on south side of road, 150 feet east of bend in road at old house.....	35 25 05.3	81 15 44.6
Rudisell's cotton mill, 0.25 mile south of, at 3 corners; 20 feet southwest to pine, 25 feet south to Huff Stettler's mail box.....	35 25 41.6	81 15 54.3
Three corners, near big house, 20 feet southwest to J. M. Robert's mail box.....	35 26 33.3	81 16 00.8
Schoolhouse, 200 feet northwest of, at 3 corners.....	35 27 31.5	81 15 31.7
Carolina & Northwestern Ry. overhead crossing.....	35 28 16.73	81 15 25.62
Lincolnton, courthouse dome (Coast & Geodetic Survey position).....	35 28 25.8	81 15 30.0
Lincolnton, 1,000 feet north of courthouse, forks.....		
Lincolnton, 1.5 miles north of, at northwest corner of T road; 15 feet south to post marked "Newton 13 miles, Morganton 39 miles," 60 feet to mail box, 40 feet to center of T road; iron post stamped "Prim. Trav. Sta. No. 2 1909 N. C.".....	35 29 16.0	81 16 10.2

Magnetic declination of east border of quadrangle, 0° 28' W.

LINCOLN TON QUADRANGLE—Continued.

Geographic positions along highways near north border of quadrangle.

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
Bridge over South Fork, middle of.....	35	29	20.0	81	16	42.1
Old mill, near, at 3 corners; 30 feet northwest to 5 mail boxes.....	35	28	39.0	81	18	08.7
Forks to southwest at house; 30 feet west to 3 mail boxes.....	35	28	48.5	81	19	30.0
T road north at old church, 20 feet southeast to 3 mail boxes.....	35	28	45.4	81	20	16.7
James Smith's store, 65 feet southeast of door, 125 feet northwest of forks, 1 road to Morganton, the other to Rutherford, at point between the 2 roads; iron post stamped "Prim. Trav. Sta. No. 3 1909 N. C.".....	35	28	48.2	81	21	20.8
Crossroads (both county roads).....	35	29	10.4	81	22	30.2
Crossroads, at corner of pea patch.....	35	29	55.3	81	23	26.2
Lincolnton, 9 miles from crossroads at 2 stores, 70 feet northwest of sign reading "Lincolnton 9 miles".....	35	30	15.8	81	23	50.1
Second-class road south, at sawdust pile.....	35	29	57.3	81	24	59.7
Dora, old post office; crossroads at old store and schoolhouse and big white house, 10 feet northeast to signboard reading "Lincolnton 11 miles, Cherryville 9 miles".....	35	29	53.8	81	25	51.8
Beam's store, opposite, on west side of road, in edge of Beam's yard, 24 feet northeast of northeast corner of house, 15 feet west of north and south road, 70 feet from store; iron post stamped "Prim. Trav. Sta. No. 4 1909 N. C.".....	35	29	52.6	81	27	17.9
T road west at persimmon tree.....	35	28	34.6	81	26	37.8
Play post office, crossroads at.....	35	27	47.3	81	26	08.0
Forks south, 300 feet west of store.....	35	27	33.9	81	27	47.7
T road south at 2 mail boxes.....	35	27	41.6	81	28	55.4
Three corners of county roads in creek bottom, 100 feet southwest of ford.....	35	28	02.1	81	29	23.2
Beam's Mills, 25 feet north of northeast corner of store, 15 feet west of north-south road, 30 feet southwest of crossroads between store and blacksmith shop; iron post stamped "Prim. Trav. Sta. No. 5 1909 N. C.".....	35	23	18.3	81	29	47.3

Magnetic declination of north border of quadrangle, 0° 39' W.

Geographic positions along Seaboard Air Line Ry. diagonally across center of quadrangle, north-east-southwest.

Tablet marked "Elev. 838" in solid rock at east side of railway in cut.....	35	26	33.1	81	16	45.8
Overhead crossing.....	35	26	22.5	81	16	47.3
Crouse, crossing east of.....	35	25	13.6	81	18	13.2
Crossing, 500 feet south of forks.....	35	24	19.4	81	19	29.0
Crossing in front of 2-story unpainted house.....	35	23	32.2	81	20	47.1
Crossing, east and west, 200 feet west of house.....	35	23	15.9	81	21	14.8
Cherryville, at east end of station, crossing.....	35	22	51.0	81	22	33.8
Cherryville bank, crossing at.....	35	22	46.8	81	22	46.8
Crossing, 30 feet north to mail box.....	35	22	24.0	81	23	59.7
Crossing, near house, 120 feet west to mail box.....	35	22	10.6	81	24	30.2
Waco, crossing at east end of station.....	35	21	40.9	81	25	45.5
Crossing, 400 feet west of milepost 34.....	35	21	07.9	81	27	00.1
Crossing, 50 feet southeast of 3 corners and 50 feet northwest of 3 corners.....	35	20	28.1	81	27	40.8
Stubbs, station.....	35	19	50.4	81	28	15.0
Stubbs, 0.8 mile west of; crossing.....	35	19	33.1	81	28	53.3
Water tank, opposite.....	35	19	18.1	81	29	10.3
Crossing; elevation 887 feet.....	35	19	01.8	81	29	28.3

SHELBY QUADRANGLE.

Geographic positions along highways near west border of quadrangle.

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
Bellwood, on State line road, 900 feet south of mill, T road east.....	35	27	53.8	81	30	15.4
Road east at 2 mail boxes.....	35	27	09.2	81	30	05.4
Fallston, 4 corners.....	35	25	42.7	81	30	06.1
Road east, 200 feet north of house.....	35	24	50.5	81	30	10.0
T road west, 20 feet northwest to mail box.....	35	24	06.9	81	30	06.2
Forks of county road northwest at sign "Morganton 37 miles".....	35	22	25.3	81	30	16.1
Cabin, second-class road at.....	35	21	14.5	81	30	24.6
Crossroads, 300 feet southeast of house.....	35	20	30.0	81	30	19.9
Forks east, 200 feet southwest of house.....	35	19	41.2	81	30	38.2
Forks, 600 feet north of Spurlin's store.....	35	19	02.4	81	31	12.8

OHIO.

PRIMARY TRAVERSE.

Brinkhaven quadrangle.

COSHOCTON AND KNOX COUNTIES.

The following geographic positions were determined by primary traverse run in 1910 by J. R. Ellis. The line begins at Warsaw Junction and follows the Pennsylvania Railroad northwest to Walhonding, thence west along highways to Zuck.

The State cooperated in the work.

Geographic positions along Pennsylvania R. R. from Warsaw Junction to Walhonding, thence west along highways to Zuck.

Stations.	Latitude.	Longitude.	Distance between stations.
Warsaw Junction, 100 feet east of station, center of crossing of Cleveland, Akron, & Columbus Ry. and Pennsylvania R. R.....	40 19 43.8	82 00 27.6	.....
Milepost "C-11," 530 feet east of; road crossing.....	40 19 56.4	82 02 08.8	7,936
Mohawk, opposite semaphore at station, center of track.....	40 20 11.9	82 04 04.7	9,107
Walhonding Run, siding west of highway bridge, center of road crossing at.....	40 21 10.2	82 05 25.9	8,617
Township line north-south.....	40 21 13.8	82 05 30.7	522
Road crossing.....	40 21 15.3	82 06 53.4	6,401
Walhonding, in east part of; 75 feet east by 30 feet north to center of triangle in forks of road at Sam Priest's blacksmith shop; iron post stamped "Prim. Trav. Sta. No. 68, OHIO 1910".....	40 21 32.2	82 08 25.3	7,310
Pennsylvania R. R. crossing.....	40 22 01.4	82 09 33.0	6,013
Knox-Coshocton county line, center of road at.....	40 22 32.4	82 11 19.8	8,834
Reilly Chapel, center of crossroads.....	40 22 41.1	82 12 01.7	3,354
Gambel schoolhouse, center of T road north, 15 feet north to center of triangle.....	40 23 02.8	82 13 20.6	6,482
Zuck, 0.2 mile east of; center of triangle at north end of steel bridge over a river, 25 feet south by 10 feet east to north end of bridge.....	40 22 45.4	82 14 13.7	4,467

Bainbridge, Batavia, Bethel, Bellefontaine, Blanchester, Chillicothe, Circleville, Covington, East Cincinnati, Era, Garrison, Georgetown, Greenfield, Greenup, Hillsboro, Jackson, Lebanon, Lima, Loramie, Maysville, Morning View, Mount Sterling, Oak Hill, Octa, Otway, Peebles, Piketon, Roxabel, Rectorville, Sabina, St. Henry, St. Paris, Sardinia, Scioto, Sidney, Spencerville, Springfield, Troy, Vanceburg, Waynesville, West Union, and Xenia quadrangles.

ADAMS, ALLEN, AUGLAIZE, BROWN, CHAMPAIGN, CLERMONT, CLINTON, FAYETTE, GREENE, HIGHLAND, JACKSON, LAWRENCE, LOGAN, MERCER, MIAMI, MONTGOMERY, PICKAWAY, PIKE, ROSS, SCIOTO, SHELBY, VAN WERT, AND WARREN COUNTIES.

The following geographic positions were determined during the field seasons of 1909 and 1910 by J. R. Ellis. The lines were tied to points previously located by primary traverse or to triangulation stations of the Coast and Geodetic Survey as herein described.

The work was done in cooperation with the State.

JACKSON QUADRANGLE.

Geographic positions along highways east and west through center of quadrangle.

Stations.	Latitude.	Longitude.
T. 7 N., R. 20 W., quarter corner between secs. 29 and 32, road north and south at fence east-west.	° ' "	° ' "
Valley Chapel, point on Chillicothe pike and road west, 20 feet south to sycamore snag.	39 08 07.1	82 44 30.7
Covered bridge, north of, Chillicothe and Jackson pike at T road south.	39 08 30.4	82 43 28.8
Green's store, Chillicothe and Jackson pike and road northeast, 10 feet northeast to center of triangular grass plat.	39 08 00.0	82 42 47.1
J. C. Randall's residence, T road north, 10 feet northeast to mail box.	39 07 48.9	82 42 01.9
Leo, 0.2 mile southwest of, section corner.	39 08 30.1	82 41 05.6
Leo, T road south, just east of schoolhouse at.	39 08 47.9	82 40 30.7
Leo and Coalton pike, crossing of line between Rs. 18 and 19 W.	39 08 49.7	82 40 01.0
T. 7 N., R. 18 W., secs. 29, 30, 31, and 32, corner of.	39 08 34.2	82 39 22.5
Coalton, 1.5 miles northwest of; in stone 30 by 12 by 6 inches at southwest corner of T road south, just east of John Wilson's house, 20 feet east and 20 feet north to center of T road; aluminum tablet stamped "Prim. Trav. Sta. No. 1, OHIO 1910".	39 07 42.5	82 38 18.7
Garfield, T pike west at station.	39 07 27.2	82 37 58.2
T. 8 N., R. 18 W., quarter corner on south side of sec. 33, crossroads at Sach's Hotel, Coalton.	39 07 26.5	82 37 11.4
Glenray, T road south at school.	39 06 49.9	82 36 40.8
Electric park, T road north at.	39 06 47.2	82 34 55.5
Wellston, large stone monument on west line of town.	39 07 01.1	82 33 45.3
	39 06 59.8	82 33 28.2

Magnetic declination of east-west center line, 0° 25' W.

OAK HILL QUADRANGLE.

Geographic positions along highways east and west through center of quadrangle.

Stations.	Latitude.	Longitude.
T road east.	38 52 53.5	82 34 05.4
Oak Hill, 500 feet south of station; pike crossing Baltimore & Ohio R. R.	38 53 38.3	82 34 24.7
T. 5 N., R. 18 W., quarter corner between secs. 13 and 14.	38 53 48.2	82 35 17.6
Mount Orab Church, north of; crossroads.	38 54 12.2	82 36 43.2
Jefferson Furnace, 1.5 miles northwest of, in southeast corner of foundation of Homerschoolhouse; aluminum tablet stamped "Prim. Sta. No. 2, OHIO 1910".	38 54 24.0	82 37 20.0
T. 5 N., R. 18 W., corner of secs. 9, 10, 15, and 16, 15 feet west to center of T road south.	38 54 24.4	82 37 27.4
Homer schoolhouse, 0.8 mile southwest of; forks of road.	38 54 12.8	82 38 14.0
A. C. Arthur's house, crossroads.	38 53 24.2	82 39 40.2
Forks of road.	38 53 10.8	82 41 18.6
T. 5 N., R. 19 W., quarter corner between secs. 13 and 24.	38 53 44.2	82 41 26.0
T. 5 N., R. 19 W., corner of secs. 13, 14, 23, and 24.	38 53 45.7	82 41 54.5
Mabee, T road south.	38 54 11.5	82 43 10.5
Covered bridge, west of, T road east.	38 52 58.9	82 44 39.7

Magnetic declination of line east-west through center of quadrangle, 0° 10' W.

SCIOTO QUADRANGLE.

Geographic positions along highways east and west through center of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Jackson-Scioto county line, at crossing of pike.	38 53 19.3	82 45 33.5
Jackson-Scioto county line, T. 5 N., R. 19 W., corner secs. 20, 21, 27, and 28.	38 53 04.0	82 45 35.2
Steel bridge over Little Scioto River, T road west.	38 53 10.6	82 46 30.3
Irwin's store, T road east.	38 52 54.0	82 47 19.0
Schoolhouse 10, northwest of, road south.	38 52 30.6	82 48 19.0
T. 4 N., R. 20 W., corner secs. 25, 26, 35, and 36.	38 52 22.4	82 49 11.7
T. 4 N., R. 20 W., center of sec. 4, T road north.	38 51 57.6	82 50 33.2
Purdyville, center of sec. 33, T. 4 N., R. 20 W., crossroads.	38 52 00.4	82 51 48.4
Purdyville, 0.5 mile west of; 0.8 mile north of Scioto (Harrisonville), in center of top of north retaining wall to concrete culvert; aluminum tablet stamped "Prim. Trav. Sta. No. 3, 1910 OHIO".	38 52 01.9	82 52 20.4
Township corner.	38 51 40.3	82 54 23.8
East-west road at road south, 35 feet east and 10 feet south to John Flower's mail box.	38 51 34.3	82 54 33.8
J. H. Chandler's mail box, in triangle at T road southwest.	38 52 00.0	82 57 21.0
Corner of sections.	38 52 18.2	82 57 43.3
Lucasville, 1.5 miles east of, T road south at church.	38 52 35.0	82 57 54.9

Magnetic declination of east-west line through center of quadrangle, 1° 02' W.

GREENUP QUADRANGLE.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Franklin Furnace, 1 mile south of, T road west.....	38 37 36.2	82 50 42.0
Pike crossing Norfolk & Western Ry.....	38 38 13.3	82 50 51.1
T pike southwest at schoolhouse.....	38 35 05.0	82 49 58.0
Haverhill, 1.5 miles southeast of, Scioto-Lawrence county line monument on north side of pike.....	38 34 23.6	82 48 32.0
T road north.....	38 34 10.1	82 47 32.8
Hanging Rock, pike crossing Norfolk & Western Ry. at north end of siding.....	38 33 51.8	82 45 21.8
Hanging Rock, near north end of siding, in top of south end of stone culvert, 350 feet east of pike crossing Norfolk & Western Ry.; aluminum tablet stamped "Prim. Trav. Sta. No. 4, 1910 OHIO".....	38 33 50.3	82 45 15.8
Haverhill, 1.5 miles north of; on west side of pike, in J. Oaks & Sons Tile Co.'s grounds, 50 feet north of entrance to grounds; iron post stamped "Prim. Trav. Sta. No. 5, 1910 OHIO, 546".....	38 36 19.6	82 50 32.9

Magnetic declination of southeast corner of quadrangle, 1° 24' W.

GARRISON QUADRANGLE.

Geographic positions along highways from Portsmouth southwest to Buena Vista, thence north to Twin Creek triangulation station.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Portsmouth, in west part of town, south end of highway bridge over Scioto River.....	38 43 53.4	83 00 40.2
Scioto County infirmary, 0.2 mile northeast of; center of forks of pike.....	38 43 26.9	83 02 38.6
Schoolhouse, north of; center of T road.....	38 42 41.7	83 03 47.9
Dennis, west of; center of crossroads.....	38 42 25.2	83 04 37.3
Friendship, center of T road northwest.....	38 41 50.2	83 05 56.1
Old schoolhouse, center of pike at road north.....	38 41 28.9	83 06 20.6
Pondrun, at southwest corner of T road northwest, 40 feet east to center of T road; iron post stamped "Prim. Trav. Sta. No. 8, 1910, OHIO".....	38 39 40.1	83 07 41.4
C. N. Odler's residence, 25 feet east of center of bridge, pike at road northwest.....	38 37 19.2	83 11 06.2
Center of private T road south.....	38 37 37.4	83 12 05.4
McGaw, center of crossroads at, 110 feet east to center of covered bridge.....	38 38 15.3	83 13 30.1

OTWAY QUADRANGLE.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Pond Creek road at road east along ridge, 5 feet west to small white oak.....	38 45 31.7	83 04 13.3
Upper Pond Creek schoolhouse, 0.3 mile east of; center of T road west at W. E. Davis's residence, 25 feet west to stump.....	38 46 48.1	83 05 24.4
Pond Creek Baptist Church, west of T road south, 15 feet west and 30 feet south to A. J. Carter's mail box.....	38 46 44.9	83 06 32.6
Bertha, about 5 miles northwest of; in southwest corner of foundation of W. S. Newman's residence on Pond Creek; aluminum tablet stamped "Prim. Trav. Sta. No. 6, 1910, OHIO".....	38 46 50.3	83 07 50.1
Grant de Mint's residence, front-yard gate.....	38 46 30.6	83 08 50.7
Pond Creek-Bear Creek divide, at top of; forks of road.....	38 46 34.8	83 09 51.5
Forks of Bear Creek, at north side of triangle in forks of road; James Morgan's mail box.....	38 47 33.3	83 11 31.1
William Rousch's residence, 0.25 mile south of; T road west at house, 15 feet north to southeast corner of yard fence.....	38 46 46.7	83 12 43.3
M. M. Smith's mail box, stump at forks of road.....	38 47 08.5	83 13 21.2
New Amsterdam schoolhouse; center of T road northeast.....	38 47 35.7	83 13 49.4
Pink, 3 miles north of; center of T road east at Halve's residence.....	38 48 22.0	83 14 51.0
Pink, 3.5 miles north of; center of T road east.....	38 48 51.9	83 14 30.4
J. W. Smith's mail box at private road southeast.....	38 50 50.0	83 12 39.5
Otway, 0.8 mile southwest of; center of forks of road just north of bridge over Brush Creek.....	38 51 18.1	83 12 13.5
Otway, 730 feet southeast of station, road crossing Norfolk & Western Ry.....	38 51 50.1	83 11 15.5
Otway-Brush township line.....	38 52 01.4	83 11 29.1
Otway, 1 mile northwest of; road crossing.....	38 52 37.9	83 11 48.2
Milepost 22, 1,200 feet south of; road crossing.....	38 53 37.5	83 11 56.9

OTWAY QUADRANGLE—Continued.

Geographic positions along highways—Continued..

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
Rarden-Brush Creek township line.....	38	53	55.6	83	12	22.1
Milepost 24, track opposite.....	38	54	59.6	83	13	38.1
Rarden, road crossing at station.....	38	55	16.8	83	14	35.9
Rarden, 1.8 miles north of; center of T road northeast in Dry Fork Creek.....	38	56	47.4	83	14	51.9
Harmon, 1 mile southwest of; center of T road north.....	38	59	18.8	83	14	53.8
Harmon, in schoolhouse yard, Pike-Scioto county line monument.....	38	59	55.4	83	14	02.0
Atkins's store, center of pike at road northwest.....	38	51	59.5	83	13	27.4
James Jones's residence, forks of road.....	38	51	17.0	83	14	28.8
Otway, 2 miles northeast of; center of T road northwest at top of hill.....	38	53	33.5	83	10	05.8
Comstock, pike at road southwest, 15 feet southeast to forked apple tree.....	38	53	37.5	83	08	55.7
Comstock, 1 mile east of; set on south side of pike at road north, 10 feet north to center of T road; iron post stamped "Prim. Trav. Sta. No. 7, 1910, OHIO".....	38	53	40.1	83	07	55.2
Crabtree, forks of road at T. F. Crowe's store, 10 feet northwest to north end of stone culvert.....	38	53	31.9	83	06	16.6
Crabtree, 1 mile southeast of; 45 feet east to center of bridge; pike at road south.....	38	52	53.7	83	05	50.8
John Noel's residence, center of pike at T road south.....	38	52	45.1	83	04	54.4
Rush Free Baptist Church, west of; pike at road northeast.....	38	51	49.8	83	03	22.9
Owensville, center of T road north at McDaniel's store.....	38	51	04.1	83	02	23.2
Owensville, 0.8 mile southeast of; just west of bridge over Dutch Run, 24 feet north to east end of stone culvert; forks of pike.....	38	50	30.9	83	01	48.0
Racetown, center of T pike west at old church building.....	38	50	32.6	83	01	14.6
Racetown, 1.5 miles north of; pike at T road west.....	38	51	54.5	83	00	53.0
Lucasville, 1 mile west of; center of T pike east at bridge over canal.....	38	52	30.4	83	00	57.3

Magnetic declination of south border of Otway quadrangle, 1° 08' W.; of west border 1° 06' W.; of center line, 1° 50' W.

Geographic positions along highways near north border of quadrangle.

Harmon, 0.3 mile east of; Scioto-Pike county line monument.....	38	59	52.2	83	13	37.4
McKinley residence, 0.2 mile east of; Scioto-Pike county line monument.....	38	59	36.7	83	13	11.9
Scioto-Pike county line monument in field.....	38	59	20.0	83	12	49.7
J. E. Teeter's residence, just north of; T road east.....	38	59	15.5	83	12	50.1
Scioto-Pike county line monument in field.....	38	59	13.8	83	12	49.3
Ladd, center of crossroads at post office.....	38	59	12.9	83	10	53.4
Ladd, 1 mile south of post office, southwest point of triangle formed by forks or road, crossroad is just north of forks.....	38	58	16.6	83	10	52.5
Ladd, near center of T road south at large barn.....	38	58	29.2	83	09	31.1
Star schoolhouse, 0.5 mile west of; center of T road north, 65 feet west to center of steel bridge near Creek Fork.....	38	58	55.6	83	08	35.3
Camp, 1 mile west of post office, northeast corner of Jerry Star's farm, southwest corner of T road north at Star schoolhouse; iron post stamped "Prim. Trav. Sta. No. 80, 1909, OHIO".....	38	58	46.6	83	08	01.3
Camp, center of crossroads.....	38	58	27.8	83	06	56.9
Camp, near T road south at John M. Jones's mail box.....	38	58	26.2	83	04	56.3
Coopersville, 1 mile west of; road east at west point of grove.....	38	58	20.6	83	03	53.1
Coopersville, center of crossroads west of bridge over canal.....	38	57	40.5	83	02	39.3
Wakefield, south of; Columbus-Portsmouth pike at road west.....	38	58	04.6	83	01	19.9

Magnetic declination of north border of quadrangle, 2° 24' W.

PIKETON QUADRANGLE.

Geographic positions along highways near north border of quadrangle.

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
Bainbridge, 1.5 miles east of; road crossing Detroit, Toledo & Ironton Ry.....	39	14	05.6	83	14	41.6
Dill, crossing of Chillicothe Pike and Detroit, Toledo & Ironton Ry. at station.....	39	14	42.8	83	12	44.4
Yankeetown, intersection of pike and road just southwest of town hall.....	39	14	26.9	83	03	34.1
Yankeetown, 0.7 mile southeast of cemetery, center of crossroads southeast of Dawson's mail box.....	39	14	35.7	83	02	23.3
Waller, about 3 miles southwest of; T road south.....	39	14	39.6	83	01	04.7

PIKETON QUADRANGLE—Continued.

Geographic positions along highways east-west through center of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Waverly, 1.2 miles west of; center of T road north.....	39 07 44.9	83 00 16.5
Red Bridge schoolhouse, north of; at George Cooke's mail box, center of T road west.....	39 07 18.6	83 01 42.5
Daleville, forks of pike at old store; 15 feet east to locust tree in front of store.....	39 06 25.7	83 03 39.4
Peeper Church, 300 feet northwest of; fork in road.....	39 07 16.2	83 04 31.3
Peeper Church, 0.5 mile north of; at frame schoolhouse, fork in road; 20 feet due south to small bridge.....	39 07 36.1	83 04 48.5
T road northeast, at foot of long hill.....	39 08 32.9	83 05 35.0
Buchanan, 15 feet north and 25 feet west to center of crossroads; iron post stamped "Prim. Trav. Sta. No. 77, 1909, OHIO".....	39 08 59.3	83 07 25.5
Buchanan, 1 mile west of; T road northeast, 10 feet northwest to guide board on tree marked "Bainbridge 12 miles, No Name bridge 4 miles".....	39 08 33.1	83 08 39.5
Buchanan, near center of T road north at George Key's mail box.....	39 08 10.6	83 10 00.5
Mount Holiness Church, 20 feet south to center of triangle in forks of road.....	39 07 30.9	83 10 22.6
Steel bridge, forks of road east of; 30 feet north to end of board of guard fence.....	39 07 04.5	83 11 23.2
Morgantown, T road west.....	39 07 45.5	83 11 53.6
Morgantown, 2.2 miles northwest of, at Isaac Wall's farm, on north side of T road southwest; iron post stamped "Prim. Trav. Sta. No. 78, 1909, OHIO".....	39 08 25.9	83 14 20.7
Benner schoolhouse, 0.2 mile south of; center of T road west.....	39 07 44.3	83 15 04.3
Latham, 1 mile northeast of; intersection of old State road and road northwest to Bainbridge.....	39 06 51.9	83 14 16.3
Latham, at I. O. O. F. building, center of crossroads.....	39 05 58.6	83 14 46.7
Sunfish Creek, 520 feet northeast of bridge.....	39 05 44.77	83 14 50.13

Geographic positions along highways near south border of quadrangle.

Scioto-Pike county line monument, in center of road opposite white oak tree....	39 00 36.5	83 14 57.0
Scioto-Pike county line monument, 20 feet south by 30 feet east to T road west....	39 00 35.3	83 14 19.5
Scioto-Pike county line monument, on bank, on north side of road.....	39 00 15.2	83 14 09.0
Scioto-Pike county line monument, in J. W. Campbell's orchard, just north of Harmon.....	39 00 07.5	83 13 58.5
Sargent's station, iron post No. 17.....	39 00 39.10	83 01 24.80

Magnetic declination of north border of quadrangle, 1° 26' W.; of east-west center line, 1° 24' W.; of south border, 2° 24' W.; of west border, 1° 56' W.

ROXBELL QUADRANGLE.

Geographic positions along highways near south border of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
T road south.....	39 15 19.4	83 11 25.1
Bourneville, 1 mile southwest of, intersection of Chillicothe and Waverly pikes.....	39 15 59.8	83 10 15.0
Junction of Waverly pike with pike west to Storm's station.....	39 15 20.8	83 09 34.6
Schoolhouse No. 10, center of T road south.....	39 15 18.1	83 07 52.2
Andy Miller's store, T road south.....	39 15 02.4	83 06 48.1
Newingburg, on south side of east-west road; iron post stamped "Prim. Trav. Sta. No. 72, OHIO, 1909".....	39 16 04.7	83 06 01.5
Slaughter farm, center of crossroads.....	39 15 19.2	83 04 36.4

Geographic positions along highways and railways east-west through center of quadrangle.

Ross County infirmary, 0.8 mile west of; crossroads, 25 feet north and 10 feet west to W. D. Overly's mail box.....	39 24 27.6	83 00 43.8
Pinto's store, center of crossroads.....	39 24 13.4	83 03 01.1
Store at forks of road south of John O. Byer's residence.....	39 23 57.5	83 04 29.7
Schoolhouse No. 4, on Chillicothe-Frankfort pike, T pike north.....	39 22 47.0	83 04 38.2
Maple Grove Hotel, flagstaff on water tank.....	39 22 22.6	83 06 04.8
Baltimore & Ohio Southwestern R. R. and Cincinnati, Hamilton & Dayton Ry. crossing, about 200 feet northeast of, on north side of public road; iron post stamped "Prim. Trav. Sta. No. 73, 1909 OHIO".....	39 21 32.7	83 06 25.9
Bridge 88, road crossing south of.....	39 21 54.6	83 07 56.3
Musselman, road crossing at station.....	39 22 06.2	83 08 31.6
Musselman, 1 mile west of station.....	39 22 37.9	83 09 17.0
Roxbelle, at station, center of track opposite telegraph window.....	39 23 01.7	83 11 07.0
Roxbelle, about 1.2 miles southwest of station, 770 feet west of milepost "84-C," road crossing.....	39 22 37.1	83 12 22.3
Milepost 83-C, east of; road crossing.....	39 22 15.1	83 13 09.2
Crossing road northwest-southeast.....	39 22 11.8	83 13 52.8
T road north, west of steel bridge and 0.2 mile east of large white house.....	39 22 34.3	83 14 54.8
Austin, forks of road, west of bridge, 25 feet north and 15 feet west to Shaw & Haines's store door.....	39 26 12.5	83 13 23.8
North-south pike crossing Cincinnati, Hamilton & Dayton Ry., 70 feet west of west end of bridge 92.....	39 27 05.8	83 14 02.4

Magnetic declination of east-west line through center of quadrangle, 1° 02' W.; of outh border of quadrangle, 1° 26' W.; of west border, 1° 18' W.

CHILLICOTHE QUADRANGLE.

Geographic positions along highways in southwest portion of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Waller, 0.8 mile south of; iron post, elevation 629 feet.	39 15 34.7	82 58 10.3
Hopetown, 1 mile north of, on Columbus-Chillicothe pike at pike northwest.	39 23 31.5	82 58 07.0
Hopetown, 2 miles north of, by 1 mile east of Ross County infirmary; center of crossroads.	39 24 27.1	82 58 30.8
Ross County infirmary, cupola.	39 24 35.3	82 59 53.1
Ross County infirmary, south meridian stone.	39 24 32.9	82 59 58.3

CIRCLEVILLE QUADRANGLE.

Geographic positions along highways in west central part of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Circleville, about 3 miles northwest of; center of standpipe.	39 37 14.2	82 58 21.0
Thomas Brown's field, 150 feet south of entrance to yard, forks of pike at old toll gate; iron post stamped "Prim. Trav. Sta. No. 76, 1909 OHIO"	39 35 54.4	82 58 20.4
Circleville, north side of courthouse grounds; iron post stamped "Prim. Trav. Sta. No. 4, 1906, OHIO"	39 36 02.8	82 56 46.2

ERA QUADRANGLE.

Geographic positions along highways east-west through center of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Yankeetown Methodist Episcopal Church, 0.5 mile west of, on Circleville and Yankeetown pike, at T road south.	39 39 08.1	83 14 44.4
Yankeetown Methodist Episcopal Church, 1 mile east of, on the Circleville and Yankeetown pike, at T road north.	39 38 35.5	83 12 58.6
Monroe Township schoolhouse No. 10, on Circleville and Yankeetown pike at road south.	39 38 24.2	83 12 23.0
Deer Creek, at post office, center of cross pikes.	39 37 59.8	83 11 05.9
Deer Creek, 1 mile east of post office, center of grass plot at road forks.	39 37 38.4	83 10 09.4
Peter Justin's mail box on the Circleville and Yankeetown pike at intersection with T road north.	39 37 29.2	83 09 09.8
Monroe Township schoolhouse No. 1, on Circleville and Yankeetown pike at intersection with T road south.	39 37 07.4	83 08 24.3
Williamsport, near, stone on Monroe-Jackson township line.	39 36 48.8	83 07 08.2
Williamsport, 2 miles north of, 260 feet east of Monroe-Jackson township line, about 30 feet southwest of T road west; iron post stamped "Prim. Trav. Sta. No. 75, 1909, OHIO"	39 36 47.8	83 07 05.0
Schoolhouse No. 8, 0.7 mile west of, on Circleville and Yankeetown pike, at T pike north.	39 36 57.3	83 05 54.5
Schoolhouse No. 8, 1 mile east of, on Circleville and Yankeetown pike, at F. J. Clark's mail box, T pike south.	39 37 14.0	83 04 08.8
Schoolhouse No. 8, 2 miles east of, T pike north.	39 37 24.8	83 03 15.1
Circleville, 4.5 miles west of, junction of the Circleville and Yankeetown and Circleville and Dayton pikes.	39 37 31.7	83 01 40.8
Wildwood Parks farm, cross pikes.	39 36 41.8	83 00 22.1

Magnetic declination of center line east-west through quadrangle, 1° 31' W.

MOUNT STERLING QUADRANGLE.

Geographic positions along highways near east and west borders of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Center of Snowhill pike at road northwest, 0.3 mile southwest of schoolhouse.	39 30 11.4	83 29 58.4
Waterloo, in northwest corner of yard of Christian Church; iron post stamped "Prim. Trav. Sta. No. 74, 1909, OHIO"	39 37 39.2	83 15 58.2
Waterloo, near, Fayette-Pickaway county line stone.	39 38 20.2	83 15 25.5

GREENFIELD QUADRANGLE.

Geographic positions along highways and railroad east-west through center of quadrangle.

Stations.	Latitude.	Longitude.
East Monroe, just west of station, crossing of Hillsboro pike and Baltimore & Ohio Southwestern R. R.	39 21 27.6	83 29 57.7
T road southeast.	39 23 04.2	83 29 14.4
New Martinsburg, center of cross pikes at new store, 30 feet south by 15 feet east to town pump.	39 23 49.0	83 27 50.0
New Martinsburg, 0.8 mile east of; crossing of pike and north-south road.	39 23 47.1	83 26 50.1
New Martinsburg, 2 miles east of; intersection of pike with north-south road.	39 23 07.1	83 25 56.6
Greenfield, 3 miles west of; intersection of pike with north-south road.	39 22 34.4	83 25 07.9
Greenfield, 1.8 miles west of; intersection of pike with T road south, 0.2 mile west of brick schoolhouse.	39 22 06.6	83 24 05.3
Greenfield, intersection of North Washington and East Fayette streets.	39 21 10.4	83 23 00.2
Greenfield, 0.5 mile east of, at northeast corner of crossroads; iron post stamped "Prim. Trav. Sta. No. 67, 1909, OHIO".	39 21 11.7	83 22 20.0
Greenfield, 2 miles east of; intersection of Greenfield and Chillicothe pike with T road south.	39 21 12.9	83 20 40.4
Lyndon, at station, crossing of Baltimore & Ohio Southwestern R. R. and pike.	39 21 13.4	83 18 42.1
Lyndon, near, center of steel bridge.	39 21 14.6	83 17 47.0
Harpers, about 0.5 mile south of station, at Parrott schoolhouse, in southwest corner of T road south; iron post stamped "Prim. Trav. Sta. No. 68, 1909, OHIO".	39 21 21.7	83 16 06.8
Harpers, at station, crossing of road and Baltimore & Ohio Southwestern R. R.	39 21 54.7	83 15 41.8
T road west, center of.	39 23 32.2	83 15 42.3
Allison Hires's mail box, intersection of Greenfield and Austin pike with pike southeast.	39 25 09.2	83 16 09.1
Schoolhouse No. 9, intersection of Greenfield and Austin pike with lane south.	39 25 32.6	83 15 04.0
Plano, about 1.2 miles southeast of, at brick schoolhouse No. 10, crossroads.	39 28 53.5	83 15 45.9
Plano, about 1.2 miles southeast of, at north corner of schoolhouse grounds; iron post stamped "Prim. Trav. Sta. No. 69, 1909, OHIO".	39 28 53.4	83 15 46.1
Harpers, 1.8 miles south of station, south of James H. Fuller's mail box; T road north.	39 20 22.0	83 15 48.6

Geographic positions along highways near southwest border of quadrangle.

Schoolhouse No. 3, road opposite.	39 19 53.7	83 16 15.5
Five mail boxes, T road southwest, 20 feet south by 20 feet west to Allen Edgington's mail box.	39 18 56.8	83 15 21.6
Crossroads at unpainted frame house, 10 feet east to center of box culvert.	39 18 07.7	83 16 27.2
Cyrus Stork's residence, 900 feet east of, on Fruitdale and Bourneville pike at intersection of T road southwest.	39 17 25.0	83 16 48.4
Schoolhouse, 0.5 mile south of; crossroads.	39 16 15.8	83 16 45.5
Fork of road north, east of railroad bridge.	39 15 01.9	83 17 04.3
Humboldt, about 1 mile southeast of, on Bainbridge-Humboldt road, at intersection of T road southwest near G. W. Chapin's mail box.	39 15 55.0	83 18 27.7

Magnetic declination of east border of quadrangle, $1^{\circ} 18' W.$; of south border, $0^{\circ} 31' W.$; of west border, $0^{\circ} 17' W.$; of central line east-west, $0^{\circ} 39' W.$

BAINBRIDGE QUADRANGLE.

Geographic positions along highways near north border of quadrangle.

Stations.	Latitude.	Longitude.
Barrett schoolhouse 12, 0.5 mile south of; 390 feet west of T road north, on south side of Hillsboro and Greenfield pike; iron post stamped "Prim. Trav. Sta. No. 62, 1909, OHIO".	39 14 24.8	83 29 53.4
Barrett schoolhouse 12, 0.5 mile south of; at southwest corner of T road north; 15 feet north by 10 feet east to center of T road; hub.	39 14 26.0	83 29 48.8
Bainbridge, 0.8 mile north of; 0.2 mile north of schoolhouse, 20 feet east of forks, just inside field; iron post stamped "Prim. Trav. Sta. No. 70, 1909, OHIO".	39 14 23.3	83 16 35.1
Stringtown, center of cross pikes at store.	39 14 05.7	83 29 17.1
Schoolhouse, west of; center of T road south.	39 14 32.2	83 27 01.4
T road north, center of.	39 14 49.8	83 25 37.5
Snake Corners schoolhouse, 0.3 mile west of; center of crossroads.	39 14 47.8	83 24 15.3
Snake Corners schoolhouse, 0.5 mile east of; at southeast corner of T road south; iron post stamped "Prim. Trav. Sta. No. 71, 1909, OHIO".	39 14 44.0	83 23 19.8
J. Kinsley's mail box, T road east at; 10 feet north and 10 feet west to locust tree.	39 15 00.0	83 20 39.6

BAINBRIDGE QUADRANGLE—Continued.**Geographic positions along highways along east border of quadrangle.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Scioto-Pike county monument, in front yard.....	39 00 38.8	83 15 08.0
Scioto-Pike county stone monument.....	39 00 52.0	83 15 31.0
Scioto-Pike county line stone, at forks of road south.....	39 00 49.9	83 15 40.7
County line monument at junction of Adams, Scioto, and Pike counties.....	39 00 57.1	83 16 16.3
Adams-Pike county line stone, at crossroads at Groom's store.....	39 01 13.1	83 16 31.6
Groom's store, at northeast corner of crossroads; iron post stamped "Prim. Trav. Sta. No. 79, 1909, OHIO".....	39 01 13.4	83 16 31.0
Old store building, center of road opposite, at T road north.....	39 02 13.8	83 15 15.3
Whiteoak Church, center of crossroads, 15 feet southeast to center of triangular mound.....	39 03 05.8	83 15 32.3
Latham, 2.5 miles south of, northeast of Grassy Fork schoolhouse, center of T road southeast.....	39 03 54.7	83 16 01.3
Bainbridge, road crossing west of station.....	39 13 53.89	83 16 16.19
Road northeast along wire fence, 25 feet east to north end of gate.....	39 12 16.2	83 16 05.3
Ross-Pike county line, stone on east side of road.....	39 11 39.3	83 15 58.5
Pine Top schoolhouse, 0.5 mile southeast of center of T road east.....	39 10 44.5	83 16 08.0
Auerville, 0.8 mile northwest of; fork in road, 10 feet south to cross on butternut tree.....	39 09 01.8	83 15 13.5

Geographic positions along highways near south border of quadrangle.

Schoolhouse, west corner of.....	39 00 47.7	83.17 46.5
Locust Grove, 1.2 miles northwest of; intersection of Sinking Springs and Peebles pike with T road east.....	39 00 09.5	83 23 48.2
Serpent Mound, 0.8 mile southeast of; intersection of pike with T road north.....	39 00 58.4	83 25 33.2
Brush Creek, center of steel bridge over, east fork.....	39 01 22.6	83 26 11.1
Lovett, post office, center of T road north at store.....	39 01 36.6	83 27 10.4
Lovett, 1 mile south of post office, T road east, north of small house on west side of road.....	39 00 47.4	83 27 21.4
Lovett, 1.8 miles south of post office, T road north.....	39 00 14.0	83 27 26.7
Fork in road at corner of garden.....	39 00 21.5	83 28 06.4
John Peterson's residence, east of; center of T road north.....	39 00 31.6	83 29 00.6

Geographic positions along highways east-west through center of quadrangle.

Schoolhouse, 0.2 mile west of, at A. W. Seller's mail box; T road north.....	39 09 51.8	83 29 57.4
Marshall, T pike south at blacksmith shop.....	39 09 07.6	83 29 06.3
Marshall, 1.8 miles east of, at Cameron farm; T road north.....	39 09 30.9	83 27 10.7
T road east, cross cut on stone corner at.....	39 08 30.4	83 26 38.1
Carmel, 2 miles south of; center of T road west.....	39 08 49.6	83 25 19.0
T road west, center of, at abandoned house.....	39 08 34.5	83 24 16.2
Brush Creek, T road north, 0.2 mile west of wooden bridge.....	39 07 32.7	83 23 58.4
Sinking Springs, 3.7 miles north of; 0.7 mile north of Sam Butler's store and hotel, in northeast corner of pasture at T road west; iron post stamped "Prim. Trav. Sta. No. 84, 1909, OHIO".....	39 07 30.0	83 22 47.6
Intersection of Bainbridge-Sinking Springs pike and east-west road.....	39 07 57.1	83 22 24.8
Cynthiana, 2 miles southwest of; Highland-Pike county line monument, on east side of Bainbridge-Sinking Springs pike.....	39 08 59.8	83 21 51.6
Cynthiana, 1 mile south of, on Bainbridge-Sinking Springs pike, at intersection of T road southeast.....	39 09 22.3	83 20 45.0
Ora A. Benner's mail box, southwest point of triangle at fork in road.....	39 08 30.7	83 19 35.4
Perry-Mifflin township line, culvert.....	39 07 51.2	83 19 24.9
Newfain, center of road opposite post office.....	39 07 16.4	83 19 08.2
Latham, 2 miles west of, at Sunfish Valley mill; T pike north.....	39 05 36.8	83 16 48.8
Latham, 1 mile west of; forks of pike east of steel bridge, 15 feet south by 15 feet west to mail box.....	39 06 06.4	83 15 52.0

Magnetic declination of north border of quadrangle, 0° 31' W.; of south border, 0° 51' E.; of east border, 1° 56' W.; of west border, 1° 28' E.

PEEBLES QUADRANGLE.**Geographic positions along highways.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Adams-Scioto county line monument, at Mustard farm.....	38 58 00.7	83 16 10.2
Adams-Scioto county line monument.....	38 58 10.8	83 16 10.3

PEEBLES QUADRANGLE—Continued.

Geographic positions along highways near north border of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Sycamore tree in triangle at forks.....	38 59 30.7	83 18 49.6
Old frame schoolhouse, center of crossroads at.....	38 59 12.2	83 19 49.2
Locust Grove, 1.5 miles east of; center of T road north.....	38 59 06.9	83 21 01.0
Locust Grove, in north part of town, southeast corner of Bratton's blacksmith shop, northwest corner of T road west; iron post stamped "Prim. Trav. Sta. No. 81, 1909, OHIO".....	38 59 30.6	83 22 39.2

Magnetic declination of north border of quadrangle, 0° 51' E.

Geographic positions along highways near southeast corner of quadrangle.

M. M. Corrill's residence, forks of road on top of hill northwest of; 10 feet north to charred stump.....	38 45 28.9	83 17 14.8
Pink, at post office, in southeast corner of garden, on north side of road at W. B. Evans's store; iron post stamped "Prim. Trav. Sta. No. 10, 1910, OHIO".....	38 45 21.4	83 16 11.6
Scioto-Adams county line monument.....	38 45 21.1	83 16 06.0
Perry Chapel grounds, front gate.....	38 46 07.1	83 15 42.6
Forks, 0.2 mile north of store, 15 feet west to Kenton Lawson's mail box.....	38 47 36.3	83 15 23.1

Geographic positions along highways east from point near Scioto-Adams county line to point near Unity.

Scioto-Adams county line, 0.2 mile east of on south side of Otway-Wamsley pike just east of road south and opposite W. H. Jones's residence; iron post stamped "Prim. Trav. Sta. No. 11, OHIO 1910".....	38 50 28.7	83 15 48.9
W. H. Jones residence, on Otway-Wamsley pike at road south; 20 feet west to center of bridge.....	38 50 28.5	83 15 49.6
Scioto-Adams county line, at center of Otway-Wamsley pike.....	38 50 21.2	83 16 06.9
Wamsley, 0.5 mile northeast of; center of forks of pike.....	38 50 19.0	83 16 53.1
Old store building, forks of pike, south point of grass triangle.....	38 51 41.8	83 19 28.9
Mineral Springs, center of forks of pike.....	38 53 12.3	83 19 46.5
Mineral Springs, 0.8 mile northwest of; south point of triangle at forks at old store building.....	38 53 53.0	83 20 42.5
Mineral Springs, 2 miles northwest of, on ridge, on land of James Miller, northwest of his house; underground station mark a pottery pyramid, surface mark a section of 6-inch drain tile pipe filled with concrete.....	38 53 43.52	83 21 43.44
Atkins's store, just outside of Christ Church grounds, 10 feet northwest to corner of church yard, 30 feet west by 5 feet north to center of pike at road northeast; iron post stamped "Prim. Trav. Sta. No. 12, OHIO, 1910".....	38 53 15.8	83 22 31.9
Old steam furnace, center of T pike east, 20 feet north by 5 feet west to J. R. Shoemaker's mail box.....	38 54 21.5	83 24 29.8
Old steam furnace, 0.8 mile northwest of; center of T road north, 35 feet north to small sycamore tree.....	38 54 39.0	83 25 16.8
Jacksonville, center of T pike southeast at W. H. Foster's general store.....	38 54 28.9	83 26 25.7
Jacksonville, 1 mile southwest of; center of forks of pike.....	38 53 59.7	83 27 04.2
Brush Creek, center of T pike east of west end of bridge.....	38 52 06.7	83 27 36.4
Dunkinsville, center of T pike west at Methodist Episcopal Church.....	38 51 20.2	83 28 16.7
Dunkinsville, 1 mile northwest of; stone monument on pike at road north.....	38 52 07.4	83 28 34.6
Unity, 2 miles southeast of; center of T road south at Thomas Sevearingin's farm.....	38 52 41.9	83 29 20.1
Dunkinsville, 0.8 mile southwest of; center of covered bridge over Brush Creek.....	38 51 02.4	83 28 57.8

Geographic positions along highways from point 2 miles southeast of West Union east via Lynx and Blue Creek to tie at Lower Churn Creek schoolhouse.

Andy Groom's residence, center of east-west road at private road south.....	38 45 52.2	83 29 46.1
Harmony Church, center of T road north, near.....	38 45 59.7	83 29 14.4
W. C. Satterfield's mail box, center of crossroads at; 0.2 mile east to covered bridge over Brush Creek.....	38 46 49.8	83 27 18.0
Lynx, center of pike at T road south.....	38 46 19.7	83 25 14.3
Lynx, 1 mile east of; on south side of pike at T road north, 15 feet west to center of small bridge; iron post stamped "Prim. Trav. Sta. No. 15, OHIO, 1910".....	38 46 34.8	83 23 46.6
Copas Hotel, just west of; center of pike at T road south.....	38 46 19.0	83 22 02.0
Copas Hotel, 1 mile east of; center of pike at T road north.....	38 46 26.4	83 20 49.0
Blue Creek post office, forks of pike at Coleman's store, 20 feet north by 12 feet west to southwest corner of office building.....	38 46 40.8	83 19 50.5
Covered bridge, center of forks at south end of.....	38 46 16.3	83 19 54.5

Magnetic declination of center line east-west through quadrangle, 1° 00' E.; of south half of west border of quadrangle, 0° 02' W.; of north half of west border of quadrangle, 0° 35' E.; of west half of south border of quadrangle, 0° 1' E.; of east half of north border of quadrangle, 1° 43' E.

VANCEBURG QUADRANGLE.

Geographic positions along highways from Buena Vista north along east edge of quadrangle to Pink.

Stations.	Latitude.	Longitude.
Buena Vista, 0.5 mile east of; in northwest corner of crossroads, 30 feet east to center of crossroads; iron post stamped "Prim. Trav. Sta. No. 9, 1910, OHIO".	° ' "	° ' "
Scioto-Adams county line, 10 feet south to sycamore tree.	38 37 52.4	83 15 16.8
Stone quarry, forks of road, 15 feet to guy wire to derrick.	38 38 24.3	83 16 06.9
Forks of road, about 35 feet northwest of, corner of fence; cross cut on corner board.	38 39 08.0	83 16 47.0
Forks of trail on top of hill.	38 40 28.5	83 18 15.7
Upper Twin Creek and Churn Creek road, at road south, on divide between creeks.	38 41 33.2	83 16 52.1
Schoolhouse, northeast corner of.	38 42 25.8	83 16 50.9
Forks of road at junction of State Fork and Churn creek at Lee Cooper's farm, 15 feet east to sycamore tree at west end of foot log.	38 43 28.6	83 17 26.4
Lower Churn Creek schoolhouse, southwest corner of, at forks of road.	38 44 04.6	83 18 18.0
	38 44 54.4	83 19 02.3

Magnetic declination of east border of quadrangle, 1° 02' W.

Geographic positions along highways from adjusted position at Buena Vista west via Rome to Wrightsville.

Scioto-Adams county line monument, on north side of Buena Vista-Rome pike.	38 37 12.6	83 16 06.0
Foster's residence, 300 feet west of; stone monument on south side of road.	38 36 26.6	83 17 30.4
Sandy Springs Church crossroads, 5 feet north to large white oak.	38 36 41.1	83 17 54.3
Sandy Springs Church, 1.3 miles north by 0.8 mile west of road northeast; 5 feet northwest to telephone pole.	38 37 53.9	83 18 42.1
Walled spring at forks of road east of small creek.	38 38 14.8	83 19 22.1
Stout (Rome), near southeast corner of cross streets, east of town pump, 50 feet west by 30 feet north to center of crossroads; iron post stamped "Prim. Trav. Sta. No. 16, 1910, OHIO".	38 39 50.5	83 22 51.8
Stout Run, center of steel bridge over.	38 40 02.8	83 23 20.5
Stout, 1.5 miles west of, at road north: 20 feet east by 5 feet north to telephone pole.	38 40 13.2	83 24 23.5
Lockhart schoolhouse, No. 5, center of pike.	38 40 11.2	83 25 49.0
Brush Creek bridge, 0.5 mile north of; center of small triangle in forks of pike.	38 40 56.5	83 27 14.1
Concord, Ky., Christian Church spire.	38 41 07.6	83 29 26.0

Magnetic declination of line, 0° 59' E. at the north, 1° 10' E. at the south.

Magnetic declination of west half of north border of quadrangle, 0° 01' E.; east half, 1° 43' E.

RECTORVILLE QUADRANGLE.

Geographic positions along highways from Wrightsville to Groom's store.

Stations.	Latitude.	Longitude.
Wrightsville, 0.3 mile north of, at northeast corner of cross pikes at Leonard & Sons' general store, 20 feet west and 20 feet south to center of cross pikes; iron post stamped "Prim. Trav. Sta. No. 17, OHIO, 1910".	° ' "	° ' "
Wrightsville, 1.3 miles north of; at J. B. Johnson's residence, center of pike at T road northeast.	38 42 28.3	83 30 37.6
Abandoned schoolhouse pike at T road west.	38 43 26.3	83 30 51.5
Groom's store, 0.2 mile southwest of; forks of road at west end of bridge.	38 44 04.4	83 31 00.6
	38 44 48.9	83 31 06.8

Geographic positions along highways from point near Groom's store via Bentonville and Clayton to Hickory Church.

Center of pike at T road north up branch.	38 44 21.5	83 32 16.8
Catbird schoolhouse, No. 10, center of crossroads.	38 44 13.4	83 33 20.4
Center of T road west.	38 44 24.6	83 33 47.1
Old house, north of; center of cross roads.	38 44 56.5	83 34 11.3
Bentonville, center of cross pikes.	38 44 57.8	83 36 47.8
Bentonville, 1 mile west of; in northeast corner of pasture at southwest corner of T road south, 30 feet east and 20 feet north to center of T road; iron post stamped "Prim. Trav. Sta. No. 18, OHIO, 1910".	38 45 15.3	83 37 55.7
Bentonville, 0.3 mile south by 1.5 miles west of; center of cross roads.	38 44 36.8	83 38 33.3
Ratis Roush farm, center of T road south, 20 feet north and 20 feet west to Ed West's mail box.	38 44 05.4	83 39 15.9
Clayton, center of crossroads, 25 feet due east to southwest corner of old house.	38 44 39.4	83 40 36.1
Clayton, 1 mile west of, Adams-Brown county line monument, situated on south side of road.	38 44 47.3	83 41 53.0

RECTORVILLE QUADRANGLE—Continued.

Geographic positions along highways from Wrightsville via Manchester to Aberdeen.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Allen's store, center of pike opposite.....	38 42 04.0	83 32 45.2
Lindsey Creek, west of; pike at private road northwest.....	38 41 44.8	83 34 03.3
Manchester, 1 mile east of; center of forks of pike.....	38 41 33.7	83 35 19.1
Manchester, center of crossing of Main and Pike streets.....	38 41 13.8	83 36 32.0
Schoolhouse, No. 15, pike opposite.....	38 41 08.3	83 37 31.1
J. C. Rinehart's residence, east side of Manchester-Aberdeen pike at T road west, 10 feet west of center of T road; iron post stamped "Prim. Trav. Sta. No. 19, OHIO, 1910".....	38 39 15.0	83 38 26.9
Jos. D. Mott's mail box, center of Manchester-Aberdeen pike at road south.....	38 38 17.7	83 39 17.2
Glendale schoolhouse, No. 1, center of Manchester-Aberdeen pike at T road south.....	38 38 20.0	83 40 14.0
Little Threemile Creek, T pike north just east of; 10 feet south to D. Scott & Son's mailbox.....	38 38 30.5	83 41 04.9
Manchester-Aberdeen pike at Adams-Brown county line, 10 feet west to culvert. Aberdeen, 0.8 mile east of, near Manchester-Aberdeen pike, at road northeast up hill; 15 feet south to center of yard gate.....	38 38 41.8	83 42 20.4
	38 39 03.4	83 44 58.3

Geographic positions along highways from Aberdeen to Hickory Ridge Church.

Threemile Creek, forks of road at south end of covered bridge over; 20 feet north to southwest corner of bridge.....	38 40 21.6	83 44 52.6
Schoolhouse, No. 5, 0.3 mile north of; center of small triangle at forks of pike.....	38 41 26.9	83 44 43.2
Pike at T road north, 20 feet east and 5 feet north to mail box of John Griffith, jr. Heitt, at covered bridge, center of triangle in forks of pike.....	38 41 56.2	83 44 17.8
	38 43 12.5	83 43 32.1
Hickory Ridge Church, 0.5 mile south of covered bridge, center of forks of road.....	38 44 35.2	83 42 42.3

Magnetic declination of west half of east-west line, $1^{\circ} 18' W.$; of east half of east-west line, $0^{\circ} 16' W.$; of north half of east border, $0^{\circ} 10' E.$; of north half of west border, $1^{\circ} 43' W.$; of west half of north border, $0^{\circ} 43' W.$; of east half of north border, $0^{\circ} 27' W.$

WEST UNION QUADRANGLE.

Geographic positions along highways from Unity via Tranquillity to Mayhill.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Harshasville, about 1.2 miles southeast of; at southwest corner of T road south at C. F. Campbell's residence, 20 feet east and 20 feet north to center of T road; iron post stamped "Prim. Trav. Sta. No. 13, OHIO, 1910".....	38 53 03.2	83 30 12.2
Unity, spire of church (Coast and Geodetic Survey triangulation station, Unity Church spire).....	38 53 30.09	83 31 18.12
Unity, center of crossroads.....	38 53 30.2	83 31 25.1
Unity, 1 mile north of; center of crossroads.....	38 54 23.8	83 30 58.4
Newport, 2 miles southwest of; center of crossing of Newport-Harshasville pike and north-south road.....	38 55 28.4	83 30 47.7
J. S. Montgomery's mail box, center of T road east.....	38 56 32.6	83 31 36.0
Tranquillity, about 0.8 mile southwest of; Seaman-Tranquillity pike at road east, 15 feet east to north end of picket fence.....	38 57 16.2	83 32 19.3
Tranquillity, T road northwest at post office and store, 20 feet south to southwest corner of store porch.....	38 57 43.3	83 31 59.8
Fairview schoolhouse, stone at T road east.....	38 58 48.4	83 30 52.5

Geographic positions along pike from Dunkinsville to West Union.

Schoolhouse, north end of covered bridge at forks of road.....	38 49 59.0	83 30 11.4
West Union, 1.5 miles northeast of; Dunkinsville-West Union pike at road northwest.....	38 48 37.5	83 31 19.9
West Union, monument in Odd Fellows Cemetery (Coast and Geodetic Survey mark).....	38 47 54.6	83 31 53.4
West Union, Children's Home (Coast and Geodetic Survey triangulation station). West Union, center of crossing of Mulberry and Second streets.....	38 47 42.63	83 32 08.86
	38 47 44.4	83 32 37.7
West Union, 2 miles southeast of; near Trotter schoolhouse, on north side of West Union-Wrightsville pike at road north, at east end of bridge over Beasley's Fork, 40 feet south and 10 feet east to T road; iron post stamped "Prim. Trav. Sta. No. 14, 1910, OHIO".....	38 45 56.7	83 31 23.2
Schoolhouse 27, center of forks of road, 10 feet northwest to ash stump.....	38 54 58.2	83 30 47.0
Wrightsville-West Union pike at township line, 0.3 mile north of Groom's store.	38 45 16.4	83 31 09.7

WEST UNION QUADRANGLE—Continued.

Geographic positions along highways from Unity west to point near Russellville, thence north to Tate triangulation station.

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
Unity-Harshasville pike at road northeast.....	38 54	08.7		83 32	11.3	
Harshasville, center of T pike south at Williamson's store.....	38 54	27.7		83 32	34.5	
Harshasville, 1.3 miles west of; center of cross pikes.....	38 54	37.7		83 33	55.2	
Covered bridge over Grace River, near forks of pike at old blacksmith shop.....	38 54	50.3		83 34	30.2	
North Liberty, 1 mile north by 1 mile east of; center of pike at T road southeast.....	38 54	04.4		83 35	37.4	
North Liberty, in north part of town, center of T street east.....	38 53	16.0		83 36	52.7	
North Liberty, center of steel bridge over Cherry Fork.....	38 53	04.3		83 36	53.8	
Eckmansville, in west part of town, near northwest corner of T road west, just south of gate to W. C. Morrison's yard, 35 feet south and 25 feet east to center of T road; iron post stamped "Prim. Trav. Sta. No. 21, OHIO, 1910".....	38 51	57.5		83 38	42.3	
Eckmansville, spire of church (Coast and Geodetic Survey triangulation station). Eckmansville, old State road at T road east at F. M. Eyer's farm, 10 feet west to John W. Bailey's mail box.....	38 51	50.03		83 38	34.63	
Center of crossing of old State road and North Liberty-Russellville pike.....	38 52	00.6		83 40	58.8	
Adams-Brown county line stone on north side of pike.....	38 53	05.1		83 41	05.4	
J. W. Marshall's residence, North Liberty-Russellville pike at road west.....	38 52	50.9		83 42	00.4	
Center of T pike east at large hickory tree, about 800 feet northeast of covered bridge.....	38 52	54.3		83 43	20.4	
Center of North Liberty-Russellville pike at Jackson-Jefferson township line.....	38 52	26.2		83 44	19.7	
Russellville, 2 miles east by 0.5 mile north of; near southeast corner of Baird schoolhouse grounds, 25 feet south by 25 feet east to center of crossroads; iron post stamped "Prim. Trav. Sta. No. 22, OHIO, 1910".....	38 52	21.4		83 44	31.1	
Macon, 1 mile southwest of; center of crossroads.....	38 57	19.7		83 44	58.5	

Geographic positions along highways from Hickory Ridge Church to Highland Farm.

Hickory Ridge Church, center of north-south pike and east-west road crossing.....	38 45	07.1		83 42	48.6	
Bowman's store, center of covered bridge over Eagle Creek.....	38 46	11.1		83 42	54.2	
Eagle Chapel, center of T pike west.....	38 46	30.4		83 42	34.8	
Front gate to cemetery.....	38 46	45.7		83 43	21.6	
Highland stock farm, center of crossing of Decatur pike and north-south road.....	38 47	14.1		83 44	56.3	

Magnetic declination of west half of east-west center line, $0^{\circ} 51' W.$; of east half of east-west center line, $0^{\circ} 07' E.$; of south half of west border of quadrangle, $0^{\circ} 32' W.$; of north half of west border, $2^{\circ} 13' W.$; of north half of east border, $0^{\circ} 35' E.$; of south half of east border, $0^{\circ} 02' W.$; of south border, $0^{\circ} 35' W.$

Geographic positions along highways near north border of quadrangle.

Buckrun schoolhouse, 700 feet south of; on Seaman-Fairfax pike, at road west, 20 feet north and 10 feet west to southeast corner of yard.....	38 59	08.4		83 34	48.1	
Calvary Church, 0.3 mile south of; 2 mail boxes at forks just north of blacksmith shop.....	38 59	45.6		83 36	50.0	
T road northwest, center of.....	38 58	49.4		83 37	24.7	
T road north, center of; 20 feet north to corner of gatepost.....	38 59	17.3		83 38	34.4	
Emerald, 0.5 mile east of; at northeast corner of T road north; iron post stamped "Prim. Trav. Sta. No. 85, 1909, OHIO".....	38 59	51.0		83 38	52.8	
Adams-Brown county line, center of road at.....	38 59	58.4		83 40	30.9	
Schoolhouse, 0.2 mile south of; center of crossroads.....	38 59	31.3		83 41	25.4	
Fincastle, 1 mile west of, center of T road north.....	38 59	49.6		83 43	43.4	

Magnetic declination of north border of quadrangle, $0^{\circ} 36' W.$

HILLSBORO QUADRANGLE.

Geographic positions along highways near north border of quadrangle.

Stations.	Latitude.	Longitude.
Dallas, 1.5 miles north of; at southeast corner of crossroads, 20 feet west to intersection of roads; nail in hub.	° ' "	° ' "
Hillsboro, 4 miles northeast of; on the Hillsboro and East Munroe pike at road east, 15 feet west to Mrs. W. K. Wright's mail box.	39 14 00.2	83 31 15.8
Hillsboro, about 3 miles northeast of; on the East Munroe-Hillsboro pike, center of steel bridge over Clear Creek.	39 14 58.0	83 33 34.8
Mr. Shepard's residence, 0.7 mile north of T road south.	39 13 52.8	83 34 34.5
James Elliott's residence, center of Samantha pike, at road west.	39 14 46.8	83 35 14.0
Carey town-Hillsboro pike, at road east.	39 14 41.0	83 36 19.2
Hillsboro, 4 miles northwest of; near Persimmon Ridge schoolhouse, at northeast corner of intersection of Hillsboro and Vienna pike and road east; iron post stamped "Prim. Trav. Sta. No. 63, 1909, OHIO".	39 14 28.8	83 37 45.1
Dunn's Chapel, 0.2 mile east of; center of crossing of Hillsboro-Lynchburg pike east-west road.	39 14 43.2	83 39 05.2
Dunn's Chapel, 1.5 miles west of; T road south.	39 14 20.7	83 40 51.6
Stone at center of crossroads.	39 14 02.0	83 42 36.5
	39 13 49.2	83 43 32.4

Geographic positions along highways near south border of quadrangle.

Mayhill, center of road at township line.	39 00 40.1	83 30 15.0
Mayhill, south corner of crossroads, 25 feet north and 10 feet east to center of roads; iron post stamped "Prim. Trav. Sta. No. 82, 1909, OHIO".	39 00 45.4	83 30 28.5
Bell, 0.8 mile southeast of post office, north point of grass triangle at forks.	39 00 38.3	83 32 13.0
Jesup, 1 mile south of; north-south pike at T road west.	39 00 56.3	83 33 50.3
Greenbrier schoolhouse, west of; T road southeast.	39 00 02.9	83 34 55.8
Buckrun post office, 0.2 mile south of; on Seaman-Fairfax pike, at road northeast.	39 00 03.1	83 39 29.7
Emerald, center of crossroads.	39 00 18.8	83 40 17.6
Emerald, 0.8 mile west of; T road south.	39 00 00.0	83 42 42.2
Pencastle Cemetery, center of pike at T road southeast.		

Geographic positions along highways near east border of quadrangle.

Jesup, center of crossroads.	39 01 30.7	83 31 59.3
Jesup, 0.6 mile northeast of; Highland-Adams county line monument, in J. H. Moore's front yard.	39 02 00.2	83 31 44.7
J. W. Moore's mail box, crossroads, 10 feet southwest to telephone pole.	39 02 32.6	83 31 12.2
Bell, 0.8 mile southeast of post office, north point of grass triangle at forks.	39 03 19.6	83 31 36.3
Bell, center of T road east at post office.	39 03 46.9	83 31 58.5
Brush Creek, center of bridge over.	39 04 50.7	83 30 47.7
Pleasant schoolhouse, 0.2 mile north of; center of T road west, 5 feet north and 15 feet west to center of mound.	39 05 30.1	83 30 45.4
T road west, north of small store.	39 06 41.9	83 31 00.9
Berryville, 2.5 miles east of; 15 feet south to center of T road; iron post stamped "Prim. Trav. Sta. No. 83, 1909, OHIO".	39 07 27.2	83 30 50.9
Marshall, 1 mile west of; stone at crossroads.	39 08 52.2	83 30 22.6
Marshall, 1 mile northwest of; intersection of Hillsboro-Marshall pike and north-south road.	39 09 31.0	83 30 20.5
Dallas, 1.7 miles south of; cross pikes at Beechwoods schoolhouse.	39 11 32.8	83 30 10.5
Dallas, center of crossroads, 20 feet north to town pump.	39 12 55.2	83 30 38.7

Geographic positions along highways near west border of quadrangle.

Mowrystown, crossing of main streets.	39 02 18.2	83 44 55.6
Mowrystown, 1.8 miles north of; on Mowrystown-Taylorville pike, at T road west.	39 03 43.1	83 44 45.1
Taylorville, 0.2 mile west of; center of T pike south.	39 04 41.3	83 44 30.2
T road south, at northwest corner of wooded field.	39 05 44.1	83 44 46.5
D. C. Marconet's residence 0.2 mile northeast of; center of T road southeast.	39 06 41.3	83 44 59.0
Danville, 0.5 mile southwest of; at southwest side of Cincinnati road at road west to Pricetown, 50 feet east by 25 feet north to center of forks; iron post stamped "Prim. Trav. Sta. No. 87, 1909, OHIO".	39 08 28.2	83 44 42.6
Danville, center of T pike southeast.	39 08 41.9	83 44 16.3
Danville, 1 mile north of; center of T road east.	39 09 39.4	83 44 26.7
Danville, 2 miles north of; just north of C. E. Lewis's residence, center of T road west.	39 10 18.0	83 44 26.4
T road east, just south of church.	39 11 03.7	83 44 08.5
Fairview, center of cross pikes in west part of town.	39 12 15.3	83 43 48.0
Fairview, 1 mile west of; center of Cincinnati pike, at road northwest.	39 12 15.4	83 44 39.3

HILLSBORO QUADRANGLE—Continued.**Geographic positions along highways east-west through center of quadrangle.**

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
Danville, 0.5 mile southeast of, forks in road, 20 feet east to center of culvert.....	39	08	21.2	83	43	52.3
Newmarket, at station, crossing of east-west road and Norfolk & Western Ry....	39	08	14.8	83	41	53.2
Newmarket, center of cross pikes.....	39	08	07.8	83	40	07.2
Newmarket, 2 miles east of; northeast corner of Harrisonville schoolhouse, 40 feet east by 10 feet north to center of crossroads; iron post stamped "Prim. Trav. Sta. No. 88, 1909, OHIO".....	39	07	44.5	83	37	57.8
Berryville, 2 miles west of; intersection of Hillsboro-West Union road and old State road.....	39	07	37.7	83	36	01.3
Berryville, 1.5 miles west of; T road southeast on top of hill.....	39	07	49.9	83	35	09.0
Berryville, 0.5 mile northwest of; at Prospect Church, center of cross pikes.....	39	08	06.0	83	33	50.6

Magnetic declination of north border of quadrangle, 0° 14' W.; of south border, 0° 36' W.; of west border, 1° 41' W.; of east border, 1° 28' E.; of center line east-west through the quadrangle 0° 18' W.

Geographic positions along highways.

Mayhill, 0.8 mile south of; forks of road in branch.....	39	00	01.8	83	30	51.3
--	----	----	------	----	----	------

SABINA QUADRANGLE.**Geographic positions along highways near east border of quadrangle.**

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
Bunker Hill schoolhouse, on Snowhill pike, road southeast.....	39	29	20.5	83	31	29.4
Staunton, 1 mile southwest of; on Worthington pike, at T road northwest.....	39	28	17.8	83	30	14.8
Junction of Worthington pike and the Plymouth-Rockville road.....	39	27	47.2	83	31	23.0
Junction of Plymouth-Rockville road and Leesburg pike.....	39	26	50.8	83	30	08.2
Crossing of Washington-Leesburg and Sabina-Greenfield pikes, Washington 9 miles, Leesburg 6 miles.....	39	25	52.9	83	30	49.0
Schoolhouse No. 6, 1.2 miles south of; on Washington-Leesburg pike at road east.....	39	24	29.6	83	31	38.2
Crossing of Washington-Leesburg and Sabina-East Monroe pikes.....	39	23	53.2	83	31	59.6
Olive Chapel Methodist Episcopal Church, west of junction of Barger and Stafford pikes.....	39	23	05.7	83	31	08.3
Fayette-Highland county line, at intersection with Barger pike.....	39	22	41.5	83	30	43.9
East Monroe, 1.25 miles northwest of; on west side of Barger pike at road northeast; iron post stamped "Prim. Trav. Sta. No. 61, 1909, OHIO".....	39	22	26.6	83	30	30.5
Lees Creek, center of steel bridge over.....	39	20	39.9	83	30	33.4
Crossing of Hillsboro-East Monroe pike and east-west road.....	39	19	43.8	83	31	14.8
Union schoolhouse, No. 6, 0.2 mile north of, on East-Monroe-Hillsboro pike at T pike west.....	39	18	40.0	83	31	25.4
Johnson's blacksmith shop, 0.3 mile south of; crossing of east-west road and East Monroe-Hillsboro pike.....	39	17	02.4	83	32	07.3
T road south.....	39	16	59.9	83	31	21.6
Andy Morrison's residence, 0.2 mile west of; center of T road east.....	39	16	14.3	83	31	11.0
Center of bridge.....	39	15	18.2	83	30	42.6

Geographic positions along highways east-west through center of quadrangle.

Snowhill, 1.5 miles northwest of; on east side of New Vienna-New Antioch pike at T road southwest; iron post stamped "Prim. Trav. Sta. No. 65, 1909, OHIO".....	39	21	56.8	83	43	47.8
Mount Olive schoolhouse (district 10), cross pikes.....	39	23	00.3	83	42	29.2
Snowhill, 2 miles northeast of; center of cross pikes.....	39	22	18.4	83	41	08.7
Joseph Edward's mail box, cross pikes.....	39	21	40.8	83	39	18.3
M. L. Rockford's mail box, on north-south pike, at pike northeast.....	39	21	35.4	83	38	07.4
T. Morrison's residence, southeast of, on east side of Lexington-Reesville pike at pike southwest; iron post stamped "Prim. Trav. Sta. No. 66, 1909, OHIO".....	39	22	43.4	83	36	32.4
Albert Van Pell's mail box, crossing of road northeast-southwest and Lexington-Reesville pike.....	39	23	21.8	83	36	44.8
H. S. Adams's mail box, on old Urbana pike, at road southwest, 20 feet north to center of bridge.....	39	23	55.9	83	35	57.4
Clinton-Fayette county line stone.....	39	23	54.9	83	35	21.1
Crossing of Morris pike and Barger pike.....	39	24	24.2	83	34	41.2
Crossing of Barger pike and north-south road.....	39	24	25.8	83	33	31.1
Crossing of Washington-Leesburg and Barger pike.....	39	23	53.2	83	31	59.6
Highland-Fayette county line, center of road at.....	39	22	41.2	83	30	04.6

Magnetic declination of east border of quadrangle, 0° 17' W.; of south border, 0° 14' W.; of center line east-west through quadrangle, 1° 13' W.

OCTA QUADRANGLE.

Geographic positions along highways east-west through center of quadrangle.

Stations.	Latitude.	Longitude.
Jamestown, 2 miles south of; southeast corner of crossroads; iron post stamped "Prim. Trav. Sta. No. 55, 1909, OHIO".....	39 37 33.9	83 43 51.6
Jamestown, 1 mile south of; center of T road east.....	39 38 20.8	83 43 48.8
Jamestown, about 500 feet west of station, crossing of Cincinnati, Hamilton & Dayton Ry. and pike.....	39 39 22.4	83 44 06.0
Oak Grove schoolhouse, No. 3, 0.8 mile southeast of; on Jamestown-Cedarville pike at road northwest.....	39 40 45.1	83 44 20.9
Oak Grove schoolhouse, 0.7 mile northwest of; on Jamestown-Cedarville pike at intersection with road southwest, 15 feet southwest to east corner of triangular grass plat.....	39 41 50.8	83 44 56.6
Center of pike on east-west line between Silver Creek and Jefferson townships.....	39 37 01.8	83 43 38.3
T road east, center of.....	39 35 46.7	83 43 22.2
Bowersville, center of cross streets, at town well.....	39 34 49.5	83 43 28.2
North-south road crossing.....	39 34 30.6	83 44 01.4
Greene-Clinton county line stone post, near road.....	39 33 16.9	83 44 28.8
Bowersville, 2.5 miles south of; 0.5 mile south of Greene-Clinton county line, center of crossroads.....	39 32 53.7	83 44 47.2
Jamestown, about 2.5 miles southeast of; T road south, center of triangular plat.....	39 37 19.4	83 42 15.8
Pleasant Valley schoolhouse, center of T road south.....	39 37 06.4	83 41 07.1
Rosemoor, near station, road crossing Cincinnati, Hamilton & Dayton Ry. track.....	39 37 43.3	83 40 00.2
Greene-Fayette county line post, center of Cincinnati, Hamilton & Dayton Ry. track opposite.....	39 37 37.1	83 39 45.8
Edgefield, road crossing Cincinnati, Hamilton & Dayton Ry.....	39 37 04.7	83 38 31.0
Edgefield, 1 mile north of; at Maple Grove schoolhouse, center of T road south.....	39 38 03.2	83 38 13.6
West Lancaster, in southwest part of town, southwest corner of intersection of roads at T road south; iron post stamped "Prim. Trav. Sta. No. 58, 1909, OHIO".....	39 37 22.6	83 36 43.1
Jasper-Jefferson township line, 10 feet south to center of T road south.....	39 36 37.2	83 35 12.0
Creamer farm, intersection of Washington-Jamestown pike with road northwest.....	39 36 24.0	83 33 54.8
Washington-Jeffersonville pike and crossroad, center of intersection, near Mr. Gaul's mail box.....	39 36 01.4	83 33 08.8
Jasper township, northeast corner of; center of north-south road at wire fence west.....	39 36 34.3	83 32 51.8
Parrott, near station, road crossing the Detroit, Toledo & Ironton Ry.....	39 36 51.8	83 31 53.2
Parrott, 1.25 miles east of station, north side of T road south; iron post stamped "Prim. Trav. Sta. No. 59, 1909, OHIO".....	39 36 56.7	83 30 29.4
Blackoak schoolhouse, center of road opposite.....	39 36 08.7	83 30 29.8
Hogler, crossing of Detroit, Toledo & Ironton Ry and northeast-southwest road.....	39 35 16.8	83 30 55.7

Geographic positions along highways near southwest corner of quadrangle.

Jasper Mills, Baltimore & Ohio R. R. crossing northeast of.....	39 31 19.1	83 30 27.0
Jasper, 0.8 mile east of station, at southwest corner of crossroads; iron post stamped "Prim. Trav. Sta. No. 60, 1909, OHIO".....	39 31 09.0	83 30 27.8
Corner stone at T road northwest.....	39 30 01.2	83 30 38.4

Magnetic declination of center line east-west through quadrangle, 0° 11' W.

XENIA QUADRANGLE.

Geographic positions along highways near west border of quadrangle.

Stations.	Latitude.	Longitude.
W. W. Mills's residence, center of cross pikes west.....	39 30 35.6	83 57 52.3
T road north, 20 feet north to south end of steel bridge.....	39 31 28.2	83 58 48.5
Warren-Clinton county line, stone on hillside on south side of pike, southwest of bridge over branch.....	39 31 25.9	83 58 52.1
Briar schoolhouse, 0.25 mile north of; stone corner at crossroads.....	39 32 19.0	83 58 26.0
Fork in pike, 25 feet east to corner of fence post.....	39 33 21.7	83 57 52.4
New Burlington, center of cross streets at post office.....	39 34 04.1	83 58 01.0
New Burlington, 0.5 mile west of; stone monument at intersection of Clinton, Warren, and Greene counties.....	39 34 10.3	83 58 36.3
New Burlington, 1 mile west of; at Cornstalk schoolhouse, center of cross pikes.....	39 34 14.2	83 59 08.5
Cornstalk schoolhouse, 1.5 miles north of; center of T pike west.....	39 35 40.4	83 59 37.3
Spring Valley, 1 mile east of; center of T pike south.....	39 36 25.7	83 59 27.2
Xenia, 4.5 miles from, T road southeast at guide post marked "Bellbrook 4½ miles, Xenia 4½ miles".....	39 38 24.3	83 59 52.6
Xenia, about 3.5 miles southwest of; on the lower Bellbrook pike at pike northwest.....	39 39 15.3	83 58 47.5
T road southwest at; R. F. Harper's residence.....	39 39 52.8	83 59 41.8
Rural Home schoolhouse, No. 9, 0.5 mile south of; on upper Bellbrook pike at pike north.....	39 40 43.4	83 59 18.7
Trebeins, at station, north end of wagon bridge over Little Miami River, center of crossroads.....	39 42 29.5	83 59 15.8
T. 3 N., R. 7 E., corner of secs. 8, 9, 14, and 15, center of north-south road at fence east.....	39 43 46.2	83 59 20.3
T. 3 N., R. 7 E., corner of secs. 9, 10, 15, and 16.....	39 44 38.9	83 59 15.1

XENIA QUADRANGLE—Continued.

Geographic positions along highways east-west through center of quadrangle.

Stations.	Latitude.	Longitude.
Spring Valley, about 1.7 miles northeast of; east-west road at center of Cincinnati pike, 25 feet north and 20 feet west to mail box.....	° ' " 39 37 32.3	° ' " 83 59 07.2
Richland Church, T road west.....	39 37 30.2	83 57 39.0
Richland schoolhouse, 0.2 mile east of; on Xenia-New Burlington pike at pike west.....	39 37 21.2	83 56 53.1
Xenia-Spring Valley township line stone, at T road west.....	39 37 17.8	83 55 10.6
Caesar's Creek, north-south pike at road west, south of covered bridge over creek.....	39 37 24.9	83 54 08.2
Xenia, about 5 miles southeast of; southeast corner of crossroads at Reformed Church and schoolhouse; iron post stamped "Prim. Trav. Sta. No. 54, 1909, OHIO".....	39 36 31.6	83 54 23.3
Xenia, 5 miles southeast of; on Xenia-Wilmington pike, at intersection of cross-road.....	39 36 49.5	83 53 11.7
Needmore schoolhouse, 600 feet east of; center of T road south.....	39 36 59.9	83 51 36.0
Mount Tabor Church, 0.2 mile west of; at Harvey Field's residence, center of grass plot at fork in roads.....	39 37 24.6	83 50 00.3
T road south.....	39 37 35.8	83 48 24.3
Patterson's Corners, 1.3 miles southwest of, intersection of pike and road south.....	39 37 47.1	83 47 16.5

Geographic positions along highways near east border of quadrangle.

Patterson's Corners, center of cross pikes.....	39 38 12.0	83 46 13.1
T road southwest.....	39 42 32.7	83 46 14.0
Schoolhouse, center of crossroads.....	39 43 05.0	83 46 32.1
Cedarville, about 3 miles southeast of; near northwest corner of T road northwest; iron post.....	39 43 22.4	83 45 12.2
T road northwest.....	39 43 22.4	83 45 11.3
Bowersville, 4.5 miles from; center of crossroads.....	39 31 45.4	83 45 59.4
Melvin, 4.5 miles from; at John Atley's residence, center of T road east.....	39 30 58.5	83 47 00.0

Magnetic declination of east border of quadrangle, 0° 09' W.; of center line east-west, 0° 28' E.; of west border, 0° 13' E.

SPRINGFIELD QUADRANGLE.

Point near Byron.

Stations.	Latitude.	Longitude.
Byron, 2.5 miles south of; west side of T road east, near quarter section corner; iron post stamped "Prim. Trav. Sta. No. 44, 1909, OHIO".....	° ' " 39 45 05.4	° ' " 83 59 15.35

BLANCHESTER QUADRANGLE.

Geographic positions along highways near west border of quadrangle.

Stations.	Latitude.	Longitude.
Harveysburg, 1.5 miles east of; on north side of pike at Warren-Clinton county line; iron post.....	° ' " 39 29 48.5	° ' " 83 59 01.4
Harveysburg, 1.5 miles east of; near St. John's Church, center of T road south.....	39 29 46.9	83 58 54.6
St. John's Church, in southeast corner of foundation; aluminum tablet stamped "Prim. Trav. Sta. No. 50, 1909, OHIO," elev. 943.....	39 29 46.6	83 58 48.1
Clarksville, about 0.3 mile southwest of station, south switch block.....	39 24 03.2	83 59 27.1
Clarksville, 0.2 mile west of; south side of pike, Clinton-Warren county line post.....	39 24 05.5	83 59 33.5
Clarksville, intersection of main street with Cincinnati-Wilmington pike.....	39 24 03.3	83 58 50.6
Center of T road east.....	39 29 54.9	83 47 06.4
Deserted camp, 1.5 miles north of; just east of Samuel Speer's residence, 40 feet north by 15 feet west to center of T road east, 15 feet west and 125 feet south to center of T road west; iron post stamped "Prim. Trav. Sta. No. 57, 1909, OHIO".....	39 29 54.5	83 47 06.3

SARDINIA QUADRANGLE.

Geographic positions along highways near south border of quadrangle.

Stations.	Latitude.	Longitude.
Sardinia, 2.5 miles east of; at 5 points near Coddaman schoolhouse, 30 feet north and 20 feet west to intersection of roads; iron post stamped "Prim. Trav. Sta. No. 86, 1909, OHIO"	° ' "	° ' "
County line, fork in road just south of, 10 feet north to center of bridge	39 00 07.5	83 45 41.33
Brown-Highland county line stone, on west side of road	39 01 10.7	83 45 05.5
Sardinia, 1 mile east of; road crossing	39 01 12.7	83 45 04.9
Sardinia, west part of, intersection of Norfolk & Western Ry. and Mount Orab pike	39 00 01.6	83 47 25.5
Sardinia, 1.2 miles west of; on Mount Orab-Sardinia pike, at T road north	39 00 26.0	83 48 40.2
Whiteoak, 1.2 miles east of station, T road south	39 00 38.3	83 49 52.7
Whiteoak, northeast corner of crossroads, 25 feet west and 10 feet south to center of crossroads; iron post stamped "Prim. Trav. Sta. No. 92, 1909, OHIO"	39 00 51.0	83 51 18.6
T road north	39 01 07.1	83 52 38.5
Mount Orab, center of town; cross streets	39 01 29.8	83 54 25.4
Williamsburg and Mount Orab pike, center of; opposite township line stone	39 01 39.4	83 55 11.9
Maple Grove schoolhouse, 1.25 miles east of; center of T road south	39 01 55.3	83 56 31.4
Maple Grove schoolhouse, center of T road south	39 00 57.6	83 57 37.9
	39 00 52.1	83 59 11.0

Geographic positions along highways east-west through center of quadrangle.

A. W. Willett's residence, on Cincinnati road at intersection of road east	39 07 41.2	83 45 42.5
Danville, 0.5 mile southwest, on southwest side of Cincinnati road at road west to Pricetown, 50 feet east and 25 feet north to center of forks; iron post stamped "Prim. Trav. Sta. No. 87, 1909, OHIO"	39 08 30.6	83 46 09.1
Horne-Salem township line, at crossing of Danville and Pricetown pike	39 08 32.4	83 46 40.0
Pricetown, center of cross pikes	39 08 34.4	83 48 09.4
Pricetown, 1 mile west of; center of pike at T road north	39 08 29.7	83 49 10.4
Harwood, center of cross pikes at post office	39 07 51.7	83 50 46.8
Harwood, 1 mile west of post office, stone in center of crossroad	39 07 49.9	83 51 38.6
Harwood, 1.2 miles west of post office, center of road at Highland-Brown county line; 15 feet southwest to road north	39 07 50.9	83 52 05.5
Northtown, 3 miles east of; at southeast corner of Harwood and Fivemile road, at road south, 20 feet west and 10 feet north to stone at forks; iron post stamped "Prim. Trav. Sta. No. 89, 1909, OHIO"	39 07 28.5	83 52 52.9
Gum Corner schoolhouse, 0.8 mile east of; T road south	39 07 16.4	83 54 05.1
Gum Corner schoolhouse, center of crossroads	39 07 11.9	83 54 51.5
Northtown (Fivemile), center of crossroads	39 07 09.4	83 55 58.4
Crossing of pike and road	39 06 54.2	83 57 27.2
Marathon, 2.5 miles east of; center of pike and road crossing	39 07 35.0	83 58 37.9
Dill, crossing of east-west pike and Baltimore & Ohio Southwestern R. R.	39 13 38.1	83 45 02.0

Geographic positions along highways near north border of quadrangle.

Lynchburg, in north corner of railroad fork, 29 feet south of store, 74 feet north-west of railroad station; iron post stamped "Prim. Trav. Sta. No. 64, 1909, OHIO"	39 14 30.8	83 47 32.0
Lynchburg, crossing of Main Street and Baltimore & Ohio Southwestern R. R.	39 14 30.5	83 47 32.4
M. Brown's mail box; T road southwest	39 13 59.5	83 59 11.8
T road southwest	39 14 26.9	83 59 41.3

Magnetic declination of east border of quadrangle $1^{\circ} 41' W.$; of south border, $0^{\circ} 34' E.$; of west border, $1^{\circ} 02' E.$; of center line east-west through quadrangle, $0^{\circ} 10' W.$

GEORGETOWN QUADRANGLE.

Geographic positions along highways from point near Russellville north to primary traverse station 86.

Stations.	Latitude.	Longitude.
Baird schoolhouse, 1.3 miles north by 0.5 miles east of; at turn of private road south	° ' "	° ' "
Ash Ridge post office, center of crossroads	38 53 20.1	83 45 00.7
Ash Ridge, 1 mile north of small village of Carlisle, on rise of ground clear of trees nearly northwest from church, on turnpike to Carlisle. Station mark, a glass bottle filled with cement, 3 feet below surface of ground; surface mark, a 6-inch drain tile pipe 2 feet long, filled with hydraulic cement concrete. Reference marks, stone monument with cross cut in top, in north-south fence line, 297.6 feet from triangulation station, azimuth to stone, $271^{\circ} 17' 48''$; stone monument with cross cut in top set on east-west fence line, 347.3 feet from triangulation station, azimuth to stone $1^{\circ} 12' 18''$ (Ash Ridge triangulation station, Coast and Geodetic Survey)	38 55 13.43	83 45 22.09
Ash Ridge, 1.7 miles north of post office, 15 feet east of J. Knutz' mail box, center of T road east	38 55 55.7	83 45 23.9
Schoolhouse No. 5, south end of small bridge, center of crossroads	38 56 39.5	83 45 06.0
Milepost 51, Norfolk & Western Ry., at north-south road crossing	38 58 40.5	83 45 06.9
Coddaman Church and schoolhouse, 0.8 mile south by 0.2 mile east of; center of T road south	38 59 32.8	83 45 19.3

GEORGETOWN QUADRANGLE—Continued.**Geographic positions along highways from Baird schoolhouse to Russellville.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Russellville, 1.7 miles east of; 15 feet north to sycamore tree, pike at road south...	38 51 54.8	83 45 23.4
Russellville, 0.8 mile east of; center of T pike south.....	38 52 00.5	83 46 23.6
Russellville, center of crossing of Main and Columbus streets.....	38 52 00.6	83 47 14.2

Geographic positions along electric railroad, Russellville to Georgetown.

Pike crossing at spur.....	38 52 19.2	83 50 06.1
Georgetown, 2.5 miles east of; 25 feet north by 10 feet east to center of T road southwest, corner of T road west, at west end of electric railroad bridge over Straight Creek; iron post stamped "Prim. Trav. Sta. No. 23, 1910, OHIO".....	38 52 05.5	83 50 53.8
Crossing of electric railroad and Ohio River Columbus Ry.....	38 52 14.4	83 53 32.3
Georgetown, junction of Main and Ohio streets.....	38 52 17.2	83 54 13.5
Georgetown, dome of courthouse.....	38 51 56.33	83 54 14.77

Geographic positions along public highways from Georgetown west to Feesburg, thence north to New Harmony.

Georgetown, 1 mile west of; center of triangle in forks.....	38 51 51.1	83 55 16.4
Georgetown, 0.5 mile north by 1.5 miles west of; east point of triangle at forks.....	38 52 23.2	83 55 55.0
Eden Church, forks of road at, 25 feet north to junction of rail and wire fences.....	38 52 08.1	83 57 32.2
Martin schoolhouse, No. 6, center of T road northwest.....	38 52 17.8	83 58 26.0
Feesburg, 1 mile southeast of; center of T road northeast.....	38 52 02.5	83 59 08.8
Feesburg, center of crossroads.....	38 52 42.2	83 59 55.9
William Baird's farm, center of T road north.....	38 54 51.2	83 59 58.6
Locust Ridge, 1 mile south by 0.5 mile east of; center of crossing of north-south pike and road east-west.....	38 58 43.5	83 59 50.4

Geographic positions along highways from Mount Ayr schoolhouse to Russellville.

Mount Ayr schoolhouse, southwest corner of yard, 15 feet west and 25 feet south of center of T road north; iron post stamped "Prim. Trav. Sta. No. 31, 1910, OHIO".....	38 46 56.7	83 45 50.5
Mount Ayr schoolhouse, 1 mile north of center of T road west.....	38 47 44.5	83 46 00.0
Mount Ayr schoolhouse, 2 miles north of; center of crossing of Decatur pike and north-south road.....	38 48 43.8	83 45 49.9
C. W. Brown's mail box, center of T road west.....	38 49 36.6	83 45 50.5
Russellville, 2 miles south by 1.5 miles east of; just east of J. M. Moore's residence, 15 feet north and 20 feet east of center of crossroads; iron post stamped "Prim. Trav. Sta. No. 32, 1910, OHIO".....	38 50 21.9	83 45 31.2
Corner of Byrd and Jefferson townships, east end of gate.....	38 50 26.8	83 46 05.9
Russellville, 1 mile south of; center of crossing of north-south pike and east-west road.....	38 50 58.4	83 47 13.5

Geographic positions along highways from Higginsport east via Ripley to Mount Ayr schoolhouse.

Higginsport, 0.7 miles west of; center of bridge.....	38 47 17.1	83 58 49.4
Higginsport; center of cross streets at Christian Church.....	38 47 24.1	83 58 03.8
Bridge over Whiteoak Creek, center of triangle in forks of pike just east of.....	38 47 36.7	83 57 11.8
Sink Creek, center of pike at road north.....	38 47 13.7	83 55 58.1
Cohalls Branch, 20 feet west by 5 feet south to north corner of bridge over, center of pike at road north.....	38 47 09.4	83 54 40.6
Milepost 5, 0.2 mile south of; pike crossing Ohio River & Columbus Ry.....	38 46 35.0	83 54 49.6
Levanna, 1.2 miles west by 0.6 miles north of; T road north.....	38 46 01.7	83 53 24.7
Levanna, 20 feet east by 5 feet north to center of crossroads, at southwest corner of crossroads; iron post stamped "Prim. Trav. Sta. No. 30, 1910, OHIO".....	38 45 59.1	83 53 01.9
Hornets Run, center of trestle of Ohio River & Columbus Ry., over.....	38 45 17.2	83 51 15.5
Ripley, 1 mile east by 0.5 mile north of; center of covered bridge over Redoak Creek.....	38 45 15.2	83 49 38.9
Ripley, 1.8 miles east by 0.5 mile north of; on Ripley-Neal pike at road north-east, 15 feet east to center of small bridge.....	38 45 12.5	83 48 46.4
John Greiner's farm, on top of hill, center of T pike.....	38 45 03.2	83 48 02.0
Fred Swalle's residence, Decatur pike at T pike south.....	38 46 03.3	83 47 57.2
Beasley's farm, Decatur pike at road north.....	38 46 34.8	83 47 08.2
J. H. Self's mail box, forks of road at.....	38 46 27.2	83 46 26.6

Magnetic declination of west half of south border of quadrangle, 0° 52' E.; of east half of south border of quadrangle, 0° 03' W.; of south half of east border of quadrangle, 0° 32' W.; of south half of west border of quadrangle, 1° 05' E.; of north half of west border of quadrangle, 0° 56' E.; of north border of east half of quadrangle, 2° 13' W.; of west half of east-west center line of quadrangle, 0° 40' E.

GEORGETOWN QUADRANGLE—Continued.

Geographic positions along highways near north border of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Eagle-Washington township line.....	38 59 32.1	83 46 32.9
Sardinia, 2 miles east of.....	38 59 20.8	83 46 12.9

Magnetic declination north edge of quadrangle, 0° 34' W.

MAYSVILLE QUADRANGLE.

Geographic positions along river road from Ripley southeast to Aberdeen.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Ripley, center of main street at crossing of Ohio River & Columbus Ry.....	38 44 43.2	83 50 45.7
Ripley, 1.2 miles south by 1 mile east of; center of bridge.....	38 43 37.7	83 49 48.4
Ripley, 1.8 miles south by 1.2 miles east of; center of steel bridge over Eagle Creek	38 43 14.8	83 49 30.7
Damson orchard, telephone pole at forks of road.....	38 42 28.5	83 48 26.5
O'Connor schoolhouse, No. 3, 500 feet north of; center of T road west.....	38 41 24.0	83 46 15.6

Geographic positions along highways from Aberdeen north to Hickory Ridge Church.

Aberdeen, center of crossing of Market and Third streets.....	38 39 19.9	83 45 42.4
Aberdeen, 0.5 mile north of; on east side of pike just north of road to northeast, 35 feet south and 25 feet west to center of forks, 60 feet north to south end of steel bridge over Fishgut Creek; iron post stamped "Prim. Trav. Sta. No. 20, 1910, OHIO".....	38 39 42.0	83 45 40.8

BETHEL QUADRANGLE.

Geographic positions along highways from Feesburg to New Harmony.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Feesburg, 0.5 mile northwest of; 10 feet west by 10 feet south to center of T road, at Rose Hill Cemetery, on east side of T road southwest; iron post stamped "Prim. Trav. Sta. No. 24, 1910, OHIO".....	38 52 57.4	84 00 24.4
Feesburg, 1 mile north by 1 mile west of; center of T road northeast.....	38 53 28.0	84 01 00.9
Maple, center of crossroads.....	38 54 12.1	84 02 08.8
Maple, Clermont-Brown county line; stone.....	38 54 12.5	84 02 08.8
Maple, 1 mile east by 0.8 mile north of; center of T pike at Maple Dale farm.....	38 54 51.0	84 00 58.8
Hamerstown, 1 mile northwest of; north-south road crossing electric railroad.....	38 55 33.1	84 00 17.9
John Block's residence, crossing of Hamerstown-Bethel pike and north-south road.....	38 55 59.6	84 00 15.9
Center of crossing of north-south road and road northwest-southeast.....	38 57 25.4	84 00 05.6
Locust Ridge, 15 feet west to north end of bridge, center of crossroads.....	38 59 30.8	84 00 27.0

Geographic positions along highways from Maple west to Point Isobel, thence north via Tate triangulation station to Bantam.

Maple, 1.2 miles southwest of; center of crossroads.....	38 53 32.6	84 03 10.1
C. F. Swope farm, center of crossroads.....	38 54 03.9	84 04 05.5
Center of concrete culvert, Franklin-Tate township line.....	38 53 23.8	84 05 31.0
Mount Olive Church, 1 mile west of; 20 feet north to center of small bridge, center of T road north.....	38 54 00.2	84 06 22.2
Point Isobel, east part of; 20 feet north of center of T road south; iron post stamped "Prim. Trav. Sta. No. 25, 1910, OHIO".....	38 53 45.8	84 07 39.4
Point Isobel, center of cross streets.....	38 53 46.4	84 07 54.0
Point Isobel, 1 mile north of, center of crossroads.....	38 54 30.2	84 08 02.7
Saltair, center of cross pikes.....	38 55 35.3	84 08 33.3
Monroe and Washington townships, corner of gate.....	38 55 41.9	84 08 52.6
Tate and Monroe township line, 0.5 mile east of; on boundary fence separating land of J. Hibbets from that of Salt, at crossroads near post office. Station marks: Pottery pyramid 3 feet below surface of ground, surmounted by section of sewer pipe 2 feet long filled with hydraulic cement; concrete reaches to surface of ground, and station center is marked by 4-inch iron spike. Reference mark: 4 drain tile pipes 4 inches in diameter, filled with concrete (Tate triangulation station).....	38 56 26.71	84 08 01.53
C. J. Paeltz's residence, east-west pike at T road south.....	38 57 28.0	84 08 29.5
South Bantam, north-south road crossing electric railroad at station.....	38 57 57.9	84 08 48.5
Bantam, north-south road crossing electric railroad.....	38 59 54.9	84 08 29.8

BETHEL QUADRANGLE—Continued.

Positions along highways from Point Isabel west to Point Pleasant, thence north via New Richwood to Spann schoolhouse.

Stations.	Latitude.	Longitude.
Point Isabel, 1 mile south by 1.5 miles west of; center of triangle in forks of road just north of covered bridge over Big Indian Creek.....	38 52 52.4	84 09 35.8
Log house with tile chimney, center of T road south.....	38 53 13.2	84 10 31.2
Big Indian Creek, center of stream at ford.....	38 53 17.7	84 10 55.2
Large elm tree on fence line, center of T road south.....	38 53 26.7	84 11 41.8
Washington-Monroe township line, center of road at.....	38 53 27.8	84 12 16.4
Point Pleasant, 1.3 miles east of; center of triangle in T road east just west of bridge.....	38 53 32.3	84 12 28.6
Point Pleasant, southwest corner of T street east, 25 feet north and 10 feet east to its center; iron post stamped "Prim. Trav. Sta. No. 26, 1910, OHIO".....	38 53 38.2	84 13 59.5
Point Pleasant, 0.8 mile northwest of, at large culvert; center of T road east.....	38 54 12.2	84 14 27.5

Positions along river road from Point Pleasant to point near Higginsport.

Monroe-Washington township stake, on east side of pike.....	38 52 32.4	84 13 32.8
Little Indian Creek, 35 feet east by 10 feet south to south end of stone culvert, pike at T road east.....	38 51 59.9	84 13 25.7
Moscow, center of crossroads at Clermont Distilling & Mill Co.'s plant, 12 feet south to center of small bridge.....	38 51 28.5	84 13 25.8
Pike at T road east, at corner of hedge fence.....	38 50 26.4	84 13 22.6
Neville, 0.8 mile northwest of; center of T pike east.....	38 49 10.7	84 12 51.9
Neville, 30 feet east and 10 feet north to front door of public school building, in grounds and in front of; iron post stamped "Prim. Trav. Sta. No. 27, 1910, OHIO".....	38 48 36.5	84 12 35.1
Neville, center of cross streets at Methodist Church.....	38 48 31.9	84 12 36.8
Neville, 2.8 miles east by 0.5 mile south of; center of small triangle in forks.....	38 48 03.2	84 09 33.4
Chilo, 0.2 mile northwest of; 30 feet north by 60 feet west to center of small bridge, 15 feet west and 5 feet north to south end of stone culvert, set at southeast corner of crossroads; iron post stamped "Prim. Trav. Sta. No. 28, 1910, OHIO".....	38 47 47.7	84 08 27.2
Chilo, center of cross pikes in north part of town.....	38 47 43.3	84 08 11.5
Chilo, 1 mile east by 0.5 mile south of, at road north.....	38 47 18.6	84 07 14.0
Rural, 30 feet southwest of pump, center of crossroads.....	38 46 40.8	84 05 19.5
Utopia, 15 feet south by 30 feet west of center of crossroads; iron post stamped "Prim. Trav. Sta. No. 29, 1910, OHIO".....	38 46 33.3	84 03 26.7
Brown-Clermont county line, stone on north side of pike.....	38 46 35.5	84 03 09.2
Schoolhouse No. 9, center of pike opposite.....	38 46 42.8	84 02 03.1
Boudesferry, center of crossroads, 20 feet east by 15 feet north to southwest corner of porch of house.....	38 46 51.2	84 00 27.7
Augusta, Ky., cupola of public school building.....	38 46 24.9	84 00 11.7

Geographic positions along highways from Utopia north to Feesburg.

Utopia, 1 mile north of; center of road at short lane to P. T. Barthlow's residence, on top of hill.....	38 47 18.8	84 03 16.6
Cedron, center of covered bridge over Bullskin Creek.....	38 48 18.7	84 03 16.8
Cedron, about 0.3 mile east of; stone on Brown-Clermont county line.....	38 48 21.8	84 02 55.2
Forks of road near forks of Bullskin Creek, 15 feet south by 5 feet east to cross cut on large sycamore tree.....	38 48 37.2	84 02 29.4
Steel bridge over Bullskin Creek, just east of; center of pike at road south; 15 feet south to sycamore tree.....	38 49 09.4	84 02 32.8
A. E. Cooper's mail box, 10 feet north of; pike at dirt road south.....	38 49 25.7	84 01 30.7
Wm. Metzker's mail box, center of pike at T road northeast.....	38 49 05.8	84 00 37.7
Barr's schoolhouse, No. 8, center of T pike southwest.....	38 50 15.4	84 00 08.6
Barr's schoolhouse, No. 8, 1.2 miles northwest of, 35 feet east by 15 feet north to Goslin's mail box, forks of pike.....	38 51 02.1	84 00 57.7
Feesburg, 1 mile southwest of; east point of triangle at forks of pike.....	38 52 02.3	84 00 43.7
Feesburg, center of crossroads.....	38 52 42.18	83 59 55.87

Magnetic declination of south border of quadrangle, 1° 00' E.; of south half of east border of quadrangle, 1° 05' E.; of south half of west border of quadrangle, 1° 07' E.; of north half of east border, 0° 56' E.; of north half of west border, 0° 53' E.; of east half of east-west center line, 1° 11' E.; of west half of east-west center line, 1° 0' E.; of north half of north-south line, 1° 0' E.

MORNING VIEW QUADRANGLE.

Geographic positions along highways from Point Pleasant north via New Richmond to Spann schoolhouse.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Clermontville, T pike north at; 20 feet south by 5 feet east to northeast corner of platform scales.....	38 55 24.4	84 15 02.2
Clermontville, 0.8 mile northwest of; center of pike at road southeast up hill....	38 56 01.3	84 15 50.1
New Richmond, center of intersection of Front and Walnut streets	38 57 03.0	84 17 01.3
Twelvemile Creek, center of steel bridge over.....	38 57 42.2	84 17 13.8
Steel bridge over creek, center of T pike east, just north of, just east of electric railroad.....	38 59 07.5	84 17 24.3
Geo. Neep's mail box, center of T road northeast at.....	38 59 51.8	84 16 28.6

EAST CINCINNATI QUADRANGLE.

Geographic positions along highways between Spann and Guinea.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Spann, 0.2 mile east of; center of T pike south at bridge.....	39 00 25.9	84 15 25.7
Spann, 0.5 mile east of; 91 feet south of south corner of Spann schoolhouse; iron post stamped "Prim. Trav. Sta. No. 95, 1909, OHIO".....	39 00 48.1	84 15 09.2
Wm. Eppert's mail box, center of crossroads.....	39 01 40.2	84 15 18.1
Merwin, 670 feet southeast of post office, Ohio pike at pike southwest.....	39 03 13.8	84 15 21.0
Withamsville, Ohio pike at T road north at post office.....	39 03 52.3	84 16 45.4
Withamsville, 1.3 miles north of, east-west pike at center of T road south.....	39 05 02.2	84 16 35.4
Gleniste, north-south pike crossing Cincinnati, Georgetown & Portsmouth electric railroad at station.....	39 05 40.1	84 15 46.7
Gleniste, 0.5 mile northwest of, center of T pike north.....	39 06 21.2	84 16 14.7
Dave Hausermann's mail box, bend in road at.....	39 07 10.2	84 16 06.9
Perrintown, 0.7 mile west of; on north side of east-west pike, 10 feet west and 10 feet north of center of T road; iron post stamped "Prim. Trav. Sta. No. 96, 1909, OHIO".....	39 08 16.7	84 15 01.3
Guinea, 0.3 mile northwest of; at store, center of cross pikes.....	39 13 44.7	84 15 22.8

BATAVIA QUADRANGLE.

Geographic positions along highways between Clarence Reiley's residence and Marathon.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Clarence Reiley's residence, center of crossroads.....	39 00 21.8	84 04 23.3
Center of covered bridge over Clover Creek, north.....	39 00 22.5	84 05 57.6
Schoolhouse No. 3, Tate township, center of T road east just southeast of.....	39 00 16.7	84 06 49.1
Bantam, 0.5 mile west of, south side of Bethel-Cincinnati pike, in front of Frederick Ropp's residence; iron post stamped "Prim. Trav. Sta. No. 94, 1909 OHIO".....	39 00 07.3	84 09 07.7
Electric railroad crossing over public road.....	39 00 30.8	84 10 12.4
Mount Holly, at post office, center of T pike north.....	39 00 47.5	84 10 53.5
Hamlet, Ohio pike at T road south at.....	39 01 11.2	84 12 21.1
Amelia, center of T pike southwest at Odd Fellows Hall.....	39 01 49.3	84 13 15.7
Amelia, 0.8 mile southwest of, center of T road west.....	39 01 16.7	84 13 43.5
Perrintown, center of T pike southwest at W. O. Robinson's store.....	39 08 16.4	84 14 12.5
Perrintown, 2 miles north of, center of T road west.....	39 09 58.0	84 14 14.3
Mulberry, northeast of old school building, center of T pike southeast.....	39 11 38.0	84 14 24.1
Barber schoolhouse, No. 9, center of T pike northwest.....	39 12 10.2	84 13 15.2
Union schoolhouse (subdistrict No. 5), center of cross pikes.....	39 12 53.1	84 14 25.3
Schoolhouse No. 7, center of cross pikes.....	39 14 13.9	84 14 36.6
Stone Lick, center of T pike south at.....	39 07 19.8	84 11 50.7
Stone Lick, 2 miles east of; center of Perrintown-Marathon pike at road north-south.....	39 07 09.6	84 09 44.3
Boston, in west part of town, 20 feet south and 15 feet east of center of T pike north; iron post stamped "Prim. Trav. Sta. No. 98, 1909 OHIO".....	39 07 17.5	84 08 32.2
Boston, 2 miles east of, at Hutchinson's residence, center of Perrintown-Marathon pike at T road north.....	39 07 45.9	84 06 04.0
Monterey, at Christian Church, center of cross pikes.....	39 08 00.5	84 04 52.6
Monterey, 0.8 mile east of, center of cross pikes.....	39 08 08.4	84 04 08.9
Monterey, 1.7 miles east of, center of T pike south.....	39 08 12.4	84 03 08.4
Marathon, 1 mile west of; center of T pike south.....	39 08 20.0	84 01 31.6

BATAVIA QUADRANGLE—Continued.

Geographic positions along highways along east border of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
New Harmony, center of crossroads	39 00 48.7	84 00 45.9
Brown-Clermont county line stone in northeast corner of J. W. Abbot's garden..	39 00 48.1	84 01 17.5
Henning's mill, 0.5 mile west of; center of T road east	39 00 49.1	84 02 32.0
Todds Run schoolhouse, T road west, south of	39 02 09.0	84 02 34.4
Williamsburg, 0.5 mile southeast of; at C. P. McKeever's residence, center of forks of pike	39 02 57.3	84 02 48.9
Williamsburg, third street crossing, Norfolk & Western Ry., west of station	39 03 27.7	84 03 08.8
Center of pike at T road east	39 05 12.6	84 01 58.8
Harbold schoolhouse, 1 mile south of; center of crossroads	39 05 45.3	84 01 04.4
Harbold schoolhouse, center of crossroads	39 06 28.5	84 00 40.8
Brown-Clermont county line stone, east of T road	39 07 15.3	84 00 25.0
Marathon, 1.5 miles south of; at W. G. Dougherty's mail box, T road east	39 07 15.5	84 00 25.8
Brown-Clermont county line stone, south of covered bridge	39 08 03.6	84 00 18.0
Marathon, 0.5 mile south of; 20 feet due east to west end of covered bridge; iron post stamped "Prim. Trav. Sta. No. 90, 1909, OHIO"	39 08 16.5	84 00 11.2
Brown-Clermont county line stone	39 08 27.6	84 00 15.0
Marathon, T road south at, near M. E. Applegates' store	39 08 39.5	84 00 26.6
Marathon, 0.5 mile north of; forks in pike	39 09 11.5	84 00 44.8
Lerado, cross pikes at post office, 20 feet north to south corner of public scales	39 10 29.2	84 00 30.1
Crossroads, center of	39 12 17.0	84 01 42.8
Crossroads, center of, at large brick house	39 13 05.6	84 00 30.5
Woodville, in northwest corner of A. W. Garrison's front yard, 20 feet north and 20 feet west to town pump at center of cross pikes; iron post stamped "Prim. Trav. Sta. No. 91, 1909, OHIO"	39 15 17.5	84 00 38.6
Woodville, at church, on northeast-southwest pike at T pike north	39 15 19.2	84 00 26.3

Magnetic declination of east border of quadrangle, 1° 2' E.; of south border of quadrangle, 0° 58' E.; of west border of quadrangle, 0° 55' E.; of east-west line through center of quadrangle, 0° 48' E.

LEBANON QUADRANGLE.

Geographic positions along highways near north border of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Red Lion, 0.5 mile east of; north of pike, 15 feet south by 25 feet east to center of small bridge over branch to north, 10 feet north to southeast corner of E. W. Decker's garden; iron post stamped "Prim. Trav. Sta. No. 48, 1909, OHIO"	39 29 25.5	84 14 17.3
Red Lion, 1.5 miles from; T road north, 20 feet south to guidepost "Springfield 5 miles"	39 29 14.1	84 13 10.6
Red Lion, 2.5 miles east of, 3.5 miles north of Lebanon, center of crossroads	39 29 06.2	84 12 09.2
Red Lion, 3.5 miles east of; corner of secs. 27, 28, 33, and 34, T. 4, R. 4.	39 29 29.1	84 10 47.6
Utica, corner of secs. 21, 22, 27, and 28, T. 4, R. 4, 10 feet west and 10 feet south to center of crossroads	39 29 40.0	84 09 37.7
Yale, 4.5 miles from; 4 miles from Waynesville, center of crossroads and section corner	39 29 34.9	84 08 29.0
Schoolhouse, center of T road south at section corner	39 29 31.0	84 07 18.0
Waynesville, 3.5 miles southwest of; on east side of T road west at Ellis Ivin's residence, 10 feet west by 25 feet south to center of stone culvert; iron post stamped "Prim. Trav. Sta. No. 49, 1909, OHIO"	39 29 22.1	84 06 34.9
Waynesville, 2.5 miles southwest of; center of steel bridge over Little Miami River	39 29 51.0	84 06 06.6
Wayne Township schoolhouse, No. 10, 0.2 mile south of; 10 feet south to center of triangular grass plat	39 29 57.8	84 04 36.8

LEBANON QUADRANGLE—Continued.

Geographic positions along highways east-west through center of quadrangle.

Stations.	Latitude.	Longitude.
Hopkinsville, 0.5 mile southwest of; center of Foster and Morrow pikes at pike south.....	° ' " 39 20 02.1	° ' " 84 13 43.6
Hopkinsville, at northeast corner of cross pikes, 300 feet south by 20 feet west to center of pikes; iron post stamped "Prim. Trav. Sta. No. 51, 1909 OHIO".....	39 20 20.4	84 13 07.9
Hopkinsville, 1 mile northeast of; on Foster-Morrow pike at pike north.....	39 20 47.5	84 12 19.0
Zoar Methodist Episcopal Church, west of; center of cross pikes.....	39 21 02.9	84 11 26.4
Foster-Morrow pike at T pike north.....	39 21 21.8	84 10 28.5
Morrow, crossing of north-south street and Cincinnati & Muskingum Valley R. R. at Milepost 147, 550 feet east of and just southeast of intersection of northeast-southwest road and the Cincinnati & Muskingum Valley R. R. on east side of wagon road; iron post stamped "Prim. Trav. Sta. No. 52, 1909, OHIO".....	39 20 33.1	84 06 10.4
Milepost 146, private road crossing.....	39 20 43.2	84 05 15.2
Milepost 145, 0.2 mile west of; near east end of bridge, pike crossing under railroad.....	39 21 01.2	84 04 26.5
Hicks, road crossing northwest-southeast at station.....	39 21 29.9	84 03 19.4
Milepost 143, overhead road crossing.....	39 21 29.9	84 02 36.7
Spur to sawmill, east-west road crossing at.....	39 22 34.2	84 01 57.7
Clarksville, 2.3 miles southwest of; on east side of Cincinnati & Muskingum Valley R. R., 50 feet west and 15 feet south to center of road crossing; iron post stamped "Prim. Trav. Sta. No. 53, 1909, OHIO".....	39 22 57.0	84 01 00.8
Milepost 140, 0.2 mile south of, at crossing of northeast-southwest road.....	39 23 10.7	84 00 02.9

Magnetic declination of north border of quadrangle, 0° 28' E.; of center line east-west through quadrangle, 0° 45' E.

At Loveland.

Loveland, about 0.5 mile southeast of; at southeast corner of T pike east; iron post stamped "Prim. Trav. Sta. No. 97, 1909, OHIO".....	39 15 30.9	84 14 57.6
Loveland, crossing of Baltimore & Ohio Southwestern R. R. and Pennsylvania R. R.....	39 16 00.6	84 15 31.9

WAYNESVILLE QUADRANGLE.

Geographic positions along highways east-west through center of quadrangle.

Stations.	Latitude.	Longitude.
Spring Valley, 0.8 mile northwest of; fork at mail box.....	° ' " 39 37 21.7	° ' " 84 00 22.9
Pennsylvania R. R. crossing, 220 feet north of milepost "C-60".....	39 37 37.8	84 00 05.4
Bellbrook, 3.5 miles east of; north side of lower Bellbrook pike, at road northeast; iron post stamped "Prim. Trav. Sta. No. 45, 1909, OHIO".....	39 38 05.9	84 00 50.6
Little Miami River, center of covered bridge over.....	39 37 59.1	84 03 04.9
Bellbrook, center of cross streets at post office.....	39 38 10.0	84 04 13.8
T. 3, R. 6, corner of secs. 1, 2, 31, and 32.....	39 38 02.5	84 04 14.4
T. 2, R. 6, corner of secs. 1, 2, 7, and 8, center of north-south pike fence.....	39 38 17.6	84 05 22.9
Greene-Montgomery county line, center of T pike north at corner of secs. 7, 8, 13, and 14, T. 2, R. 6.....	39 38 17.1	84 06 39.4
Bellbrook, 3 miles west of, at northwest corner of T road north; iron post stamped "Prim. Trav. Sta. No. 46, 1909, OHIO".....	39 38 35.8	84 07 41.3
T. 2, R. 6, corner of secs. 19, 20, 25, and 26, center of pike at north-south fence.....	39 38 37.9	84 08 52.0
T. 2, R. 6, quarter corner between secs. 25 and 26, 1 mile north of Centerville, center of crossroads.....	39 38 38.1	84 09 26.2
Centerville, quarter corner between secs. 25 and 30, T. 2, R. 6, center of crossroads.....	39 37 42.6	84 09 31.1
T. 2, R. 6, corner of secs. 25, 30, 31, and 36, 10 feet west of T road north.....	39 37 41.3	84 10 05.3
T. 2, R. 6, corner of secs. 25, 26, 35, and 36, 10 feet east of T road north; section corner stone.....	39 37 39.9	84 11 16.5
Tps. 1 and 2, Rs. 5 and 6, corner of secs. 1, 6, 7, and 12.....	39 38 01.8	84 12 21.1
Intersection of Dayton-Springboro and Centerville-Miamisville pikes, southeast corner of; iron post stamped "Prim. Trav. Sta. No. 47, 1909, OHIO".....	39 38 16.4	84 13 29.2
T. 1, R. 6, corner of secs. 7, 12, 13, and 18.....	39 38 09.5	84 13 30.0

Geographic positions near south border of quadrangle.

T pike south, 15 feet south by 5 feet west to D. S. Woollard's mail box.....	39 30 08.5	84 03 23.2
Carson's Creek, center of.....	39 30 17.9	84 02 20.8
T road south, 20 feet north to elm tree at end of fence.....	39 30 09.0	84 01 31.1
Harveysburg, 0.5 mile east of; center of cross pikes at creamery.....	39 30 00.7	84 00 00.8

Magnetic declination of east border of quadrangle, 0° 13' E.; of south border of quadrangle, 0° 28' E.; of central line east-west through quadrangle, 0° 08' E.

ST. PARIS QUADRANGLE.

Geographic positions along highways near west border of quadrangle.

Stations.	Latitude.	Longitude.
St. Paris, 1.5 miles west of; at southwest corner of crossroads, 25 feet west and 85 feet north of quarter corner between secs. 24 and 30, T. 3, R. 11; iron post stamped "Prim. Trav. Sta. No. 42 1909 OHIO"	40 08 00.0	83 59 12.4
T. 3, R. 11, quarter corner between secs. 23 and 29, crossroads	40 07 08.1	83 59 17.2
T. 3, R. 11, corner of secs. 22, 23, 28, and 29	40 06 42.0	83 59 19.9
T. 3, R. 11, corner of secs. 20, 21, 26, and 27	40 04 57.7	83 59 30.6
T. 3, R. 11, corner of secs. 19, 20, 25, and 26, crossroads	40 04 04.9	83 59 35.7
T. 3, R. 10, corner of secs. 23, 24, 29, and 30, Champaign-Clark county line	40 02 17.5	83 59 46.7
T. 3, R. 10, corner of secs. 22, 23, 28, and 29	40 01 24.9	83 59 52.1
T. 3, R. 10, corner of secs. 21, 22, 27, and 28, crossroads	40 00 31.3	83 59 57.6
Alcony, 3 miles east by 1 mile south of, at northwest corner of Troy-Springfield pike and north-south road, 25 feet north and 20 feet west of crossroads near township house; iron post stamped "Prim. Trav. Sta. No. 43-1909 OHIO"	39 59 42.7	84 00 02.7
T. 3, R. 11, corner of secs. 24 and 30, at jog in road west	40 08 24.6	83 59 09.9
T. 3, R. 12, corner of secs. 19, 20, 25, and 26, crossroads	40 09 17.4	83 59 08.5
Prince schoolhouse, No. 1, 430 feet south of, T road east	40 10 09.6	83 59 03.5
T. 3, R. 12, corner of secs. 21, 22, 27, and 28	40 10 52.3	83 58 59.6
T. 3, R. 12, corner of secs. 22, 23, 28, and 29, at T road east	40 11 54.3	83 58 53.6
Carysville, crossroads	40 12 43.1	83 58 48.4
T. 3, R. 12, corner of secs. 23, 24, 29, and 30	40 12 46.8	83 58 47.9
T. 3, Rs. 12 and 13, corner of secs. 19, 24, 25, and 30	40 13 38.8	83 58 42.6
Quincy, 4 miles south of; at northeast corner of crossroads, 20 feet east and 20 feet north of corner of secs. 19, 20, 25, and 26, T. 3, R. 13; iron post stamped "Prim. Trav. Sta. No. 35 1909 OHIO"	40 14 32.1	83 58 37.1
T. 3, R. 13, corner of secs. 25, 26, 31, and 32, near church, crossroads	40 14 35.8	83 59 46.2

Magnetic declination of west border of quadrangle, 0° 02' W.

TROY QUADRANGLE.

Geographic positions along highways near north border of quadrangle.

Stations.	Latitude.	Longitude.
T. 3, R. 13, west corner of secs. 31 and 32, T road on Champaign-Shelby county line	40 14 39.7	84 01 02.3
T. 2, R. 13, east corner of secs. 1 and 2, on Champaign-Shelby county line	40 14 32.0	84 01 03.0
New Palestine, 0.5 mile north by 0.5 mile west of, T road north, 40 feet north of J. H. Loudenback's mail box	40 14 35.6	84 02 11.6
T. 2, R. 13, corner of secs. 7, 8, 13, and 14, crossroads	40 14 39.2	84 03 22.2
T. 2, R. 13, corner of secs. 13, 14, 19, and 20, T road south	40 14 43.6	84 04 30.6
Tps. 1 and 2, R. 13, corner of secs. 19, 20, 25, and 26	40 14 48.6	84 05 39.6
Sidney, 3.5 miles east by 1.8 miles south of; 25 feet north and 20 feet east of T road north; iron post stamped "Prim. Trav. Sta. No. 36 1909 OHIO"	40 14 49.7	84 05 51.7
T. 1, R. 13, corner of secs. 25, 26, 31, and 32, crossroads	40 14 52.4	84 06 38.3
T. 1, R. 13, corner of secs. 1, 2, 31, and 32, T road south	40 14 57.9	84 07 48.6
T. 1, Rs. 12 and 13, corner of secs. 1, 6, 7, and 12	40 14 09.3	84 09 03.3
T road west at schoolhouse	40 13 50.1	84 09 39.6
T road east	40 14 07.0	84 11 22.7
Sidney, 3 miles south of; center of bridge over Miami River	40 14 38.7	84 10 58.4

Magnetic declination of north border of quadrangle, 0° 13' E.

Geographic positions along highways near west border of quadrangle.

T. 1, R. 12, corner of secs. 16, 17, 22, and 23, T road west	40 12 31.3	84 11 29.8
T. 1, R. 12, corner of secs. 15 and 21, on Miami-Shelby county line	40 11 39.3	84 11 34.9
T. 1, R. 12, corner of secs. 14, 15, 20, and 21, crossroads	40 10 46.9	84 11 40.5
T. 1, R. 12, corner of secs. 13, 14, 19, and 20, T road east	40 09 53.0	84 11 45.6
Piqua, 2 miles east of, at northeast corner of T road north near schoolhouse No. 7, 20 feet south by 20 feet west to south corner of secs. 13 and 19, T. 1, R. 12; iron post stamped "Prim. Trav. Sta. No. 37 1909 OHIO"	40 09 00.5	84 11 50.8
T. 1, R. 12, corner of secs. 19 and 25, T road north	40 09 04.3	84 12 59.3
Piqua, crossing of Main and Ash streets	40 08 59.7	84 14 21.8
T. 1, R. 11, corner of secs. 17, 18, 23, and 24, near schoolhouse No. 1, crossroads	40 08 07.8	84 11 51.9
T. 1, R. 11, corner of secs. 16, 17, 22, and 23, crossroads	40 07 15.8	84 11 55.6
T. 1, R. 11, corner of secs. 15, 16, 21, and 22, crossroads	40 06 24.1	84 12 00.1
T. 1, R. 11, corner of secs. 21, 22, 27, and 28, crossroads	40 06 27.3	84 13 08.5
Covered bridge crossing east-west road and electric railway	40 06 28.2	84 13 55.1
Milestone marked "P. 4, T. 3," on west side of pike	40 05 12.7	84 13 23.1
Milestone marked "P. 7, T. 1," 15 feet north of; center of T road west	40 03 44.0	84 12 50.2
Troy, McKay Avenue crossing of Cincinnati, Hamilton & Dayton Ry.	40 02 24.0	84 12 50.4
North-south crossing of Cincinnati, Hamilton & Dayton Ry.	40 01 35.0	84 13 04.4
Tps. 4 and 5 N., R. 6 E., corner of secs. 4, 5, 32, and 33, crossroads	40 00 37.6	84 13 11.4
T. 4 N., R. 6 E., corner of secs. 4, 5, 8, and 9, on west side of north-south road, just north of crossroads; iron post stamped "Prim. Trav. Sta. No. 40 1909 OHIO"	39 59 44.9	84 13 20.1

Magnetic declination of west border of quadrangle, 0° 12' E.

TROY QUADRANGLE—Continued.

Geographic positions along highways east-west through center of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
T. 1, R. 12, corner of secs. 7 and 13.....	40 08 56.2	84 10 42.1
Old cemetery, T road north.....	40 08 52.2	84 09 35.7
Tps. 1 and 2, R. 12, south corner of secs. 1 and 31.....	40 08 48.4	84 08 26.0
Tps. 1 and 2, R. 11, north corner of secs. 6 and 36.....	40 08 48.3	84 08 23.0
T. 2, R. 12, south corner of secs. 25 and 31.....	40 08 44.4	84 07 17.7
T. 2, R. 11, north corner of secs. 30 and 36.....	40 08 44.2	84 07 14.0
T. 2, R. 12, south corner of secs. 19 and 25; T road north.....	40 08 40.5	84 06 10.0
Fletcher, 0.5 mile east of; at southeast corner of T road south, 20 feet south and 30 feet east of north corner of secs. 24 and 30, T. 2, R. 11; iron post stamped "Prim. Trav. Sta. No. 41 1909 OHIO".....	40 08 40.1	84 06 06.0
T. 2, R. 12, south corner of secs. 13 and 19, at T road north near schoolhouse.....	40 08 36.6	84 05 01.6
T. 2, R. 11, north corner of secs. 18 and 24, at T road south near schoolhouse.....	40 08 36.5	84 05 00.0
T. 2, R. 12, south corner of secs. 7 and 13, at T road north.....	40 08 32.8	84 03 53.3
T. 2, R. 11, north corner of secs. 12 and 18, at T road south.....	40 08 32.7	84 03 52.6
T. 2, Rs. 11 and 12, corner of secs. 1, 6, 7, and 12, crossroads near Lena schoolhouse.....	40 08 29.1	84 02 44.0
Miami-Champaign county line, center of pike.....	40 08 25.2	84 01 36.2

Magnetic declination of center of quadrangle, 0° 01' E.; of east border of quadrangle, 0° 02' W.

Geographic positions along highways near north border of quadrangle.

Shelby County infirmary, 0.2 mile southwest of, 20 feet east and 10 feet south of crossroads; iron post stamped "Prim. Trav. Sta. No. 29 1909 OHIO".....	40 14 52.9	84 12 22.4
T. 7 N., R. 6 E., quarter corner between secs. 16 and 17, T road west.....	40 14 11.6	84 13 30.6
T. 7 N., R. 6 E., quarter corner between secs. 17 and 18, T road north.....	40 14 10.0	84 14 33.5

COVINGTON QUADRANGLE.

Geographic positions along highways near north border of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
T. 7 N., R. 6 E., west corner of secs. 18 and 19.....	40 13 42.6	84 15 42.5
T. 9 N., R. 5 E., east corner of secs. 13 and 24.....	40 13 41.0	84 15 42.6
Bunker Flat schoolhouse, 0.5 mile east of, crossroads.....	40 14 20.0	84 16 18.1
T. 9 N., R. 5 E., corner of secs. 10, 11, 14, and 15, crossroads.....	40 14 32.2	84 18 01.2
T. 9 N., R. 5 E., corner of secs. 9, 10, 15, and 16, near schoolhouse, at fence north-south, east-west road.....	40 14 31.8	84 19 08.9
Houston, in south part of, at E. C. Mitchell's store; T road west, 15 feet south and 15 feet east to guidepost "Piqua 9 miles—Russia 4 miles".....	40 14 57.0	84 20 06.5
Houston, 1 mile west of, in top of southeast corner of abutment of railway bridge; aluminum tablet stamped "Prim. Trav. Sta. No. 30 1909 OHIO".....	40 14 56.2	84 21 20.2
T. 10 N., R. 4 E., corner of secs. 9, 10, 15, and 16, Shelby-Darke county line, T road south.....	40 14 28.1	84 26 00.6
Catholic cemetery, T road south.....	40 14 27.4	84 27 54.2
Versailles, 1 mile north of; at southeast corner of T road east, 20 feet north and 20 feet east of its center; iron post stamped "Prim. Trav. Sta. No. 31 1909 OHIO".....	40 14 27.2	84 29 03.2

Magnetic declination of north border of quadrangle, 0° 04' E.

Geographic positions along highways east-west through center of quadrangle.

Tps. 6 and 8 N., Rs. 5 and 6 E., quarter corner between secs. 13 and 18.....	40 08 52.8	84 15 34.3
Piqua corporation line, T road north.....	40 08 52.6	84 16 08.3
T. 8 N., R. 5 E., quarter corner between secs. 13 and 14.....	40 08 52.4	84 16 42.6
T. 8 N., R. 5 E., quarter corner between secs. 14 and 15, crossroads.....	40 08 51.8	84 17 54.4
T. 8 N., R. 5 E., quarter corner between secs. 15 and 16, T road south.....	40 08 49.5	84 19 01.6
T. 8 N., R. 5 E., quarter corner between secs. 16 and 17, T road south.....	40 08 48.7	84 20 10.0
Covington, 2 miles north of; at southeast corner of crossroads, 25 feet west and 15 feet north of crossroads; iron post stamped "Prim. Trav. Sta. No. 33, 1909 OHIO".....	40 08 50.5	84 21 08.9
T. 8 N., R. 5 E., corner of secs. 17, 18, 19, and 20.....	40 08 21.0	84 21 18.0
Quarter corner, T road west at T. 8 N., R. 5 E., secs. 19 and 20.....	40 07 55.6	84 21 17.6
Covington, large steel water tank.....	40 07 07.1	84 21 21.9
T. 8 N., R. 5 E., quarter corner on west side of sec. 19, T road east.....	40 07 54.2	84 22 25.6
T. 9 N., R. 4 E., quarter corner on east side of sec. 24, T road west.....	40 07 53.8	84 22 25.6
T. 9 N., R. 4 E., quarter corner between secs. 23 and 24, crossroads.....	40 07 53.0	84 23 34.7
T. 9 N., R. 4 E., corner of secs. 13, 14, 22, and 29, crossroads.....	40 08 18.6	84 24 43.8
T. 9 N., R. 4 E., corner of secs. 15, 16, 21, and 22, on Miami-Darke county line.....	40 08 17.8	84 25 51.4
T. 9 N., R. 4 E., corner of secs. 16, 17, 20, and 21, crossroads.....	40 08 16.8	84 26 59.8
T. 9 N., R. 4 E., corner of secs. 17, 18, 19, and 20.....	40 08 15.6	84 28 08.9
Bradford, 2.5 miles west by 0.5 mile north of; on south side of east-west road, 765 feet east of quarter corner between secs. 18 and 19, T. 9 N., R. 4 E., at crossroads, about 3 feet north of east-west fence; iron post stamped "Prim. Trav. Sta. No. 39 1909 OHIO".....	40 08 14.9	84 28 33.3

Magnetic declination of east border of quadrangle, 0° 12' E.; of center line through quadrangle, 0° 02' E.

BELLEFONTAINE QUADRANGLE.

Geographic positions along highways near west border of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
T. 2 N., R. 8 E., corner of secs. 27, 28, 33, and 34, crossroads.....	40 22 35.8	83 58 49.6
Maplewood, 3 miles east of; southeast corner of crossroads, quarter corner between secs 27 and 34, T. 2 N., R. 8 E.; iron post stamped "Prim. Trav. Sta. No. 33 1909 OHIO".....	40 22 36.1	83 58 15.1
T. 2 N., R. 8 E., quarter corner on north side of sec. 27, T road south near schoolhouse.....	40 23 28.4	83 58 16.4
T. 7 S., R. 8 E., corner of secs. 19, 20, 29, and 30.....	40 24 36.4	83 58 27.7
T. 7 S., R. 8 E., corner of secs. 17, 18, 19, and 20.....	40 25 29.6	83 58 28.1
T. 7 S., R. 8 E., corner of secs. 7, 8, 17, and 18, T road south, 715 feet east of schoolhouse No. 4.....	40 26 21.6	83 58 28.5
T. 7 S., Rs. 7 and 8 E., corner of secs. 7, 12, 13, and 18, crossroads.....	40 26 21.7	83 59 36.9
T. 7 S., Rs. 7 and 8 E., corner of secs. 1, 6, 7, and 12, T road west.....	40 27 14.1	83 59 37.0
Tps. 6 and 7 S., Rs. 7 and 8 E., corner of secs. 1, 6, 31, and 36, crossroads near schoolhouse No. 8.....	40 28 06.5	83 59 37.2
T. 6 S., Rs. 7 and 8 E., corner of secs. 25, 30, 31, and 36, T road west, 22 feet east to dressed stone post.....	40 28 58.9	83 59 37.4
Santa Fe, 0.5 mile south of, in top of southwest corner of bridge abutment; aluminum tablet stamped "Prim. Trav. Sta. No. 34 1909 OHIO".....	40 29 06.1	83 59 37.6
Tps. 1 and 2 N., R. 8 E., corner of secs. 3, 4, 33, and 34, crossroads.....	40 21 43.0	83 58 49.2
T. 1 N., R. 8 E., corner of secs. 3, 4, 9, and 10, crossroads.....	40 20 50.9	83 58 48.8
T. 1 N., R. 8 E., corner of secs. 9, 10, 15, and 16.....	40 19 58.2	83 58 48.1
T. 1 N., R. 8 E., corner of secs. 15, 16, 21, and 22.....	40 19 08.6	83 58 47.9
Quincy, crossing of Cleveland, Cincinnati, Chicago & St. Louis Ry. and Detroit, Toledo & Ironton Ry.....	40 17 51.4	83 58 18.4
T. 3 N., R. 13 E., corner of secs. 22, 23, 28, and 29, T road west.....	40 17 10.2	83 58 21.4
T. 3 N., R. 13 E., corner of secs. 21, 22, 27, and 28, crossroads near schoolhouse, on Logan-Champaign county line.....	40 16 16.1	83 58 26.9
T. 3 N., R. 13 E., at corner of secs. 20, 21, 26, and 27, T road east, near schoolhouse..	40 15 23.6	83 58 32.2

Magnetic declination of west border of quadrangle, 0° 10' E.

SIDNEY QUADRANGLE.

Geographic positions along highways near west border of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Tps. 7 and 8 S., R. 5 E., corner of secs. 1, 2, 35, and 36.....	40 22 49.0	84 14 24.3
Anna, 1 mile south by 2 miles west of; northwest corner of crossroads, 15 feet north and 25 feet west of corner of secs. 1, 6, 31, and 36, Tps. 7 and 8 S., Rs. 5 and 6 E.; iron post stamped "Prim. Trav. Sta. No. 28 1909 OHIO".....	40 22 49.9	84 13 15.9
T. 7 S., Rs. 5 and 6 E., corner of secs. 25, 30, 31, and 36, crossroads.....	40 23 42.0	84 13 15.7
T. 7 S., Rs. 5 and 6 E., corner of secs. 19, 24, 25, and 30, crossroads.....	40 24 34.7	84 13 15.8
T. 7 S., Rs. 5 and 6 E., corner of secs. 13, 18, 19, and 24, crossroads.....	40 25 26.8	84 13 15.8
T. 7 S., Rs. 5 and 6 E., corner of secs. 7, 12, 13, and 18, crossroads.....	40 26 19.2	84 13 15.9
T. 7 S., Rs. 5 and 6 E., corner of secs. 1, 6, 7, and 12, crossroads.....	40 27 11.7	84 13 15.9
Tps. 6 and 7 S., Rs. 5 and 6 E., corner of secs. 1, 6, 31, and 36, T road south.....	40 28 04.0	84 13 16.1
T. 7 S., R. 5 E., north corner of secs. 1 and 2.....	40 28 03.1	84 14 24.5
T. 6 S., R. 5 E., south corner of secs. 35 and 36, T road north.....	40 28 03.1	84 14 24.9
Greenville treaty line, T road north on.....	40 22 01.3	84 13 15.4
T. 8 N., R. 6 E., corner of secs. 3, 4, 9, and 10, crossroads.....	40 20 43.6	84 12 31.8
T. 8 N., R. 6 E., corner of secs. 9, 10, 15, and 16, crossroads.....	40 19 51.3	84 12 30.4
T. 8 N., R. 6 E., corner of secs. 21, 22, 27, and 28, crossroads.....	40 18 06.2	84 12 27.8
T. 8 N., R. 6 E., corner of secs. 27, 28, 33, and 34, crossroads.....	40 17 15.4	84 12 26.1
Cleveland, Cincinnati, Chicago & St. Louis Ry., north-south road crossing.....	40 16 23.6	84 12 25.0

Magnetic declination of west border of quadrangle, 0° 24' W.

Geographic positions near west border of quadrangle.

T. 6 S., Rs. 5 and 6 E., secs. 25, 30, 31, and 36, Shelby-Auglaize county line.....	40 28 56.3	84 13 16.7
T. 6 S., R. 5 E., corner of secs. 25, 26, 35, and 36, crossroads.....	40 28 55.3	84 14 25.8

SIDNEY QUADRANGLE—Continued.

Geographic positions along highways on east-west line through center of quadrangle.

Stations.	Latitude.	Longitude.
Tps. 7 and 8 S., R. 6 E., corner of secs. 5, 6, 31, and 32, near schoolhouse No. 6, crossroads.....	40 22 49.9	84 12 06.4
T. 7 S., R. 6 E., corner of secs. 32 and 33, fence north at south corner of sections.....	40 22 50.1	84 10 58.1
Tps. 7 and 8 S., R. 6 E., corner of secs. 3, 4, 33, and 34, near schoolhouse No. 8.....	40 22 50.4	84 09 49.6
Tps. 7 and 8 S., R. 6 E., corner of secs. 3, 4, 33, and 34.....	40 22 50.7	84 08 41.0
Tps. 7 and 8 S., R. 6 E., corner of secs. 1, 2, 35, and 36.....	40 22 51.0	84 07 32.6
Schoolhouse No. 5, 0.2 mile east of, crossroads.....	40 22 51.1	84 07 15.4
T. 7 S., Rs. 6 and 7 E., south corner of secs. 31 and 36, T road north.....	40 22 51.4	84 06 24.0
Maplewood, 3 miles west of; in southwest corner of abutment to bridge on Greenville treaty line road at Louis Covault's house; aluminum tablet stamped "Prim. Trav. Sta. No. 32 1909 OHIO".....	40 22 53.6	84 05 15.4
T. 2 N., R. 7 E., corner of secs. 26, 27, 34, and 35, near schoolhouse No. 9, T road east.....	40 22 32.4	84 04 31.8
T. 2 N., R. 7 E., corner of secs. 25, 26, 35, and 36, crossroads.....	40 22 33.2	84 03 23.4
Maplewood, Main Street crossing of Detroit, Toledo & Ironton Ry.....	40 22 34.4	84 01 26.8
T. 2 N., R. 8 E., corner of secs. 29, 30, 31, and 32, crossroads.....	40 22 34.6	84 01 07.3
Shelby and Logan counties, stone boundary post between.....	40 22 34.9	84 00 15.6

Geographic position near southwest corner of quadrangle.

Quarter corner between secs. 10 and 11, at T road west.....	40 15 05.7	84 11 13.9
---	------------	------------

Magnetic declination of line through center of quadrangle, 0° 17' E.; of east border of quadrangle, 0° 10' E.; of south border of quadrangle, 0° 13' E.

LORAMIE QUADRANGLE.

Geographic positions along highways through center of quadrangle.

Stations.	Latitude.	Longitude.
Maria Stein, 2 miles south of, in southeast corner of foundation of bridge on east-west road, 0.2 mile east of section corner; aluminum tablet stamped "Prim. Trav. Sta. No. 26 1909 OHIO".....	40 22 42.5	84 29 21.8
Tps. 7 and 8 S., R. 3 E., corner of secs. 1, 2, 35, and 36, crossroads.....	40 22 42.5	84 28 27.9
Tps. 7 and 8 S., Rs. 3 and 4 E., corner of secs. 1, 6, 31, and 36, Mercer-Auglaize county line.....	40 22 42.3	84 27 19.1
Tps. 7 and 8 S., R. 4 E., corner of secs. 5, 6, 31, and 32, Mercer-Auglaize county line, T road west.....	40 22 42.4	84 26 01.8
T road south.....	40 22 29.2	84 24 53.2
Loramie, Catholic Church spire.....	40 21 04.5	84 22 17.4
Minster, corner of secs. 26, 27, 34, and 35, T. 7 S., R. 4 E., cross streets.....	40 23 35.5	84 22 35.4
Minster, 1 mile east of; in southeast abutment of bridge over ditch, 40 feet west and 10 feet south from corner of secs. 25, 26, 35, and 36, T. 7 S., R. 4 E., at T road south; aluminum tablet stamped "Prim. Trav. Sta. No. 27 1909 OHIO".....	40 23 36.0	84 21 27.4
T. 7 S., R. 4 E., east corner of secs. 25 and 36, Auglaize-Shelby county line, T road west.....	40 23 36.6	84 20 18.7
T. 7 S., R. 5 E., west corner of secs. 30 and 31, Auglaize-Shelby county line, T road east.....	40 23 37.7	84 20 18.7
T. 7 S., R. 5 E., corner of secs. 29, 30, 31, and 32, T road north.....	40 23 38.2	84 18 59.5
T. 7 S., R. 5 E., corner of secs. 28, 29, 32, and 33, crossroads.....	40 23 39.4	84 17 50.4
T. 7 S., R. 5 E., corner of secs. 27, 28, 33, and 34, near schoolhouse No. 6, T road south.....	40 23 39.7	84 16 42.0
Tps. 7 and 8 S., R. 5 E., corner of secs. 3, 4, 33, and 34, T road east.....	40 22 47.0	84 16 41.6
Tps. 7 and 8 S., R. 5 E., corner of secs. 2, 3, 34, and 35; crossroads.....	40 22 48.0	84 15 32.9

Geographic positions along highways near south border of quadrangle.

T. 9 N., R. 5 E., corner of secs. 5, 6, 7, and 8, T road west.....	40 15 22.0	84 21 27.2
T. 9 N., R. 5 E., west corner of secs. 6 and 7, near crossroads.....	40 15 21.4	84 22 35.3
T. 9 N., R. 4 E., east corner of secs. 1 and 12, near crossroads.....	40 15 21.6	84 22 35.3
T. 10 N., R. 4 E., corner of secs. 1, 2, 11, and 12, T road north.....	40 15 21.1	84 23 43.9
T. 10 N., R. 4 E., corner of secs. 2, 3, 10, and 11, crossroads.....	40 15 20.7	84 24 52.6
T. 10 N., R. 4 E., corner of secs. 3, 4, 9, and 10, Shelby-Darke county line, T road east.....	40 15 20.4	84 26 01.5

Magnetic declination of east-west line through center of quadrangle, 0° 08' W.; of east border of quadrangle, 0° 24' W.; of south border of quadrangle, 0° 04' E.

LORAMIE QUADRANGLE—Continued.**Geographic positions along highways near north border of quadrangle.**

Stations.	Latitude.	Longitude.
New Knoxville, 3 miles east by 1 mile south of; at southwest corner of crossroads, 15 feet north and 25 feet east to corner of secs. 26, 27, 34, and 35, T. 6 S., R. 5 E.; iron post stamped "Prim. Trav. Sta. No. 6, 1909 OHIO".....	° ' "	° ' "
T. 6 S., R. 5 E., corner of secs. 27, 28, 33, and 34, T road north (Shelby-Auglaize county line).....	40 28 54.4	84 15 34.5
T. 6 S., R. 5 E., corner of secs. 28, 29, 32, and 33, T road south (Shelby-Auglaize county line).....	40 28 54.4	84 16 42.7
T. 6 S., R. 5 E., corner of secs. 29, 30, 31, and 32, crossroads (Shelby-Auglaize county line).....	40 28 53.5	84 17 51.5
T. 6 S., R. 5 E., west corner of secs. 30 and 31, T road east (northwest corner Shelby County).....	40 28 52.8	84 19 00.0
T. 6 S., R. 4 E., east corner of secs. 25 and 36; T road west.....	40 28 52.3	84 20 20.7
New Knoxville, 2 miles southwest of, northeast corner of schoolhouse No. 4; aluminum tablet stamped "elev. 918 ADJ 1905 OHIO Prim. Trav. Sta. No. 7 1909".....	40 28 51.2	84 20 20.7
T. 6 S., R. 4 E., corner of secs. 25, 26, 35, and 36, crossroads.....	40 28 50.5	84 21 05.2
T. 6 S., R. 4 E., corner of secs. 26, 27, 34, and 35, crossroads.....	40 28 50.8	84 21 29.7
T. 6 S., R. 4 E., corner of secs. 27, 28, 33, and 34.....	40 28 50.6	84 22 37.8
St. Marys, 4 miles south of; in northwest corner of schoolhouse No. 1; aluminum tablet stamped "912 ADJ 1905 OHIO Prim. Trav. Sta. No. 8 1909".....	40 28 50.4	84 23 46.9
T. 6 S., R. 4 E., corner of secs. 28, 29, 32, and 33, crossroads.....	40 28 49.9	84 23 51.5
T. 6 S., R. 4 E., corner of secs. 20, 21, 28, and 29, crossroads.....	40 28 50.2	84 24 55.4
T. 6 S., R. 4 E., corner of secs. 29, 30, 31, and 32, crossroads near schoolhouse No. 8.....	40 29 42.8	84 24 55.6
T. 6 S., R. 3 E., east corner of secs. 25 and 26, on Mercer-Auglaize county line....	40 28 50.0	84 26 03.8
Montezuma, 3 miles east of, 25 feet east and 20 feet south to T road north; iron post stamped "Prim. Trav. Sta. No. 9 1909 OHIO".....	40 28 49.8	84 27 17.8
	40 29 15.5	84 29 18.5

Magnetic declination of north border of quadrangle, 0° 05' W.

ST. HENRY QUADRANGLE.**Geographic positions near north border of quadrangle.**

Stations.	Latitude.	Longitude.
T. 6 S., R. 3 E., quarter corner between secs. 27 and 28, near township house, crossroads.....	° ' "	° ' "
T. 6 S., R. 3 E., quarter corner between secs. 28 and 29, T road north.....	40 29 15.3	84 30 44.0
Montezuma, crossing of Cincinnati, Hamilton & Dayton Ry.....	40 29 15.3	84 31 52.9
	40 29 18.0	84 33 10.1

Geographic positions along highways near northwest corner of quadrangle.

T. 6 S., R. 1 E., corner of secs. 22, 23, 26, and 27, 20 feet north and 20 feet west of crossroads at section corner; iron post stamped "Prim. Trav. Sta. No. 23 1909 OHIO".....	40 29 40.7	84 43 36.9
T. 6 S., R. 1 E., corner of secs. 26, 27, 34, and 35, crossroads.....	40 28 48.0	84 43 36.6

LIMA QUADRANGLE.**Geographic positions near west border of quadrangle.**

Stations.	Latitude.	Longitude.
Buckland, 1.5 miles east of; at southeast corner of crossroads, 35 feet west and 10 feet north to center of crossroads; iron post stamped "Prim. Trav. Sta. No. 5 1909 OHIO".....	° ' "	° ' "
T. 5 S., Rs. 5 and 6 E., near corner of secs. 1, 6, 7, and 12, T road north.....	40 37 40.1	84 14 08.6
T. 5 S., R. 6 E., near corner of secs. 5, 6, 7, and 8, near church and schoolhouse, crossroads.....	40 37 40.1	84 13 19.8
	40 37 41.4	84 12 11.9

SPENCERVILLE QUADRANGLE.

Geographic positions along west border of quadrangle.

Stations.	Latitude.	Longitude.
T. 3 S., R. 3 E., south corner of secs. 35 and 36, line between Van Wert and Mercer counties	° ' "	° ' "
T. 4 S., R. 3 E., north corner of secs. 1 and 2, on line between Van Wert and Mercer counties	40 43 42.3	84 28 31.1
T. 4 S., R. 3 E., corner of secs. 1, 2, 11, and 12, at Church of God, corner of crossroads	40 43 42.3	84 28 31.5
T. 4 S., R. 3 E., corner of secs. 12, 13, 11, and 14, 0.2 mile east of Baptist Church, corner of crossroads	40 42 49.4	84 28 31.2
North-south road crossing Cincinnati, Hamilton & Dayton Ry.	40 41 57.2	84 28 30.8
T. 4 S., R. 3 E., corner of secs. 13, 14, 23, and 24	40 41 04.8	84 28 30.7
T. 4 S., R. 3 E., center of sec. 24, near Dunkard Church, at crossroads	40 41 04.6	84 28 30.7
St. Marys River, center of steel bridge over	40 40 38.7	84 27 56.2
T. 4 S., R. 3 E., corner of secs. 25, 26, 35, and 36, T road south	40 39 53.9	84 27 56.1
T. 4 S., R. 3 E., south corner of secs. 35 and 36, near crossroads	40 39 19.9	84 28 30.5
T. 5 S., R. 3 E., north corner of secs. 1 and 2, near crossroads	40 38 27.5	84 28 30.4
Elm Grove schoolhouse, No. 10, northwest corner of crossroads, 20 feet west and 20 feet south to corner of secs. 1, 2, 11, and 12, T. 5 S., R. 3 E.; iron post stamped "Prim. Trav. Sta. No. 3 1909 OHIO"	40 38 27.5	84 28 30.2
T. 5 S., R. 3 E., corner of secs. 11, 12, 13, and 14, crossroads	40 37 35.2	84 28 29.8
T road east	40 36 42.5	84 28 30.0
T. 5 S., R. 3 E., quarter corner between secs. 24 and 25, crossroads	40 35 49.9	84 28 29.7
T. 5 S., R. 3 E., quarter corner between secs. 25 and 36, T road west	40 34 57.4	84 27 54.9
Auglaize-Mercer county line, T road north	40 34 04.8	84 27 54.8
Pump factory, north-south road crossing Lake Erie & Western R. R.	40 33 04.1	84 27 20.0
Grand Reservoir lock, west end of bridge over	40 32 34.2	84 24 56.4
T. 5 S., R. 4 E., corner of secs. 16, 17, 20, and 21, crossroads	40 31 18.1	84 25 18.2
	40 30 35.2	84 24 55.9

Geographic positions along highways near center of quadrangle.

T. 5 S., Rs. 3 and 4 E., corner of secs. 1, 6, 7, and 12, Auglaize-Mercer county line, crossroads	40 37 35.0	84 27 21.6
T. 5 S., R. 4 E., corner of secs. 5, 6, 7, and 8, crossroads	40 37 35.0	84 26 05.7
T. 5 S., R. 4 E., corner of secs. 4, 5, 8, and 9, near church and schoolhouse, crossroads	40 37 35.2	84 24 56.7
T. 5 S., R. 4 E., corner of secs. 3, 4, 9, and 10, crossroads	40 37 35.2	84 23 48.0
T. 5 S., R. 4 E., corner of secs. 2, 3, 10, and 11	40 37 35.5	84 22 39.2
T. 5 S., R. 4 E., corner of secs. 1, 2, 11, and 12, T road north	40 37 36.0	84 21 30.7
Tps. 4 and 5 S., Rs. 4 and 5 E., corner of secs. 1, 6, 31, and 36, T road west	40 38 29.4	84 20 21.7
Kossuth, 0.8 mile southeast of, at southwest corner of intersection of northwest-southeast pike with road south, on range line, 15 feet east and 10 feet north to center of intersection; iron post stamped "Prim. Trav. Sta. No. 4 1909 OHIO"	40 38 53.8	84 20 22.0
Pike, at road south	40 38 21.1	84 19 22.2
Buckland, 1.2 miles west by 0.3 mile north of, crossroads	40 37 51.5	84 17 05.1
Buckland, 0.3 mile north of, crossroads	40 37 50.7	84 15 38.0

Magnetic declination of line through center of quadrangle, 0° 09' W.; of south border of quadrangle, 0° 05' W.; of west border of quadrangle, 0° 14' W.

Alvordton, Berne, Bobo, Butler, Celina, Continental, Defiance, Delphos, Edon, Halls Corners, Mark Center, Montpelier, Paulding, Van Wert, and Wauseon quadrangles.

DEFIANCE, FULTON, HENRY, MERCER, PAULDING, PUTNAM, VAN WERT, AND WILLIAMS COUNTIES.

The following geographic positions in northwestern Ohio were determined by primary traverse. They are for the most part the result of a readjustment of lines previously published in Bulletins 201, 245, and 310, to correct an error found in a line of 1901 in the Halls Corners quadrangle. In this new adjustment new lines in Halls Corners and Paulding quadrangles here included were taken into account, as were also connections made by primary traverse of 1911 with triangulation stations in Michigan.

The field work was done in the Wauseon quadrangle in 1901 by G. T. Hawkins, and in 1901 and 1905 by J. R. Ellis; in the Alvordton,

Defiance, Mark Center, Butler, and Continental quadrangles in 1901 by G. T. Hawkins, and in 1905 by J. R. Ellis; in the Edon and Montpelier quadrangles in 1905 by J. R. Ellis; in the Paulding quadrangle in 1901 and 1903 by G. T. Hawkins, and in 1905, 1909, 1910, and 1911 by J. R. Ellis; in the Halls Corners quadrangle in 1901 by G. T. Hawkins, and in 1905, 1909, 1910, and 1911 by J. R. Ellis; in the Van Wert and Celina quadrangles in 1903 by G. T. Hawkins, and in 1909 by J. R. Ellis; and in the Berne, Bobo, and Delphos quadrangles in 1909 by J. R. Ellis.

ALVORDTON QUADRANGLE.

Geographic positions along Lake Shore & Michigan Southern Ry.

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
Mileposts 38 and 39, east and west road crossing between.....	41	31	42.8	84	15	26.3
Mileposts 39 and 40, north and south road crossing between.....	41	31	36.8	84	16	02.8
Mileposts 40 and 41, north and south road crossing between.....	41	31	25.5	84	17	12.1
Archbold station.....	41	31	15.5	84	18	12.8
Archbold, main street crossing.....	41	31	14.1	84	18	21.9
Mileposts 42 and 43, north and south road crossing between.....	41	31	02.7	84	19	31.3
Mileposts 43 and 44, north and south road crossing between.....	41	30	53.0	84	20	30.4
Milepost 45, north and south road crossing near.....	41	30	35.9	84	22	14.7
Mileposts 45 and 46, north and south road crossing between.....	41	30	27.6	84	23	05.0
Mileposts 46 and 47, north and south road crossing between.....	41	30	18.8	84	23	59.1
Stryker, main street crossing.....	41	30	10.3	84	24	50.9
Stryker station.....	41	30	09.0	84	24	59.2
Mile post 48, north and south road crossing near.....	44	30	03.3	84	25	33.5

• Geographic positions along highways on west border of quadrangle.

T. 6 N., R. 3 E., north corner of secs. 1 and 2, T road south.....	41	30	50.2	84	28	37.3
T. 7 N., R. 3 E., corner of secs. 25, 26, 35, and 36, crossroads.....	41	31	42.5	84	28	40.1
T. 7 N., R. 3 E., corner of secs. 23, 24, 25, and 26, 0.5 mile north of, T road south.....	41	33	00.9	84	28	39.8
T. 7 N., R. 3 E., corner of secs. 14, 15, 22, and 23, T road east.....	41	33	27.5	84	29	48.7
T. 7 N., R. 3 E., corner of secs. 10, 11, 14, and 15.....	41	34	19.7	84	29	48.5
T. 7 N., R. 3 E., corner of secs. 2, 3, 10, and 11, crossroads.....	41	35	11.9	84	29	48.6
T. 8 N., R. 3 E., southwest corner of sec. 35, in southwest corner of field of Joseph Eberly, northwest corner of his house bears S. 2° E., distant 91.4 feet; southwest corner of Warnick's house bears N. 74° W., distant 76.4 feet; iron post stamped "Prim. Trav. Sta. No. 16, 1905".....	41	36	03.1	84	29	50.0
T. 8 N., R. 3 E., north corner of secs. 34 and 35.....	41	36	55.0	84	29	50.7
T. 10 S., R. 2 W., south corner of secs. 1 and 2, crossroads.....	41	37	19.4	84	29	43.6
T. 9 S., R. 2 W., corner of secs. 25, 26, 35, and 36, crossroads.....	41	39	04.1	84	29	43.3
T. 9 S., R. 2 W., corner of secs. 23, 24, 25, and 26, crossroads.....	41	39	56.8	84	29	43.3
T. 9 S., R. 2 W., corner of secs. 13, 14, 23, and 24, crossroads.....	41	40	49.3	84	29	43.0

Geographic positions along highways at north border of quadrangle near Ohio-Michigan State line.

T. 9 S., R. 2 W., in southeast corner of sec. 11, in southeast corner of field of E. Thatcher; iron post stamped "Prim. Trav. Sta. No. 17, 1905".....	41	41	42.0	84	29	42.2
T. 9 S., R. 2 W., east corner of secs. 12 and 13, T road west.....	41	41	40.5	84	28	32.6
T. 9 S., R. 1 W., corner of secs. 7, 8, 17, and 18, crossroads.....	41	41	41.3	84	27	23.3
T. 9 S., R. 1 W., corner of secs. 8, 9, 16, and 17, T road south.....	41	41	41.6	84	26	15.4
Ohio-Michigan State line, 0.33 mile west of Cincinnati Northern R. R., T road south.....	41	42	18.1	84	25	41.1
Ohio-Michigan State line, 0.75 mile east of Cincinnati Northern R. R., crossroads.....	41	42	19.7	84	24	32.4
T. 9 S., R. 1 W., corner of secs. 10, 11, 14, and 15, Fulton-Williams County line.....	41	41	42.0	84	23	57.2
T. 9 S., R. 1 W., southeast corner of sec. 11, in southeast corner of field of G. S. Wilnor; iron post stamped "Prim. Trav. Sta. No. 23, 1905".....	41	41	42.0	84	22	47.8
T. 9 S., R. 1 W., east corner of secs. 12 and 13, T road west.....	41	41	42.4	84	21	36.7
T. 9 S., R. 1 E., corner of secs. 7, 8, 17, and 18, crossroad.....	41	41	42.3	84	19	41.1
T. 9 S., R. 1 E., corner of secs. 8, 9, 16, and 17, crossroad.....	41	41	44.0	84	18	29.3
T. 9 S., R. 1 E., corner of secs. 9, 10, 15, and 16, crossroad.....	41	41	45.6	84	17	20.2
T. 9 S., R. 1 E., corner of secs. 10, 11, 14, and 15, crossroad.....	41	41	45.9	84	16	10.3
Ohio-Michigan State line, center of north-south road.....	41	42	31.9	84	16	11.5

BERNE QUADRANGLE.

Geographic positions along highways on Ohio-Indiana State line.

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
St. Anthony Catholic Church spire	40	30	33.2	84	47	05.3
T. 6 S., R. 1 E., west corner of secs. 18 and 19, T road east.....	40	30	34.2	84	48	09.2
T. 27 N., R. 15 E., east corner of secs. 22 and 27, T road west.....	40	30	50.1	84	48	09.0
T. 27 N., R. 15 E., east corner of secs. 22 and 15, crossroads.....	40	31	42.7	84	48	08.7
T. 6 S., R. 1 E., west corner of secs. 6 and 7, T road east.....	40	32	19.9	84	48	08.6
Tps. 5 and 6 S., R. 1 E., west corner of secs. 6 and 31, fence east.....	40	33	12.1	84	48	08.3
T. 27 N., R. 15 E., east corner of secs. 3 and 10, T road west.....	40	33	27.4	84	48	08.3
T. 5 S., R. 1 E., west corner of secs. 19 and 30, T road east.....	40	34	57.3	84	48	07.5
T. 5 S., R. 1 E., west corner of secs. 18 and 19, T road east.....	40	35	49.8	84	48	07.1
T. 28 N., R. 15 E., east corner of secs. 22 and 27, T road west.....	40	36	05.3	84	48	07.0
T. 5 S., R. 1 E., 15 feet east and 25 feet south of west corner of secs. 7 and 18; iron post stamped "Prim. Trav. Sta. No. 25-1909-OHIO".....	40	36	41.8	84	48	06.6
T. 28 N., R. 15 E., east corner of secs. 15 and 22, T road west.....	40	36	58.0	84	48	06.8
T. 28 N., R. 15 E., east corner of secs. 10 and 15, T road west.....	40	37	49.9	84	48	06.5
Tps. 4 and 5 S., R. 1 E., west corner of secs. 6 and 31, T road east.....	40	38	26.4	84	48	06.8
T. 28 N., R. 15 E., east corner of secs. 3 and 10, T road west.....	40	38	42.4	84	48	06.9
T. 4 S., R. 1 E., west corner of secs. 30 and 31, T road east.....	40	39	18.8	84	48	06.8
Tps. 28 and 29 N., R. 15 E., east corner of secs. 3 and 34, T road west.....	40	39	37.8	84	48	06.8
T. 4 S., R. 1 E., west corner of secs. 19 and 30, T road east.....	40	40	11.2	84	48	07.0
T. 4 S., R. 1 E., quarter corner between secs. 18 and 19, T road east.....	40	41	03.8	84	47	39.7
T. 4 S., R. 1 E., west corner of secs. 6 and 7, T road east.....	40	42	48.8	84	48	06.7
T. 29 N., R. 15 E., east corner of secs. (no numbers), T road west.....	40	43	07.4	84	48	06.7
T. 29 N., R. 15 E., east corner of secs. (no numbers), fence west.....	40	43	59.5	84	48	06.7
Corner of sections on State line.....	40	44	33.9	84	48	06.8

Magnetic declination of east border of quadrangle, $0^{\circ} 46' E.$; of north and south line through center of quadrangle, $0^{\circ} 42' E.$

BOBO QUADRANGLE.

Geographic positions along highways on the Indiana-Ohio State line.

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
Tps. 1 N. and 1 S., R. 1 E., west corner of secs. 6 and 31; T road east.....	40	59	22.3	84	48	10.6
T. 29 N., R. 15 E., east corner of secs. 11 and 14; T road west.....	40	58	51.1	84	48	10.4
T. 1 S., R. 1 E., west corner of secs. 6 and 7; T road east.....	40	58	30.2	84	48	10.3
T. 29 N., R. 15 E., east corner of secs. 14 and 23; T road west.....	40	57	59.3	84	48	10.2
T. 1 S., R. 1 E., west corner of secs. 7 and 18; T road east.....	40	57	38.1	84	48	10.2
T. 29 N., R. 15 E., east corner of secs. 23 and 26; T road west.....	40	57	07.1	84	48	10.0
T. 1 S., R. 1 E., west corner of secs. 18 and 19; T road east.....	40	56	46.4	84	48	09.9
Tps. 28 and 29 N., R. 15 E., east corner of secs. 2 and 35; T road west.....	40	56	14.5	84	48	09.7
T. 1 S., R. 1 E., west corner of secs. 19 and 30; T road east.....	40	55	53.7	84	48	09.6
T. 28 N., R. 15 E., east corner of secs. 2 and 11; T road west.....	40	55	21.7	84	48	09.4
T. 1 S., R. 1 E., west corner of secs. 30 and 31; T road east.....	40	55	01.0	84	48	09.3
Tps. 1 and 2 S., R. 1 E., west corner of secs. 6 and 31; T road east.....	40	54	08.5	84	48	08.9
T. 28 N., R. 15 E., east corner of secs. 14 and 23; T road west.....	40	53	34.3	84	48	08.6
Wolfcave, 2.0 miles west of, at southeast corner of T road east; 25 feet north and 20 feet west to west corner of secs. 6 and 7, T. 2 S., R. 1 E.; iron post stamped "Prim. Trav. Sta. No. 20-1909-OHIO".....	40	53	16.3	84	48	08.3
T. 28 N., R. 15 E., east corner of secs. 23 and 26; T road west, near church.....	40	52	42.0	84	48	08.2
T. 2 S., R. 1 E., west corner of secs. 7 and 18; T road east.....	40	52	24.4	84	48	08.0
T. 28 N., R. 15 E., east corner of secs. 26 and 35; T road west.....	40	51	49.7	84	48	07.8
Tps. 27 and 28 N., R. 15 E., east corner of secs. 2 and 35; T road west.....	40	50	57.6	84	48	07.4
T. 2 S., R. 1 E., west corner of secs. 19 and 30; T road east.....	40	50	39.8	84	48	07.2
T. 27 N., R. 15 E., east corner of secs. 2 and 11; T road west.....	40	50	05.3	84	48	07.0
T. 2 S., R. 1 E., west corner of secs. 30 and 31; T road east.....	40	49	47.4	84	48	07.1
Tps. 2 and 3 S., R. 1 E., west corner of secs. 6 and 31; T road east.....	40	48	54.7	84	48	06.8
T. 27 N., R. 15 E., east corner of secs. 11 and 14.....	40	48	20.9	84	48	10.2
T. 3 S., R. 1 E., west corner of secs. 6 and 7; T road east.....	40	48	03.0	84	48	06.6
T. 27 N., R. 15 E., east corner of secs. 23 and 26.....	40	46	36.2	84	48	06.8
Willshire, Ohio, 1.5 miles north of, at northeast corner of T road east; 30 feet south and 20 feet west to west corner of secs. 18 and 19, T. 3 S., R. 1 E.; iron post stamped "Prim. Trav. Sta. No. 21-1909-OHIO".....	40	46	18.6	84	48	06.7

Magnetic declination of State line through center of quadrangle, $0^{\circ} 03' E.$; magnetic declination of east border of quadrangle, $0^{\circ} 13' E.$

Geographic positions near south border of quadrangle.

Willshire; Toledo, St. Louis & Western Ry. crossing at east end of bridge over St. Marys River.....	40	45	09.3	84	47	31.4
T. 3 S., R. 1 E., quarter corner between secs. 28 and 29; T road north.....	40	44	59.8	84	45	54.9

BUTLER QUADRANGLE.**Geographic positions near east border of quadrangle.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
T. 5 N., R. 1 E., corner of secs. 28, 29, 32, and 33.....	41 21 13.1	84 45 59.8
T. 5 N., R. 1 E., corner of secs. 29, 30, 31, and 32.....	41 21 12.8	84 47 09.4
Hicksville, in southwest part of town, High Street at Antwerp pike south.....	41 17 24.5	84 45 59.1
Hicksville, crossroads 2 miles south of, 25 feet northwest to north end of culvert, 45 feet southeast to cross cut on telephone pole.....	41 16 01.0	84 45 40.7
Antwerp, 5 miles north of, in northwest corner of field of Everett Longworth, at crossroads, 1.5 feet southeast of large corner fence post, iron post stamped "Prim. Trav. Sta. No. 1, 1905".....	41 15 08.9	84 45 28.8

Geographic positions along Ohio-Indiana State line.

T. 5 N., R. 1 E., corner on State line between secs. 30 and 31.....	41 21 13.0	84 48 13.1
T. 4 N., R. 1 E., corner of secs. 6 and 7.....	41 19 29.7	84 48 12.9
Road west.....	41 18 52.2	84 48 12.7
Baltimore & Ohio R. R. crossing.....	41 18 14.7	84 48 12.3
Roads west and southeast.....	41 18 00.1	84 48 12.3
Road west.....	41 17 07.6	84 48 11.9
Road northeast and southwest.....	41 16 15.8	84 48 11.5
Road west.....	41 15 23.2	84 48 11.4
Tps. 3 and 4 N., R. 1 E., township corner.....	41 15 09.4	84 48 11.4
T. 4 N., R. 1 E., south corner of secs. 31 and 32, T road north.....	41 15 09.2	84 47 07.8

Geographic positions along highways near Ohio-Indiana State line.

T. 5 N., R. 1 E., corner of secs. 29, 30, 31, and 32, crossroads.....	41 21 12.8	84 47 09.3
T. 5 N., R. 1 E., corner of secs. 19, 20, 23, and 30, crossroads.....	41 22 05.0	84 47 09.3
T. 5 N., R. 1 E., corner of secs. 17, 18, 19, and 20, crossroads.....	41 22 57.1	84 47 09.2
Ohio-Indiana State line, center of road.....	41 23 11.8	84 48 13.2
Edgerton, 3 miles southwest of, T road west near schoolhouse, 40 feet southeast to walnut tree on fence line, 30 feet northwest to cross on corner fence post.....	41 24 45.6	84 47 25.7
Tps. 5 and 6 N., R. 1 E., corner of secs. 1, 6, 31, and 36, T lane east.....	41 25 33.7	84 48 13.2
Ohio-Indiana State line, post on, near Lake Shore & Michigan Southern Ry. (Astronomic value, latitude, 41° 26' 13.7"; longitude, 84° 48' 08.6").....	41 26 18.7	84 48 13.3
Edgerton, road crossing, south rail of north track, Lake Shore & Michigan South- ern Ry., 1.5 miles southwest of.....	41 26 34.1	84 46 38.8
Edgerton T road south, 1.5 miles west and 1 mile north of, 25 feet southeast to cross on corner fence post, 27 feet southwest to cross on corner fence post.....	41 27 44.5	84 46 39.1
Ohio-Indiana State line, stone at turn of road and 600 feet south of T road west.....	41 27 44.1	84 48 13.9
T. 6 N., R. 1 E., secs. 7 and 18, T road east at west corner of.....	41 29 02.3	84 48 14.3

CELINA QUADRANGLE.**Geographic positions along Cincinnati Northern Railroad.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Blind siding, road crossing east and west, 200 feet south of.....	40 30 07.5	84 36 32.1
Pike crossing east and west.....	40 31 39.4	84 35 05.4
Celina, main road crossing in southwest part of town.....	40 32 45.8	84 34 35.7
Cemetery, road crossing east and west at.....	40 33 37.8	84 34 39.6
Road crossing east and west.....	40 34 30.3	84 35 09.3
Road crossing east and west.....	40 35 49.4	84 35 53.5
Schoolhouse, east and west road crossing, 0.25 mile west of.....	40 36 41.8	84 36 23.4
Road crossing east and west.....	40 37 34.2	84 36 53.4
Tana, road crossing east and west.....	40 38 00.3	84 37 08.5
Schoolhouse, road crossing 800 feet west of.....	40 39 18.6	84 37 52.2
Road crossing east and west.....	40 40 37.3	84 38 32.9
Rockford, road crossing.....	40 41 26.3	84 38 43.0
Road crossing northeast and southwest.....	40 41 52.5	84 38 41.4
Road crossing north and south.....	40 42 53.2	84 38 16.0
Schoolhouse, road crossing east and west, 0.25 mile east of.....	40 44 32.2	84 37 33.3

CELINA QUADRANGLE—Continued.

Geographic positions along highways near west border of quadrangle.

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
T. 3 S., R. 1 E., corner of secs. 26, 27, 34, and 35; T road north	40	44	33.1	84	43	37.3
Township line crossing north and south road; also Van Wert-Mercer County line.	40	43	41.0	84	44	11.8
T. 4 S., R. 1 E., center of sec. 2	40	43	11.6	84	43	05.0
T. 4 S., R. 1 E., center of sec. 11; crossroads	40	42	22.0	84	43	04.6
T. 4 S., R. 1 E., center of sec. 14; crossroads	40	41	29.7	84	43	04.3
T. 4 S., R. 1 E., corner of secs. 14, 15, 22, and 23; crossroads	40	41	03.7	84	43	38.7
T. 4 S., R. 1 E., corner of secs. 22, 23, 26, and 27; crossroads	40	40	11.3	84	43	38.8
T. 4 S., R. 1 E., corner of secs. 26, 27, 34, and 35; crossroads	40	39	18.6	84	43	38.6
Tps. 4 and 5 S., R. 1 E., corner of secs. 2, 3, 34, and 35; crossroads	40	38	26.1	84	43	38.5
T. 5 S., R. 1 E., corner of secs. 2, 3, 10, and 11; crossroads	40	37	33.7	84	43	37.8
Hinton, 1 mile west of, in southwest corner of crossroads, 20 feet east and 25 feet north to corner of secs. 10, 11, 14, and 15, T. 5 S., R. 1 E.; iron post stamped "Prim. Trav. Sta. No. 22-1909-OHIO"	40	36	40.9	84	43	38.2
T. 5 S., R. 1 E., corner of secs. 14, 15, 22, and 23; crossroads	40	35	48.6	84	43	38.5
T. 5 S., R. 1 E., corner of secs. 22, 23, 26, and 27; T road east	40	34	56.0	84	43	36.6
T. 5 S., R. 1 E., corner of secs. 26, 27, 34, and 35; crossroads	40	34	03.4	84	43	37.6
Tps. 5 and 6 S., R. 1 E., corner of secs. 2, 3, 34, and 35	40	33	10.8	84	43	36.7
T. 6 S., R. 1 E., corner of secs. 2, 3, 10, and 11; crossroads	40	32	18.3	84	43	36.7
T. 6 S., R. 1 E., corner of secs. 10, 11, 14, and 15; T road west	40	31	25.8	84	43	36.8
T. 6 S., R. 1 E., corner of secs. 14, 15, 22, and 23; crossroads	40	30	33.3	84	43	36.8

Magnetic declination of west border of quadrangle, 0° 46' E.

CONTINENTAL QUADRANGLE.

Geographic positions along Cincinnati, Hamilton & Dayton Ry.

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
Road crossing, north and south	41	01	08.1	84	29	44.0
Grover Hill station	41	01	08.4	84	28	38.6
Grover Hill, main street crossing	41	01	08.4	84	28	34.7
T. 1 N., Rs. 3 and 4 E., corner of secs. 19, 30, 24, and 25	41	01	09.9	84	27	25.6
Road crossing, north and south	41	01	09.3	84	25	42.1
Roselms station	41	01	09.6	84	25	07.1
Road crossing, north and south	41	01	10.0	84	23	58.6
Road crossing, north and south	41	01	10.3	84	23	24.3
Road south	41	01	10.5	84	22	49.8
Erie Canal crossing	41	01	11.1	84	21	31.2
T. 1 N., Rs. 4 and 5 E., corner of secs. 19, 30, 24, and 25	41	01	12.2	84	20	31.5
Road crossing, north and south	41	01	11.9	84	19	21.8
Road crossing, north and south	41	01	12.2	84	18	46.8
Toledo, St. Louis & Western R. R. crossing	41	01	12.5	84	18	12.6
Road crossing, north and south	41	01	12.8	84	17	38.2
Road crossing, northwest and southeast	41	01	12.9	84	17	24.5
Road crossing, under railway	41	01	13.0	84	17	14.9
Road crossing, north and south	41	01	13.5	84	15	54.6
Road crossing, north and south	41	01	13.8	84	15	20.0

Geographic positions along highways near west border of quadrangle.

T. 1 N., R. 3 E., at crossroads 1 mile north and 1 mile west of Grover Hill, in southeast corner of field owned by F. M. Saul; iron post stamped "Prim. Trav. Sta. No. 4, 1905"	41	02	01.7	84	29	44.4
T. 1 N., R. 3 E., corner of secs. 10, 11, 14, and 15, crossroads	41	02	53.9	84	29	44.2
T. 1 N., R. 3 E., corner of secs. 2, 3, 10, and 11, crossroads	41	03	46.3	84	29	44.5
T. 1 N., R. 3 E., north corner of secs. 2 and 3, T road south	41	04	39.1	84	29	44.4
T. 2 N., R. 3 E., corner of secs. 26, 27, 33, and 34, crossroads	41	05	31.5	84	29	44.1
T. 2 N., R. 3 E., corner of secs. 22, 23, 26, and 27, crossroads	41	06	24.3	84	29	44.4
T. 2 N., R. 3 E., southeast corner of sec. 15, in southeast corner of field of Geo. Older; northeast corner of C. Stutsman's house bears S. 37° E., distant 188 feet; iron post stamped "Prim. Trav. Sta. No. 5, 1905"	41	07	17.0	84	29	44.8
T. 2 N., R. 3 E., corner of secs. 10, 11, 14, and 15, crossroads	41	08	03.2	84	29	44.4
T. 2 N., R. 3 E., corner of secs. 2, 3, 10, and 11, crossroads	41	09	01.7	84	29	44.6
T. 2 N., R. 3 E., corner of secs. 3, 4, 9, and 10, crossroads	41	09	01.3	84	30	54.5
T. 3 N., R. 3 E., corner of secs. 26, 27, 34, and 35, crossroads	41	10	47.9	84	29	42.4
T. 3 N., R. 3 E., corner of secs. 22, 23, 26, and 27, center of bridge over canal	41	11	39.8	84	29	42.7
Sixmile Creek, center of bridge over	41	12	28.2	84	29	43.2
T. 3 N., R. 3 E., east corner of secs. 10 and 15, T road west	41	13	25.2	84	29	43.8
T. 3 N., R. 3 E., corner of secs. 2, 3, 10, and 11, crossroads	41	14	17.7	84	29	44.9
T. 3 N., R. 3 E., 30 feet west and 30 feet south of quarter corner between secs. 2 and 3, in northeast corner of field owned by Saul, Meyer & Co.; south rail of Wabash R. R. at section line crossing bears N. 19° E., distant 70 feet; iron post stamped "Prim. Trav. Sta. No. 6, 1905"	41	14	43.7	84	29	45.7

DEFIANCE QUADRANGLE.

Geographic positions along Lake Shore & Michigan Southern Ry.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Mileposts 48 and 49, north and south road crossing between.....	41 29 58.2	84 26 05.3
Milepost 49, north and south road crossing near.....	41 29 50.5	84 26 52.0
Mileposts 49 and 50, north and south road crossing between.....	41 29 43.9	84 27 31.7
Mileposts 50 and 51, north and south road crossing between.....	41 29 32.9	84 28 38.9
Mileposts 51 and 52, north and south road crossing between.....	41 29 21.4	84 29 48.5

Geographic position in northwest corner of quadrangle.

T. 6 N., R. 3 E., northeast corner of sec. 11, in northwest corner of field owned by S. J. Bowman; southwest corner of schoolhouse bears N. 26° 30' E., distant 161 feet; iron post stamped "Prim. Trav. Sta. No. 15, 1905".....	41 29 59.5	84 28 38.8
--	------------	------------

Geographic positions along Wabash R. R. and Baltimore & Ohio R. R. near south border of quadrangle.

Ashwood, 1 mile west of station, road crossing north and south (section line)....	41 15 03.4	84 28 34.7
Ashwood, road crossing at station.....	41 15 21.7	84 27 25.3
Ashwood, 1 mile east of, road crossing north and south (section line).....	41 15 39.8	84 26 16.6
Defiance Junction, crossing of Wabash R. R. and Baltimore & Ohio R. R.	41 16 39.5	84 22 43.5
Defiance, in water table at southwest corner of Defiance County jail; aluminum tablet stamped "Prim. Trav. Sta. No. 8, 1905".....	41 17 11.7	84 21 39.0
Defiance, in southeast part of, Ottawa Avenue, crossing of Baltimore & Ohio Southwestern R. R.	41 16 47.1	84 21 03.5
Midway, 1,300 feet east of telegraph office, road crossing north and south.....	41 16 45.7	84 18 49.7
Midway, overhead crossing 1.25 miles east of.....	41 16 44.9	84 17 41.0
Milepost 82, north-south section line, road crossing 150 feet west of.....	41 16 29.2	84 15 57.1
T. 3 N., R. 3 E., secs. 2 and 3, T road south at north corner of.....	41 15 11.5	84 29 45.9
T road east.....	41 16 03.9	84 29 45.2
The Bend, north-south road crossing Baltimore & Ohio R. R. 1 mile east of.....	41 16 59.0	84 29 34.0

Geographic position near northeast corner of quadrangle.

Ridgeville corners, crossroads.....	41 26 15.8	84 15 26.0
-------------------------------------	------------	------------

DELPHOS QUADRANGLE.

Geographic positions along public roads from Elgin to Grover Hill.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Elgin, 1.25 miles north of, at T road west 30 feet east and 15 feet south to center of T road; iron post stamped "Prim. Trav. Sta. No. 10, 1909, OHIO".....	40 45 45.2	84 28 32.7
Elgin, 1.25 miles north by 0.5 mile west of, 10 feet south to stone; crossroads.....	40 45 39.6	84 29 06.8
Toledo, St. Louis & Western Railroad crossing of north-south road; center of track.....	40 46 54.5	84 29 06.9
T. 3 S., R. 3 E., at corner of secs. 1, 2, 11, and 12, at T road north, near schoolhouse, section corner stone.....	40 48 00.0	84 28 32.5
T. 2 S., R. 3 E., south corner of secs. 35 and 36, T road north.....	40 48 56.7	84 28 31.8
T. 3 S., R. 3 E., north corner of secs. 1 and 2, T road south.....	40 48 56.7	84 28 32.7
T. 2 S., R. 3 E., corner of secs. 25, 26, 35, and 36, T road east.....	40 49 48.6	84 28 31.9
T. 2 S., R. 3 E., corner of secs. 23, 24, 25, and 26.....	40 50 41.0	84 28 31.9
Middlepoint, 1.5 miles west of, 270 feet east of milepost 197, north-south road crossing Pennsylvania R. R.; center of north track.....	40 51 30.5	84 28 32.0
T. 2 S., R. 3 E., quarter corner between secs. 11 and 14.....	40 52 25.2	84 29 07.6
Van Wert County poor farm, 0.25 mile west of, at southeast corner of crossroads, 30 feet north and 20 feet west to center of crossroads; iron post stamped "Prim. Trav. Sta. No. 11, 1909, OHIO".....	40 52 42.9	84 29 07.5
T road east, just west of schoolhouse.....	40 53 43.7	84 29 07.9
T. 2 S., R. 3 E., north corner of secs. 2 and 3, T road south.....	40 54 11.2	84 29 42.2
T. 1 S., R. 3 E., south corner of secs. 34 and 35, T road north.....	40 54 11.2	84 29 41.3
T. 1 S., R. 3 E., corner of secs. 26, 27, 34, and 35, crossroads.....	40 55 03.8	84 29 41.3
T. 1 S., R. 3 E., corner of secs. 22, 23, 26, and 27, crossroads.....	40 55 55.6	84 29 41.6
T. 1 S., R. 3 E., corner of secs. 14, 15, 22, and 23, crossroads.....	40 56 47.4	84 29 42.9
T. 1 S., R. 3 E., corner of secs. 10, 11, 14, and 15, crossroads.....	40 57 39.5	84 29 42.4
T. 1 S., R. 3 E., corner of secs. 2, 3, 10, and 11, crossroads.....	40 58 31.6	84 29 43.1
Tps. 1 S. and 1 N., R. 3 E., corner of secs. 2, 3, 34, and 35, crossroads on Paulding-Van Wert County line.....	40 59 24.6	84 29 43.6
Grover Hill, 1.25 miles south by 1 mile west of, in southeast corner of stone retaining wall to bridge; aluminum tablet stamped "730 OHIO".....	40 59 40.9	84 29 43.5

DELPHOS QUADRANGLE—Continued.

Geographic positions along public roads through center of Delphos quadrangle east from primary traverse station No. 11.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Cemetery, T road north.....	40 52 43.6	84 28 15.3
Dog Creek, 1 mile north of, T road east, near range line.....	40 53 17.9	84 27 18.0
T. 2 S., R. 4 E., west corner of secs. 6 and 7.....	40 53 17.9	84 27 23.4
T. 2 S., R. 3 E., east corner of secs. 1 and 12.....	40 53 19.3	84 27 23.4
T. 2 S., R. 4 E., corner of secs. 5, 6, 7, and 8, center of bridge at schoolhouse.....	40 53 18.2	84 26 11.2
T. 2 S., R. 4 E., corner of secs. 4, 5, 8, and 9, crossroads.....	40 53 18.5	84 25 02.8
T. 2 S., R. 4 E., corner of secs. 3, 4, 9, and 10, crossroads at Bethel Church and schoolhouse.....	40 53 18.5	84 23 53.3
T. 2 S., R. 4 E., corner of secs. 2, 3, 10, and 11.....	40 53 18.8	84 22 45.2
T. 2 S., R. 4 E., corner of secs. 1, 2, 11, and 12, at schoolhouse No. 8.....	40 53 19.1	84 21 35.9
Miami & Erie Canal, bridge over, at range line.....	40 53 20.2	84 20 27.0
Delphos, 3 miles north of, in southeast corner of east-west road crossing of the Cincinnati, Hamilton & Dayton Ry., 25 feet south by 35 feet east to crossing; iron post stamped "Prim. Trav. Sta. No. 13, 1909, OHIO".....	40 53 18.6	84 20 07.6
Fort Jennings, 0.8 mile southwest of, northeast and southwest pike crossing Cincinnati, Hamilton & Dayton Ry.; center of track.....	40 53 45.2	84 18 31.8
Fort Jennings, center of steel bridge over Ottawa River.....	40 54 09.6	84 17 44.7
Fort Jennings, 0.8 mile southeast of, T road north.....	40 53 54.4	84 16 47.0
T. 2 S., R. 5 E., north corner of secs. 2 and 3, T road south.....	40 54 14.4	84 15 45.7
T. 1 S., R. 5 E., south corner of secs. 34 and 35; T road north.....	40 54 14.4	84 15 48.3
Fort Jennings, 3 miles east of, at crossroads on township line, 15 feet south and 35 feet west to T. 1 S., R. 5 E., south corner of secs. 35 and 36, T road north, 80 feet east and 30 feet south to T. 2 S., R. 5 E., north corner of secs. 1 and 2, T road south; iron post stamped "Prim. Trav. Sta. No. 14, 1909, OHIO".....	40 54 14.9	84 14 39.0
T. 1 S., R. 5 E., south corner of secs. 35 and 36, T road north.....	40 54 14.7	84 14 39.4
T. 1 S., R. 5 E., corner of secs. 25, 26, 35, and 36.....	40 55 06.8	84 14 39.7

Magnetic declination of south border of quadrangle, 0° 9' W.; of west border of quadrangle, 0° 1' W.; of center of quadrangle, 0° 19' 26" W.

EDON QUADRANGLE.

Geographic positions along highways near Ohio-Indiana State line.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Tps. 6 and 7 N., R. 1 E., west corner of secs. 6 and 31, T road east.....	41 30 46.5	84 48 15.2
T. 7 N., R. 1 E., stone at corner of secs. 30 and 31.....	41 31 38.9	84 48 15.7
T. 7 N., R. 1 E., west corner of secs. 19 and 30, T road east.....	41 32 30.8	84 48 16.4
Edon, 2 miles west of crossing of Wabash Railroad and Ohio-Indiana State line.....	41 32 54.7	84 48 16.7
T. 7 N., R. 1 E., crossroads at west corner of secs. 7 and 18.....	41 34 14.7	84 48 18.0
T. 7 N., R. 1 E., west corner of secs. 6 and 7, T road east.....	41 35 07.0	84 48 18.7
T. 8 N., R. 1 E., west corner of secs. 30 and 31, T road south.....	41 36 47.4	84 48 20.0
Columbia, crossroads.....	41 37 58.8	84 47 19.4
Columbia, road west 1.5 miles north of.....	41 39 11.6	84 47 37.1
Store, T road east just south of, 0.33 mile north of schoolhouse, 33 feet southeast to mail box, 44 feet northeast to apple tree.....	41 40 16.3	84 47 45.0
Ohio-Indiana State line, T road east, 1.25 miles south of northwest corner of Ohio.....	41 40 41.9	84 48 21.3
T road east.....	41 41 34.8	84 48 21.1
Ohio-Indiana-Michigan, corner of.....	41 41 46.2	84 48 21.1

Geographic positions near Ohio-Michigan State Line.

T. 9 S., R. 4 W., corner of secs. 8, 9, 16, and 17, T road north.....	41 41 35.4	84 47 10.9
T. 9 S., R. 4 W., corner of secs. 9, 10, 15, and 16, T road north.....	41 41 36.3	84 46 01.1

HALLS CORNERS QUADRANGLE.

Geographic positions along Cincinnati, Hamilton & Dayton Ry.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Baldwin station.....	41 01 04.3	84 48 09.0
Road crossing, north and south.....	41 01 04.5	84 47 00.8
Section corner.....	41 01 07.5	84 47 00.8
Road crossing, north and south.....	41 01 04.5	85 46 26.5
McGill station.....	41 01 04.6	84 46 25.7
Road crossing, north and south.....	41 01 04.7	84 45 35.3

HALLS CORNERS QUADRANGLE—Continued.

Geographic positions along highway south along Indiana-Ohio State line to Baldwin (corrected mean of two lines.)

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
T. 3 N., R. 1 E., corner of secs. 6 and 7, T road east (Indiana-Ohio State line).....	41 14 14.1	84 48 11.1	.....
T. 3 N., R. 1 E., west corner of secs. 7 and 8, T road east.....	41 13 21.5	84 48 11.1	5,320
T. 3 N., R. 1 E., west corner of secs. 18 and 19, center of crossroads.....	41 12 29.1	84 48 11.4	5,300
T road east.....	41 11 03.5	84 48 11.0	8,660
T road east at church.....	41 10 26.9	84 48 11.2	3,700
T road west at schoolhouse No. 1 and church.....	41 10 12.8	84 48 40.0	2,628
Maumee River, center of middle span of bridge over.....	41 09 49.4	84 48 40.5	2,370
North-south road at road southwest along canal.....	41 09 42.1	84 48 11.3	2,351
T. 2 N., R. 1 E., corner of secs. 6 and 7, stone.....	41 09 02.3	84 48 11.2	4,030
Wabash Railroad, road crossing.....	41 08 55.2	84 48 11.2	720
T. 2 N., R. 1 E., secs. 7 and 18, center of T road east.....	41 08 09.9	84 48 11.4	4,600
T. 2 N., R. 1 E., on line of secs. 18 and 19, T road east.....	41 07 17.4	84 48 11.3	5,315
T. 2 N., R. 1 E., secs. 19 and 30, center of T road east.....	41 06 25.1	84 48 11.1	5,275
T. 2 N., R. 1 E., corner of secs. 30 and 31, center of T road east.....	41 05 32.5	84 48 11.0	5,320
Tps. 1 and 2 N., R. 1 E., township corner, center of crossroads.....	41 04 40.1	84 48 10.8	5,300
T. 1 N., R. 1 E., secs. 6 and 7, T road east.....	41 03 45.0	84 48 10.6	5,580
T. 1 N., R. 1 E., secs. 7 and 18, T road east.....	41 02 52.8	84 48 10.3	5,280
T. 1 N., R. 1 E., secs. 18 and 19, T road east.....	41 02 00.1	84 48 10.3	5,330
Baldwin, road crossing.....	41 01 04.3	84 48 10.6	5,642

Geographic positions along highways along east border of quadrangle.

Crossroads (pike and east-west road).....	41 14 14.3	84 45 17.0	.....
Antwerp, 3 miles north of, crossroads.....	41 13 22.0	84 45 05.7	5,369

Magnetic declination along Indiana-Ohio State line, 11' W.; along east border of quadrangle, 17° W.

Geographic positions near south border of quadrangle.

T. 29 N., R. 15 E., at east corner of secs. 2 and 35, on State line; T road west.....	41 00 35.0	84 48 10.7	
Baldwin, 1 mile south of, near T road east; 20 feet south and 15 feet west to west corner of secs. 30 and 31, T. 1 N., R. 1 E.; iron post stamped "Prim. Trav. Sta. No. 19-1909-OHIO".....	41 00 15.1	84 48 10.6	

MARK CENTER QUADRANGLE.

Geographic positions along Lake Shore & Michigan Southern Ry.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Milepost 52, road crossing near.....	41 29 14.9	84 30 27.2
Milepost 53, road crossing near.....	41 29 07.1	84 31 14.8
Road crossing, northeast and southwest.....	41 29 02.0	84 31 45.2
Mileposts 53 and 54, north and south road crossing between.....	41 28 57.9	84 32 10.3
Lake Shore & Michigan Southern Ry. and Cincinnati Northern R. R. crossing.....	41 28 54.3	84 32 32.1
Bryan, road crossing at.....	41 28 50.0	84 32 58.0
Bryan, road crossing at.....	41 28 49.2	84 33 02.5
Bryan station.....	41 28 48.8	84 33 04.9
Road crossing over railroad.....	41 28 36.1	84 34 21.6
Mileposts 56 and 57, north and south road crossing between.....	41 28 23.8	84 35 35.8
Road crossing over railroad.....	41 28 12.1	84 36 46.0
Milepost 59, north and south road crossing near.....	41 28 00.7	84 37 55.1
Melbern station.....	41 27 49.7	84 39 01.3
Milepost 60, north and south road crossing near.....	41 27 49.4	84 39 03.2
Road crossing over railroad.....	41 27 37.4	84 40 15.0
Milepost 62, north and south road crossing near.....	41 27 25.5	84 41 27.1
Mileposts 62 and 63, north and south road crossing between.....	41 27 21.4	84 41 52.1
Milepost 63, north and south road crossing near.....	41 27 13.8	84 42 37.8
Milepost 64, north and south road crossing near.....	41 27 02.6	84 43 45.9
Edgerton, road crossing at.....	41 26 54.7	84 44 33.3
Edgerton station.....	41 26 53.2	84 44 42.7
Edgerton, main street crossing.....	41 26 51.6	84 44 52.1

MARK CENTER QUADRANGLE—Continued.

Geographic positions along highways along west border of quadrangle.

Stations.	Latitude.	Longitude.
Edgerton, 3 miles north of, in southwest corner of yard of schoolhouse No. 22, St. Joseph Township; southwest corner of schoolhouse bears N. 62° 40' E., distant 61 feet; iron post stamped "Prim. Trav. Sta. No. 21, 1905"	° ' "	° ' "
T. 6 N., R. 1 E., corner of secs. 9, 10, 15, and 16, T road west	41 29 39.1	84 44 56.5
T. 6 N., R. 1 E., secs. 15, 16, 21, and 22, T road east	41 29 02.5	84 44 53.7
T. 5 N., R. 1 E., corner of secs. 3 and 4, Defiance-Williams County line	41 28 10.3	84 44 52.9
T. 5 N., R. 1 E., corner of secs. 3 and 4, on township line	41 25 33.9	84 44 55.3
T. 5 N., R. 1 E., corner of secs. 3, 4, 9, and 10, crossroads	41 25 24.6	84 44 55.3
T. 5 N., R. 1 E., corner of secs. 3, 4, 9, and 10, crossroads	41 24 41.5	84 44 54.8
T. 5 N., R. 1 E., corner of secs. 9, 10, 15, and 16, crossroads	41 23 49.6	84 44 53.9
T. 5 N., R. 1 E., corner of secs. 15, 16, 21, and 22, crossroads	41 22 57.3	84 44 53.1
T. 5 N., R. 1 E., corner of secs. 21, 22, 27, and 28, crossroads	41 22 05.2	84 44 52.2
T. 5 N., R. 1 E., 4 miles north of Hicksville, northwest corner of sec. 34, northwest corner of yard of schoolhouse No. 9, limestone post 38 by 6 by 4 inches; aluminum tablet stamped "Prim. Trav. Sta. No. 22"	41 21 12.8	84 44 51.1
Tps. 4 and 5 N., R. 1 E., corner of secs. 3, 4, 33, and 34, crossroads	41 20 21.0	84 44 50.7
T. 4 N., R. 1 E., corner of secs. 3, 4, 9, and 10, crossroads	41 19 29.7	84 44 50.3
Hicksville, Bryan-Hicksville pike at road north, 1 mile northeast of	41 18 11.8	84 44 49.4

Geographic positions along highways near southeast corner of quadrangle.

The Bend, railroad crossing, 60 feet east of station	41 16 57.9	84 30 55.4
T. 4 N., R. 3 E., corner of secs. 15, 16, 21, and 22, cross pikes	41 17 47.4	84 30 55.9
T. 4 N., R. 3 E., corner of secs. 9, 10, 15, and 16, crossroads	41 18 39.6	84 30 56.3
T. 4 N., R. 3 E., corner of secs. 3, 4, 9, and 10, crossroads	41 19 31.9	84 30 56.6

Geographic positions along Cincinnati Northern R. R. near east border of quadrangle.

Moats, railway crossing 0.5 mile north of	41 20 23.6	84 31 30.8
Moats, railway crossing 1.5 miles north of	41 21 16.1	84 31 31.5
Ney, 0.5 mile south of, in northwest corner of pasture owned by John Burt, at east-west crossing of Baltimore & Ohio Ry.; nail in north face of walnut tree bears S. 6° W., distant 18 feet; east rail of track at north-south crossing bears N. 74° W., distant 51 feet; iron post stamped "Prim. Trav. Sta. No. 14, 1905"	41 22 34.5	84 31 31.9
Ney, east-west railway crossing 1 mile north of	41 23 53.0	84 31 33.5
Ney, east-west railway crossing 2 miles north of	41 24 45.0	84 31 34.1
Defiance-Williams County line, east-west road crossing of Cincinnati Northern R. R.	41 25 37.6	84 31 34.7
Defiance-Williams County line, east-west road crossing 1 mile north of	41 26 30.1	84 31 35.4
Bryan, east-west crossing 1.25 miles south of	41 27 22.7	84 31 38.5
Bryan, crossing 400 feet south of tank on Cincinnati Northern R. R.	41 28 07.6	84 32 31.7

Geographic positions near south border of quadrangle.

T. 3 N., R. 2 E., northeast corner of sec. 3, in northeast corner of field of Henry Martin, iron post stamped "Prim. Trav. Sta. No. 7, 1905"	41 15 10.1	84 36 40.2
T. 4 N., R. 2 E., south corner of secs. 33 and 34, T road north	41 15 10.0	84 37 48.6
T. 4 N., R. 2 E., south corner of secs. 32 and 33 of T road north	41 15 09.8	84 38 58.2
Tps. 3 and 4 N., Rs. 1 and 2 E., corner of secs. 1, 6, 31, and 36, crossroads	41 15 09.1	84 41 20.4
T. 3 N., R. 1 E., north corner of secs. 1 and 2, T road south	41 15 09.0	84 42 29.8
T. 4 N., R. 1 E., south corner of secs. 34 and 35	41 15 09.1	84 43 39.4

MONTPELIER QUADRANGLE.

Geographic positions along highways near Ohio-Michigan State line.

Station.	Latitude.	Longitude.
	° ' "	° ' "
T. 9 S., R. 2 W., corner of secs. 10, 11, 14, and 15, T road north	41 41 41.3	84 30 51.8
T. 9 S., R. 2 W., corner of secs. 9, 10, 15, and 16, T road east	41 41 41.0	84 32 01.1
Ohio-Michigan State line, center of north-south road	41 42 09.7	84 32 01.4
Pioneer, T road west, 1 mile east of, 30 feet northwest to cross cut on corner fence post, 42 feet southwest to cross cut on telephone pole	41 40 48.4	84 32 08.5
Pioneer, northeast corner of bridge at crossing of main streets	41 40 47.9	84 33 11.5
T. 9 S., R. 2 W., corner of secs. 17, 18, 19, and 20, crossroads	41 40 48.3	84 34 20.9
T. 9 S., R. 2 W., west corner of secs. 18 and 19, T road east	41 40 48.0	84 35 31.6
T. 9 S., R. 3 W., corner of secs. 13, 14, 23, and 24, crossroads	41 40 47.6	84 36 41.6
T. 9 S., R. 3 W., corner of secs. 14, 15, 22, and 23, at Bethel Church, crossroads	41 40 47.2	84 37 50.9
T. 9 S., R. 3 W., southeast corner of sec. 10, 4 miles west and 1 mile north of Pioneer, in southeast corner of Osborne's farm, iron post stamped "Prim. Trav. Sta. No. 18, 1905"	41 41 39.7	84 37 51.3
Ohio-Michigan State line, T. 9 S., R. 3 W., 349 feet south of quarter corner between secs. 10 and 11	41 42 02.2	84 37 51.2
T. 9 S., R. 3 W., corner of secs. 9, 10, 15, and 16, T road north	41 41 39.2	84 39 01.3
T. 9 S., R. 3 W., corner of secs. 8, 9, 16, and 17, crossroads	41 41 38.8	84 40 11.4
T. 9 S., R. 3 W., north corner of secs. 17 and 18, T road south	41 41 38.4	84 41 21.4
Northwest Church, T road north	41 41 37.0	84 43 05.6
In southeast corner of field owned by F. M. Hugghy, iron post stamped "Prim. Trav. Sta. No. 19, 1905"	41 41 37.1	84 44 50.8
Ohio-Michigan State line, center of north-south road, 3 feet south of southwest gatepost	41 41 51.3	84 44 50.6

Geographic positions along highways near west border of quadrangle.

T. 9 S., R. 4 W., corner of secs. 14, 15, 22, and 23, crossroads	41 40 44.3	84 44 50.6
T. 9 S., R. 4 W., corner of secs. 22, 23, 26, and 27, T road west	41 39 51.9	84 44 50.6
T. 9 S., R. 4 W., corner of secs. 26, 27, 34, and 35, T road west	41 38 59.5	84 44 49.7
Tps. 9 and 10 S., R. 4 W., corner of secs. 2, 3, 34, and 35, center of north-south road crossing at corner	41 38 07.1	84 44 48.5
T. 10 S., R. 4 W., quarter corner of secs. 2 and 3, T road north	41 37 15.1	84 44 47.6
T. 8 N., R. 1 E., south corner of secs. 33 and 34, crossroads	41 36 07.5	84 44 58.8
T. 7 N., R. 1 E., southwest corner of sec. 3, in southwest corner of John Fox's garden; southwest corner of schoolhouse bears N. 79° 40' W., distant 190.7 feet; southwest corner of section 3 bears S. 48° W., distant 30.7 feet; iron post stamped "Prim. Trav. Sta. No. 20, 1905"	41 35 07.5	84 44 58.1
T. 7 N., R. 1 E., corner of secs. 9, 10, 15, and 16, crossroads	41 34 15.0	84 44 58.3
T. 7 N., R. 1 E., corner of secs. 15, 16, 21, and 22, crossroads	41 33 23.0	84 44 58.3
T. 7 N., R. 1 E., corner of secs. 21, 22, 27, and 28, crossroads	41 32 31.0	84 44 58.0
T. 7 N., R. 1 E., corner of secs. 27, 28, 33, and 34, crossroads	41 31 39.0	84 44 57.7
Tps. 6 and 7 N., R. 1 E., corner of secs. 3, 4, 33, and 34, stone	41 30 47.0	84 44 57.3

PAULDING QUADRANGLE.

Geographic positions along Cincinnati, Hamilton & Dayton Ry.

Station.	Latitude.	Longitude.
	° ' "	° ' "
Batson station	41 01 04.9	84 44 44.0
Road crossing, north and south	41 01 05.0	84 43 34.6
Road crossing, north and south	41 01 05.3	84 42 25.4
T. 1 N., Rs. 1 and 2 E., corner of secs. 19, 30, 24, and 25	41 01 07.9	84 41 15.6
Tipton, road crossing at	41 01 05.8	84 40 08.1
Road crossing, north and south	41 01 06.1	84 38 57.8
Road crossing, north and south	41 01 06.3	84 37 48.9
Road crossing, north and south	41 01 06.6	84 36 40.1
Road crossing, north and south	41 01 06.7	84 36 05.4
Road crossing, north and south	41 01 06.8	84 35 30.6
Haviland, crossing of Cincinnati, Hamilton & Dayton Ry. and Cincinnati Northern R. R.	41 01 06.9	84 34 55.6
T. 1 N., Rs. 2 and 3 E., corner of secs. 19, 30, 24, and 25	41 01 09.1	84 34 21.2
Road crossing, north and south	41 01 07.3	84 33 11.6
Road crossing, north and south	41 01 07.5	84 32 02.5
Road crossing, north and south	41 01 07.8	84 30 53.0

Geographic position on Cincinnati Northern R. R.

East and west road crossing	41 00 10.4	84 34 55.0
-----------------------------	------------	------------

PAULDING QUADRANGLE—Continued.

Geographic positions along highways near north border of quadrangle.

Stations.	Latitude.		Longitude.	
	°	'	°	'
Section line at north-south road crossing.....	41	14 25.9	84	30 55.1
T. 3 N., R. 3 E., corner of secs. 4, 5, 8, and 9, crossroads.....	41	14 16.5	84	32 02.9
T. 3 N., R. 3 E., corner of secs. 5, 6, 7, and 8, crossroads.....	41	14 15.6	84	33 11.8
T. 3 N., Rs. 2 and 3 E., crossing of Cincinnati Northern R. R. just east of corner of secs. 1, 6, 7, and 12.....	41	14 15.6	84	34 08.8
T road south.....	41	13 54.7	84	34 56.5
Cecil, crossroads 1 mile north of.....	41	13 52.2	84	36 06.3
T. 3 N., R. 2 E., center of sec. 2, T road west.....	41	14 41.4	84	36 05.1

Geographic positions along west border of quadrangle (corrected mean of two lines).

Stations.	Latitude.		Longitude.		Distance between stations.
	°	'	°	'	
Crossroads at schoolhouse No. 2.....	41	12 29.6	84	44 54.2	.....
T. 3 N., R. 1 E., corner of secs. 15, 16, 21, and 22.....	41	12 29.6	84	44 47.0	550
Antwerp, Main Street crossing of Wabash R. R.....	41	10 51.0	84	44 23.9	10, 122
Antwerp, 0.9 mile southeast of; bridge over ditch.....	41	10 00.1	84	44 04.2	5, 375
T. 2 N., R. 1 E., corner of secs. 2, 3, 10, and 11; crossroads.....	41	09 02.7	84	43 36.7	6, 178
T. 2 N., R. 1 E., 30 feet north by 25 feet east of corner of secs. 10, 11, 13, and 14, about 3.5 miles southeast of Antwerp; in southwest corner of Pugh schoolhouse yard; iron post stamped "Prim. Trav. Sta. No. 44, 1910".....	41	08 10.3	84	43 36.2	5, 302
T. 2 N., R. 1 E., corner of secs. 10, 11, 14, and 15, crossroads at schoolhouse.....	41	08 09.9	84	43 36.4	.....
T. 2 N., R. 1 E., corner of secs. 14, 15, 22, and 23, 10 feet north to center of crossroads.....	41	07 17.3	84	43 36.2	5, 370
T. 2 N., R. 1 E., northwest corner of sec. 23, at crossroads at bridge over ditch, in northwest corner of field owned by E. H. Amspough; iron post stamped "Prim. Trav. Sta. No. 2, 1905".....	41	07 16.9	84	43 35.8	.....
T. 2 N., R. 1 E., corner of secs. 22, 23, 26, and 27, crossroads.....	41	06 24.5	84	43 35.9	5, 340
T. 2 N., R. 1 E., corner of secs. 26, 27, 34, and 35, crossroads.....	41	05 31.8	84	43 35.4	5, 330
Payne, Main Street crossing of Nashville Chattanooga & St. Louis Ry. Tps. 1 and 2 N., R. 1 E., corner of secs. 2, 3, 34, and 35.....	41	04 39.2	84	43 35.0	4, 170
T. 1 N., R. 1 E., corner of secs. 2, 3, 10, and 11.....	41	03 45.5	84	43 35.4	5, 440
Crossroads at schoolhouse No. 2.....	41	03 39.7	84	44 45.0	.....
T. 1 N., R. 1 E., corner of secs. 10, 11, 14, and 15, crossroads.....	41	02 52.9	84	43 35.2	5, 320
T. 1 N., R. 1 E., corner of secs. 9, 10, 15, and 16, at crossroads.....	41	02 52.9	84	44 45.8	.....
T. 1 N., R. 1 E., corner of secs. 14, 15, 22, and 23, crossroads.....	41	02 00.4	84	44 35.0	5, 310
T. 1 N., R. 1 E., corner of secs. 15, 16, 21, and 22, crossroads at schoolhouse.....	41	02 00.3	84	44 44.3	.....
T. 1 N., R. 1 E., corner of secs. 22, 23, 26, and 27, crossroads.....	41	01 07.7	84	43 34.6	5, 330
Batson, southwest corner of G. H. Chapman's front yard, at crossroads; iron post stamped "Prim. Trav. Sta. No. 3".....	41	01 08.0	84	44 43.7	.....
Batson, 1 mile east of, road crossing Cincinnati, Hamilton & Dayton Ry.....	41	01 05.0	84	43 34.6	274

Geographic positions along highways through center of quadrangle.

T. 2 N., R. 1 E., corner of secs. 11, 12, 13, and 14, crossroads.....	41	08 09.2	84	42 27.2	.....
T. 2 N., R. 1 E., east corner of secs. 12 and 13, 5 feet north of center of crossroads.....	41	08 08.8	84	41 16.8	5, 390
Crossroads.....	41	08 08.7	84	41 16.8	.....
T. 2 N., R. 2 E., west corner of secs. 7 and 18, 15 feet south of center of crossroads.....	41	08 08.6	84	41 16.8	.....
T. 2 N., R. 2 E., corner of secs. 7, 8, 17, and 18, crossroads at schoolhouse.....	41	08 08.4	84	40 10.9	5, 040
T. 2 N., R. 2 E., corner of secs. 8, 9, 16, and 17, T road north.....	41	08 07.9	84	39 01.4	5, 310
T. 2 N., R. 2 E., corner of secs. 9, 10, 15, and 16, crossroads.....	41	08 07.6	84	37 52.0	5, 310
Paulding, 2 miles west of, at southeast corner of crossroads, 20 feet south by 20 feet east of quarter corner; iron post stamped "Prim. Trav. Sta. No. 45, 1910, OHIO".....	41	08 07.4	84	37 17.3	2, 654
T. 2 N., R. 2 E., corner of secs. 10, 11, 14, and 15.....	41	08 07.2	84	36 43.0	2, 630
T. 2 N., R. 2 E., corner of secs. 11, 12, 13, and 14, T road south.....	41	08 07.1	84	35 33.2	5, 340
Paulding, cross streets southeast corner of public square.....	41	08 14.5	84	34 45.1	3, 746
T. 2 N., R. 3 E., west corner of secs. 7 and 18, crossroads.....	41	08 07.8	84	34 24.3	1, 729
T. 2 N., R. 3 E., west corner of secs. 18 and 19, T road east.....	41	07 15.4	84	34 24.0	5, 310
T. 2 N., R. 2 E., east corner of secs. 13 and 24.....	41	07 15.7	84	34 24.0	.....
T. 2 N., R. 3 E., corner of secs. 17, 18, 19, and 20, crossroads at schoolhouse.....	41	07 15.8	84	33 13.8	5, 370
T. 2 N., R. 3 E., corner of secs. 16, 17, 20, and 21, crossroads.....	41	07 16.2	84	32 03.7	5, 360
T. 2 N., R. 3 E., corner of secs. 15, 16, 21, and 22, crossroads at schoolhouse.....	41	07 16.2	84	30 53.6	5, 370

PAULDING QUADRANGLE—Continued.
Geographic positions near east border of quadrangle.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
T. 2 N., R. 3 E., north corner of secs. 3 and 4, jog in road.....	41 09 54.7	84 30 54.8	.....
T. 3 N., R. 3 E., corner of secs. 27, 28, 33, and 34, crossroads.....	41 10 47.3	84 30 52.3	.....

Magnetic declination of west border of quadrangle, 17' W.; of center line, 23' W.

Geographic position near southwest corner of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Batson, 1 mile south by 1.3 miles east of, at southeast corner of crossroads, 20 feet north and 20 feet east to corner of secs. 26, 27, 34, and 35, T. 1 N., R. 1 E., near St. Paul's Church; iron post stamped "Prim. Trav. Sta. No. 18 1909 OHIO".....	41 00 15.1	84 43 34.3

Geographic position near southeast corner of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Grover Hill, 1 mile south and 1 mile west of, at southwest corner of crossroads, 20 feet east and 25 feet north to T. 1 N., R. 3 E., corner of secs. 26, 27, 34, and 35, crossroads; iron post stamped "Prim. Trav. Sta. No. 12-1909-OHIO".....	41 00 16.7	84 29 44.0

VAN WERT QUADRANGLE.

Geographic positions along the Cincinnati Northern R. R.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Pipeline and road crossing.....	40 45 24.7	84 37 10.5
Ohio City, Toledo, St. Louis & Western R. R. crossing.....	40 46 12.0	84 36 51.1
Ohio City, crossing of telephone line and street.....	40 46 17.4	84 36 49.0
Road crossing east and west.....	40 47 10.0	84 36 27.7
Road crossing east and west.....	40 48 02.4	84 36 06.3
Road crossing east and west 100 feet west of pike.....	40 49 21.1	84 35 26.4
Road crossing east and west.....	40 50 13.6	84 35 26.0
Van Wert, crossing of main road in southwest part of town.....	40 51 54.1	84 35 26.4
Van Wert, Pennsylvania R. R. crossing.....	40 52 19.3	84 35 18.5
Road crossing east and west.....	40 54 10.1	84 34 52.6
Bridge, east-west road crossing 300 feet west of.....	40 55 02.3	84 34 52.9
Bridge, east-west road crossing 400 feet west of.....	40 56 20.8	84 34 53.6
Cavett station, road crossing.....	40 56 46.9	84 34 53.8
Road crossing east and west.....	40 57 38.3	84 34 54.2
Sawmill, east-west road crossing.....	40 58 31.5	84 34 54.6
Scott, east-west road crossing.....	40 59 23.9	84 34 54.8

Geographic positions along highways near south border of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
T. 3 S., R. 1 E., quarter corner between secs. 27 and 28, near schoolhouse; crossroads.....	40 44 59.9	84 44 46.2
T. 3 S., R. 1 E., quarter corner between secs. 26 and 27, 0.5 mile south of Schumm; crossroads.....	40 45 59.2	84 43 37.1
T road east.....	40 45 39.4	84 30 14.9
T. 3 S., R. 3 E., corner of secs. 21, 22, 27, and 28, near church; crossroads.....	40 45 26.2	84 30 48.8
T. 3 S., R. 3 E., corner of secs. 20, 21, 28, and 29.....	40 45 25.7	84 31 57.3
T. 3 S., R. 3 E., corner of secs. 19, 20, 29, and 30; T road east.....	40 45 25.4	84 33 06.0
T. 3 S., R. 3 E., west corner of secs. 19 and 30.....	40 45 25.6	84 34 16.1
T. 3 S., R. 2 E., east corner of secs. 24 and 25; T road west.....	40 45 25.9	84 34 16.2
T. 3 S., R. 2 E., at corner of secs. 23, 24, 25, and 26; crossroads.....	40 45 25.0	84 35 25.5
T. 3 S., R. 2 E., corner of secs. 22, 23, 26, and 27; crossroads.....	40 45 25.2	84 36 33.9
Ohio City, 1 mile south of, crossing of Cincinnati Northern R. R.....	40 45 24.7	84 37 10.5
Ohio City, 1 mile south and 0.5 mile west of, at northeast corner of crossroads, 30 feet west and 20 feet south to center of crossroads; iron post stamped "Prim. Trav. Sta. No. 15-1909-OHIO".....	40 45 24.4	84 37 32.5
T. 3 S., R. 2 E., corner of secs. 21, 22, 27, and 28; T road north.....	40 45 24.1	84 37 42.6
T. 3 S., R. 2 E., corner of secs. 20, 21, 28, and 29; north-south fence.....	40 45 23.9	84 38 50.5
T. 3 S., R. 2 E., corner of secs. 19, 20, 29, and 30; T road north.....	40 45 24.2	84 39 59.1
T. 3 S., R. 2 E., west corner of secs. 19 and 30; T road east.....	40 45 24.1	84 41 18.4
T. 3 S., R. 1 E., east corner of secs. 24 and 25.....	40 45 24.6	84 41 18.4
T. 3 S., R. 1 E., corner of secs. 23, 24, 25, and 26.....	40 45 25.3	84 42 27.3
Schumm, 25 feet west and 25 feet south to Toledo, St. Louis & Western Ry. crossing; iron post stamped "Prim. Trav. Sta. No. 16-1909-OHIO".....	40 45 25.7	84 43 36.7

VAN WERT QUADRANGLE—Continued.

Geographic positions along highways near west border of quadrangle.

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
T. 3 S., R. 1 E., corner of secs. 14, 15, 22, and 23; crossroads.....	40	46	17.6	84	43	36.8
T. 3 S., R. 1 E., corner of secs. 10, 11, 14, and 15; crossroads.....	40	47	00.0	84	43	36.6
T. 3 S., R. 1 E., corner of secs. 2, 3, 10, and 11; crossroads.....	40	48	02.4	84	43	36.5
T. 3 S., R. 1 E., north corner of secs. 2 and 3.....	40	48	54.4	84	43	36.4
T. 2 S., R. 1 E., south corner of secs. 34 and 35; T road north.....	40	48	54.4	84	43	34.8
T. 3 S., R. 1 E., north corner of secs. 1 and 2, just west of crossroads.....	40	48	54.4	84	42	26.9
T. 2 S., R. 1 E., south corner of secs. 35 and 36.....	40	48	54.5	84	42	26.2
T. 2 S., R. 1 E., quarter corner between secs. 25 and 26; crossroads.....	40	50	13.1	84	42	25.6
T. 2 S., R. 1 E., corner of secs. 13, 14, 23, and 24, near church and schoolhouse; crossroads.....	40	51	31.9	84	42	25.1
Convoy, 3.25 miles south of; crossroads.....	40	52	11.1	84	42	25.1
T. 2 S., R. 1 E., near schoolhouse, 20 feet south and 20 feet west of corner of secs. 1, 2, 11, and 12, in southwest corner of crossroads; iron post stamped "Prim. Trav. Sta. No. 17-1909-OHIO".....	40	53	16.4	84	42	25.7
T. 2 S., R. 1 E., north corner of secs. 1 and 2, near crossroads.....	40	54	08.8	84	42	25.9
T. 1 S., R. 1 E., south corner of secs. 35 and 36, near crossroads.....	40	54	06.6	84	42	24.9
Tps. 1 and 2 S., R. 1 E., corner of secs. 2, 3, 34, and 35; T road north.....	40	54	08.8	84	43	34.1
T. 1 S., R. 1 E., corner of secs. 26, 27, 34, and 25; crossroads.....	40	55	01.1	84	43	34.0
T. 1 S., R. 1 E., corner of secs. 14, 15, 22, and 23; crossroads.....	40	56	45.8	84	43	34.1
T. 1 S., R. 1 E., corner of secs. 10, 11, 14, and 15; crossroads.....	40	57	38.2	84	43	34.0
T. 1 S., R. 1 E., corner of secs. 2, 3, 10, and 11; crossroads.....	40	58	30.6	84	43	34.2
Tps. 1 S. and 1 N., R. 1 E., corner of secs. 2, 3, 34, and 35; crossroads, at Paulding-Van Wert county line.....	40	59	22.6	84	43	34.5

Magnetic declination of south border of quadrangle, 0° 11' E.; of west border of quadrangle, 0° 13' E.

WAUSEON QUADRANGLE.

Geographic positions along Lake Shore & Michigan Southern Ry. and highways.

Station.	Latitude.			Longitude.		
	°	'	"	°	'	"
Delta, road crossing west of.....	41	34	13.4	84	00	01.7
Delta, road crossing west of.....	41	34	11.7	84	00	11.9
Road crossing, northeast-southwest.....	41	34	01.8	84	01	13.0
Mileposts 27 and 28, north-south road crossing between.....	41	33	51.8	84	02	14.4
Mileposts 28 and 29, north-south road crossing between.....	41	33	40.6	84	03	23.5
Mileposts 29 and 30, north-south road crossing between.....	41	33	29.2	84	04	33.6
Mileposts 31 and 32, north-south road crossing between.....	41	33	06.6	84	06	52.6
Mileposts 32 and 33, north-south road crossing between.....	41	32	55.1	84	08	02.9
Wauseon, main street crossing.....	41	32	51.1	84	08	27.3
Wauseon station.....	41	32	49.7	84	08	35.9
Wauseon, crossing Lake Shore & Michigan Southern Ry. and Detroit, Toledo & Ironton Ry.....	41	32	47.2	84	08	51.7
Wauseon, north and south road crossing at cemetery.....	41	32	44.0	84	09	11.2
Milepost 34, east-west road crossing at.....	41	32	37.5	84	09	50.9
Mileposts 34 and 35, north-south road crossing between.....	41	32	32.7	84	10	20.5
Mileposts 35 and 36, north-south road crossing between.....	41	32	21.4	84	11	29.9
Mileposts 36 and 37, north-south road crossing between.....	41	32	10.0	84	12	39.4
Mileposts 37 and 38, north-south road crossing between.....	41	31	59.3	84	13	44.7
Mileposts 38 and 39, north-south road crossing between.....	41	31	48.0	84	14	53.7
T. 9 S., R. 3 E., corner of secs. 2, 3, 10, and 11.....	41	42	50.3	84	02	13.2
T. 9 S., R. 3 E., corner of secs. 5, 6, 7, and 8.....	41	42	47.3	84	05	43.2
Ohio-Michigan State line.....	41	42	46.5	84	07	10.3
Schoolhouse, road crossing.....	41	42	14.8	84	08	37.3
T. 9 S., R. 2 E., corner of secs. 3, 4, 9, and 10, on State line.....	41	42	40.4	84	10	22.2
T. 9 S., R. 2 E., corner of secs. 8, 9, 16, and 17.....	41	41	48.5	84	11	30.8
T. 9 S., Rs. 1 and 2 E., corner of secs. 7, 18, 13, and 12.....	41	41	47.4	84	13	49.2
Ritters, 1.5 miles southeast of, in northwest corner of Hevey Sutton's front yard; northwest corner of Sutton's house bears S. 79° E., distant 181.2 feet; east rail of electric railway at crossing bears N. 67° W., distant 69 feet; iron post stamped "Prim. Trav. Sta. No. 24, 1905".....	41	41	47.0	84	14	57.2
T. 9 S., R. 1 E., corner of secs. 13, 14, 23, and 24.....	41	40	54.5	84	14	56.1
T. 9 S., R. 1 E., corner of secs. 25, 26, 35, and 36.....	41	39	09.1	84	14	54.7
T. 10 S., R. 1 E., corner of secs. 1, 2, 11, and 12.....	41	37	24.1	84	14	52.3
T. 7 N., R. 5 E., corner of secs. 1, 2, 11, and 12.....	41	35	12.3	84	14	56.2
T. 7 N., R. 5 E., corner of secs. 13, 14, 23, and 24.....	41	33	27.8	84	14	55.6
T. 6 N., R. 5 E., corner of secs. 1, 2, 11, and 12.....	41	30	00.5	84	14	53.6

WAUSEON QUADRANGLE—Continued.

Geographic positions along highways on south border of quadrangle.

Station.	Latitude.	Longitude.
T. 6 N., R. 7 E., corner of secs. 2, 3, 10, and 11, crossroads, 22 feet southwest to south end of culvert, 41 feet southeast to cross on corner fence post.....	41 30 03.9	84 02 14.9
T. 6 N., R. 7 E., corner of secs. 3, 4, 9, and 10, crossroads, 39 feet southeast to cross on corner fence post, 45 feet southwest to G. S. Frederick's mail box.....	41 30 01.2	84 03 23.8
T. 6 N., R. 7 E., corner of secs. 4, 5, 8, and 9, crossroads, 34 feet southeast to cross on corner fence post, 48 feet southwest to cross on fence post.....	41 30 01.1	84 04 34.8
T. 6 N., R. 7 E., corner of secs. 5, 6, 7, and 8, crossroads at schoolhouse, 33 feet northeast to T. L. Ammand's mail box, 35 feet northwest to cross on telephone pole.....	41 30 00.9	84 05 43.8
T. 6 N., R. 6 E., east corner secs. 1 and 12, 31 feet northwest to Val Snyder's mail box, 34 feet southwest to corner of rail fence.....	41 30 02.0	84 06 52.5
T. 6 N., R. 6 E., southwest corner of sec. 1, in southwest corner of schoolhouse No. 3 yard, crossroads, southwest corner of schoolhouse bears N. 16° 10' E., distant 171.4 feet; northwest corner foundation of church bears S. 2° 30' E., distant 79.9 feet, iron post stamped "Prim. Trav. Sta. No. 32, 1905".....	41 30 01.7	84 08 02.0
T. 6 N., R. 6 E., corner of secs. 2, 3, 10, and 11, crossroads, 34 feet southeast to cross on corner fence post, 36 feet northeast to cross on yard fence post.....	41 30 01.3	84 09 12.0
T. 6 N., R. 6 E., corner of secs. 3, 4, 9, and 10, crossroads, 34 feet southeast to cross on telephone pole, 39 feet northeast to penalty notice.....	41 30 01.2	84 10 21.7
T. 6 N., R. 6 E., corner of secs. 4, 5, 8, and 9, crossroads, 12 feet southeast to cross on telephone pole, 29 feet southwest to Frank Lea's mail box.....	41 30 00.0	84 11 30.1
T. 6 N., R. 6 E., corner of secs. 5, 6, 7, and 8, at schoolhouse, crossroads, 28 feet southwest to David Reyze's mail box, 43 feet northeast to iron fence.....	41 30 00.3	84 12 41.1
T. 6 N., R. 5 W., east corner of secs. 1 and 12, 33 feet southwest to corner of garden fence, 32 feet northwest to cross on advertising board.....	41 30 00.6	84 13 44.0
T. 6 N., R. 5 E., southeast corner of sec. 2, in southeast corner of yard of district No. 14 schoolhouse, center of iron pump in yard bears N. 82° W., distant 42 feet; southeast corner of schoolhouse bears N. 45° W., distant 44.7 feet.....	41 30 00.8	84 14 54.0

OHIO-INDIANA.

PRIMARY TRAVERSE.

Greenville, Harrison, Lawrenceburg, Liberty, Lynn, Moores Hill, Portland, and Richmond quadrangles.

BUTLER, DARKE, HAMILTON, MERCER, AND PREBLE COUNTIES, OHIO; DEARBORN, HARRISON, AND RIPLEY COUNTIES, INDIANA.

The following geographic positions were determined by primary traverse in 1910 by J. R. Ellis. The line starts from Reizin (Coast and Geodetic Survey) triangulation station, Ind., and follows public highways east to Dillsboro station, Ind., thence along Baltimore & Ohio Southwestern Railroad to Lawrenceburg, Ind., thence along Cleveland, Cincinnati, Chicago & St. Louis Railway to Ohio-Indiana State line. From this point the line follows public highways north to Harrison and east to tie at Preston. The line was carried north along the Ohio-Indiana State line from Harrison to a point northwest of Fort Recovery, and connecting lines were run east to adjusted positions at Oxford, West Florence, and near Noggle. A tie was also made about 4 miles north of Union City.

The work in Ohio was done in cooperation with that State.

MOORES' HILL QUADRANGLE (IND.).

Geographic positions along highways to Dillsboro station, thence along Baltimore & Ohio Southwestern Railroad.

Stations.	Latitude.	Longitude.	Distance between stations.
Elrod, about 1 mile east of; 320 yards south of road from Elrod to Dillsboro, 39 feet east of line fence dividing lands of Jos. Beall from those of Reizin Johnson; tile pipe filled with concrete, spike in center of top (Reizin triangulation station, Coast and Geodetic Survey).....	° ' " 39 02 53.86	° ' " 85 08 24.08	Feet.....
T. 7 N., R. 13 E., east corner between fractional secs. 18 and 19, Dearborn-Ripley county line.....	39 02 47.1	85 06 50.9	7,381
Versailles-Dillsboro pike, center of, at section line road north-south.....	39 02 13.7	85 05 49.4	5,916
Dillsboro, center of cross streets at First National Bank, corner of secs. 11, 12, 13, and 14, T. 4 N., R. 3 W.....	39 01 04.4	85 03 39.1	12,446
Dillsboro, center of steel bridge over Hogan Creek at station.....	39 01 48.2	85 02 16.9	7,858
Milepost, 510 feet west of, north track at road crossing Baltimore & Ohio Southwestern R. R.....	39 01 53.2	85 01 25.5	4,081

Magnetic declination of southeast corner of quadrangle, 1° 15' E.

LAWRENCEBURG QUADRANGLE (IND.).

Geographic positions along Baltimore & Ohio Southwestern Railroad to Lawrenceburg, thence along Cleveland, Cincinnati, Chicago & St. Louis Railway.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' " 39 01 53.2	° ' " 85 01 25.5	Feet.....
Milepost, 510 feet west of.....	39 02 56.4	84 59 14.4	12,174
Bridge 3064, road crossing, between tracks.....	39 03 01.1	84 57 31.8	8,107
Road subway, under railroad, between tracks.....	39 03 07.3	84 55 44.5	8,489
Cochran, track opposite semaphore.....	39 03 26.3	84 54 12.0	7,550
Aurora, Second Street crossing.....	39 04 19.6	84 52 59.8	7,836
Milepost 24, 1,990 feet southwest of private road crossing.....	39 05 32.0	84 51 00.2	11,944
Lawrenceburg, siding opposite telegraph window at station.....			
Lawrenceburg, crossing of Baltimore & Ohio Southwestern R. R. and Cleveland, Cincinnati, Chicago & St. Louis Ry.....	39 05 46.9	84 50 41.0	2,130
Hardintown, road crossing at station.....	39 07 24.7	84 50 50.6	9,931
Lawrenceburg Junction, opposite telegraph window at station, south track of main line of Cleveland, Cincinnati, Chicago & St. Louis Ry.....	39 07 48.2	84 50 33.1	2,745
T. 6 N., R. 1 W., stone at corner of secs. 30, 31, 25, and 36.....	39 08 49.8	84 49 12.4	8,899

LAWRENCEBURG QUADRANGLE (OHIO-IND.).

Geographic positions along highways to point near Harrison.

Elizabethtown, 1.1 miles southwest of, at northeast corner of T pike north at Indiana-Ohio State line, 4 feet south and 1 foot east to large stone monument, 20 feet west and 35 feet south to center of T pike; iron post stamped "Prim. Trav. Sta. No. 32, 1910 OHIO".....	39 08 57.2	84 49 12.5	749
Elizabethtown, street crossing electric railroad.....	39 09 29.7	84 48 17.8	5,412
Elizabethtown, astronomical pier, about 1 mile east of State line, 200 meters northwest of Cleveland, Cincinnati, Chicago & St. Louis Ry. station; stone piers.....	39 09 32.2	84 48 21.5	386
Astronomic value.....	39 09 28.54	84 48 22.48	5,412
Suspension bridge, just west of; center of T pike east.....	39 10 58.7	84 47 41.8	9,444
Harrison, 2 miles from; center of T road south, 25 feet south and 15 feet east to guidepost "Locust Grove Church 2 mi., Harrison 2 mi.".....	39 14 05.6	84 48 27.8	19,256
T. 7 N., R. 1 W., east corner of secs. 24 and 25, Ohio-Indiana State line.....	39 14 51.0	84 49 12.4	5,774
Harrison, 1.8 miles east by 1 mile south of; center of pike at north-south road.....	39 14 52.9	84 47 10.7	10,604

Magnetic declination of north half of border of quadrangle along Ohio-Indiana State line, 1° 12' E.

HARRISON QUADRANGLE (OHIO-IND.).

Geographic positions along highways near State line, and from Harrison east to Preston.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
T. 7 N., R. 1 W., corner of secs. 24 and 25.....			
Harrison, 0.8 mile south of; on west side of Ohio-Indiana State line pike at pike east, 15 feet east and 15 feet south to junction of pikes; iron post stamped "Prim. Trav. Sta. No. 33, 1910 OHIO".....	39 15 05.5	84 49 12.3	1,465
Harrison, center of crossing of Broadway and State Street.....	39 15 39.3	84 49 11.5	3,420
Harrison, 1.8 miles east and 1 mile south of, road crossing.....			
Harrison, 3 miles east by 0.5 mile south of; center of T road west.....	39 15 16.7	84 46 00.1	6,049
T. 2 N., R. 1 E., stone at corner of secs. 15, 16, 21, and 22.....	39 15 41.8	84 45 52.5	2,594
Harrison, 4.2 miles from; center of T pike southeast at guidepost "Harrison 4.2 miles, Venice 6.8 miles".....	39 16 08.7	84 45 05.8	4,561

Geographic position north along highways.

Harrison, crossing of Broadway and State Street.....			
T. 2 N., R. 1 E., west corner of secs. 18 and 19, State line.....	39 15 42.8	84 49 11.5	350
T. 6 N., R. 1 W., east corner of secs. 13 and 14, center of cross streets at State line.....	39 15 43.3	84 49 11.5	50
Harrison, 1 mile east by 1.8 miles north of; center of triangle in forks.. Tps. 2, 3, 7, and 8 N., Rs. 1 E. and 1 W., west corner of secs. 1, 6, 31, and 36, center of T road north.....	39 17 11.6	84 47 58.7	10,608
Tps. 3 and 8 N., Rs. 1 E. and 1 W., corner of secs. 25, 30, 31, and 36; State line.....	39 18 19.0	84 49 09.7	8,811
T. 3 N., R. 1 E., west corner of secs. 19 and 30, State line.....	39 19 11.4	84 49 08.8	5,317
T. 3 N., R. 1 E., west corner of secs. 18 and 19, State line.....	39 20 03.2	84 49 07.9	5,238
T. 8 N., R. 1 W., east corner of secs. 13 and 24, State line.....	39 20 55.4	84 49 07.2	5,280
T. 3 N., R. 1 E., west corner of secs. 7 and 18, State line.....	39 20 56.5	84 49 07.2	110
T. 8 N., R. 1 W., east corner of secs. 12 and 13, State line.....	39 21 47.7	84 49 06.1	5,180
Okeana, 2 miles west and 1 mile north of; center of cross pikes.....	39 21 49.2	84 49 06.0	150
Schoolhouse No. 3, just west of; crossing of north-south pike and pike northwest-southeast.....	39 21 44.3	84 47 41.9	6,624
Scipio, in southwest part of town, 20 feet east and 5 feet north to south- west corner of Town Hall Building, in Town Hall yard; iron post stamped "Prim. Trav. Sta. No. 35, 1910 OHIO".....	39 22 32.4	84 47 41.0	4,871
Scipio, center of pike at Ohio-Indiana State line at.....	39 23 30.1	84 49 00.7	8,553
Tps. 3 and 4 N., R. 1 E., west corner of secs. 6 and 31, State line.....	39 23 31.0	84 49 03.6	250
T. 9 N., R. 1 W., east corner of secs. 25 and 36, State line.....	39 23 30.8	84 49 03.6	25
T. 4 N., R. 1 E., west corner of secs. 30 and 31, State line.....	39 24 22.9	84 49 02.2	5,274
Center of T road west, State line.....	39 24 23.3	84 49 02.2	40
T. 4 N., R. 1 E., west corner of secs. 18 and 19, State line.....	39 25 36.7	84 49 00.6	7,420
T. 9 N., R. 1 W., east corner of secs. 13 and 24, T road west, State line.....	39 26 08.5	84 48 59.9	3,220
T. 4 N., R. 1 E., west corner of secs. 7 and 18, center of T road east, State line.....	39 26 08.9	84 48 59.9	40
T. 4 N., R. 1 E., west corner of secs. 6 and 7, State line.....	39 26 59.8	84 48 59.1	5,151
T. 9 N., R. 1 E., east corner of secs. 1 and 12, State line.....	39 27 53.5	84 48 58.2	5,430
Tps. 4 and 5 N., R. 1 E., corner of secs. 6 and 31, State line.....	39 27 54.5	84 48 58.2	100
Mixersville, center of cross pikes (in Indiana).....	39 28 46.1	84 48 57.4	5,220
Tps. 5 N. and 10 N., Rs. 1 E. and 1 W., corner of secs. 30, 31, 25, and 36, T road north, State line.....	39 29 18.5	84 49 28.9	4,107
	39 29 38.6	84 48 56.2	3,270

Magnetic declination southeast border of quadrangle, 1° 26' E.; along Ohio-Indiana State line, 1° 45' E.

LIBERTY QUADRANGLE (OHIO-IND.).

Geographic positions along highway north on State line.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Tps. 5 N. and 10 N., Rs. 1 E. and 1 W., corner of secs. 30, 31, 26, and 36.			
Tps. 5 and 10 N., Rs. 1 E. and 1 W., 20 feet south by 45 feet west of corner of secs. 19, 24, 25, and 30, 4 miles west of Oxford, in northeast corner of Frank Hausel's field, at T road south on Ohio-Indiana State line; iron post stamped "Prim. Trav. Sta. 1910 OHIO No. 36".....	39 30 30.6	84 48 55.9	5,259
T. 5 N., R. 1 E., corner of secs. 19, 20, 29, and 30.....	39 30 30.6	84 47 47.2	5,379
Oxford, 2.8 miles west of; center of T road north.....	39 30 30.4	84 47 22.1	1,970
T. 5 N., R. 1 E., stone at corner of secs. 20, 21, 28, and 29.....	39 30 30.2	84 46 38.7	3,390
T. 5 N., R. 1 E., corner of secs. 21, 22, 27, and 28.....	39 30 29.6	84 45 31.0	5,291
To tie point 2.8 miles west of Oxford.....			5,213
T. 5 N., R. 1 E., corner of secs. 17, 18, 19, and 20, center of T road north at schoolhouse No. 4.....	39 31 23.1	84 47 46.0	5,656
T. 5 N., R. 1 E., corner of secs. 7, 8, 17, and 18, center of T road west.....	39 32 15.8	84 47 44.8	5,331
Tps. 5, 6, 10, and 11 N., Rs. 1 W. and 1 E., corner of secs. 1, 6, 31, and 36, Butler, Preble, and Union counties, State line.....	39 34 04.4	84 48 53.5	12,230
T. 6 N., R. 1 E., west corner of secs. 19 and 30, center of T road east, State line.....	39 35 49.5	84 48 53.2	10,635
T. 6 N., R. 1 E., west corner of secs. 18 and 19, T road east, State line.....	39 36 37.0	84 48 52.7	4,810
T. 11 N., R. 1 W., east corner of secs. 13 and 24, T road west, State line.....	39 36 37.4	84 48 52.7	40
T. 11 N., R. 1 W., east corner of secs. 12 and 13, 10 feet west to center of T road west, State line.....	39 37 29.9	84 48 52.3	5,310
College Corner, 5 miles north of; northeast corner of T road east at Ohio-Indiana State line, 20 feet south and 20 feet west to center of T road; iron post stamped "Prim. Trav. Sta. No. 37, 1910 OHIO".....	39 38 16.8	84 48 52.0	4,744
T. 11 N., R. 1 W., east corner of secs. 1 and 12, T road west, State line.....	39 38 22.5	84 48 52.2	580
Tps. 6 and 7 N., R. 1 E., west corner of secs. 6 and 31, center of T road east, State line.....	39 39 21.6	84 48 51.8	5,980
T. 7 N., R. 1 E., west corner of secs. 30 and 31, State line.....	39 40 14.7	84 48 51.9	5,370
T. 12 N., R. 1 W., east corner of secs. 24 and 25, center of T road west, State line.....	39 40 58.6	84 48 51.9	4,440
T. 12 N., R. 1 W., east corner of secs. 13 and 24, State line.....	39 41 51.2	84 48 51.5	5,320
T. 7 N., R. 1 E., west corner of secs. 18 and 19, State line.....	39 41 59.9	84 48 51.4	880
T. 12 N., R. 1 W., east corner of secs. 12 and 13, center of T road west, State line.....	39 42 43.6	84 48 51.1	4,420
T. 7 N., R. 1 W., west corner of secs. 7 and 18, center of T road east, State line.....	39 42 52.7	84 48 51.1	920
T. 12 N., R. 1 W., stone at east corner of secs. 1 and 12, junction of Union, Wayne, and Preble county lines, State line.....	39 43 35.9	84 48 51.0	4,370
T. 7 N., R. 1 E., west corner of secs. 6 and 7, center of T road east, State line.....	39 43 46.0	84 48 51.0	1,020
Tps. 7 and 8 N., R. 1 E., 27 feet north and 15 feet east of corner of secs. 1 and 6, at northeast corner of crossroads, 3 miles west of West Florence; iron post stamped "Prim. Trav. Sta. No. 38, 1910 OHIO".....	39 44 37.7	84 48 50.9	5,227

Geographic positions along highways east from primary traverse station No. 38 to tie east of West Florence.

T. 7 N., R. 1 E., north corner of secs. 5 and 6, center of T road south.....	39 44 37.5	84 47 51.2	4,629
T. 7 N., R. 1 E., north corner of secs. 4 and 5.....	39 44 37.6	84 46 42.9	5,300
T. 7 N., R. 1 E., north corner of secs. 3 and 4, center of T road south.....	39 44 37.7	84 45 34.4	5,160
T. 8 N., R. 1 E., south corner of secs. 33 and 34, center of T road north.....	39 44 37.7	84 45 36.4	160
Corner of secs. 3 and 4 to tie point east of West Florence.....			5,243

Magnetic declination along Ohio-Indiana State line, 1° 14' E.; along line near south-east border of quadrangle, 1° 35' E.

RICHMOND QUADRANGLE (OHIO-IND.).

Geographical positions along highways north along State line.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Fect.
Primary traverse station No. 38.....			
T. 8 N., R. 1 E., west corner of secs. 30 and 31, State line.....	39 45 30.6	84 48 51.0	5,360
T. 8 N., R. 1 E., west corner of secs. 19 and 30, center of T road east, State line.....	39 46 23.8	84 48 50.7	5,380
T. 13 N., R. 1 W., east corner of secs. 13 and 24.....	39 47 07.2	84 48 50.8	4,390
T. 8 N., R. 1 E., stone at west corner of secs. 18 and 19, State line.....	39 47 16.8	84 48 50.8	970
T. 8 N., R. 1 E., west corner of secs. 7 and 18, at stone, State line.....	39 48 08.4	84 48 50.2	5,220
Stone at turn of road.....	39 48 51.9	84 48 49.9	4,400
Ohio-Indiana State line road crossing electric railroad at Richmond pike.....	39 49 37.2	84 48 49.1	4,580
Tps. 8 and 9 N., R. 1 E., west corner of secs. 6 and 31.....	39 49 48.6	84 48 49.0	1,152
New Paris, 1.5 miles south of; center of cross pikes.....	39 50 08.5	84 47 36.2	6,027
New Paris, center of crossing of Main and Washington streets.....	39 51 27.5	84 47 33.0	7,996
New Paris, 0.8 mile northwest of forks of pike, 15 feet north to north end of culvert.....	39 51 53.8	84 48 08.5	3,836
T. 9 N., R. 1 E., west corner of secs. 18 and 19, center of T road north, State line.....	39 52 23.5	84 48 46.6	4,233
Center of T road west, State line.....	39 53 28.0	84 48 45.4	6,530
New Paris, 2.2 miles north by 1 mile west of, 0.5 mile east of Ohio-Indiana State line, on south side of T road north at J. A. Garretson's residence; iron post stamped "Prim. Trav. Sta. No. 39, 1910 OHIO".....	39 53 30.1	84 48 18.6	2,098
State line, 0.5 mile east of; 1 mile south of Preble-Darke County line center of T road east.....	39 54 05.2	84 48 16.1	3,556
Tps. 9 and 10 N., R. 1 E., west corner of secs. 6 and 31, stone at meeting point of Preble, Darke, and Wayne counties, State line.....	39 55 02.4	84 48 44.2	6,185
J. M. Wallace's mail box; center of T road west.....	39 55 55.1	84 48 34.5	5,386
Center of T road east.....	39 57 40.7	84 48 33.4	10,686
T. 10 N., R. 1 E., west corner of fractional secs. 18 and 19, State line.....	39 57 40.7	84 48 41.4	623
Hollandsburg, 1.7 miles southwest of; center of T road east.....	39 58 33.3	84 48 21.0	5,555
Hollandsburg, 1 mile southwest of; forks of pike.....	39 59 11.2	84 48 03.4	4,072
Hollandsburg, center of cross streets at post office.....	39 59 54.8	84 47 35.4	4,919

Magnetic declination along Ohio-Indiana State line, 1° 34' E.

LYNN QUADRANGLE (OHIO-IND.).

Geographic positions along highways east from primary traverse station No. 40 to tie north of Noggle.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Fect.
Hollandsburg, cross streets.....			
Glen Karn, 0.7 mile north of station, 0.8 mile east of Ohio-Indiana State line, 20 feet south and 20 feet west to center of crossroads, at southwest corner of schoolhouse yard; iron post stamped "Prim. Trav. Sta. No. 40, 1910 OHIO".....	40 01 11.4	84 47 51.9	7,851
T. 11 N., R. 1 E., corner of secs. 28, 29, 32, and 33, east-west road at fence line north-south.....	40 01 10.0	84 46 50.4	4,787
T. 11 N., R. 1 E., corner of secs. 27, 28, 38, and 34, east-west road at fence north-south.....	40 01 09.4	84 45 42.1	5,316
Schoolhouse, center of T road south at.....	40 01 09.1	84 45 20.0	1,720

O

Geographic positions north along State line.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Fect.
Primary traverse station No. 40.....			
T. 11 N., R. 1 E., west corner of fractional secs. 30 and 31, Ohio-Indiana State line.....	40 01 12.0	84 48 36.4	3,460
Primary traverse station No. 40.....			
Tampico, center of crossroads.....	40 02 56.6	84 47 40.3	10,675
T. 11 N., R. 1 E., stone corner of secs. 7, 8, 17, and 18, crossroads at cemetery.....	40 03 49.8	84 47 57.5	5,541
T. 11 N., R. 1 E., west fractional corner of secs. 7 and 18, Ohio-Indiana State line.....	40 03 51.2	84 48 32.5	2,706
T. 11 N., R. 1 E., stone at west fractional corner of secs. 6 and 7.....	40 04 43.3	84 48 31.7	5,270
Tps. 11 and 12 N., R. 1 E., west corner of secs. 6 and 31, east-west road, State line.....	40 05 34.4	84 48 30.8	5,170

LYNN QUADRANGLE (OHIO-IND.)—Continued.

Geographic positions north along State line—Continued.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
T. 12 N., R. 1 E., west corner of secs. 31 and 30, T road north, State line.....	40 06 26.8	84 48 29.6	5,303
T. 12 N., R. 1 E., west corner of secs. 19 and 30, T road east, State line.....	40 07 19.2	84 48 28.1	5,300
T. 12 N., R. 1 E., west corner of secs. 18 and 19, State line.....	40 08 11.8	84 48 26.8	5,310
T. 12 N., R. 1 E., 20 feet north by 20 feet east of west corner of secs. 7 and 18, at northeast corner of crossroads, 3 miles south of Union City; iron post stamped "Prim. Trav. Sta. No. 41, 1910, OHIO".....	40 09 04.8	84 48 25.0	5,369
T. 12 N., R. 1 E., west corner of secs. 6 and 7, T road east, State line.....	40 09 57.3	84 48 23.8	5,311
Tps. 17 and 18 N., R. 1 W., east corner of secs. 1 and 36, T road west, State line.....	40 10 49.7	84 48 22.4	5,301
Union City, crossing of State-line road and Pear Street.....	40 11 58.3	84 48 20.4	6,940
T. 13 N., R. 1 E., west corner of secs. 17 and 20, T road east, State line.....	40 13 26.3	84 48 18.3	8,901
T. 18 N., R. 1 W., east corner of secs. 13 and 24, T road west, State line.....	40 13 26.9	84 48 18.3	60
T. 13 N., R. 1 E., west corner of secs. 8 and 17, center of crossroads, State line.....	40 14 19.4	84 48 16.9	5,310
Union City, 3 miles north of, just south of crossroads at blacksmith shop, in northeast corner of concrete abutment of bridge; aluminum tablet stamped "Prim. Trav. Sta. No. 42, 1910, OHIO".....	40 14 44.1	84 48 16.2	2,502
Blacksmith shop, center of T road east.....	40 14 45.9	84 48 16.2	180

Magnetic declination along Ohio-Indiana State line, 1° 49' E.

PORTLAND QUADRANGLE (OHIO-IND.).

Geographic positions north along Ohio-Indiana State line.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Blacksmith shop, T road east.....			
T. 18 N., R. 1 W., east corner of fractional secs. 1 and 12, lane west, State line.....	40 15 11.8	84 48 15.8	2,620
T. 13 N., R. 1 E., west corner of secs. 5 and 8, center of T road east, State line.....	40 15 12.4	84 48 15.7	70
Tps. 13 and 14 N., R. 1 E., west corner of secs. 5 and 31, center of crossroads, State line.....	40 16 04.0	84 48 14.7	5,220
T. 14 N., R. 1 E., west corner of secs. 30 and 31, T road east, State line.....	40 16 56.4	84 48 13.5	5,311
T. 19 N., R. 1 W., east corner of secs. 24 and 25, State line.....	40 17 48.9	84 48 12.8	5,310
T. 14 N., R. 1 E., west corner of secs. 19 and 30, State line.....	40 17 49.6	84 48 12.8	70
T. 19 N., R. 1 W., west corner of fractional secs. 13 and 24.....	40 18 41.6	84 48 12.4	5,270
T. 14 N., R. 1 E., west corner of secs. 7 and 18.....	40 19 26.6	84 48 12.0	4,550
Center of T road west.....	40 19 27.2	84 48 12.0	60
T. 14 N., R. 1 E., west corner of secs. 6 and 7, center of T road east, State line.....	40 20 18.5	84 48 12.5	5,200
Center of T road west, State line.....	40 20 19.8	84 48 12.5	130
Tps. 14 N., R. 1 E., northwest corner of sec. 6, Darke-Mercer county line, T road east, State line.....	40 21 11.2	84 48 13.1	5,200
Center of T road west, State line.....	40 21 12.3	84 48 13.1	110
T. 15 N., R. 1 E., 25 feet north and 20 feet east of stone at west corner of secs. 29 and 32, center of T road east, 3.5 miles south by 1.2 miles west of Fort Recovery; iron post stamped "Prim. Trav. Sta. No. 43, 1910, OHIO".....	40 22 03.9	84 48 13.4	5,229
T. 15 N., R. 1 E., west corner of secs. 20 and 29, T road east, State line.....	40 22 54.3	84 48 13.8	5,100
T. 15 N., R. 1 E., stone at west corner of secs. 17 and 20, T road east, State line.....	40 23 46.8	84 48 14.3	5,320
T. 15 N., R. 1 E., west corner of fractional secs. 30 and 19, State line.....	40 24 39.1	84 48 14.0	5,290
Center of T road west, State line.....	40 24 42.2	84 48 14.0	320
Fort Recovery, 1.2 miles north by 1.2 miles west of; center of T road east.....	40 25 58.1	84 48 13.5	7,677
Fort Recovery, 2 miles north by 1.2 miles west of; stone at T road east.....	40 26 50.9	84 48 12.7	5,350
T. 16 N., R. 1 E., west corner of secs. 6 and 31, stone at T road east, State line.....	40 27 56.5	84 48 11.6	6,641
Bridge, ditch west.....	40 28 44.0	84 48 10.7	4,811
Primary traverse station No. 24, 1909, Ohio.....	40 29 41.3	84 48 09.6	5,801

Magnetic declination along Ohio-Indiana State line, 1° 00' E.

PORTLAND QUADRANGLE (OHIO-IND.)—Continued.

Geographic positions along highways near north border of quadrangle.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	<i>Fect.</i>
T. 6 S., R. 1 E., corner of secs. 28, 29, 32, and 33, crossroads.....	40 28 48.0	84 45 54.1	.....
T. 6 S., R. 1 E., corner of secs. 29, 30, 31, and 32, crossroads.....	40 28 48.4	84 47 02.8	.....
T. 6 S., R. 1 E., 20 feet east and 25 feet south of west corner of secs. 19 and 30, on Indiana-Ohio State line; iron post stamped "Prim. Trav. Sta. No. 241909 OHIO".....	40 29 41.2	84 48 09.5	.....
T. 27 N., R. 15 E., east corner of secs. 27 and 34, T road west, Ohio-Indiana State line.....	40 29 57.8	84 48 09.5	.....

GREENVILLE QUADRANGLE (OHIO-IND.).

Geographic positions on highway near west border of quadrangle.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	<i>Fect.</i>
T road south of schoolhouse.....			
T 11 N., R. 1 E., corner of secs 26, 27, 34, and 35, center of crossroads.....	40 01 08.5	84 44 34.1	3,570
T. 11 N., R. 1 E., corner of secs. 25, 26, 35, and 36.....			5,314

OREGON.**TRIANGULATION STATIONS.**

Albany, Corvallis, Elmira, Eugene, Halsey, and Monroe quadrangles.

BENTON, LANE, LINN, MARION, AND POLK COUNTIES.

The following positions were determined by Pearson Chapman in 1909, and are based on Coast and Geodetic Survey stations, Peterson, Spencer, Eugene North Base, and Seavies.

The State cooperated in the work.

BALD, BENTON COUNTY, OREG.

On a bald hill about 3 miles west of Corvallis; the Corvallis reservoir, on the south side of the hill, will identify it.

Station mark: Iron bench-mark post.

[Latitude 44° 33' 57.76". Longitude 123° 20' 02.78".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Fiechter.....	1 14 16.78	181 14 06.56	4.1741258	9.278
Knox.....	249 28 57.41	69 42 26.02	4.4328165	16.833
Church No. 5.....	276 45 13.51	96 57 17.11	4.3603769	18.247
Peterson.....	281 49 21.05	102 04 44.95	4.4731375	18.471
Saddle.....	298 31 15.35	118 43 01.25	4.4037410	15.743
Timber Butte.....	340 28 37.71	160 31 26.27	4.2018591	9.890
White Tank.....	346 12 42.28	166 15 12.30	4.2984779	12.355

BARROW, LANE COUNTY, OREG.

On an isolated hill about 4.5 miles west of Junction City. The hill has a number of ash trees on the top and sides. The road runs to the south of the hill, turns north toward Monroe; thence east to north side of hill. A gate opens into the field.

Station mark: Aluminum tablet set in concrete 2 feet below surface of ground.

Reference marks: West 103.8 feet to fence, northwest 132.2 feet to another fence, northeast 164.9 feet to spike in blaze on oak tree, and 181.7 feet to spike in blaze in another oak tree.

[Latitude 44° 13' 34.04". Longitude 123° 16' 37.23".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Fiechter.....	167 58 07.66	347 55 33.84	4.3684342	14.514
Monroe.....	176 23 05.24	356 22 48.78	3.9187736	5.154
White Tower.....	212 25 16.64	32 26 24.39	3.6039872	2.497
Saddle.....	214 37 24.02	34 46 44.13	4.4939111	19.376
Bond.....	240 18 13.75	60 27 43.77	4.3187130	12.944
Coburg.....	278 25 12.70	98 34 45.87	4.2659880	11.464
Seavies.....	300 14 14.15	120 25 52.61	4.4116953	16.034
North Base.....	304 37 21.45	124 40 05.53	3.8027918	3.946
Hamenway.....	343 27 57.16	163 30 35.85	4.2507860	11.070
Camp.....	350 49 41.94	170 50 32.58	3.99340	6.120
Fir.....	354 13 58.1	174 14 55.9	4.2645842	11.427

BLUFUNK, BENTON COUNTY, OREG. (Not occupied.)

On west side of road north from jog north of Fiechter's place to "Dusty," or Bell-fountain.

Signal: Target signal.

Station mark: Iron bench-mark post.

[Latitude 44° 27' 54.74". Longitude 123° 20' 11.01".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Fiechter.....	2 09 38.39	182 09 33.94	3.5712531	2.315
Bald.....	180 55 44.98	0 55 50.75	4.0494826	6.964
Saddle.....	272 16 29.67	92 28 20.71	4.3514329	13.957

BOND, LINN COUNTY, OREG.

On low grass-covered butte, on land of Mr. Bond.

Station mark: Iron bench-mark post.

[Latitude 44° 19' 07.57". Longitude 123° 03' 00.68".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Barrow.....	60 27 43.77	240 18 13.75	4.3187130	12.944
Harrisburg.....	60 42 17.69	240 37 29.72	4.0206117	6.516
Monroe.....	83 53 56.67	263 44 09.80	4.2725355	11.638
Halsey.....	147 09 43.69	327 07 16.86	3.9332012	5.328
Saddle.....	178 44 48.83	358 44 38.22	4.1859702	9.535
Peterson.....	196 59 56.87	17 03 23.43	4.3482876	13.856
Lone Pine Hill.....	204 48 54.19	24 52 15.88	4.1816701	9.441
Coburg.....	359 28 26.69	179 28 30.44	4.1146872	8.092

CAMP, LANE COUNTY, OREG. (Three-point station.)

On Ricketts place, about 400 feet southeast from schoolhouse and 150 feet north of red barn.

Station mark: Iron bench-mark post.

[Latitude 44° 08' 19.01". Longitude 123° 15' 26.61".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Barrow.....	170 50 32.58	350 49 41.94	3.99340	6.120
Seavies.....	278 59 04.74	99 09 53.48	4.3218169	13.037
Spencer.....	322 51 05.01	142 57 50.74	4.3345024	13.423
Hamenway.....	334 33 55.86	154 35 45.27	3.9109214	5.061

CHURCH NO. 5, LINN COUNTY, OREG. (Not occupied.)

[Latitude 44° 32' 29.11". Longitude 123° 02' 51.39".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Saddle.....	3 17 38.87	183 17 21.72	3.9738085	5.850
Bald.....	96 57 17.11	276 45 13.51	4.3603769	14.247
Peterson.....	298 24 50.37	118 28 10.82	3.8560580	4.461

COBURG, LINN COUNTY, OREG.

On west end of West Point station. It can be reached by road to right through a gate 2.8 miles north of Coburg post office, thence through several gates to foot of dyke.

Station mark: Aluminum tablet in rock.

[Latitude 44° 12' 05.69". Longitude 123° 02' 55.30".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Spencer.....	8 40 47.32	188 38 51.84	4.3893011	15.228
Hamenway.....	42 40 27.36	222 33 33.64	4.2901347	12.120
Eugene (north base C. & G. S.).....	86 10 42.35	266 03 53.39	4.1158286	8.113
Barrow.....	98 34 45.87	278 25 12.70	4.2659880	11.731
Monroe.....	120 28 45.29	300 18 55.28	4.3374300	13.514
Harrisburg.....	130 25 22.44	310 20 31.02	4.0852726	7.562
Fiechter.....	138 00 51.12	317 48 43.11	4.5372503	21.409
Halsey.....	166 44 00.85	346 41 30.42	4.3176586	12.912
Saddle.....	179 04 54.35	359 04 39.98	4.4528110	17.626
Bond.....	179 28 30.44	359 28 26.69	4.1146872	8.092

EUGENE (WILLAMETTE) NORTH BASE, LANE COUNTY, OREG.

Coast and Geodetic Survey station, in east center of sec. 7, T. 16 S., R. 4 W., on land owned by William M. Pittney, of Junction City, Oreg. It is about 1.5 miles south and 0.5 mile west of Junction City, in the northeast corner of a field on south side of main east-west road, about 71 yards from north-south fence on east side of field and 4 or 5 yards from fence on north side of field, or south side of road. The station is about opposite main wagon road gate into corral of barnyard of place on north side of road. A schoolhouse stands opposite the end of the road 0.5 mile east of station.

Station mark: Subsurface mark is stone 3½ by 4 feet and 10 inches deep with ¾ by 6-inch copper bolt as center mark. Top of subsurface mark is 3 to 3½ feet below surface of ground. Surface pier is 3½ by 3½ feet at base and 1½ by 1½ feet at top, and 2 feet 5 inches high with 8-inch drain tile 1 foot long and regular station mark in center of tile about even with surface.

Reference marks: Three concrete blocks, each having an underground mark with copper bolts for center marks; the east reference mark is on south side of main road 12 or 15 feet from road fence on west side of north-south fence, about 6 inches from fence and 65.076 meters from station, azimuth $303^{\circ} 21'$. West reference mark is 32.058 meters west of station, 6 inches south of east-west fence on south side of road and about in prolongation of fence line which forms the west side of the barnyard corral on north side of road; azimuth from station, $129^{\circ} 05'$. The north reference mark is about 8 inches from fence in barnyard corral just north of station and about 7 feet from east end of gate entering from road; distance 19.876 meters, azimuth $218^{\circ} 19'$.

[Latitude $44^{\circ} 11' 37.08''$. Longitude $123^{\circ} 12' 41.92''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Hamenway.....	0 42 29.57	180 42 24.36	4.1294075	8.371
Rauch.....	25 09 09.08	205 04 16.61	4.3428910	13.685
Barrow.....	124 40 05.53	304 37 21.45	3.8027918	3.946
Ridge.....	130 22 30.94	310 17 28.19	4.1016178	7.852
Twin.....	228 35 55.72	48 44 39.50	4.3457607	13.776
Coburg.....	266 03 53.39	86 10 42.35	4.1158286	8.113
Seavies.....	298 51 15.99	119 00 10.34	4.2895636	12.104
Spencer.....	338 06 50.53	158 11 43.22	4.4005529	15.628
Eugene (Willamette south base).....	352 20 18.07	172 21 16.55	4.1467287	8.711

FIECHTER, BENTON COUNTY, OREG.

In cultivated field about 1,000 feet northwest of Fiechter's house and 0.2 mile west of north-south road between Philomath and Bellfountain. It can be reached by road turning west through gate.

No permanent mark was placed at the station.

[Latitude $44^{\circ} 25' 54.11''$. Longitude $123^{\circ} 20' 17.36''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Bald.....	181 14 06.56	1 14 16.78	4.1741258	9.278
Blufunk.....	182 09 33.94	2 09 38.39	3.5712531	2.315
Knox.....	226 26 59.48	46 40 37.35	4.5496215	22.028
Peterson.....	253 16 29.26	73 32 02.27	4.4873807	19.087
Saddle.....	262 51 05.94	83 03 01.22	4.3571880	14.143
Timber Butte.....	270 44 20.43	90 47 19.00	3.7514523	3.506
White Tank.....	310 52 34.86	130 55 14.90	3.8256938	4.160
Coburg.....	317 48 43.11	138 00 51.12	4.5372503	21.409
Barrow.....	347 55 33.84	167 58 07.66	4.3684342	14.514

FIR, LANE COUNTY, OREG.

On low, bare butte south of through west road south of Hamenway

Station mark: Iron bench-mark post.

[Latitude $44^{\circ} 03' 41.32''$. Longitude $123^{\circ} 15' 14.21''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
South.....	55 36 33.6	235 32 46.43	3.9291197	5.278
Flag.....	149 55 43.9	.....	3.91164	5.070
Barrow.....	174 14 55.9	354 13 58.1	4.2645842	11.427
Peterson.....	204 27 46.00	24 39 35.67	4.7393760	34.098
Seavies.....	255 29 07.27	75 39 46.94	4.3247258	13.124
Spencer.....	304 06 30.88	124 13 09.06	4.1881484	9.583

HALSEY, LINN COUNTY, OREG. (Not occupied.)

On high derrick at Halsey.

Station mark: White water tank on high derrick.

[Latitude 44° 23' 00.92". Longitude 123° 06' 30.72".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Saddle.....	207 53 22.83	27 55 39.22	3.9642605	5.723
Bond.....	327 07 16.86	147 09 43.69	3.9332012	5.328
Coburg.....	346 41 30.42	166 44 00.85	4.3176586	12.912

HAMENWAY, LANE COUNTY, OREG.

On small cultivated hill south of Eugene and Sinslaw road, about 6 miles from Eugene; part of the farm of Valney Hamenway.

[Latitude 44° 04' 20.65". Longitude 123° 12' 49.40".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Camp.....	154 35 45.27	334 33 55.86	3.9109214	5.061
Barrow.....	163 30 35.85	343 27 57.16	4.2507860	11.070
North Base.....	180 42 24.36	0 42 29.57	4.1294076	8.371
Coburg.....	222 33 33.64	42 40 27.36	4.2901347	12.120
Seavies.....	256 42 21.42	76 51 20.39	4.2480046	10.999
Spencer.....	315 57 41.41	136 02 38.98	4.1375658	8.529

KNOX, LINN COUNTY, OREG.

On south end of Knox Butte, about 5 miles from Albany.

Station mark: Aluminum tablet in a rock on the south brow of butte about 75 feet above a terrace.

[Latitude 44° 39' 03.75". Longitude 123° 00' 51.34".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Saddle.....	8 25 18.94	188 23 37.55	4.3387620	13.555
Fiechter.....	46 40 37.35	226 26 59.48	4.5496215	22.028
Bald.....	69 42 26.02	249 28 57.41	4.4328165	16.833
Windmill No. 3.....	330 54 18.10	150 56 04.22	3.8358185	4.258
Peterson.....	346 47 15.79	166 49 12.18	4.2047668	9.957

LONE PINE HILL, LINN COUNTY, OREG. (Not occupied.)

On one of the foothills of mountains east of Shedd's.

Station mark: Lone pine on top of hill.

[Latitude 44° 26' 34.27". Longitude 122° 58' 12.32".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Bond.....	24 52 15.88	204 48 54.19	4.1816701	9.441
Saddle.....	103 03 43.62	283 00 11.06	3.8381597	4.281

MONROE, BENTON COUNTY, OREG.

On a bare cultivated hill about 1.5 miles south of Monroe and 0.5 mile east of main road.

Station mark: Aluminum tablet in concrete, 1 foot below surface of ground.

Reference marks: Spike in blaze on fir tree bears N. 41° W., and is distant 489.3 feet. Worm fence bears N. 14° W., and is distant 286.9 feet.

[Latitude 44° 18' 02.22". Longitude 123° 17' 00.83'.]¹

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Bond.....	263 44 09.80	83 53 56.67	4.2725355	11.638
Coburg.....	300 18 55.28	120 28 45.29	4.3374300	13.514
White Tower.....	331 16 38.28	151 18 02.54	3.7459692	3.462
Barrow.....	356 22 48.78	176 23 05.24	3.9187736	5.154

PETERSON, LINN COUNTY, OREG.

Coast and Geodetic Survey station; elevation 1,431 feet. It is on the most western summit of Peterson Butte, 4 miles southwest of Lebanon. The station is visible from any point in Willamette Valley within 30 miles, and can be reached by wagon from Lebanon.

Station mark: Brass tablet set in cement; under it in same rock is a copper bolt, the top of which is 1½ inches below bottom of stem of tablet.

Reference marks: Two half-inch copper bolts set north and south of station. The following distances and directions were taken: Twin 00° 00' 00'', about 12 miles; north reference mark 177° 18', 3.270 meters; south reference mark 359° 47.5', 4.645 meters; Truant schoolhouse 198° 53' 43''.

[Latitude 44° 30' 38.34". Longitude 122° 58' 05.53'.]¹

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Bond.....	17 03 23.43	196 59 56.87	4.3482876	13.856
Fir.....	24 39 35.67	204 27 46.00	4.7393760	34.098
Saddle.....	48 56 26.85	228 52 49.40	3.9589900	5.654
Fiechter.....	73 32 02.27	253 16 29.26	4.4873807	19.087
Bald.....	102 04 44.95	281 49 21.05	4.4731375	18.471
Church No. 5.....	118 28 10.82	298 24 50.37	3.8560580	4.461
Knox.....	166 49 12.18	346 47 15.79	4.2047668	9.957
Wind Mill No. 3.....	178 03 46.10	358 03 35.76	3.9830840	5.976
South.....	28 42 13.87	208 26 36.23	4.7944879	38.711
Shedds.....	64 33 41.68	244 27 44.65	4.0959515	7.750

¹ New value.

SADDLE, LINN COUNTY, OREG.

On the highest part of Saddle Butte, a prominent butte northwest of Brownsville. Station mark: Tablet in solid rock.

[Latitude 44° 27' 24.60". Longitude 123° 03' 15.86'.]¹

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Halsey.....	27 55 39.22	207 53 22.83	3.9642605	5.723
Barrow.....	34 46 44.14	214 37 24.02	4.4939111	19.376
Fiechter.....	83 03 01.22	262 51 05.94	4.3571880	14.143
Blufunk.....	92 28 20.71	272 16 29.67	4.3514329	13.957
Shedds.....	97 56 40.58	277 54 21.08	3.6479354	2.762
Bald.....	118 43 01.25	298 31 15.35	4.4037410	15.743
Church No. 5.....	183 17 21.72	3 17 38.87	3.9738085	5.850
Knox.....	188 23 37.55	8 25 18.94	4.3387620	13.555
Windmill No. 3.....	202 41 08.19	22 44 35.47	4.2279803	10.503
Peterson.....	228 52 49.40	48 56 26.85	3.9589900	5.654
Lone Pine Hill.....	283 00 11.06	103 03 43.62	3.8381597	4.281
Bond.....	358 44 38.22	178 44 48.83	4.1859702	9.535
Coburg.....	359 04 39.98	179 04 54.35	4.4528110	17.626

SEAVIES, LANE COUNTY, OREG.

Coast and Geodetic Survey station; elevation is approximately 1,990 feet. This is also an old United States Geological Survey station; the signal apparently had not been disturbed. It is located on the most southern of the high hills 6 miles north-east of Eugene. It is about 30 or 40 feet southwest of the highest part of the bald hill.

Station mark: Stone post 4 by 4 by 24 inches. (Not found. It is probably below the surface, but the point located is probably within 1 inch of it if signal was originally placed over it.

[Latitude 44° 06' 31.80". Longitude 122° 59' 54.79''].¹

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Spencer.....	29 01 13.16	208 57 12.29	4.2018428	9.890
Fir.....	75 39 46.94	255 29 07.27	4.3247253	13.124
Hamenway.....	76 51 20.39	256 42 21.42	4.2480048	10.999
Camp.....	99 09 53.48	278 59 04.74	4.3218169	13.037
North Base.....	119 00 10.34	298 51 15.99	4.2895636	12.014
Barrow.....	120 25 52.61	300 14 14.15	4.4116953	16.034

¹ Urquhart has changed longitude slightly.

SHEDDS, LINN COUNTY, OREG. (Not occupied.)

Church on north side of east-west road through Shedd's.

Station mark: Spire of church.

[Latitude 44° 27' 44.46". Longitude 123° 06' 35.03''].]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Peterson.....	244 27 44.65	64 33 41.68	4.0959515	7.750
Saddle.....	277 54 21.08	97 56 40.58	3.6479354	2.762

SOUTH, LANE COUNTY, OREG. (Three-point station.)

On timbered ridge 1,000 feet east of the road to Crow.

Station mark: Iron bench-mark post.

[Latitude 44° 01' 05.75". Longitude 123° 20' 28.90''].]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Peterson.....	208 26 36.23	28 42 13.87	4.7944879	38.711
Fir.....	235 32 46.43	55 36 33.6	3.9291197	5.278

SPENCER, DOUGLAS COUNTY, OREG.

Coast and Geodetic Survey station; elevation is approximately 2,053 feet. It is on highest point of Spencer Butte, 4 miles south of Eugene, and can be reached by way of Willamette Street, Eugene, and road which passes west of peak. A team can be driven to the point where trail is built up steep part of peak on south side, but the summit is rough. The station is on the largest rock projection on the south end of a short ridge.

Station mark: Copper tablet in rock, with a copper bolt just under it.

Reference marks: Two copper bolts set with their tops flush with surface of rocks, near station; north reference mark 94° 21', 5.338 meters; southeast reference mark 248° 10', 4.570 meters; Peterson station 109° 04', United States Geological Survey station 95° 31', 7.970 meters.

288 TRIANGULATION AND PRIMARY TRAVERSE FOR 1909 AND 1910.

[Latitude 43° 59' 00.72". Longitude 123° 05' 41.25'".]¹

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Yellow.....	27 10 23.0	106 57 36.4	4.7362418	33.853
Fir.....	124 13 09.06	304 06 30.88	4.1881484	9.583
Hamenway.....	136 02 38.98	315 57 41.41	4.1375658	8.529
Camp.....	142 57 50.74	322 51 05.01	4.3345024	13.423
North Base.....	158 11 43.22	338 06 50.53	4.4005529	15.628
Coburg.....	188 38 51.84	8 40 47.32	4.3893011	15.228
Seavies.....	208 57 12.29	29 01 13.16	4.2018428	9.890
Fairview.....	320 57 01.9	141 15 23.5	4.753141	35.196

¹ Urquhart has changed longitude slightly.

TIMBER BUTTE, BENTON COUNTY, OREG. (Not occupied.)

Timbered butte east of main road north from Monroe; probably a poor point, not definite.

[Latitude 44° 25' 51.67". Longitude 123° 16' 02.29'".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Fiechter.....	90 47 19.00	270 44 20.43	3.7514523	3.506
Bald.....	160 31 26.27	340 28 37.71	4.2018591	9.890

WHITE TANK, BENTON COUNTY, OREG. (Not occupied.)

Tank at ranch east of main road north from Monroe.

Station mark: Center of tank.

[Latitude 44° 23' 32.12". Longitude 123° 16' 28.67'".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Fiechter.....	130 55 14.90	310 52 34.86	3.8256938	4.16
Bald.....	166 15 12.30	346 12 42.28	4.2984779	12.35

WHITE TOWER, LANE COUNTY, OREG. (Not occupied.)

Station mark: Tower on a red barn.

[Latitude 44° 15' 23.91". Longitude 123° 15' 00.13'".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Barrow.....	32 26 24.39	212 25 16.64	3.6039872	2.497
Monroe.....	151 18 02.54	331 16 38.28	3.7459692	3.462

WINDMILL No. 3, LINN COUNTY, OREG. (Not occupied.)

[Latitude 44° 35' 49.75". Longitude 122° 58' 20.27'".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>miles.</i>
Saddle.....	22 44 35.47	202 41 08.19	4.2279803	10.503
Knox.....	150 56 04.22	330 54 18.10	3.8358185	4.258
Peterson.....	353 03 35.76	178 03 46.10	3.9830840	5.976

PRIMARY TRAVERSE.

Cazadero, Oregon City, Portland, and Troutdale quadrangles.

CLACKAMAS AND MULTNOMAH COUNTIES.

The following geographic positions along highways and railways were determined in 1910 by O. C. Kintner. They are tied to Rocky Butte and Bald Eagle triangulation stations, and are for the control of the northwest quarter of the Cazadero 30' quadrangle.

The State cooperated in the work.

CAZADERO QUADRANGLE.

Geographic positions along highways near west border of quadrangle from point near Sycamore station south via Sycamore, Damascus, Stone, Redland, Clarks, and Colton to point southwest of Colton.

Stations.	Latitude.	Longitude.
Sycamore, 0.25 mile east of; center of main road at T road north, 30 feet east to bridge.....	° ' " 45 28 27.8	° ' " 122 29 37.2
Sycamore, in northwest corner of schoolhouse yard, 200 feet southeast to schoolhouse, 150 feet northwest to forks of road; iron post stamped "Prim. Trav. Sta. No. 22, 1910".....	45 27 54.9	122 28 50.0
Damascus, 3 miles northwest of; center of main road at T road southeast; 2 transmission lines turn southeast on this road.....	45 27 23.5	122 28 35.0
T. 1 S., R. 3 E., corner of secs. 29, 30, 31, and 32, 80 feet northwest to small brown house, 150 feet north to bridge, 2 miles northwest of Damascus, in center of T road, 50 feet west of main road.....	45 26 49.4	122 28 28.4
Damascus, 1.5 miles northwest of; center of small bridge over Rock Creek, 250 feet northeast of Henry Troge's house.....	45 26 10.3	122 28 19.2
Damascus, at T road north, across road from Wm. Stevenson's house, 400 feet west of J. C. Elliott's store; iron post stamped "Prim. Trav. Sta. No. 21, 1910".....	45 25 05.1	122 27 20.7
Damascus, corner of secs. 4, 5, 8, and 9, T. 2 S., R. 3 E., 100 feet south of Elliott's store.....	45 25 04.8	122 27 14.2
Damascus, 1.25 miles southwest of; center main road at T road north, 20 feet south to mail box, 30 feet northeast to signpost, 500 feet east to yellow house.....	45 24 38.9	122 29 05.7
Stone, 2,000 feet south of Bakers bridge, over Clackamas River, 400 feet southeast to forks of road, at south end of schoolhouse; iron post stamped "Prim. Trav. Sta. No. 20, 1910".....	45 23 46.6	122 29 50.7
Stone, 3 corners, 30 feet west to signpost, 30 feet north to old shed, 40 feet west to 7 mail boxes, 100 feet west to house.....	45 23 27.6	122 29 39.7
Bridge over ravine, east end of, 200 feet east to church, 400 feet west to rock cliff.....	45 23 19.2	122 29 44.7
Bakers bridge, 2 miles south of; T road west, 300 feet northwest of Chas. Hatten's house.....	45 22 32.6	122 29 41.4
T. 2 S., Rs. 2 and 3 E., corner of secs. 19, 30, 24, and 25, 150 feet southwest of Chas. Hatten's barn, 2 miles south of Bakers bridge.....	45 22 28.4	122 29 46.5
Bakers bridge, 2 miles south of; center of road on line between secs. 19 and 30, T. 2 S., R. 3 E.....	45 22 28.4	122 29 43.2
Redland, 1.25 miles southwest of; T road east, 20 feet southeast to signpost, 80 feet southwest to 8 mail boxes, 0.25 mile southeast to house on hill, 800 feet north of T road west.....	45 20 38.3	122 29 31.4
Redland, in southwest corner of H. A. Allen's field, 100 feet southeast to schoolhouse, 200 feet southwest to T road west, 300 feet south to old post-office building; iron post stamped "Prim. Trav. Sta. No. 19, 1910".....	45 19 44.6	122 28 11.4
T road south, 2,000 feet west of schoolhouse and church, at cemetery, 30 feet north to 2 mail boxes.....	45 18 33.9	122 27 10.1
Viola, 2 miles west of; crossroads, 30 feet east to signboard post, 100 feet northeast to white house, 900 feet northwest to a church and schoolhouse.....	45 18 11.8	122 26 20.6
Viola, 3 miles south west of; center of main road at T road south, 70 feet east to 3 mail boxes, 1,000 feet east to green house, 1,500 feet west to house.....	45 17 12.6	122 27 07.4
Clarks, 4 miles north of; center of road to Viola called the Hog Back, 20 feet northeast to fir tree blazed "P. T. U. S. G. S.," 10 feet north to second fir tree blazed "P. T. U. S. G. S.," 151 feet southeast to forks of road in hollow.....	45 16 47.4	122 27 12.7
Viola, 4 miles south of; 1 mile west of Highland store, in southeast corner of G. R. Miller's garden at crossroads, 300 feet north to Miller's house, 200 feet southeast to a bridge; iron post stamped "Prim. Trav. Sta. No. 16, 1910".....	45 15 44.5	122 27 32.8
Clarks, 2.5 miles north of; crossroads on the Viola road, 100 feet northeast to Washburn's house, 30 feet east to 5 mail boxes.....	45 14 53.9	122 27 35.7
Clarks, 1.5 miles north of; T road east, 30 feet east to signboard on fence, 30 feet north to 2 mail boxes, 500 feet north to white ranch house.....	45 14 02.2	122 28 25.0
Clarks, on east side of Methodist Episcopal Church, 400 feet north of store and crossroads; iron post stamped "Prim. Trav. Sta. No. 15, 1910".....	45 13 00.6	122 28 13.7
Clarks, crossroads, 400 feet north to church, 40 feet southeast to store.....	45 12 57.0	122 28 13.0
Clarks, 1 mile south of; T road east, 30 feet southeast to signpost, 20 feet northeast to mail box, 1,200 feet north to ranch house.....	45 12 08.1	122 28 11.1
Clarks, 1.5 miles south of; center of triangle at T road east, 30 feet northeast to old shed, 500 feet north to ranch house, 500 feet south to old barn.....	45 11 33.0	122 28 21.5
Milk Creek, south end of bridge over, 1 mile northwest of schoolhouse (district 53), 200 feet east to abandoned homestead, 9,500 feet northwest to white house.....	45 11 02.4	122 27 54.2
Colton, 1.5 miles west of; crossroads, 80 feet northeast to schoolhouse, 300 feet east to abandoned store, 40 feet northwest to signpost.....	45 10 12.7	122 27 54.4

CAZADERO QUADRANGLE—Continued.

Geographic positions along highways near west border of quadrangle from point near Sycamore station south, via Sycamore, Damascus, Stone, Redland, Clarks, and Colton, to point southwest of Colton—Continued.

Stations.	Latitude.	Longitude.
Colton, 2 feet west of Lutheran Church vestry, 200 feet north to yellow house, 200 feet east to store; iron post stamped "Prim. Trav. Sta. No. 14, 1910".....	45 10 19.8	122 26 13.8
Colton, 2 miles southwest of; center of plank bridge over small stream at cross-roads, 0.8 mile south of Cedardale schoolhouse.....	45 09 34.0	122 27 54.2
Cedardale, 1.5 miles south of schoolhouse, center of road opposite front yard gate of second farmhouse south of schoolhouse.....	45 09 15.2	122 27 54.3
Cedardale, 2.5 miles south of; center of road, 5 feet west to tree blazed "P. T. U. S. G. S.," 20 feet east to second tree blazed "P. T. U. S. G. S.," 200 feet northeast to corduroy bridge.....	45 08 39.8	122 27 51.9
Cedardale, 2.8 miles south of; north end of bridge over small stream, 25 feet north to Pendleton's mail box, 200 feet southeast to abandoned shingle mill, 0.25 mile east through timber to Pendleton's house.....	45 07 53.6	122 27 44.0
Colton, 3.5 miles southwest of; center of triangle at T road east, 1,000 feet east to farmhouse, 1,000 feet north to house, 20 feet southwest to Albert Johnson's mail box, 1,500 feet south to Julius Berhudt's house.....	45 07 44.2	122 28 11.6
Colton, 5 miles southwest of, at T road north, 10 feet north to 2 mail boxes, 1,500 feet north to Julius Berhudt's house, 1,500 feet west to Woodcock Creek, 150 feet southwest to small unpainted house; iron post stamped "Prim. Trav. Sta. No. 23, 1910".....	45 07 29.8	122 28 11.4

Geographic positions along highways from Colton northeast to Cazadero; thence east through center of quadrangle via Bissell to Eagle station.

Tps. 4 and 5 S., R. 3 E., corner of secs. 3, 4, 33, and 34, in center of road, 500 feet east of Colton store.....	45 10 20.6	122 26 03.0
Colton, 0.25 mile east of; center of new bridge over Canyon Creek, 200 feet east to fork of road, 200 feet east to sign "Springwater 10.5 miles—Elmwood 5.5 miles".....	45 10 21.1	122 25 46.0
Colton, 2 miles northeast of; center of triangle at fork of road, 80 feet northeast to bridge over Milk Creek, 50 feet south to signboard.....	45 11 01.9	122 24 43.2
Colton, 3 miles northeast of; forks of road, 100 feet southwest to bridge, 30 feet north to signboards on tree "Colton 3m., Oregon City 15 m., Springwater 6 m., Elmwood 2 m., Clarks 3 m.".....	45 12 21.3	122 24 41.5
Elwood schoolhouse, 1.5 miles west of; center of triangle at T lane south, 0.25 mile south to yellow house, 10 feet north to mail box near large roots and logs.....	45 12 21.4	122 23 34.8
Elwood, schoolhouse and church, 0.5 mile west of; center of bridge over small stream.....	45 12 20.6	122 22 28.4
Elwood, 1 mile southwest of store, in southeast corner of schoolhouse yard, 150 feet northwest to schoolhouse, 200 feet southeast to church; iron post stamped "Prim. Trav. Sta. No. 13 1910".....	45 12 17.5	122 21 44.6
Elwood, 0.25 mile south of store, center of road at T road east, 500 feet south to ranch house, 40 feet west to gate.....	45 12 56.5	122 21 07.1
Elwood, 1.5 miles north of; east end of bridge over Clear Creek.....	45 13 35.6	122 21 07.3
Elwood, 2 miles northeast of; center of road where bridge across Little Clear Creek turns south to Miller's ranch house, on top of hill.....	45 13 33.3	122 20 16.4
Elwood, 3 miles northeast of; 2 miles northwest of Dodge, fork of road, 40 feet east to bridge over ravine, 800 feet north to Wilcox's house.....	45 13 52.0	122 19 30.4
Cazadero, 2.5 miles southwest of; 1 mile southeast of Springwater, at T road south, 0.8 mile north of Wilcox ranch, 3 feet west to signboard; iron post stamped "Prim. Trav. Sta. No. 12, 1910".....	45 14 34.9	122 19 39.4
Springwater, 0.8 mile east of; center of triangle at T road west, 300 feet southeast to white house, 100 feet northeast to barn.....	45 15 01.1	122 19 24.2
Cazadero, 1 mile south of; center of grass triangle at private T lane north, 80 feet east to barn, 50 feet east to right-angle turn in road to south, 200 feet northeast to ranch house.....	45 15 04.6	122 18 38.8
Cazadero, 0.8 mile northeast of; center of triangle at T road north, 300 feet northwest to white house, 20 feet south to a burned stump.....	45 16 25.7	122 18 21.2
T. 3 S., R. 4 E., northeast corner stone of sec. 34, at T road west.....	45 16 26.1	122 17 26.5
Center of triangle at T road east, 200 feet west to church, 1,000 feet south to house.....	45 16 26.2	122 16 39.2
Cazadero, 2.5 miles east of; center of triangle at T road west, 1,200 feet north to farmhouse, 1,000 feet west to second farmhouse.....	45 16 26.4	122 15 53.7
Cazadero, 4 miles east of; fork of road at top of hill, 10 feet west to 3 mail boxes, 1,000 feet east to new house.....	45 16 24.2	122 14 38.6
T. 3 S., R. 5 E., stone at quarter corner between secs. 30 and 31, at T road east.....	45 15 59.5	122 13 44.8
Cazadero, 5 miles east of; at T road east, 150 feet north to Porter's schoolhouse (district 88), 600 feet south to J. B. Bourman's house, 1,500 feet west to G. P. Looney's house, 4 feet east to mail box; iron post stamped "Prim. Trav. Sta. No. 10, 1910".....	45 15 59.4	122 13 43.5
Porter's schoolhouse, 1.5 miles east of; center of triangle at fork, 600 feet south to bridge over South Fork of Eagle Creek.....	45 15 39.0	122 12 28.7
Eagle Creek, south end of bridge over, at bottom of deep canyon.....	45 16 34.9	122 12 13.2
Center of triangle at fork on top of north side of Eagle Canyon, 1,500 feet west to farmhouse.....	45 16 49.9	122 12 33.2
T. 3 S., R. 5 E., corner of secs. 20, 21, 28, and 29, at right-angle turn in road.....	45 17 16.2	122 12 30.4
George, 1.5 miles east of; center of triangle at T road south, 10 feet southeast to 2 mail boxes, 1,000 feet south to Paulsin's ranch house.....	45 17 42.2	122 12 40.7
Bissell, 1 mile southwest of; center of road at lane north to white house.....	45 17 32.6	122 11 41.0
Bissell, center of triangle at T road east, 1,000 feet north to old barn, 1,500 feet northwest to green farmhouse.....	45 17 41.8	122 10 39.7
Bissell, 1 mile east of; center of road, 5 feet to tree blazed "P. T. U. S. G. S.," 5 feet west to dead snag blazed "P. T. U. S. G. S.," at bottom of gully.....	45 17 49.4	122 09 41.6

CAZADERO QUADRANGLE—Continued.

Geographic positions along highways from point near George schoolhouse via Firwood, Sandy, and Kelso to Boring, thence over the Portland Railway, Light & Power Co.'s electric line to Gresham.

Stations.	Latitude.	Longitude.
T. 3 S., R. 5 E., quarter corner between secs. 19 and 20, at T lane south, 800 feet west to George schoolhouse.....	45 17 43.0	122 13 44.3
George, at T road east, 200 feet north to large red barn, 500 feet north to several old sheds, 2 feet from signpost "Bissell 3 m., Robertson 4 m."; iron post stamped "Prim. Trav. Sta. No. 11, 1910".....	45 17 53.6	122 14 39.1
George, 2 miles northwest of; center of road opposite gate of deserted homestead on bank of Eagle Creek.....	45 18 47.4	122 16 43.0
Estacada, 4 miles northeast of; fork of road at junction of main branch and North Fork of Eagle Creek, 40 feet west to bridge over North Fork, 10 feet south to signboard "Exodus 1 m.".....	45 19 33.5	122 17 14.3
Estacada, 4 miles northeast of; center of triangle at T road south, 100 feet southeast to J. L. Ellis's house, 500 feet south to bridge over Eagle Creek.....	45 19 30.5	122 17 54.6
Eagle Creek, 2.5 miles east of; center of crossroads, 30 feet east to Victor Berg's mail box, 30 feet southeast to large fir.....	45 20 34.6	122 18 39.2
Center of triangle at T road north, 200 feet north to schoolhouse, 100 feet to R. B. Gibson's farmhouse.....	45 20 34.7	122 18 02.0
T. 3 S., R. 4 E., center of sec. 3.....	45 20 21.7	122 18 01.7
Eagle Creek, 3.5 miles east of; at right-angle turn in road, 0.25 mile south of R. B. Gibson's house, 0.25 mile west of E. L. Paulfrey's house, 40 feet northwest to H. E. Huntington's mail box, 8 feet west to large gatepost; iron post stamped "Prim. Trav. Sta. No. 6, 1910".....	45 20 08.5	122 17 43.0
Wooden bridge over ravine, center of; 100 feet southwest to barn, 800 feet west to turn in road.....	45 20 05.2	122 17 15.2
Eagle Creek, 4.5 miles southeast of; lane north to white house, 500 feet from road, 80 feet west to gate across road.....	45 19 59.3	122 16 23.9
Bridge over small stream, center of.....	45 20 24.7	122 14 41.1
Dover, 0.5 mile northwest of; center of triangle at 3 corners.....	45 20 20.9	122 14 06.2
Center of triangle at T road east, 1,000 feet south of F. F. Evan's house.....	45 20 47.0	122 14 03.4
Firwood, 1 mile southwest of; center of highway bridge.....	45 22 01.3	122 13 50.0
Firwood, at road fork north edge of Salmon road, at base of signboard; iron post stamped "Prim. Trav. Sta. No. 5, 1910, 1206".....	45 22 31.7	122 13 24.3
Sandy, 1.25 miles southeast of; fork of road, plank road leads to sawmill, 20 feet south of mail box marked "56".....	45 23 10.2	122 13 58.7
Sandy, 5 feet north of northwest corner of Meinig Bros.' store, 5 feet north of east line of Bull Run road; iron post stamped "Prim. Trav. Sta. No. 4, 1910".....	45 23 51.7	122 15 15.5
Kelso, 1.5 miles southeast of; T road south, center of triangle at.....	45 24 19.2	122 17 24.2
Kelso, in northwest corner of C. J. Sindall's yard, 60 feet southeast of crossroads, 50 feet east of store; iron post stamped "Prim. Trav. Sta. No. 3, 1910".....	45 25 07.7	122 18 26.5
Kelso, crossroads.....	45 25 08.1	122 18 27.1
Boring, 2 miles east of; crossroads.....	45 25 59.6	122 19 41.9
Tps. 1 and 2 S., R. 4 E., corner of secs. 4, 5, 32, and 33.....	45 25 59.6	122 19 50.5
Boring, 1.5 miles east of; Orient and Sandy crossroads, 50 feet southeast to old store, 30 feet northwest to W. S. Norton's mail box.....	45 25 59.3	122 20 27.5
Tps. 1 and 2 S., Rs. 3 and 4 E., corner of secs. 31, 36, 1, and 6, at T road east, 800 feet north of Ed. Donahue's livery stable at Boring.....	45 25 59.0	122 22 18.6
Boring, 150 feet north of station, 10 feet west of west rail, 2 feet southwest of trolley pole; iron post stamped "Prim. Trav. Sta. No. 2 1910".....	45 25 49.8	122 22 28.5
Haley, opposite station.....	45 26 35.9	122 22 59.0
Anderson, crossing at station.....	45 27 39.0	122 23 14.3
Palmblad, track opposite station.....	45 28 26.8	122 24 06.3
Hogan, crossing at station, 1.5 miles southeast of Gresham.....	45 28 51.6	122 24 40.0
Preston, crossing at, 0.8 mile south of Gresham.....	45 29 15.0	122 25 14.6
Gresham, 30 feet south of west end of Portland Ry., Light & Power Co., station, 10 feet south of south rail at intersection of public road and railroad; iron post set 1 foot above ground, stamped "Prim. Trav. Sta. No. 1, 1910".....	45 29 44.1	122 25 48.0
Gresham, intersection of Powell Valley road and Fairview road, center of town.....	45 29 54.7	122 25 48.3

Geographic positions along Portland Railway, Light & Power Co.'s electric line from Cazadero north via Estacada, Eagle Creek, and Boston to Boring.

Cazadero, 2 feet west of west end of station, 10 feet south of track; iron post stamped "Prim. Trav. Sta. No. 9, 1910".....	45 16 02.4	122 18 25.8
Faraday, opposite station.....	45 16 13.7	122 19 00.0
Estacada, southeast corner of front yard of Estacada Hotel, 400 feet southeast of station, 15 feet north of north rail; iron post stamped "Prim. Trav. Sta. No. 8, 1910".....	45 17 10.5	122 19 59.7
Estacada, opposite window of station.....	45 17 12.2	122 20 03.9
Rivernill, opposite station.....	45 17 55.3	122 20 33.2
Morrow, crossing at station.....	45 18 19.6	122 20 37.5
Currinsville, crossing.....	45 19 06.3	122 20 45.8
Alspaugh, 1 mile south of; crossing.....	45 19 27.4	122 20 49.6
Alspaugh, crossing at station, 1 mile southeast of Eagle Creek.....	45 20 25.6	122 20 59.8
Eagle Creek, on right of way, about 300 feet south of station on opposite side of road, 40 feet west of track, 80 feet south of G. R. Morse's store, on opposite side of road, in corner of fence; iron post stamped "Prim. Trav. Sta. No. 7, 1910".....	45 21 28.1	122 21 30.2
Eagle Creek, 0.8 mile northwest of; crossing, 1,000 feet southeast to white house.....	45 22 04.4	122 22 20.1
Riverside, station, 1.5 miles northwest of Eagle Creek.....	45 22 36.1	122 23 09.4
Barton, crossing, 200 feet west to store.....	45 23 22.6	122 24 21.4
Morris, opposite station.....	45 24 00.3	122 24 21.9
Siefer, opposite door of station.....	45 25 23.2	122 23 18.0

292 TRIANGULATION AND PRIMARY TRAVERSE FOR 1909 AND 1910.

CAZADERO QUADRANGLE—Continued.

Geographic positions along highways from point 2.5 miles southeast of Eagle Creek west to point 1 mile south of Eagle Creek.

Stations.	Latitude.	Longitude.
Eagle Creek, 2 miles southeast of; point in road at 45° bend north, 80 feet east to F. J. Shultz's mail box, 150 feet northeast to his residence, 80 feet southeast to old shed.....	° ' "	° ' "
Eagle Creek, 1 mile south of; center of triangle at T road north, 50 feet northwest to Granger Hall.....	45 20 34.6	122 20 18.5
	45 20 45.8	122 20 44.8

Geographic positions along highways from point 2 miles west of Viola northeast via Logan to Barton.

T. 3 S., R. 3 E., corner of secs. 9, 10, 15, and 16, 1.5 miles north of crossroads.....	45 19 02.1	122 26 01.9
Cloverhook farm, center of road, opposite gate of front yard, 1 mile southwest of Fisher's Mills, 30 feet west to mail box, 80 feet west of farmhouse.....	45 19 48.0	122 26 09.2
Fisher's Mills, in northwest corner of front yard of Gus Fisher's store, 30 feet southeast to covered bridge over Clear Creek, 50 feet northeast to residence; iron post stamped "Prim. Trav. Sta. No. 17, 1910".....	45 20 18.5	122 26 07.0
Logan, center of main road at T road north, 40 feet south to Harding grange hall, 800 feet northeast to schoolhouse.....	45 20 37.8	122 25 19.2
Logan, 2 miles south of; 10 feet east of center of road, opposite front-yard gate of John Walazak's ranch house.....	45 22 16.7	122 25 17.0
Center of road opposite front-yard gate of J. P. McMurray's ranch house, on bank of Clackamas River, 500 feet north of ferry.....	45 23 01.1	122 25 14.6
Barton, on electric-railroad right of way, 50 feet west of crossing, 150 feet east of H. F. Gibson's store, 250 feet south of railroad station; iron post stamped "Prim. Trav. Sta. No. 18, 1910".....	45 23 22.4	122 24 22.3

Magnetic declination of west border of quadrangle, 21° 29' E.; of east-west line through center of quadrangle, 21° 29' E.; of northwest quarter of quadrangle, 22° 10' E.

PORTLAND QUADRANGLE.

Geographic positions along highways from Montavilla east to east border of quadrangle.

Stations.	Latitude.	Longitude.
Montavilla, Oregon-Washington Railroad & Navigation Co., crossing at; 6 miles east of Portland.....	° ' "	° ' "
Montavilla, center of intersection of base line road and Meridian Street.....	45 32 03.5	122 34 41.2
Montavilla, 1.5 miles east of; T road north, 20 feet northeast of J. P. Welbe's mail box, 300 feet northeast to brown house.....	45 31 10.6	122 34 41.4
Montavilla, 2.5 miles east of; T road south, 150 feet southwest to A. F. Friese's house.....	45 31 10.1	122 32 45.5
	45 31 10.4	122 31 26.3

Magnetic declination along this line, 22° 14' E.

OREGON CITY QUADRANGLE.

Geographic positions along highways from north border of quadrangle near northeast corner, 1.5 miles north of Lents, southeast via Lents to point on east border of quadrangle near northeast corner, 2.5 miles south of Damascus.

Stations.	Latitude.	Longitude.
Lents, 1.5 miles north of, intersection of Meridian road and Powell Valley road....	° ' "	° ' "
Lents, intersection of Foster road and Meridian road.....	45 29 52.4	122 34 40.6
Lents, intersection of Foster road and Main Street.....	45 28 59.8	122 34 41.2
Lents, 1 mile east of, T road south.....	45 28 48.8	122 34 04.0
Lents, 2.5 miles east of; center of main road, at T road north.....	45 28 36.0	122 32 47.1
Damascus, 2.5 miles south of; center of triangle at 3 corners, 30 feet north to 2 mail boxes, 200 feet northwest to covered bridge over small creek.....	45 28 38.5	122 31 21.6
	45 24 37.1	122 30 16.8

Magnetic declination of northeast corner of quadrangle, 21° 47' E.

TROUTDALE QUADRANGLE.

Geographic positions along highways from point on west border of quadrangle, near southwest corner, east along south border of quadrangle to point 0.5 mile north of Gresham.

Stations.	Latitude.	Longitude.
Montavilla, 4 miles east of; "Ninemile" crossroads, 150 feet southeast of house of H. Lindstad.....	45 31 10.6	122 29 44.2
Rockwood, T road north, 30 feet northwest to corner of store, 400 feet east to school-house.....	45 31 10.6	122 28 35.0
Rockwood, 1 mile east of; crossing of base line road and electric railroad.....	45 31 10.5	122 27 22.4
Montavilla, 7 miles east of; center of crossroads at Twelvemile roadhouse.....	45 31 10.2	122 25 58.6
Gresham, 0.5 mile north of; center of triangle at T road north.....	45 30 41.6	122 25 59.0

Magnetic declination of southwest corner of quadrangle, 20° 00' E.

TENNESSEE.

PRIMARY TRAVERSE.

Crossville, Sparta, and Standing Stone quadrangles.

BLEDSON, CUMBERLAND, VAN BUREN, AND WHITE COUNTIES.

The following geographic positions were determined by Oscar Jones in 1910. The line starts at primary traverse station No. 2, 1909, and follows highways and railroads along or near the east, north, and west borders of the quadrangle, to tie at Chestnut Mountain triangulation station of the Coast and Geodetic Survey and at primary traverse station No. 1, 1909.

CROSSVILLE QUADRANGLE.

Geographic positions along highways near east border of quadrangle.

Stations.	Latitude.	Longitude.
Litton Fork of Pikeville and Low Gap road, 0.25 mile east of, 110 feet north of fork of road at end of stone wall, in limestone ledge; aluminum tablet stamped "Prim. Trav. Sta. No. 2".....	35 44 12.5	85 01 46.4
Forks of road to Browns Gap.....	35 45 26.2	85 01 03.6
Forks of road at schoolhouse.....	35 45 37.5	85 00 36.8
Forks of roads at Cedar Grove Church.....	35 46 22.5	85 00 46.0
Parham Mill, 100 feet west of, forks of road to Morris Gap.....	35 46 56.2	85 01 11.8
Parham Gap, 185 feet east of summit of mountain, forks of road.....	35 47 29.8	85 01 11.5
Parham Gap, south edge of road, at top of mountain, in sandstone ledge; tablet stamped "Prim. Trav. Sta. No. 4".....	35 47 29.4	85 01 13.6
Oak Grove, 300 feet north of, schoolhouse, crossroads.....	35 48 01.6	85 01 19.3
Big Lick, 1 mile west of, post office, forks of roads.....	35 48 36.8	85 01 50.2
Forks of road, 50 feet south of center of bridge over Big Lick Creek.....	35 49 16.5	85 02 14.0
Forks of public road, 1,000 feet south of bridge over Basses Creek.....	35 51 04.4	85 01 43.4
Crossroads.....	35 52 34.8	85 01 39.7
Center of bridge over Bird Creek.....	35 53 35.7	85 01 30.4
Branch flowing east.....	35 55 02.4	85 02 01.3
Crossville, 0.8 mile south of, creek crossing.....	35 55 52.9	85 01 35.9
Crossville, railroad station on Tennessee Central R. R., opposite signal pole, center of track.....	35 56 59.6	85 01 39.5
Road crossing over Tennessee Central R. R., 420 feet southeast along track from milepost "H-36".....	35 57 30.0	85 02 07.4
Road crossing.....	35 58 07.6	85 02 27.8
Crossville, 2.2 miles northwest of, on Tennessee Central R. R., 30 feet east of track, 60 feet southeast of south end of bridge over Obed Creek, in sandstone ledge; tablet stamped "Prim. Trav. Sta. No. 1".....	35 58 43.4	85 02 44.3
Road crossing.....	35 59 21.6	85 03 11.4
Milepost "H-39," Tennessee Central R. R.....	35 59 50.8	85 03 35.6

CROSSVILLE QUADRANGLE—Continued.**Geographic positions along highways near north border of quadrangle.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Bakers Crossroads.....	35 59 48.2	85 06 36.5
Crossroads.....	35 59 16.1	85 07 26.8
Forks of road, 1,000 feet north of crossing of Beam Creek.....	35 58 34.4	85 08 19.7
Claysville Church, 500 feet west of, junction of Creston and Crossville-Sparta roads.....	35 58 10.2	85 09 06.2
Forks of road.....	35 58 31.3	85 09 04.3
Pleasant Hill, 300 feet east of Frye's store, forks of road.....	35 58 41.2	85 11 57.3
Pleasant Hill, 1.5 miles west of, forks of road.....	35 58 20.3	85 13 31.3

Geographic positions along highways near west border of quadrangle.

Forks of road to Clifty.....	35 57 50.4	85 14 09.6
Smith Chapel, 0.25 mile east of; 60 feet east of Wm. Jarvis's house, south side of old stage road from Crossville to Sparta, in sandstone ledge; tablet stamped "Prim. Trav. Sta. No. 2".....	35 57 48.5	85 14 19.8
Road crossing Poke Patch Creek.....	35 56 57.3	85 13 07.3
Center of bridge over Right Fork.....	35 55 28.0	85 12 50.3
Clifty, opposite window of station on Nashville, Chattanooga & St. Louis Ry., center of track.....	35 54 06.3	85 13 14.5
Junction point of line south to primary traverse station No. 1.....	35 53 24.1	85 13 30.4

Geographic positions along highways near west border of quadrangle.

Forks of road.....	35 53 17.2	85 14 17.0
Crossroads to Crossville-Lost Creek add Clifty-Tar Killer forks.....	35 53 23.8	85 13 30.4
Tar Killer Ford, south bank of Caney Fork River, on road from Clifty to Herbert, in sandstone ledge; aluminum tablet stamped "Prim. Trav. Sta. No. 3".....	35 52 37.3	85 13 20.8
Tar Killer Ford, 1.5 miles south of; forks of road.....	35 51 21.2	85 13 37.2
Forks of road.....	35 50 51.2	85 13 38.5
T road north.....	35 50 28.7	85 13 37.5
Forks of road, 50 feet north of creek.....	35 50 13.7	85 13 33.5
Forks of road.....	35 49 02.2	85 13 56.0
Newton, 0.8 mile west of post office, forks of road.....	35 47 43.1	85 13 12.7
State land boundary.....	35 46 54.7	85 13 45.3
Forks of road, 230 feet north of crossing of Bee Creek.....	35 46 26.4	85 13 57.4
Herbert, 400 feet east of post office, T road south.....	35 45 49.9	85 14 48.2
Herbert, 0.3 miles south of; 2 miles north of Saratoga Springs, 35 feet east of bridge over branch, in limestone ledge; aluminum tablet stamped "Prim. Trav. Sta. No. 1".....	35 44 50.6	85 14 15.9

Magnetic declination of east border of quadrangle, 4° 10' E.; of north border, 4° 20' E.; of west border, 2° 30' E.

STANDING STONE QUADRANGLE.**Geographic positions along highways near southeast corner of quadrangle.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Creston, opposite window of office of Tennessee Central R. R. station, center of track.....	36 00 31.1	85 04 30.2
Creston, 1 mile southwest of; forks of road.....	36 00 06.6	85 05 46.3

SPARTA QUADRANGLE.**Geographic positions along highways in eastern part of quadrangle.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Center of ford, Clifty Creek.....	35 53 00.1	85 15 03.7
Forks of public road to Clarktown.....	35 52 45.7	85 16 38.7
Forks of road.....	35 52 36.9	85 17 19.1
Chestnut triangulation station, on west end of Big Chestnut Ridge, on western edge of Cumberland table-land, about 0.5 mile north of road from Sparta and opposite milepost marked "9 miles" (from Sparta), in White County; underground mark, large-sized jug filled with ashes; surface mark, stone post lettered "U. S. C. S.", 4 feet long, 1 foot square, rising 6 inches above surface; round hole in center of stone marks station (Coast and Geodetic Survey station).....	35 52 36.6	85 19 22.3

Magnetic declination, 3° E.

TENNESSEE-KENTUCKY.

PRIMARY TRAVERSE.

Bayouville, Cades, Dresden, Dyersburg, Hickman, Idlewild, Malesus, Martin, Maury City, Mayfield, Rives, Tiptonville, Trimble, and Water Valley quadrangles.

CARROLL, CROCKETT, DYER, GIBSON, MADISON, OBION, AND WEAKLEY COUNTIES, TENN.; GRAVES AND HICKMAN COUNTIES, KY.

The following geographic positions were determined by primary traverse run by E. L. McNair in 1910. The first line starts from an adjusted position at Milan, established by C. B. Kendall in 1906, and ties on an adjusted position in the Malesus quadrangle, 2.5 miles west of Carroll. The work was extended west and north along railroads and highways to the Kentucky-Tennessee State line, and makes another tie to a bench mark of the Mississippi River Commission 3 miles west of Hickman, Ky., where the line closes within 10 feet in latitude, but about 5 seconds too great in longitude. (See Bayouville quadrangle.)

IDLEWILD QUADRANGLE (TENN.).

Geographic positions along Illinois Central R. R., Idlewild to Sharon.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Rutherford Fork.....	35 59 38.4	88 47 36.7	.....
Idlewild, 2 miles south of, road crossing.....	36 00 27.0	88 47 57.8	5,210
Idlewild, 0.5 mile south of, road crossing.....	36 01 18.9	88 48 38.7	6,233
Idlewild, 1,100 feet north of station, 41 feet east of center of track, 80 feet from road crossing; iron post stamped "Prim. Trav. Sta. No. 6, 1910".....	36 01 56.0	88 48 32.5	3,789
Road crossing.....	36 02 47.5	88 48 30.7	5,206
Do.....	36 03 28.8	88 48 27.5	4,192
Bradford station.....	36 04 34.2	88 48 39.6	6,679
Road crossing.....	36 06 08.7	88 48 23.2	9,649
Obion River crossing.....	36 06 56.6	88 48 08.4	4,989
Road crossing.....	36 08 02.1	88 47 49.1	6,818
Greenfield, 93 feet west of center of Illinois Central R. R. track, 61 feet from northeast corner of Commercial Hotel, in open grass plot; iron post stamped "Prim. Trav. Sta. No. 19, 1910".....	36 09 12.3	88 48 06.3	7,233
Greenfield station.....	36 09 13.4	88 48 05.3	136
Greenfield, 495 feet distant, N. 23 15' E. from primary traverse station No. 19 (described above), in brick wall of building owned by Wm. Orr; copper bolt (Coast and Geodetic Survey bench mark).....	36 09 16.8	88 48 03.9	363
Road crossing.....	36 10 11.8	88 48 13.0	5,608
Do.....	36 11 10.9	88 48 20.9	6,010
Obion River, south end of long trestle over.....	36 12 19.1	88 48 30.0	6,939
Road crossing.....	36 12 59.0	88 48 57.4	4,623
Do.....	36 13 23.4	88 49 26.2	3,409
Sharon, 290 feet north of Illinois Central R. R. station, 45 feet west of center of track, south of center of east-west road, in open park, 56 feet corner of store building owned by J. H. Parrish; iron post stamped "Prim. Trav. Sta. No. 20, 1910".....	36 14 00.8	88 49 32.4	3,820
Sharon, 3,000 feet north of, road crossing.....	36 14 29.7	88 49 38.3	2,956
Road crossing.....	36 15 22.1	88 49 55.4	5,479

Sharon east along highways to Dresden.

Primary traverse station No. 20.....	36 14 00.8	88 49 32.4	.....
Sharon, 1 mile east of, T road corners north, south, and east.....	36 14 13.7	88 48 32.9	5,051
Sharon, 2 miles east of, T road corners east, west, and north.....	36 14 27.4	88 47 34.4	4,983
T road.....	36 15 59.8	88 46 56.7	9,837

IDLEWILD QUADRANGLE (TENN.)—Continued.

Sharon along public roads via Sidonia to Kenton.

Stations.	Latitude.			Longitude.			Distance between stations.
	°	'	"	°	'	"	
Primary traverse station No. 20.....	36	14	00.8	88	49	32.4	.....
T road corners east, west, and north.....	36	14	02.4	88	50	17.9	3,729
T road corners north, south, and east.....	36	13	52.8	88	52	16.2	9,745
Four corners, second-class road north-south.....	36	14	12.2	88	52	36.5	2,560
Four corners.....	36	14	18.8	88	53	58.8	6,777
Sidonia, on north side of road, 445 feet west of four corners at Lee & Simon's store, at angle in fence line, in line with road fence; iron post stamped "Prim. Trav. Sta. No. 21, 1910".....	36	14	40.6	88	54	32.4	3,527
T road corners east, west, and south.....	36	14	43.2	88	55	22.6	4,124
Forks of road.....	36	14	54.5	88	56	10.0	4,048
T road.....	36	15	10.1	88	56	39.6	2,893
County line.....	36	15	16.7	88	57	32.2	.....
Obion River, center of bridge over.....	36	14	44.2	88	58	32.4	5,924
T road corners north, south, and west.....	36	13	12.4	88	59	00.3	9,554
T road corners north, south, and east.....	36	12	55.9	88	59	31.8	3,075
Obion River, center of iron bridge over.....	36	12	21.6	88	59	48.2	3,715
Road crossing.....	36	12	10.4	89	00	41.2	4,493

Geographic positions along Mobile & Ohio R. R. from Trenton to Rutherford.

Deer River bridge.....	35	59	56.5	88	57	41.0	.....
Grizzard flag station, road crossing.....	36	01	44.5	88	59	11.4	13,214
Grizzard flag station, 1,070 feet west of; on north side of road, 2.5 feet from fence line, 47 feet east of gateway to A. F. Taylor's house, opposite schoolhouse; iron post stamped "Prim. Trav. Sta. No. 7".....	36	01	45.5	88	59	24.5	1,074
Road crossing.....	36	03	18.2	88	59	12.4	9,426
Dyer, 160 feet south of station, road crossing.....	36	04	02.0	88	59	39.1	4,931
Gravette, crossing.....	36	05	48.5	88	59	56.3	10,865
Road crossing.....	36	06	48.9	88	59	15.3	6,971
Rutherford, in front of house of M. Forrester, 30 feet south of center of road, 9 feet north of yard fence, 443 feet east of Mobile & Ohio R. R., 13 feet from box-elder tree; iron post stamped "Prim. Trav. Sta. No. 4, 1910".....	36	07	39.7	88	59	01.5	5,265
Rutherford, 1.5 miles north of; private road crossing.....	36	08	50.0	88	59	28.7	7,451
Rutherford, 3 miles north of; second-class road crossing.....	36	10	16.4	88	59	39.1	8,774
Road crossing.....	36	11	09.7	89	00	06.7	5,847

Rutherford along public roads via Goodluck and Keeley's mill to Idlewild.

Primary traverse station No. 4.....	36	07	39.7	88	59	01.5	.....
T roads east, west, and north.....	36	07	32.0	88	59	52.0	4,217
Primary traverse station No. 4.....	36	07	39.7	88	59	01.5	.....
Rutherford, 0.8 mile east of; 130 feet east of center of bridge, south side of road; copper nail in willow tree (T. B. M. No. 1).....	36	07	53.8	88	58	19.6	3,722
Rutherford, near, north edge of road; copper nail at base of sweet-gum tree blazed and marked "U. S. B. M. No. 2" (T. B. M. No. 2).....	36	07	42.1	88	56	55.2	7,031
Rutherford, near, on north side of road near Taylor Flower's mail box; copper nail in root of oak tree; should be marked "U. S. B. M. No. 3" (T. B. M. No. 3).....	36	07	17.9	88	56	08.0	4,580
Crossroads.....	36	07	15.1	88	54	59.6	5,614
Goodluck, 125 feet south of frame store, 40 feet east of corner of concrete-block store; copper nail in root of poplar tree on west side of road, marked and blazed "U. S. B. M. No. 4" (T. B. M. No. 4).....	36	07	13.1	88	54	27.9	2,611
Crossroads.....	36	06	31.7	88	54	35.3	4,231
Keeley's mill, on embankment, 15 feet south of road, 23 feet from large beech tree, 191 feet from S. E. Keeley's house; iron post stamped "Prim. Trav. Sta. No. 5, 1910".....	36	04	55.0	88	54	47.9	9,826
Rutherford Fork, near, on southwest side of road, woods on both sides of road; copper nail in root of sweet-gum tree blazed and marked "U. S. B. M. No. 5" (T. B. M. No. 5).....	36	04	16.1	88	53	32.5	7,341
Rutherford Fork, center of stream at road crossing.....	36	03	41.5	88	53	23.3	3,578
Rutherford Fork, at south end of levee across bottom, 175 feet east of Trenton-Dresden road; copper nail in root of oak tree blazed and marked "U. S. B. M. No. 6" (T. B. M. No. 6).....	36	03	16.8	88	53	30.0	2,566
Rutherford Fork, 60 feet southwest of; 20 feet northeast of public road, near end of bridge over river, on Trenton-Bradford road; copper nail in root of large beech tree marked "U. S. B. M. No. 7" (T. B. M. No. 7).....	36	02	25.8	88	52	13.7	8,114
Davis's graveyard, opposite, on south side of road; copper nail in root of walnut tree blazed "No. 8" (T. B. M. No. 8).....	36	02	41.8	88	51	13.5	5,203
Davis's graveyard, near, on north side of road, woods on both sides; copper nail in root of large beech tree blazed and marked "U. S. B. M. No. 9" (T. B. M. No. 9).....	36	02	29.3	88	50	04.1	5,840
Davis's graveyard, near, on west side of road, 150 feet north of house; copper nail in root of oak tree blazed and marked "U. S. B. M. No. 10" (T. B. M. No. 10).....	36	02	07.2	88	49	22.8	4,066
Primary traverse station No. 6.....	36	01	56.0	88	48	32.5	4,287

Magnetic declination of north border, 4° 47' E.; of central line south through quadrangle, 4° 47' E.

TRIMBLE QUADRANGLE (TENN.).

Grizzard flag station along public roads to Tatumville, mostly on south side of Deer River.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Primary traverse station No. 7.....	36 01 45.5	88 59 24.5	.....
Junction of road running south to river 0.5 mile; copper nail in root of large gum tree blazed and marked "U. S. B. M. No. 11" (T. B. M. No. 11).....	36 02 00.4	89 00 38.3	6,245
Road north from Dyersburg-Trenton road.....	36 02 03.4	89 00 52.5	1,202
Road south.....	36 02 13.7	89 01 39.3	3,978
West side of road, in front of a white house; copper nail in root of gum tree marked "U. S. B. M. No. 12" (T. B. M. No. 12).....	36 01 43.0	89 02 30.8	5,240
Roads north, south, and east.....	36 01 33.8	89 03 00.2	2,587
North Fork of Deer River, at corner of bridge across; copper nail in root of sweet-gum tree marked "U. S. B. M. No. 13" (T. B. M. No. 13).....	36 00 56.3	89 03 10.8	3,889
Junction of north, east, and west roads.....	36 00 01.7	89 03 13.7	5,529
J. T. Graves's house, in front of, on north side of road; copper nail in root of large white-oak tree marked "U. S. B. M. No. 14" (T. B. M. No. 14).....	36 00 16.8	89 04 04.6	4,453
Junction of roads north, south, and east.....	36 00 21.7	89 04 43.2	3,208
Angle in road, second-class road north.....	36 00 35.7	89 05 19.5	3,301
North side of road at lane north; copper nail in root of black-gum tree blazed and marked "U. S. B. M. No. 15" (T. B. M. No. 15).....	36 00 37.8	89 06 27.1	5,558
Junction of roads east, west, and north.....	36 00 38.8	89 07 03.5	2,988
Junction of roads north, south, and west.....	36 01 18.3	89 07 01.7	3,998
Riverside, between front porches of store buildings of Riverside Mercantile Co., about 6 feet each way from corner of main store building and smaller building; iron post stamped "Prim. Trav. Sta. No. 8, 1910".....	36 02 23.3	89 06 27.0	7,165
South side of road; copper nail in root of white-oak tree blazed and marked "U. S. B. M. No. 16" (T. B. M. No. 16).....	36 01 18.8	89 07 14.3	7,596
Junction of roads east, west, and south.....	36 01 20.3	89 08 04.8	4,145
South side of road, on line of picket fence in line with road north, 75 feet west of road south; copper nail in root of white-oak tree blazed and marked "U. S. B. M. No. 17" (T. B. M. No. 17).....	36 00 46.7	89 08 14.1	3,479
North side of road, near large oak tree; copper nail in root of hickory tree blazed and marked "U. S. B. M. No. 18" (T. B. M. No. 18).....	36 00 43.4	89 09 18.8	5,319
Edge of woods, 72 feet north of public road; copper nail in root of large beech tree blazed and marked "U. S. B. M. No. 19" (T. B. M. No. 19).....	36 00 36.4	89 11 31.4	10,915
Deer River, 30 feet south of end of bridge across Middle Fork, on east side of levee road; copper nail in root of white-oak tree blazed and marked "U. S. B. M. No. 20" (T. B. M. No. 20).....	36 01 08.9	89 11 51.4	3,673
Tatumville, 0.2 mile south of, at angle in road; copper nail in root of hickory tree blazed and marked "U. S. B. M. No. 21" (T. B. M. No. 21).....	36 02 26.9	89 11 43.0	7,923

Tatumville west along public roads to primary traverse station No. 9.

Temporary bench mark No. 21.....	36 02 26.9	89 11 43.0	.....
Creek crossing.....	36 02 13.4	89 12 23.9	3,625
Road south.....	36 01 50.1	89 13 00.7	3,827
Tatumville, 2 miles west of, on Trenton-Dyersburg road, on west side of second-class road south to river, just inside fence line; iron post stamped "Prim. Trav. Sta. No. 9, 1910".....	36 01 50.7	89 13 32.1	2,583

Positions south of primary traverse station No. 9.

Primary traverse station No. 9.....	36 01 50.7	89 13 32.1	.....
Primary traverse station No. 9, 0.8 mile south of; at foot of lane and edge of river lowlands; copper nail in root of large water oak marked with kiel "U. S. B. M. No. 57".....	36 01 08.3	89 13 34.4	4,284
Old Turner bridge crossing, center of river (no bridge here in 1910).....	36 00 35.5	89 13 16.6	3,623
T road.....	35 58 53.2	89 13 07.0	10,377

Primary traverse station No. 9, north along public roads to Newbern-Yorkville road.

Primary traverse station No. 9.....	36 01 50.7	89 13 32.1	.....
T roads east, west, and north.....	36 03 05.3	89 13 49.2	7,672
Four corners.....	36 03 38.2	89 13 48.5	3,337
T roads east, west, and south.....	36 04 31.5	89 14 23.0	6,085
T roads north, south, and east.....	36 05 03.7	89 13 44.0	4,574
T roads east, west, and north.....	36 06 39.9	89 14 11.6	9,988

TRIMBLE QUADRANGLE (TENN.)—Continued.

Newbern via Churchton and Yorkville to Rutherford.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
T roads east, west, and north	36 06 39.9	89 14 11.6	.....
Newbern, about 2 miles northeast of; 1 mile east of Illinois Central R. R., T roads east, west, and south	36 07 14.9	89 14 10.1	3,540
T roads east, west, and north	36 07 13.4	89 13 12.1	4,758
Do	36 07 11.2	89 11 53.0	6,495
T roads east, west, and south	36 07 11.0	89 11 28.4	2,014
T road north at Churchton	36 07 09.7	89 10 43.5	3,690
T roads east, west, and south, county line between Dyer and Gibson counties	36 06 42.6	89 09 27.2	6,835
Four corners	36 06 23.8	89 08 23.9	5,534
Yorkville, southeast corner of intersection of streets, 260 feet east of bank building, 3 feet from fence corner, in lot of F. M. Pitkin; iron post stamped "Prim. Trav. Sta. No. 18, 1910"	36 05 59.2	89 07 14.0	6,249
T roads north, south, and west	36 06 39.9	89 06 29.6	5,494
T roads east, west, and south	36 06 43.0	89 05 34.8	4,514
Newellville, 715 feet west of corners T roads east, west, and north	36 07 00.2	89 04 42.7	4,609
T roads east, west, and south	36 07 04.9	89 03 36.6	5,450
T roads north, south, and east	36 07 20.9	89 03 01.8	3,276
T roads north, south, and west	36 07 22.6	89 01 37.2	6,946
T roads north, south, and east	36 07 37.1	89 01 16.1	2,264
T roads east, west, and south	36 07 33.6	89 00 23.9	4,292
T roads east, west, and north	36 07 32.0	88 59 52.0	2,624

Kenton to Bruce's switch along Mobile & Ohio R. R.

Road crossing	36 10 16.4	88 59 39.1	.....
Kenton, 1.3 miles south of, road crossing	36 11 09.7	89 00 06.7	5,847
Gibson-Obion county line crossing	36 12 07.6	89 00 39.6	6,451
Kenton, 125 feet south of station, road crossing	36 12 10.4	89 00 41.2	310
Kenton, 85 feet south of south end of station, 32 feet west of center of Mobile & Ohio R. R. track, and 175 feet east of Lindell Hotel; iron post stamped "Prim. Trav. Sta. No. 21, 1910"	36 12 10.0	89 00 41.4	41
Kenton, 1 mile north of, private road crossing	36 13 04.8	89 00 58.4	5,712
Bruce's switch, 0.8 mile south of; second-class road crossing	36 14 15.8	89 01 14.0	7,290
Bruce's switch, 72 feet west of center of track, 2.5 feet north of Mr. Bruce's store and 10 feet west of front of building; iron post stamped "Prim. Trav. Sta. No. 22, 1910"	36 14 57.8	89 01 31.1	4,469

Bruce's switch west along public roads to Trimble.

Bruce's switch	36 14 57.8	89 01 31.1	.....
Bruce's switch, 1 mile west of; T road corners, roads east, west, and north	36 14 59.2	89 02 31.6	4,960
Bruce's switch, 2.5 miles west of; T road corners, roads north, south, and west	36 14 55.2	89 04 16.1	8,568
Bruce's switch, 3 miles west of; T road corners, roads north, south, and east	36 14 37.2	89 04 53.3	3,552
Bruce's switch, 3.2 miles west of; T road corners, roads north, south, and west	36 14 23.5	89 05 09.5	1,920
Bruce's switch, 3.8 miles west of; T road corners, roads east, west, and south	36 14 26.0	89 05 39.2	2,444
Bruce's switch, 5.5 miles west of and about 5 miles south of Polk, on east side of turnpike road, at south edge of Obion River bottom; in side wire fence at fence corner, 12 feet west of a large ash tree, near second-class road east; iron post stamped "Prim. Trav. Sta. No. 23, 1910"	36 14 36.9	89 06 37.5	4,901
T road corners, roads north, south, and west	36 14 17.8	89 06 34.9	1,950
T road west	36 13 22.3	89 07 21.6	6,789
T road east	36 13 05.1	89 07 37.8	2,185
Four corners	36 12 32.9	89 09 11.9	8,371
Corner of Dyer, Gibson, and Obion counties	36 12 17.0	89 09 20.4	1,753
T road corners, roads east, west, and south	36 12 21.9	89 09 45.2	2,097
T road corners, roads north, south, and west	36 12 09.2	89 10 52.5	5,657
Trimble, 60 feet south of station, road crossing Illinois Central R. R.	36 12 13.7	89 11 35.5	3,555

TRIMBLE QUADRANGLE (TENN.).—Continued.

Positions along Illinois Central R. R., Obion to Newbern.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	<i>Feet.</i>
Primary traverse station No. 24.....	36 15 32.7	89 11 38.3	.....
Obion, 0.8 mile south of; milepost 491.....	36 14 45.2	89 11 33.3	4,817
Milepost 490.....	36 13 53.1	89 11 33.7	5,278
Milepost 489, near south end of long trestle.....	36 12 58.1	89 11 34.0	5,559
Trimble, 600 feet north of station, crossing of Obion-Dyer county line.....	36 12 20.6	89 11 34.3	3,788
Trimble, 540 feet north of station, 32 feet east of center of main track, 3 feet north of telegraph pole; iron post stamped "Prim. Trav. Sta. No. 42, 1910".....	36 12 20.2	89 11 33.9	57
Road crossing.....	36 11 18.9	89 12 04.5	6,680
Do.....	36 10 14.8	89 12 53.8	7,647
Do.....	36 09 44.5	89 13 27.7	4,131
Templeton; road crossing.....	36 09 20.9	89 13 54.0	3,210
Road crossing.....	36 08 35.3	89 14 44.2	6,191
Do.....	36 08 07.7	89 14 51.9	2,856

Magnetic declination of south border of quadrangle, 4° 55' E.; of east-west line through center of quadrangle, 5° 15' E.; of north border, 4° 57' E.; of southwest quarter, 5° 14' E.

DYERSBURG QUADRANGLE (TENN.).

Geographic positions near Newbern.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	<i>Feet.</i>
Road crossing.....	36 08 07.7	89 14 51.9	.....
Newbern, about 0.8 mile north of; on Illinois Central R. R., road crossing.....	36 07 15.0	89 15 13.1	5,612
Newbern, about 0.8 mile north of; 900 feet east of Illinois Central R. R., on south side of Newbern-Yorkville road, 2 feet from fence corner, on Wm. McCulloch's land, 2 feet from telephone pole; iron post stamped "Prim. Trav. Sta. No. 43, 1910".....	36 07 15.7	89 15 02.2	891
T road.....	36 07 15.0	89 14 10.1	4,278

RIVES QUADRANGLE (TENN.).

Geographic positions along Mobile & Ohio R. R. from Bruce's switch to Union City.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	<i>Feet.</i>
Primary traverse station No. 22, 1910.....	36 14 57.8	89 01 31.1	.....
Bruce's switch, 1.1 miles north of; south end of long trestle.....	36 16 15.9	89 02 08.0	8,465
Milepost "M 437".....	36 17 08.6	89 02 26.4	5,538
Crockett, 37 feet north of northwest corner of station, 35 feet west of center of track; iron post stamped "Prim. Trav. Sta. No. 39, 1910".....	36 17 55.1	89 02 43.0	4,887
Milepost "M 440".....	36 19 43.2	89 02 38.8	10,942
Rives, 1.5 miles south of, road crossing.....	36 20 23.8	89 02 38.0	4,105
Rives, 327 feet south of semaphore post at station, 21 feet west of center of track, 2 feet inside park fencing; iron post stamped "Prim. Trav. Sta. No. 38, 1910".....	36 21 34.0	89 02 55.4	7,242
Rives, crossing of Mobile & Ohio R. R. and Illinois Central R. R.....	36 21 40.2	89 02 56.8	631
Rives, 1.2 miles north of, road crossing.....	36 22 43.2	89 03 08.1	6,439
Road crossing.....	36 23 52.4	89 03 18.6	7,050
Union City, 2,000 feet south of station, road crossing at corporation line.....	36 25 08.3	89 03 23.3	7,682
Union City, crossing of Mobile & Ohio R. R. and Nashville, Chattanooga & St. Louis Ry.....	36 25 27.9	89 03 22.9	1,990
Union City, 300 feet north, 57° west from crossing of Mobile & Ohio R. R. and Nashville, Chattanooga & St. Louis Ry., 25 feet south of center of latter track, at west end of parking, 18 inches outside of iron railing; iron post stamped "Prim. Trav. Sta. No. 40, 1910".....	36 25 29.7	89 03 25.9	300

RIVES QUADRANGLE (TENN.).—Continued.

Gibbs along Nashville, Chattanooga & St. Louis Ry. to State line.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Gibbs, crossing of Illinois Central R. R. and Nashville, Chattanooga & St. Louis Ry.	36 24 40.2	89 00 06.5	.....
Gibbs, 520 feet west of railroad crossing, 40 feet north of center of main track of Nashville, Chattanooga & St. Louis Ry., 2.5 feet south of telegraph pole; iron post stamped "Prim. Trav. Sta. No. 44, 1910"	36 24 42.4	89 00 12.2	520
Road crossing	36 24 56.7	89 01 04.0	4,469
Do	36 25 12.4	89 02 29.6	7,171
Union City, primary traverse station No. 40	36 25 29.7	89 03 25.9	4,923
Road crossing	36 26 10.3	89 04 10.9	5,510
Do	36 27 01.1	89 05 18.9	7,568
Do	36 27 57.3	89 06 23.3	7,743
Woodland Mills, road crossing	36 29 22.3	89 06 56.4	9,016
Road crossing on State line	36 30 13.6	89 07 14.8	5,396

Geographic positions along Illinois Central R. R. from Rives to Oblon.

Primary traverse station No. 38	36 21 34.0	89 02 55.4	.....
Road crossing	36 20 52.4	89 03 37.6	5,285
Do	36 20 15.2	89 04 31.8	5,822
Moffatt flag station, road crossing	36 19 37.6	89 05 26.4	5,863
Road crossing	36 18 38.6	89 06 52.3	9,216
Polk, 86 feet south of southwest corner of station, 49 feet south of center of track, 30 feet west of Guy & Peery's store, at corner of fence, on land belonging to Tom McDonald; iron post stamped "Prim. Trav. Sta. No. 41, 1910"	36 18 30.3	89 07 03.5	1,251
Road crossing	36 17 59.5	89 07 49.3	4,870
Do	36 17 08.3	89 09 03.6	7,988
Do	36 16 12.3	89 10 25.1	8,754
Oblon, 320 feet north of station, road crossing	36 15 33.4	89 11 37.8	7,132

Geographic positions along highways from Oblon to Glass.

Oblon, 1,230 feet west of station, at northeast corner of Christian Church, about 2 feet north of northeast corner of building; iron post stamped "Prim. Trav. Sta. No. 24, 1910"	36 15 32.7	89 11 38.3	82
Oblon, 1.3 miles west of; center of iron bridge	36 15 43.2	89 12 48.2	5,820
Glass, 1.1 miles east of; T road corners, roads east, west, and north	36 15 49.3	89 14 03.4	6,190
T road at Glass	36 15 53.1	89 15 14.5	5,837

Positions along highways near west border of quadrangle, north to State line.

Glass, T road	36 15 53.1	89 15 14.5	.....
Glass, 0.8 mile northeast of, 250 feet west of J. D. Dame's residence, on southeast side of road at picket fence line, beside telephone pole; large beech tree, 64 feet distant, and bears N. 57° W.; iron post stamped "Prim. Trav. Sta. No. 25, 1910"	36 16 36.1	89 14 59.7	4,516
Glass, 1.5 miles northeast of; creek crossing	36 16 51.7	89 14 37.1	2,434
T road, north	36 17 12.4	89 13 57.9	3,836
Moriah, road forks, 10 feet northwest to southeast corner of store	36 18 14.0	89 14 02.0	6,237
T road, north	36 18 29.1	89 14 21.8	2,221
Creek crossing	36 18 21.0	89 15 04.2	3,565
Forks	36 22 06.2	89 15 14.0	.....
T road, north	36 22 04.3	89 14 42.2	2,610
Forks of road	36 23 11.5	89 14 49.6	6,825
T road, north	36 23 23.3	89 15 10.6	2,094
T road corners	36 23 50.8	89 14 41.0	3,691
Forks of road	36 24 27.7	89 13 55.1	5,291
Sam Cherry's house, west side of road; copper nail in root of large cottonwood tree	36 25 29.4	89 12 34.0	9,100
T road, west	36 25 42.6	89 12 25.8	1,494
Fremont, on north side of Union City and Reelfort Lake road, opposite road south on land of H. C. Clack, opposite his house, 10 feet east of gate, near fence; iron post stamped "Prim. Trav. Sta. No. 27, 1910"	36 26 17.5	89 11 58.6	4,176
Crossroads, second-class road, east-west	36 27 16.8	89 11 25.7	6,569
Antioch Church, 4 corners	36 28 07.0	89 11 13.1	5,183
Crystal, 3 corners, 30 feet north to E. L. Williams's mail box	36 27 49.4	89 10 37.3	3,538
Second-class road, northwest	36 28 25.8	89 10 03.9	4,751
T road, west	36 29 16.9	89 09 56.3	5,200
Reelfort Creek, bridge crossing	36 29 48.6	89 09 41.7	3,427
Primary traverse station, No. 28, 1910	36 30 16.2	89 09 36.7	2,818

RIVES QUADRANGLE (TENN.)—Continued.

Geographic positions along highways near south border of quadrangle.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Primary traverse station, No. 23.....	36 14 36.9	89 06 37.5	.....
Obion River bottom, south end of bridge 400 feet long across bayou.....	36 15 13.6	89 06 39.3	3,717
Obion River bridge, 0.8 mile southeast of, on west side of levee road, about 60 feet south of a bridge; copper nail in root of tree blazed and painted "280.12" (local bench mark).....	36 15 52.7	89 07 04.5	4,450
Obion River bridge, center of.....	36 16 29.2	89 07 26.6	4,111
T road, east.....	36 16 44.6	89 09 04.3	8,150
Illinois Central R. R., road crossing.....	36 16 12.3	89 10 25.1	7,333
Road crossing.....	36 15 33.4	89 11 37.8	7,132

Magnetic declination of south border of quadrangle, 4° 57' E.; of west border, 4° 54' E.; of north border, 5° 01' E.

TIPTONVILLE QUADRANGLE (TENN.).

Geographic positions along highways near east border of quadrangle.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
T road.....	36 15 49.3	89 14 03.4	.....
Glass, roads east, west, and north.....	36 15 53.1	89 15 14.5	5,837
Primary traverse station, No. 25.....	36 16 36.1	89 14 59.7	4,516
T road.....	36 18 29.1	89 14 21.8	.....
Creek crossing, small bridge.....	36 18 21.0	89 15 04.2	3,565
Three corners, roads south 40° west, north 20° west, and south 60° east. McAnna, 0.4 mile west of, at Obion Chapel (Methodist), 2 feet from northwest corner of building; iron post stamped "Prim. Trav. Sta. No. 26, 1910".....	36 18 59.6	89 15 51.9	5,522
Obion Chapel, 0.2 mile north of; forks of road.....	36 19 56.7	89 15 30.5	6,034
Four corners.....	36 20 07.8	89 15 30.4	1,124
Ridge at top of hill, descending north; copper nail in root of small oak tree, marked "U. S. B. M. 60".....	36 21 10.8	89 15 17.8	6,455
Troy-Reelfort Lake road forks.....	36 21 38.3	89 15 12.0	2,820
T road.....	36 22 06.2	89 15 14.0	2,828
Forks of road.....	36 22 04.3	89 14 42.2	2,610
T road.....	36 23 11.5	89 14 49.6	.....
T road, north.....	36 23 23.3	89 15 10.6	2,094
T road.....	36 23 50.8	89 14 41.0	3,691

MARTIN QUADRANGLE (TENN.-KY.).

Geographic positions along Illinois Central R. R. from Sharon to Fulton.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Road crossing.....	36 14 29.7	88 49 38.3	.....
Sharon, 1.5 miles north of; road crossing.....	36 15 22.1	88 49 55.4	5,479
Road crossing.....	36 16 20.3	88 50 14.4	6,085
Hillside, road subway under railroad.....	36 16 58.3	88 50 23.6	3,922
Road crossing.....	36 18 01.6	88 50 29.9	6,415
Do.....	36 18 37.6	88 50 41.8	3,768
Martin, 345 feet south of railroad crossing, 35 feet east of center of Illi- nois Central R. R. track, 128 feet south of southwest corner of Wil- liams's Hotel, at south end of parking, 10 feet west of edge of sidewalk; iron post stamped "Prim. Trav. Sta. No. 34, 1910".....	36 20 39.9	88 51 00.0	12,457
Martin, crossing of Illinois Central R. R. and Nashville, Chattanooga & St. Louis Ry.....	36 20 43.3	88 50 59.8	345
Martin, 0.7 mile north of; road crossing.....	36 21 16.8	88 50 53.6	3,429
Milepost "C 416".....	36 22 02.8	88 50 46.5	4,681
Road crossing.....	36 23 00.0	88 51 03.4	5,947
Do.....	36 23 48.0	88 51 14.8	4,943
Do.....	36 24 48.0	88 51 07.0	6,099
McConnell, 105 feet north of station, 23 feet west of center of track, on north side of road crossing, 3 feet north of telephone pole; iron post stamped "Prim. Trav. Sta. No. 35, 1910".....	36 25 22.0	88 51 02.8	3,460
Road crossing.....	36 26 27.2	88 50 59.7	6,598
Do.....	36 27 33.3	88 51 05.6	6,700
Do.....	36 27 56.8	88 51 07.7	2,380
Do.....	36 28 51.2	88 51 25.1	5,690
Do.....	36 29 43.7	88 52 03.2	6,150
Fulton, Ky., crossing of Illinois Central R. R. tracks.....	36 30 17.7	88 52 27.9	3,984

MARTIN QUADRANGLE (TENN.-KY.)—Continued.**Geographic positions along Illinois Central R. R., Fulton to Gibbs.**

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Illinois Central R. R. crossing.....	36 30 17.7	88 52 27.9	.....
New Yard Junction, opposite semaphore.....	36 29 34.7	88 53 33.3	6,893
Milepost "N. O. 514".....	36 28 45.0	88 54 23.0	6,457
Pierce, 100 feet south of station, road crossing.....	36 28 14.4	88 54 58.3	4,223
Milepost "N. O. 512".....	36 27 32.1	88 55 57.3	6,450
Harris, about 400 feet north of station, road crossing.....	36 26 46.7	88 57 00.6	6,919
Milepost "N. O. 510".....	36 26 22.6	88 57 34.0	3,652
Road crossing.....	36 25 40.0	88 58 37.3	6,735
Do.....	36 25 21.5	88 59 04.8	2,923
Gibbs, intersection of Illinois Central R. R. and Nashville, Chattanooga & St. Louis Ry.....	36 24 40.2	89 00 06.5	6,545

Geographic positions along Nashville, Chattanooga & St. Louis Ry., Gibbs to Martin.

Gibbs, intersection of railroads.....	36 24 40.2	89 00 06.5	.....
Spur turnout, head block.....	36 24 07.5	88 58 52.9	6,868
Milepost "Nashville 148".....	36 23 31.8	88 57 35.6	7,270
Ferrell, 600 feet east of station, 28 feet south of center of track, 35 feet east from road crossing, near corner of wire fence and cattle guard fence; iron post stamped "Prim. Trav. Sta. No. 36, 1910".....	36 23 04.2	88 56 36.8	5,565
Road crossing.....	36 22 44.8	88 55 54.0	4,008
Gardner, 80 feet east of station, road crossing.....	36 21 43.8	88 53 42.7	12,381
Road crossing.....	36 21 19.5	88 52 48.4	5,078
Milepost "N. 142".....	36 21 03.3	88 51 55.3	4,645
Martin, primary traverse station No. 34.....	36 20 39.9	88 51 00.0	5,105

Martin east along public roads to Bible Union Church.

Martin, 0.7 mile north of; road crossing Illinois Central R. R.....	36 21 16.8	88 50 53.6
Illinois Central R. R., about 1.5 miles east of; T road north.....	36 21 14.9	88 49 22.0	7,498
T road, west, at schoolhouse.....	36 21 08.2	88 48 01.4	6,626
Illinois Central R. R., 3.2 miles east of; on north side of public road, opposite house of Willis Lee, 18 inches south of fence line; iron post stamped "Prim. Trav. Sta. No. 37, 1910".....	36 21 10.2	88 47 09.7	4,239
T road north.....	36 21 18.7	88 46 40.7	2,522
Bible Union Church, near corner of roads north, south, east, and north-west.....	36 20 59.2	88 46 04.6	3,549
T road north.....	36 21 12.1	88 44 29.7	7,868

Geographic positions along highways near southeast corner of quadrangle.

Primary traverse station No. 33.....	36 16 55.6	88 44 03.6	.....
Salem Church, 1.5 miles northeast of; forks of road, T road north.....	36 16 30.3	88 45 02.4	5,456
Salem Church, about 300 feet northeast from; T road east.....	36 16 07.7	88 46 32.7	7,743
Salem Church, 0.3 mile southwest of; T road south, 35 feet north of Bear Creek, center of bridge.....	36 15 59.8	88 46 56.7	2,120
T road.....	36 14 27.4	88 47 34.4	9,837

Geographic positions along highways near southwest corner of quadrangle.

Road forks.....	36 14 54.5	88 56 10.0	.....
Limbs, 0.6 mile east of; T road north.....	36 15 10.1	88 56 39.6	2,893
Limbs, about 300 feet east of Will Hill's store, on north side of road; copper nail in sweet-gum tree, blazed and marked "T. B. M. No. 55".....	36 15 14.6	88 57 14.2	2,875
Limbs, about 0.2 mile west of T road north, at Obion-Gibson county line.....	36 15 16.7	88 57 32.2	1,490
Covered bridge.....	36 14 44.2	88 58 32.4	5,924

Magnetic declination of north border of quadrangle, 4° 10' E.; of south border, 4° 47' E.; of east border, 4° 36' E.

DRESDEN QUADRANGLE (TENN.).

Geographic positions along public roads from Dukedom, south via Latham, to Dresden.^a

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Dukedom, 440 feet south of center of Main Street on east side of Latham road, opposite blacksmith shop, at corner of W. L. Jones's land and Rural Telephone Co.'s property; iron post stamped "Prim. Trav. Sta. No. 30, 1910".....	36 30 05.0	88 42 59.0	-----
Four corners.....	36 28 41.2	88 43 20.1	8,648
T road west.....	36 28 03.6	88 43 37.1	4,055
T road east.....	36 27 36.0	88 43 17.5	3,225
Do.....	36 27 06.8	88 43 15.5	2,962
T road west.....	36 26 23.0	88 43 13.7	4,441
Latham, 0.5 mile northeast of; 70 feet east of bank of Obion River, near road bridge; copper nail in root of oak tree, blazed and marked "U. S. B. M. No. 62".....	36 25 48.8	88 42 46.1	4,137
Latham, 165 feet south of Winston & Jones's store, 176 feet northeast from corner of mill, at corner of fence, at intersection of road running east and road a little west of south; iron post stamped "Prim. Trav. Sta. No. 31, 1910".....	36 25 23.4	88 42 55.4	2,680
Cypress Creek, bridge crossing.....	36 24 11.7	88 43 21.6	7,573
T road west.....	36 23 32.0	88 43 15.8	4,044
Do.....	36 22 59.2	88 43 07.4	3,398
Do.....	36 22 34.9	88 43 08.3	2,460
T lane east.....	36 21 56.4	88 42 53.3	4,087
T road east.....	36 21 06.8	88 42 42.8	5,100
Dresden, 4.1 miles north of; west side of road; copper nail in root of oak tree, blazed and marked "U. S. B. M. No. 63".....	36 20 34.8	88 43 05.5	3,735
Dresden, 4 miles north of; 450 feet south from Sam Stow's house, on east side of road and opposite road west; iron post stamped "Prim. Trav. Sta. No. 32, 1910".....	36 20 32.7	88 43 09.5	390
T road west.....	36 19 55.0	88 43 11.9	3,818
T road east.....	36 19 38.4	88 43 11.3	1,675
Four corners.....	36 19 11.9	88 43 07.0	2,706
Dresden-Fulton road fork with second-class road north.....	36 18 51.2	88 43 23.7	2,501
Dresden-Fulton and Dresden-Latham roads, intersection of.....	36 18 22.1	88 42 41.9	4,519
Dresden, soldier's monument in northwest corner of public square ..	36 17 33.3	88 42 35.5	4,960
Dresden, 0.4 mile west of; crossing of Nashville, Chattanooga & St. Louis Ry.....	36 17 27.8	88 43 06.0	2,558
Dresden, 1.5 miles southwest of; 1,600 feet southwest of large brick house with cedar grove on west side of road, 6 feet from fence at edge of field and woods; iron post stamped "Prim. Trav. Sta. No. 33, 1910".....	36 16 55.6	88 44 03.6	5,727
Salem Church, 1.5 miles northeast of; forks of road; T road north.....	36 16 30.3	88 45 02.4	5,456

Geographic positions west along roads from primary traverse station No. 32.

Primary traverse station No. 32.....	36 20 32.7	88 43 09.5	-----
T road east.....	36 20 53.1	88 43 56.7	4,379
T road north.....	36 21 12.1	88 44 29.7	3,319
Bible Union Church, crossroads near.....	36 20 59.2	88 46 04.6	7,868

^a This portion of line has an apparent error in latitude of 90 feet distributed between Dukedom and primary traverse station No. 32.

Magnetic declination of west border of quadrangle, 4° 33' E.

MAYFIELD QUADRANGLE (TENN.-KY.).

Geographic positions along highways near southwest corner of quadrangle.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Dukedom, 1.5 miles west of; on State-line road; T road north.....	36 30 09.8	88 44 39.9	-----
Dukedom, 900 feet west of; north side of State-line road; State-line monument No. 8.....	36 30 09.7	88 43 09.8	7,357
Dukedom, 440 feet south of center of main street; primary traverse station No. 30.....	36 30 05.0	88 42 59.0	1,000
Crossroads.....	36 28 41.2	88 43 20.1	8,648

WATER VALLEY QUADRANGLE (TENN.-KY.).

Geographic positions along Kentucky-Tennessee State-line road from State-line monument No. 5, east, through Fulton, to point near State-line monument No. 8.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Four corners.....	36 30 09.9	89 00 29.0	.....
State-line monument No. 5, south side of road.....	36 30 08.7	88 59 23.2	5,379
T road north.....	36 30 08.2	88 58 55.4	2,275
T road south.....	36 30 07.9	88 57 54.6	4,965
Four corners.....	36 30 07.7	88 56 10.0	8,539
T road south.....	36 30 08.1	88 55 15.0	4,490
Overhead bridge, 3,000 feet west of; south side of road, on hill descending east; State-line monument No. 6 (top of stone is about level with surface of ground; it is said to be off the line).....	36 30 08.2	88 53 58.7	6,236
Overhead bridge, 700 feet west of; on bank at north side of road, 4.5 feet from concrete gatepost at southwest corner of A. R. Steven's front yard; iron post stamped "Prim. Trav. Sta. No. 29, 1910".....	36 30 08.6	88 53 31.4	2,226
Fulton, crossing of Illinois Central tracks at tower house.....	36 30 17.7	88 52 27.9	5,273
Road south.....	36 30 09.6	88 51 22.7	5,382
Road north.....	36 30 09.8	88 50 40.5	3,446
State-line monument No. 7, in roadway in front of W. W. Brady's place.....	36 30 10.0	88 48 34.3	10,302
Road south.....	36 30 10.0	88 48 02.6	2,585
Do.....	36 30 10.1	88 47 21.0	3,405
Road north.....	36 30 10.4	88 45 59.6	6,640
Do.....	36 30 09.8	88 44 39.9	6,510

Magnetic declination of south border of quadrangle, 4° 10' E.

HICKMAN QUADRANGLE (TENN.-KY.).

Geographic positions along State-line road from State-line monument No. 5 west to State-line monument No. 3.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
State-line monument No. 5.....	36 30 08.7	88 59 23.2	.....
Four corners.....	36 30 09.9	89 00 29.0	5,379
Jordan, State-line road crossing of Mobile & Ohio R. R.....	36 30 10.9	89 02 21.2	9,160
Jordan, 50 feet east of Mobile & Ohio R. R. track, 83 feet south of south end of station, 200 feet north of State line; iron post, not stamped.....	36 30 12.8	89 02 20.2	212
T road south.....	36 30 11.1	89 03 43.5	6,803
State-line monument No. 4, south side of road.....	36 30 11.6	89 04 47.9	5,256
T road south.....	36 30 12.6	89 05 46.8	4,814
State-line road, crossing Nashville, Chattanooga & St. Louis Ry.....	36 30 13.6	89 07 14.8	7,190
T road north.....	36 30 14.7	89 08 34.9	6,542
Nashville, Chattanooga & St. Louis Ry., 2.2 miles west of; north side of road 2 feet south of wire fence, in line with fence going north, near large tree; iron post stamped "Prim. Trav. Sta. No. 28, 1910".....	36 30 16.2	89 09 36.7	5,048
State-line monument No. 3, on south side of road, in front of small dwelling house.....	36 30 17.0	89 10 12.4	2,913
T road north.....	36 30 18.3	89 10 49.4	3,026
State-line monument No. 3, 1.3 miles west of; on south side of State-line road, opposite road north to Hickman (5 miles), at point of small wooded knoll; iron post stamped "Prim. Trav. Sta. No. 45, 1910".....	36 30 19.2	89 11 39.2	4,063
T road north.....	36 31 13.2	89 11 46.4	5,496
Forks of road.....	36 31 54.0	89 11 37.9	4,179
Do.....	36 32 23.4	89 12 35.8	5,584
Hickman, Ky., at west end of town, 270 feet west of end of Mississippi River levee, on top of levee, 10 feet east of public road crossing levee; iron post stamped "Prim. Trav. Sta. No. 46, 1910".....	36 33 49.6	89 12 15.7	8,862

Magnetic declination of south border of quadrangle, 5° 01' E.

BAYOUVILLE QUADRANGLE (KY.).

Geographic positions near Hickman, Ky.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	<i>Feet.</i>
Primary traverse station No. 46.....	36 33 49.6	89 12 15.7	.....
Hickman, 3.2 miles west of; on Mrs. McKell's place, 750 feet south of levee, in northeast corner of tenant-house yard, 2.8 miles west of primary traverse station No. 46; iron bench-mark post (Mississippi River Commission bench mark).....	36 33 35.20	89 15 08.75	14,192
Position as given in letter of S. H. Hinton, inspector; probably Cairo datum.....	36 33 35.13	89 15 04.98	.....
Reduced to U. S. standard datum.....	36 33 35.23	89 15 03.6	.....

CADES QUADRANGLE (TENN.).

Geographic positions along Louisville & Nashville R. R. from Milan to Gadsden.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	<i>Feet.</i>
Milan, 130 feet southwest of Louisville & Nashville R. R. and Illinois Central R. R. crossing, at northeast corner of Southern Pacific Hotel; iron post stamped "Prim. Trav. Sta. No. 23, 1906, TENN".....	35 55 10.6	88 45 44.9	.....
Road crossing.....	35 54 12.0	88 47 57.2	12,392
Road crossing, 247 feet north of milepost "M. 89".....	35 53 42.7	88 49 09.1	6,615
Road crossing.....	35 53 18.8	88 49 52.1	4,281
Gibson, 145 feet west of station, road crossing.....	35 52 34.6	88 50 54.2	6,790
Road crossing.....	35 51 44.9	88 52 04.4	7,065
Road crossing, 1,332 feet south of milepost "M. 84".....	35 50 45.0	88 53 28.9	9,220
Road crossing.....	35 50 09.8	88 54 18.6	5,421
Humboldt, at station, crossing of Louisville & Nashville R. R. and Mobile & Ohio R. R.....	35 49 23.2	88 55 24.3	7,177
Primary traverse station No. 1.....	35 49 24.3	88 55 25.2	131
Bridge over Deer River, center.....	35 48 40.8	88 56 23.9	6,536
Private road crossing.....	35 48 16.4	88 56 58.3	3,755
Road crossing.....	35 47 47.9	88 57 38.3	4,374
Gadsden, 150 feet east of station, road crossing.....	35 46 32.3	88 59 24.5	11,619
Gadsden, opposite station, 94 feet south of center of track, 2 feet outside fence line, in front of hotel; iron post stamped "Prim. Trav. Sta. No. 12, 1910".....	35 46 30.4	88 59 25.4	207
Road south.....	35 46 14.7	89 00 20.3	4,794

Geographic positions along Mobile & Ohio R. R. from Young's crossing to Trenton.

Road crossing.....	35 44 23.5	88 50 55.6	.....
Young's crossing, 1.8 miles northwest of; road crossing.....	35 45 22.1	88 52 25.8	9,512
Girder bridge over Middle Fork of Deer River, north concrete abutment.....	35 47 09.0	88 53 37.4	12,315
Milepost 401, Gibson-Madison county line.....	35 47 49.7	88 54 04.3	4,680
Humboldt, 135 feet northwest of crossing of Mobile & Ohio R. R. and Louisville & Nashville R. R., 20 feet west of center of former track, about 40 feet east of northeast corner of Donovan Hotel and in line with north end of building; iron post stamped "Prim. Trav. Sta. No. 1, 1910".....	35 49 24.3	88 55 25.2	11,657
Road crossing.....	35 50 58.1	88 55 52.5	9,751
Do.....	35 52 08.6	88 55 53.6	7,125
Do.....	35 52 50.5	88 55 51.2	4,243
Fruitland, 170 feet north of station, 21 feet east of center of track, opposite switch stand; iron post stamped "Prim. Trav. Sta. No. 2, 1910".....	35 53 38.7	88 56 02.7	4,964
Road crossing.....	35 54 45.2	88 56 25.3	6,975
Do.....	35 55 20.0	88 56 40.8	3,740
Milepost 412.....	35 56 50.4	88 57 12.2	9,495
Road crossing.....	35 58 05.3	88 57 04.4	7,603
Trenton, north end of station, center of main track opposite.....	35 58 46.4	88 56 51.8	4,277
Trenton, 0.6 mile north of station, 50 feet east of center of track, 53 feet from switch stand, at corner of fence at gate (entrance to land of Albert Elder); iron post stamped "Prim. Trav. Sta. No. 3, 1910".....	35 59 14.9	88 57 04.6	3,070
Bridge over North Fork of Deer River, south end of girder, center of abutment.....	35 59 56.5	88 57 41.0	5,156
Grizzard, station.....	36 01 44.5	88 59 11.4	13,214

CADES QUADRANGLE (TENN.)—Continued.

Geographic positions along Illinois Central R. R. between Idlewild and Milan.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Road crossing.....	36 00 27.0	88 47 57.8	.....
Rutherford Fork of Obion River; road crossing.....	35 59 38.4	88 47 36.7	5,210
Cades; road crossing.....	35 58 33.1	88 47 06.0	7,080
Road crossing.....	35 57 51.5	88 46 45.0	4,545
Do.....	35 56 55.4	88 46 18.0	6,093
Road crossing, 735 feet north of milepost "N. O. 464".....	35 55 36.1	88 45 49.5	8,350
Primary traverse station No. 23.....	35 55 10.6	88 45 44.9	2,609

Geographic positions along public road west of Humboldt.

Primary traverse station No. 1.....	35 49 24.3	88 55 25.2	.....
Humboldt, 1 mile northwest of, T road south.....	35 49 52.7	88 55 54.1	3,731
Humboldt, 2 miles northwest of; at east edge of river bottom, 20 feet south of levee road, inside wire fence line; copper nail in oak tree, marked "U. S. B. M. No. 41".....	35 49 53.9	88 56 56.1	5,103
Humboldt, 3 miles west of; 0.4 mile west of river bridge, 25 feet south of small road bridge; copper nail in root of oak tree, marked "U. S. B. M. No. 40".....	35 49 54.5	88 58 37.8	8,380
Humboldt, 4.2 miles west of; on north side of road beside mail box; copper nail in root of oak tree, marked "U. S. B. M. No. 39".....	35 49 57.4	88 59 35.1	4,729

Magnetic declination of southwest quarter of quadrangle, 4° 40' E.

No other declinations were taken, owing to the fact that the line followed the railroad.

MALESUS QUADRANGLE (TENN.).

Geographic positions near Young's crossing.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Road crossing.....	35 45 22.1	88 52 25.8	.....
Young's crossing, Mobile & Ohio R. R.....	35 44 23.5	88 50 55.6	9,512
Young's crossing, 1.1 miles southeast of; T road east.....	35 43 34.2	88 50 36.4	5,231
Young's crossing, 1.7 miles southeast of; T road north.....	35 43 05.7	88 50 37.3	2,887
Primary traverse station No. 25, 1906; iron post.....	35 43 05.7	88 51 41.6	5,300

MAURY CITY QUADRANGLE (TENN.).

Geographic positions along highways from Tatumville levee via Eaton and Gibson Wells to point 5 miles west of Humboldt.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Feet.
Temporary bench mark No. 19.....	36 00 36.4	89 11 31.4	.....
River bottom, edge of, nearly in middle of road; copper nail in root of sycamore tree blazed and marked "U. S. B. M. No. 22" (T. B. M. No. 22).....	35 59 59.2	89 10 48.4	5,162
Road north.....	35 59 46.1	89 10 28.8	2,095
Eaton, near, about 20 feet northwest of center of road; copper nail in root of sycamore tree blazed and marked "U. S. B. M. No. 23" (T. B. M. No. 23).....	35 59 18.9	89 09 48.5	4,307
Road north.....	35 59 00.2	89 08 58.8	4,496
Eaton, near, on south side of road; copper nail in root of beech tree blazed and marked "U. S. B. M. No. 24" (T. B. M. No. 24).....	35 58 56.3	89 08 52.8	629
Eaton, at southeast corner of Main Street and road to Gibson Wells, inside fence, on land belonging to Alamo Dick, 125 feet north of his store; iron post stamped "Prim. Trav. Sta. No. 10, 1910".....	35 58 07.8	89 08 00.2	6,543
Eaton, 1 mile southeast of, at forks of road to Trenton and Gibson Wells; copper nail in root of tree blazed and marked "U. S. B. M. No. 25".....	35 57 49.6	89 07 07.8	4,697
Eaton, southeast of, about 7 feet west of center of roadway; copper nail in root of sweet-gum tree blazed and marked "U. S. B. M. No. 26" (T. B. M. No. 26).....	35 57 30.4	89 06 59.7	2,026
East side of road, at wire fence; copper nail in root of hickory tree blazed and marked "U. S. B. M. No. 27" (T. B. M. No. 27).....	35 56 25.1	89 07 05.0	6,619

MAURY CITY QUADRANGLE (TENN.)—Continued.

Geographic positions along highways from Tatumville levee via Eaton and Gibson Wells to point 5 miles west of Humboldt—Continued.

Stations.	Latitude.	Longitude.	Distance between stations.
North side of road, in front of small house; copper nail in root of large oak tree blazed and marked "U. S. B. M. No. 28" (T. B. M. No. 28).	° ' "	° ' "	<i>Feet.</i>
East side of road, about 450 feet south of a house; copper nail in root of oak tree blazed and marked "U. S. B. M. No. 29" (T. B. M. No. 29).	35 56 01.2	89 06 28.6	3,850
T road north.	35 55 34.7	89 05 45.6	4,436
Angle in road; copper nail in root of ash tree blazed and marked "U. S. B. M. No. 30" (T. B. M. No. 30).	35 54 41.0	89 05 36.3	5,483
Smith's bridge, 0.5 mile east of; just north of road leading to Smith's bridge, 65 feet west of T road corners; copper nail in root of large white oak tree blazed and marked "U. S. B. M. No. 31" (T. B. M. No. 31).	35 54 41.5	89 05 52.6	1,345
Fence line on west side of road, 120 feet south of T road south; copper nail in root of sweet-gum tree blazed and marked "U. S. B. M. No. 32" (T. B. M. No. 32).	35 53 57.4	89 06 35.8	5,695
T road north.	35 53 44.1	89 05 18.4	6,510
East side of road, on bank; copper nail in root of large oak tree blazed and marked "U. S. B. M. No. 33" (T. B. M. No. 33).	35 53 12.5	89 05 19.5	3,198
Cooper's Mill, 0.2 mile north of; 15 feet west of road; copper nail in root of walnut tree blazed and marked "U. S. B. M. No. 34" (T. B. M. No. 34).	35 52 49.5	89 04 44.1	3,727
Triangle, roads north, east, and west; copper nail in root of oak tree blazed and marked "U. S. B. M. No. 35" (T. B. M. No. 35).	35 51 59.1	89 04 43.0	5,092
Gibson Wells, 0.1 mile west of; at junction of roads east-west, and road south, 25 feet west of T road, 6 feet south of fence corner; iron post stamped "Prim. Trav. Sta. No. 11, 1910".	35 52 50.1	89 03 31.0	7,851
North side of road, about 50 feet west of small bridge; copper nail in root of large oak tree blazed and marked "U. S. B. M. No. 36" (T. B. M. No. 36).	35 52 51.6	89 03 04.6	2,180
Gibson Wells, 3 miles from; in woods, 100 feet north of bridge over river; copper nail in root of beech tree blazed and marked "U. S. B. M. No. 37" (T. B. M. No. 37).	35 52 09.5	89 01 45.5	7,784
Gibson Wells, 4 miles from; 10 feet north of center of public road, copper nail in root of large oak tree blazed and marked "U. S. B. M. No. 38" (T. B. M. No. 38).	35 51 20.2	89 01 12.4	5,680
T road north.	35 50 22.7	89 01 00.8	5,888
Temporary bench mark No. 39.	35 49 58.1	89 00 19.9	4,189
	35 49 57.4	88 59 35.1	3,690

Gadsden west along public roads via Alamo to Johnson's Grove, thence north via Maury City and Friendship to Stokes.

Primary traverse station No. 12.	35 46 30.4	88 59 25.4	.....
Road south.	35 46 14.7	89 00 20.3	4,794
Gadsden, 1.4 miles west of; at angle of road just inside fence line; copper nail in root of hickory tree (T. B. M. No. 42).	35 46 07.2	89 00 42.9	2,010
Liberty Hall schoolhouse, 300 feet south of building; copper nail in root of oak tree marked "U. S. B. M. No. 43" (T. B. M. No. 43).	35 46 04.3	89 02 09.2	7,118
T road north.	35 46 16.6	89 02 48.2	3,454
North side of road, 25 feet east of small bridge, in levee bottom land; copper nail in root of oak tree marked "U. S. B. M. No. 44" (T. B. M. No. 44).	35 46 16.6	89 03 27.4	3,224
Road south, telephone line.	35 46 08.2	89 04 07.6	3,426
North side of road near wagon track; copper nail in root of locust tree marked "U. S. B. M. No. 45" (T. B. M. No. 45).	35 46 23.0	89 05 13.6	5,641
Junction of roads north, south, and east.	35 46 23.8	89 06 01.0	3,905
North side of road; copper nail in root of oak tree marked "U. S. B. M. No. 46" (T. B. M. No. 46).	35 47 00.0	89 06 16.5	3,871
Alamo, southwest corner of courthouse yard, 2.5 feet from fence, 46.5 feet south 57° 30' west from southwest corner of building; iron post stamped "Prim. Trav. Sta. No. 13, 1910".	35 47 06.2	89 07 04.8	4,032
Alamo, in front of Christian Church; Coast and Geodetic Survey monument.	35 47 04.0	89 07 11.0	553
Alamo, 1.8 miles west of; on road to Johnson's Grove, in root of large oak tree on south side of road; copper nail marked "U. S. B. M. No. 47" (T. B. M. No. 47).	35 46 49.8	89 08 44.9	7,875
Alamo, 3.5 miles west of; on south side of road to Johnson's Grove; copper nail in root of large oak tree marked "U. S. B. M. No. 48" (T. B. M. No. 48).	35 46 07.0	89 10 00.9	7,611
Johnson's Grove, 0.8 mile east of; 650 feet west of church and opposite cemetery, on south side of road; copper nail in root of large oak tree in edge of timber (T. B. M. No. 49).	35 45 50.9	89 10 58.8	5,036
Four corners.	35 46 00.4	89 11 26.2	2,461
Johnson's Grove, 2 feet from southwest corner of Methodist Church, on square; iron post stamped "Prim. Trav. Sta. No. 14, 1910".	35 46 03.7	89 11 46.4	1,695
Johnson's Grove, 1.2 miles north of; on east side of road in front of house of Mr. Hughes; copper nail in root of large oak tree on fence line marked "U. S. B. M. No. 50" (T. B. M. No. 50).	35 47 03.2	89 12 20.0	6,624

MAURY CITY QUADRANGLE (TENN.)—Continued.

Gadsden west along public roads via Alamo to Johnson's Grove, thence north via Maury City and Friendship to Stokes—Continued.

Stations.	Latitude.	Longitude.	Distance between stations.
	° ' "	° ' "	Fect.
Junction of roads north, south, and east.....	35 47 31.8	89 13 26.4	6,186
Maury City, 1.5 miles south of; in large oak tree on east side of road, copper nail marked "U. S. B. M. No. 51" (T. B. M. No. 51).....	35 47 35.7	89 13 25.7	396
T road south.....	35 48 16.2	89 13 19.9	4,129
Maury City, 1.5 feet from southwest corner of Methodist Episcopal Church; iron post stamped "Prim. Trav. Sta. No. 15, 1910".....	35 48 58.3	89 13 40.0	4,566
Four corners.....	35 49 16.2	89 13 39.8	1,807
Maury City, 0.8 mile north of; on east side of road in front of dwelling; copper nail in root of large oak tree blazed and marked "U. S. B. M. No. 52" (T. B. M. No. 52).....	35 49 38.8	89 13 36.4	2,301
Mrs. J. Sandling's house, opposite, on south side of road; copper nail in root of large walnut tree marked "U. S. B. M. No. 53" (T. B. M. No. 53).....	35 50 24.9	89 13 58.0	4,993
T road south.....	35 50 42.2	89 14 01.9	1,770
T road west.....	35 51 40.1	89 14 16.9	5,984
Friendship, 2.8 miles southeast of; on west side of road, beside small bridge; copper nail in root of oak tree marked "U. S. B. M. No. 54" (T. B. M. No. 54).....	35 52 32.9	89 13 48.9	5,824
T road south.....	35 53 39.9	89 13 44.7	6,784
Friendship, 18 feet north 77° 30' west from northwest corner of Methodist Episcopal Church, 2 feet from fence corner, 200 feet east of Main Street; iron post stamped "Prim. Trav. Sta. No. 16, 1910".....	35 54 32.6	89 14 47.5	7,428
Friendship, 1 mile north of; 4 corners.....	35 55 10.2	89 14 14.5	4,672
Four corners.....	35 55 42.2	89 14 10.7	3,250
Friendship, 1.9 miles north of; opposite church, on west side of road; copper nail in root of large oak tree marked "U. S. B. M. No. 55" (T. B. M. No. 55).....	35 55 53.8	89 14 09.6	1,171
T road east.....	35 56 02.3	89 13 26.0	3,680
Stokes, in front of house of L. A. Williams, about 200 feet north of store buildings, on bank at fence line, on west side of north-south road; iron post stamped "Prim. Trav. Sta. No. 17, 1910".....	35 57 23.3	89 13 17.4	3,227
Four corners.....	35 57 34.3	89 13 15.8	1,116
Greenhill, 75 feet south of schoolhouse, on east side of road; copper nail in root of oak tree marked "U. S. B. M. No. 56" (T. B. M. No. 56).....	35 58 34.0	89 13 07.8	6,076
T road west.....	35 58 53.2	89 13 07.0	1,940
Old Turner bridge.....	36 00 35.5	89 13 16.6	10,377

Magnetic declination of south border of quadrangle, 4° 55' E.; of north border of quadrangle, 4° 55' E.; of central portion of quadrangle, 4° 44' E.; of west border of quadrangle, 5° 00' E.

TEXAS.

PRIMARY TRAVERSE.

Barns Bridge and Rockwall 7½ quadrangles; Dallas, Farmersville, and McKinney 30' quadrangles. (Trinity River basin.)

COLLIN, DALLAS, KAUFMAN, AND ROCKWALL COUNTIES.

The following geographic positions on approximate United States standard datum were determined in 1909 by E. L. McNair and P. W. McMillen. The line starts at Caruth triangulation station and follows highways and railroads through the above-named quadrangles, closing four circuits.

The State cooperated in the work.

DALLAS 30' QUADRANGLE.
Geographic positions along highways.

Stations.	Latitude.	Longitude.
Dallas, about 6 miles north of; on Mrs. Caruth's residence, south chimney of house (Caruth triangulation station).....	32 51 38.25	96 46 27.42
Dallas, about 1,100 feet west of fair ground entrance, in masonry abutment at east end of Texas & Pacific Ry. bridge No. 213-A, about 530 feet east of crossing of Texas & Pacific Ry. and Gulf, Colorado & Santa Fe Ry., in top course of masonry between railway tracks, 8 inches below top of rail; aluminum tablet stamped "Prim. Trav. Sta. No. 12 1909 TEXAS".....	32 47 03.2	96 46 04.3
Dallas, intersection of main tracks of the Texas & Pacific Ry. and Gulf, Colorado & Santa Fe Ry.	32 47 04.9	96 46 10.6
Dallas, crossing of Haskell Avenue and Bryan Street.....	32 47 50.4	96 46 51.1
Delmar, center of track at station.....	32 49 21.4	96 46 04.1
Missouri, Kansas & Texas Ry., overhead crossing of.....	32 50 24.0	96 46 03.8

Magnetic declination of line, 8° 48' E.

Geographic positions along the Missouri, Kansas & Texas Ry.

Fisher, 350 feet west of station signboard, 14 paces south of track, within right of way fence; U. S. Coast and Geodetic Survey stone bench-mark post 36 inches long by 6 inches square, in top of which is chiseled a hollow square and the letters "U.S. B.M.".....	32 50 44.8	96 44 32.4
White Rock Creek, center of iron truss bridge over.....	32 51 46.8	96 44 01.3

Geographic positions along Texas & Pacific Ry.

Orphans Home flag station, 1.4 miles northeast of; road crossing.....	32 46 35.4	96 39 32.1
Orphans Home flag station, road crossing.....	32 46 34.0	96 40 57.1
Orphans Home station, 1 mile west of; road crossing.....	32 46 33.7	96 41 59.4
Road crossing, overhead.....	32 46 41.8	96 43 14.9
Road subway under railroad.....	32 46 41.0	96 44 15.0
Road crossing.....	32 46 47.6	96 44 54.0

Magnetic declination of line, 8° 42' E.

Geographic positions along the Missouri, Kansas & Texas Ry.

Whiterock Creek, 1.5 miles north of; road crossing.....	32 53 05.8	96 43 50.5
Road crossing.....	32 53 45.2	96 43 03.3
Buhard siding, 0.4 mile southwest of signpost; road crossing.....	32 54 04.4	96 42 01.1
Road crossing.....	32 54 23.9	96 40 57.8
Do.....	32 54 32.4	96 40 30.2
Garland, 1 mile west of station, in top at south end of concrete abutment of the west end of iron truss bridge over Duck Creek; aluminum tablet stamped "Prim. Trav. Sta. No. 2 1909 TEXAS".....	32 54 47.5	96 39 07.1
Garland, 1,000 feet northeast of station, crossing of the Gulf, Colorado & Santa Fe Ry. and Missouri, Kansas & Texas Ry.....	32 54 59.0	96 37 57.0

Magnetic declination of line, 8° 32' E.

Geographic positions along highways.

Garland, road crossing of Gulf, Colorado & Santa Fe Ry.....	32 54 57.5	96 37 58.2
Garland, 1.5 miles south of; T road west.....	32 53 38.2	96 37 50.6
Garland, 2 miles south of; T road west.....	32 53 10.8	96 37 50.5
Four corners, intersection with northeast-southwest road.....	32 52 42.6	96 37 17.0
T road south.....	32 52 08.0	96 36 36.4
T road northwest.....	32 51 43.7	96 36 08.4
Housley, about 1.25 miles northwest of; T road south.....	32 51 42.2	96 35 48.8
Housley, on east side of open square, north 7° 30' east from northeast corner of Baptist Church, 2.5 feet west of fence; iron post stamped "Prim. Trav. Sta. No. 20 1909 TEXAS".....	32 51 07.4	96 35 09.4
Housley, 1.25 miles southwest of; intersection with road from west.....	32 50 45.5	96 35 43.0
Duck Creek, 16 feet east of the north end of bridge over, on north bank; iron post stamped "Prim. Trav. Sta. No. 21 1909 TEXAS".....	32 49 59.6	96 35 43.6
New Hope, 0.6 mile north of; T road east.....	32 49 21.3	96 35 44.1
New Hope, on east side of road, 47.5 feet north of store building, about 150 feet north of intersection of roads; iron post stamped "Prim. Trav. Sta. No. 22 1909 TEXAS".....	32 48 51.2	96 35 44.0
New Hope, 1.2 miles south of; T road north.....	32 47 50.8	96 35 52.5
New Hope, 1.2 miles south of; T road south.....	32 47 50.8	96 35 47.3

Magnetic declination of line, 8° 51' E.

DALLAS 30' QUADRANGLE—Continued.

Geographic positions along the Missouri, Kansas & Texas Ry.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Garland, 1.5 miles southeast of station; road crossing.....	32 54 29.1	96 36 48.6
Road crossing.....	32 54 14.6	96 36 00.8
Rowlett Creek, center of iron truss bridge over.....	32 54 20.5	96 35 32.8
Rowlett Creek, 1.3 miles east of; road crossing.....	32 54 11.2	96 34 09.3
Rowlett, about 700 feet east of station, opposite switch stand, 16 paces north of center of track; Coast and Geodetic Survey stone bench mark post 36 by 6 by 6 inches, set 28 inches in ground, having chiseled on top a hollow square and the letters "U. S. G. B. M.".....	32 54 14.6	96 33 47.7
Rowlett, 0.9 mile east of station; road crossing.....	32 54 12.1	96 32 49.8
Dallas-Rockwall county line; center of track.....	32 53 59.2	96 31 04.5

Magnetic declination of line, 8° 32' E.

Geographic positions along highways.

East Fork of Trinity River, southeast corner of bridge over.....	32 55 27.0	96 30 19.6
Leaning oak, 20 inches in diameter; elevation 421.8 feet.....	32 56 30.1	96 30 08.3
Spotted oak tree 2 feet in diameter, about 100 feet from east bank of river; elevation 422.2 feet.....	32 56 51.2	96 30 18.3
East bank of East Fork of Trinity River, about 400 feet from, in west edge of timber and near clearing; iron post stamped "Prim. Trav. Sta. No. 14 TEXAS 1909".....	32 57 09.3	96 30 24.0
Leaning hackberry tree 16 inches in diameter; elevation 424.3 feet.....	32 57 22.7	96 30 20.2
Twin elm tree 18 inches in diameter, inside field, about 120 feet from river.....	32 57 44.3	96 30 02.7
Bois d'arc stump, 16 inches in diameter, on west side of slough, about 100 feet from slough.....	32 58 37.0	96 30 01.1
Murphy, 1.9 miles south of; line between Collin and Dallas counties (approximate).....	32 59 02.6	96 36 47.4

Geographic positions along the Gulf, Colorado & Santa Fe Ry.

Garland, 3.8 miles north of; in top of stone pier on east side of Gulf, Colorado & Santa Fe Ry. bridge across Rowlett Creek, on north side of creek; iron post stamped "Prim. Trav. Sta. No. 19 1909 TEXAS".....	32 57 35.8	96 36 52.7
Garland, about 1.5 miles north of; road crossing.....	32 56 33.0	96 37 19.7
Garland, about 0.6 mile northeast of; east-west road crossing.....	32 55 19.0	96 37 44.1

BARNES BRIDGE 7½' QUADRANGLE.

Geographic positions along the Trinity River.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
River bank, 280 feet due east from (wagon road close to bank), 16 feet north 50° east, to blazed burr oak tree 38 inches in diameter, 15 feet south 51° west to another blazed burr oak tree 20 inches in diameter; iron post stamped "Prim. Trav. Sta. No. 5 1909 TEXAS" (bearings magnetic).....	32 52 24.1	96 29 45.2
Base of dead bois d'arc tree, close to land wagon track.....	32 52 01.3	96 29 59.9
Bridge at sharp turn in road, 800 feet south of, near small slough, about 40 feet from center of road; iron post stamped "Prim. Trav. Sta. No. 9 1909 TEXAS".....	32 46 06.0	96 29 55.5
Dead bois d'arc stump.....	32 46 05.7	96 29 43.3

Magnetic declination of line, 8° 53' E.

BARNs BRIDGE 7½' QUADRANGLE—Continued.

Geographic positions along Trinity River, through swamp.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Top of elm stump cut off about 2 feet above ground.....	32 51 41.6	96 30 15.7
Notch cut in base of mulberry tree.....	32 51 15.7	96 30 14.0
In fairly open woods, east of river and about 0.25 mile from edge of woods east; dead hackberry tree 8 inches in diameter is distant 4.5 feet, magnetic bearing south 19° east, an elm tree 13 inches in diameter is distant 21.5 feet south 86° 30' east; iron post stamped "Prim. Trav. Sta. No. 6 1909 TEXAS".....	32 50 47.9	96 30 14.4
Notch at base of red elm tree on river bank at bend just above Barns Bridge....	32 50 21.5	96 30 29.0
Barns Bridge, 102 feet southeast of, southeast corner of main bridge, east side of river, in open field south side of road; iron post stamped "Prim. Trav. Sta. No. 7 1909 TEXAS".....	32 50 12.0	96 30 31.6
Stump of tree about 6 inches in diameter, cut off 15 inches above ground.....	32 49 44.4	96 30 53.1
Root of old bois d'arc stump in open ground.....	32 49 32.3	96 30 58.3
Stump of tree 5 inches in diameter, cut off 15 inches above ground.....	32 49 12.6	96 31 05.3
Stump about 8 inches in diameter.....	32 48 42.2	96 31 07.8
Nail in root of a leaning white ash tree.....	32 48 19.7	96 30 54.0
Chittam stump 8 inches in diameter.....	32 47 54.9	96 30 56.0
Jeff Caldwell's property, about 18 inches west of a wire fence, on east side of fence bounding property of Lawrence heirs, 320 feet south of corner of a wire fence at east-west lane, about 0.8 mile north of Farney-Dallas road crossing valley; iron post stamped "Prim. Trav. Sta. No. 8 1909 TEXAS".....	32 47 30.9	96 30 59.3
Stump of small elm tree, cut off about 2 feet above ground.....	32 46 53.0	96 30 51.3
Center of east-west Dallas-Farney road.....	32 46 52.5	96 30 50.8
Bois d'arc stump on line between Dallas and Kaufman counties, at county line and road crossing.....	32 46 52.5	96 31 09.3
Hackberry tree.....	32 46 29.7	96 30 19.5
Levee, about 75 feet southeast of, in root of leaning elm tree near the corner of a cultivated field in line of fence.....	32 45 28.4	96 30 04.6

Geographic positions along Texas & Pacific R. R.

Trinity River, east side of, 48 feet south 81° 30' west to northwest corner of iron highway bridge and 162 feet north 6° east to center of water tank on north side of track, about 3 feet below floor of wagon bridge; iron post stamped "Prim. Trav. Sta. No. 10 1909 TEXAS".....	32 45 02.3	96 30 31.0
Road crossing.....	32 45 18.1	96 31 19.3
Do.....	32 45 32.9	96 32 09.7
Do.....	32 45 45.2	96 32 44.8
Do.....	32 45 49.2	96 33 40.9
Small slough, center of trestle over.....	32 45 56.3	96 34 55.2
Mesquite, just east of station, road crossing.....	32 46 02.6	96 36 00.6
Mesquite, 490 feet west of station, on open ground on railroad right of way, 61 feet north of center of track; iron post set 36 inches in ground and stamped "Prim. Trav. Sta. No. 11 1909 TEXAS".....	32 46 03.9	96 36 07.8
Trestle 204-B, center of.....	32 46 15.4	96 37 17.1

Magnetic declination of line, 8° 56' E.

ROCKWALL 7½' QUADRANGLE.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Notch at base of pin oak tree at corner of brush, woodland, and cotton fields....	32 54 20.5	96 28 44.3
Bois d'arc stump.....	32 55 22.0	96 28 50.6
Rockwall, 1.5 miles west of; 40 feet south of Rockwall-Dallas road, about 90 feet east of southeast corner of bridge over slough; iron post stamped "Prim. Trav. Sta. No. 13 1909 TEXAS".....	32 55 35.2	96 29 04.9
Leaning elm tree 20 inches in diameter, about 150 feet south of Rockwall-Dallas road; elevation 413.9 feet.....	32 55 29.1	96 29 51.6
Bois d'arc tree 2 feet in diameter; elevation 419 feet.....	32 56 08.5	96 29 54.4
Leaning mulberry tree 8 inches in diameter, in edge of timber just outside field, about 40 feet from west bank of river.....	32 58 05.3	96 29 58.2
Leaning hackberry tree 10 inches in diameter standing by the side of field in edge of timber.....	32 58 52.6	96 29 51.6
W. V. Evans's field, outside northeast corner of, in edge of timber on south side of public road, on land belonging to William Frederick, across road from land of W. G. Lee; iron post stamped "Prim. Trav. Sta. No. 15 1909 TEXAS".....	32 59 12.4	96 29 50.1
Elm tree 18 inches in diameter, in east-west fence line; elevation 432.8.....	32 59 33.4	96 29 07.1
Water elm, 28 inches in diameter, on river bank, west edge of levee, east side of road; elevation 435.9 feet.....	32 59 50.2	96 29 15.5

ROCKWALL 7½' QUADRANGLE—Continued.**Geographic positions along Missouri, Kansas & Texas R. R.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Road crossing.....	32 54 10.8	96 28 05.6
Do.....	32 54 22.6	96 27 48.9
Rockwall, semaphore post inside bay window and extending several feet above roof of station.....	32 55 19.7	96 27 14.7
Rockwall County courthouse, in fourth tier of stone, 4 feet above ground in south face at southwest corner of courthouse, about midway between corner of building and window; Coast and Geodetic Survey half-inch copper bolt 2½ inches long, set horizontally.....	32 55 51.9	96 27 35.4
Water tank, center of track opposite.....	32 54 08.6	96 29 39.2
Rockwall, 2.5 miles west of; in top of north end of east abutment of Missouri, Kansas & Texas Ry. bridge over Trinity River; aluminum tablet stamped "Prim. Trav. Sta. No. 4 1909 TEXAS".....	32 53 59.8	96 29 04.6

Geographic positions along Trinity River, through swamp.

Stump of tree about 8 inches above ground, 3 feet to right of wagon road; nail....	32 53 49.7	96 29 23.3
Burr oak about 2 feet in diameter just left of road and 20 feet west from river bank; notch in base.....	32 53 25.4	96 29 24.0
Large leaning burr oak about 75 feet west of river; notch in base.....	32 53 02.9	96 29 38.9
Top of old bois d'arc stump, sawed off about 6 inches above ground; blazed and painted hickory tree 10 feet distant.....	32 53 39.9	96 29 44.2

Magnetic declination of line, 8° 53' E.

FARMERSVILLE 30' QUADRANGLE.**Geographic positions along highways.**

Stations.	Latitude.	Longitude.
	° ' "	° ' "
South side of public road, about 3 feet north of fence post, about 1,350 feet south 72° east to bridge across east fork of Trinity River; iron post stamped "Prim. Trav. Sta. No. 16 1909 TEXAS".....	33 00 26.3	96 29 24.9
Top of bottom plank on west side of corner post of lot fence.....	33 00 33.0	96 29 46.0

McKINNEY 30' QUADRANGLE.**Geographic positions along public roads.**

Stations.	Latitude.	Longitude.
Wylie, at south end of Main Street, on south side of road, about 3 feet from wire fence, about 55 feet north 27° 30' west to southeast corner of F. L. Murphy's house across road; iron post stamped "Prim. Trav. Sta. No. 17 1909 TEXAS".....	33 00 21.6	96 32 20.2

Geographic positions along the St. Louis Southwestern Ry. of Texas.

Wylie, road crossing the Gulf, Colorado & Santa Fe Ry.....	33 00 25.7	96 32 50.0
Road crossing.....	33 00 40.2	96 34 19.7
Murphy, 0.6 mile east of station; road crossing.....	33 00 48.4	96 36 07.1
Murphy, point in front of station.....	33 00 52.0	96 36 45.4
Murphy, south border of town, 1,200 feet south of railroad crossing, in southwest corner of crossing of Murphy-Sachse and Wylie-Plano public roads; iron post stamped "Prim. Trav. Sta. No. 18 1909 TEXAS".....	33 00 40.1	96 36 46.1

Bastrop, Brenham, Flatonia, Halsted, and Sealy 30' quadrangles.**AUSTIN, BASTROP, COLORADO, FAYETTE, AND WALLER COUNTIES.**

The following geographic positions on approximate United States standard datum, along highways and the Missouri, Kansas & Texas Railway, are based on a single line from Royston Hill triangulation

station to a point near Pointer's switch, on the Austin branch of the Missouri, Kansas & Texas Railway.

An error of 3.42 seconds in latitude and 0.31 second in longitude has been adjusted between the above points.

The line was run in 1909 by F. J. McMaugh, in cooperation with the State.

BASTROP AND FLATONIA 30' QUADRANGLES.

Geographic positions along Missouri, Kansas & Texas Ry.

Stations.	Latitude.	Longitude.
Smithville, about 3 miles west of; 1.5 miles south of Colorado River, on western-most of several hills of about same elevation, hill covered with large pine trees; iron bench mark post (Royston triangulation station).....	29 59 04.5	97 13 43.2
Smithville, 3.3 miles west of; west edge of wagon track crossing branch of Missouri, Kansas & Texas Ry., in plank; nail.....	29 58 24.9	97 12 06.7
Smithville, in brick building of bank of Smithville, corner of Main and Second streets, in wall 1.2 meters above pavement and 0.3 meter from edge of wall at window on Second Street; cross cut in face of copper bolt (Coast and Geodetic Survey bench mark X-5).....	30 00 27.1	97 09 36.2
Smithville, in brick building on Main Street owned by Ed Eagleston and occupied by the American Express Co., in partition wall between express office and barber shop, in wall recess, 0.2 meter from either edge of protruding wall and 1.1 meters above pavement; cross cut in face of copper bolt (Coast and Geodetic Survey bench mark W-5).....	30 00 24.6	97 09 36.2
Smithville, in brick Masonic Building corner of Main and Third streets; bottom of square hole cut in concrete ledge of window on Third Street, 0.2 meter from edge of corner brick pillar and 0.1 meter from window (Coast and Geodetic Survey bench mark Y-5).....	30 00 30.0	97 09 33.7
Smithville, 373 feet southeast of railroad crossing, 40 feet east of main track of Missouri, Kansas & Texas Ry., 75 feet west of highway, 60 feet north of switch-stand; iron post stamped "332 S. A. 61," also stamped "Prim. Trav. Sta. No. 1, 1909, TEXAS".....	30 00 27.8	97 09 49.5
Smithville, 2.8 miles southeast of; road crossing.....	29 59 14.6	97 07 10.8
Primms spur, near right of way fence, behind second telegraph pole east of milepost 974; iron post stamped "Prim. Trav. Sta. No. 2, 1909, TEXAS, 316".....	29 58 01.2	97 05 50.5
Kirtley, 2 miles southeast of, on right of way of Missouri, Kansas & Texas Ry., near milepost 976, on east concrete abutment of bridge 2064, in top surface, 1 meter from north edge; copper bolt (Coast and Geodetic Survey bench mark U-6).....	29 57 19.8	97 04 13.5
West Point, 90 feet west and 40 feet north of crossing of San Antonio & Aransas Pass Ry., and Missouri, Kansas & Texas Ry., in corner of right of way fence; iron post stamped "Prim. Trav. Sta. No. 3, 1909, TEXAS, 295".....	29 57 17.7	97 02 18.4
West Point, in front of station, center of track.....	29 57 14.0	97 01 54.2
West Point, 60 meters east of station, in northeast corner of grade crossing, 0.3 meter from fence, on land owned by J. L. House; square hole in top of stone post (Coast and Geodetic Survey bench mark V-6).....	29 57 14.0	97 01 51.8

Magnetic declination near north border of Flatonia quadrangle, 8° 25' E.

HALSTEAD QUADRANGLE.

Geographic positions along Missouri, Kansas & Texas Ry. between West Point and New Ulm.

Stations.	Latitude.	Longitude.
West Point, about 2.2 miles southeast of; road crossing.....	29 56 42.2	96 59 46.4
Plum, 4 telegraph poles west of station, in northwest corner of grade crossing, 0.3 meter from right of way fence, on land owned by J. C. Brown, of La Grange; iron post with red metal cap, primary traverse station No. 4 (Coast and Geodetic Survey bench mark W-6).....	29 56 10.6	96 58 08.2
Plum, 175 meters southeast of station, 45 meters southwest of Missouri, Kansas & Texas Ry. tracks, 15 meters northeast of store, on land owned by Anton Legler; stone post (Coast and Geodetic Survey bench mark X-6).....	29 56 01.2	96 57 58.2
Plum, 0.2 mile southeast of; road crossing.....	29 55 55.9	96 57 48.1
Plum, 2.5 miles southeast of; road crossing.....	29 54 50.3	96 55 16.2
La Grange, 14 telegraph poles west of milepost 987, 70 meters north of grade crossing and 1 meter north of right of way fence, on land owned by Chris. Dier; stone post marked "U. S. B. M." (Coast and Geodetic Survey bench mark Y-6).....	29 54 32.3	96 54 26.7
La Grange, 0.5 mile northwest of; center of track, second pier from west side of Colorado River bridge.....	29 54 17.2	96 54 23.6
La Grange, 275 meters northeast of Missouri, Kansas & Texas Ry. station, 0.3 meter northwest of right of way, in northeast corner of grade crossing, on property of John Spreckels; stone post (Coast and Geodetic Survey bench mark B-7).....	29 54 28.5	96 52 36.2

314 TRIANGULATION AND PRIMARY TRAVERSE FOR 1909 AND 1910.

HALSTEAD QUADRANGLE—Continued.

Geographic positions along Missouri, Kansas & Texas Ry. between West Point and New Ulm—Continued.

Stations.	Latitude.	Longitude.
La Grange, in county courthouse, Washington Street entrance, in horizontal surface of first stone step from top, 0.7 foot from south end; square hole (Coast and Geodetic Survey bench mark Z-6).....	29 54 18.4	96 52 42.0
La Grange, intersection of Washington and Travis streets.....	29 54 17.5	96 52 39.5
La Grange, 1.2 miles southeast of; road crossing.....	29 54 32.2	96 51 36.9
Halstead, 1.2 miles west of; 30 meters west of milepost 993, 0.7 meter south of right of way, in southeast corner of private grade crossing, on land owned by Ernest Nitschke; iron post stamped "Prim. Trav. Sta. No. 5, 1909" (Coast and Geodetic Survey bench mark C-7).....	29 54 13.8	96 48 20.9
Halstead, 0.2 mile northwest of; road crossing.....	29 54 24.8	96 47 15.2
Halstead, 450 meters west of; on right of way, 0.7 meter from south fence, in southeast corner of grade crossing; square hole in top of stone post (Coast and Geodetic Survey bench mark D-7).....	29 54 24.5	96 47 14.7
Halstead, 0.4 mile southeast of; road crossing.....	29 54 31.7	96 46 34.5
Fayetteville, about 2.5 miles northwest of; road crossing.....	29 54 30.6	96 43 01.1
Fayetteville, in brick store of H. Zapp's Sons, in concrete water table on south side of east entrance; red metal disk stamped "Prim. Trav. Sta. No. 6, 1909" (Coast and Geodetic Survey bench mark E-7).....	29 54 14.8	96 40 36.2
Fayetteville, 18 meters east of station, on right of way, 6 meters north of track, in range with a row of trees in parking; square hole in top of stone post (Coast and Geodetic Survey bench mark F-7).....	29 54 13.1	96 40 24.6
Fayetteville, 2.7 miles southeast of; road crossing.....	29 54 41.6	96 37 45.8
Boggy Tank, 9 telegraph poles west of milepost 1006, near south end of west abutment of bridge 2104, in horizontal surface, 0.2 meter from south edge of capstone; copper bolt (Coast and Geodetic Survey bench mark G-7).....	29 55 03.2	96 36 34.6
Boggy Tank, about 0.5 mile southeast of; main track at Fayette-Colorado County line crossing.....	29 55 10.4	96 36 11.1
New Ulm, 6 miles west of; road crossing.....	29 54 49.1	96 34 38.0
New Ulm, 5.1 miles west of; road crossing.....	29 54 37.0	96 33 47.1
New Ulm, 3.5 miles west of; 6 meters east of milepost 1010, in corner of right of way and cattle-guard fences; square hole in top of stone post (Coast and Geodetic Survey bench mark H-7).....	29 54 17.2	96 32 38.2
New Ulm, 2.7 miles northwest of; road crossing.....	29 53 54.3	96 31 51.8

Magnetic declination of line east-west through center of quadrangle, 8° 29' E.

SEALY QUADRANGLE.

Geographic positions along Missouri, Kansas & Texas Ry. between New Ulm and Sealy.

Stations.	Latitude.	Longitude.
New Ulm; railroad station.....	29 53 19.9	96 29 20.5
New Ulm, 100 meters northeast of Missouri, Kansas & Texas Ry. station, in brick store owned by L. R. Fink, on east side of building, 1 meter from north side, 1.5 meters above ground; copper bolt (Coast and Geodetic Survey bench mark I-7).....	29 53 22.3	96 29 17.2
New Ulm, 225 meters west of milepost 1014, on north side of right of way, in corner of fence; square hole in top of stone post (Coast and Geodetic Survey bench mark J-7).....	29 53 15.6	96 29 07.5
New Ulm, 0.9 mile southeast of; road crossing.....	29 53 00.2	96 28 27.3
New Ulm, 3.5 miles southeast of; road crossing.....	29 52 38.3	96 26 01.8
New Ulm, 4.5 miles southeast of; 9 telegraph poles east of milepost 1018, on right of way of Missouri, Kansas & Texas Ry., 11 paces north of track; iron post stamped "Prim. Trav. Sta. No. 7, 1909" (Coast and Geodetic Survey bench mark K-7).....	29 52 21.9	96 24 49.9
Cat Springs, 4.5 miles northwest of; road crossing.....	29 52 04.9	96 23 39.0
Cat Springs, 2.8 miles northwest of; private road crossing.....	29 51 20.7	96 22 25.4
Cat Springs, 0.5 mile northwest of; road crossing.....	29 51 03.0	96 20 10.8
Cat Springs, 125 meters west of milepost 1024, 0.3 meter south of right of way, at southwest corner of grade crossing; square hole in stone post 4 feet long and 7 inches square, 6 inches out of ground, post marked "U. S. B. M." (Coast and Geodetic Survey bench mark L-7).....	29 50 50.3	96 19 44.0
Cat Springs, Missouri, Kansas & Texas Ry. station.....	29 50 46.0	96 19 33.5
Cat Springs, 0.8 mile southeast of; road crossing.....	29 50 28.9	96 18 53.7
Cat Springs, 1.2 miles southeast of; road crossing.....	29 50 26.7	96 18 24.8
Cat Springs, 2 miles southeast of; road crossing.....	29 50 12.0	96 17 45.1
Cat Springs, 3.5 miles southeast of; 1,960 feet northwest of milepost 1028; road crossing.....	29 49 32.8	96 16 25.3

Magnetic declination of line, 8° 41' E.

SEALY QUADRANGLE—Continued.

Geographic positions along Missouri, Kansas & Texas Ry. between point 5.8 miles west of Sealy and point 0.6 mile east of McDowell.

Stations.	Latitude.	Longitude
Sealy, 5.8 miles west of station, 10 telegraph poles east of milepost 1029, on right of way of Missouri, Kansas & Texas Ry., in northeast corner of grade crossing, 0.3 meter from right of way fence; iron post with red metal cap stamped "Prim. Trav. Sta. No. 8, 1909" (Coast and Geodetic Survey bench mark M-7).....	29 49 01.6	96 14 51.0
Sealy, 5 miles west of; center of track opposite milepost 1030.....	29 48 43.6	96 14 16.5
Sealy, 3.5 miles west of, 13 telegraph poles east of milepost 1031, in northeast corner of grade crossing, 0.2 meter north of right of way of Missouri, Kansas & Texas Ry.; stone post marked "U. S. B. M." (Coast and Geodetic Survey bench mark N-7).....	29 48 05.5	96 13 00.5
Sealy, 2 miles west of; center of track opposite milepost 1033.....	29 47 24.6	96 11 41.3
Sealy, 1 mile west of; center of track opposite milepost 1034.....	29 47 02.1	96 10 47.8
Sealy, opposite Missouri, Kansas & Texas Ry. station, track.....	29 46 57.8	96 09 45.9
Sealy, on right of way of Missouri, Kansas & Texas Ry., 35 meters east of station, on water tank on top of second concrete mudsill from the tracks, 0.1 meter from west end of sill; hole in top surface (Coast and Geodetic Survey bench mark O-7).....	29 46 57.5	96 09 44.3
Sealy, on Foulken Street, in center of east face of brick store owned by A. Preibisch, about 1.3 meters above the walk; copper bolt (Coast and Geodetic Survey bench mark P-7).....	29 46 53.1	96 09 23.2
Sealy, on Foulken Street, in cement walk in front of brick store owned by Mistroit Bros., 0.2 meter from northwest corner of building; square hole in walk (Coast and Geodetic Survey bench mark Q-7).....	29 46 54.7	96 09 22.7
Sealy, crossing of Missouri, Kansas & Texas Ry. and Gulf, Colorado & Santa Fe Ry.....	29 47 01.2	96 09 19.1
Sealy, 0.5 mile southeast of; road crossing.....	29 46 58.9	96 08 51.4
Sealy, 2 miles southeast of; center of track opposite milepost 1037.....	29 46 51.4	96 07 49.0
San Felipe; Missouri, Kansas & Texas Ry. station.....	29 46 41.7	96 06 28.9
San Felipe, 0.5 mile southeast of station; road crossing.....	29 46 37.9	96 05 58.0
San Felipe, 1.7 miles southeast of; 44 telegraph poles west of milepost 1040, in northwest corner of grade crossing, 0.5 meter from right of way of Missouri, Kansas & Texas Ry., on land owned by John Hluchan; iron post stamped "Prim. Trav. Sta. No. 9, 1909, TEXAS" (Coast and Geodetic Survey bench mark R-7).....	29 46 31.4	96 04 59.3
San Felipe, 2.2 miles southeast of; road crossing.....	29 46 27.2	96 04 29.3
San Felipe, 2.9 miles southeast of; center of track opposite milepost 1041.....	29 46 22.6	96 03 50.8
McDowell, road crossing at station.....	29 46 14.4	96 02 42.2
McDowell, 0.5 mile east of; on bridge "1042.5" over Brazos River, at south end of first pier west of Austin-Waller County line, on top surface of southernmost short section of rail, on cement pier; a 2.5 cm. square chiseled in outline between two transverse girders (Coast and Geodetic Survey bench mark S-7).....	29 46 18.7	96 02 11.8
McDowell, 0.6 mile southeast of; center of track at Austin-Waller County line.....	29 46 19.0	96 02 11.0
McDowell, 0.6 mile east of station, in east abutment, south side of track, in railroad bridge 1042.5 over Brazos River; aluminum tablet stamped "Prim. Trav. Sta. No. 10, 1909, TEXAS," also stamped "No. 1".....	29 46 20.0	96 02 06.6

Geographic positions along highways between McDowell and bridge over Clear Creek.

McDowell, 1 mile north of; 15 feet east of road, in root of elm tree; copper nail painted "U. S. B. M. No. 1, 118".....	29 47 03.3	96 02 12.2
McDowell, 1.5 miles north of; 10 feet west of road, in root of mulberry tree; copper nail painted "U. S. B. M. No. 2, 124".....	29 47 34.3	96 02 14.4
McDowell, 2 miles north of; 100 yards east of Orange Creek, 50 feet east of public road, 6 feet west of gate; iron post stamped "Prim. Trav. Sta. No. 11, 1909, TEXAS 2".....	29 48 04.7	96 02 02.1
McDowell, 2.5 miles north of; 15 feet west of road, in root of elm tree; copper nail painted "U. S. B. M. 125, 3".....	29 48 40.1	96 02 20.4
McDowell, 3 miles north of; 100 feet west of gateway to T lane southeast, 25 feet northwest of road, in root of oak tree; painted "U. S. B. M. 131, No. 4;" copper nail.....	29 49 07.4	96 02 38.6
Wendt's Ferry, about 1.3 miles southeast of; 10 feet southeast of gateway to Lee Penrice's house; iron post stamped "Prim. Trav. Sta. No. 12, 1909, TEXAS, No. 3".....	29 48 59.5	96 03 41.9
Wendt's Ferry, about 1 mile southeast of; 15 feet north of road, in root of oak tree; copper nail painted "U. S. B. M. 130, No. 5".....	29 49 04.2	96 04 28.6
Wendt's Ferry, 0.5 mile southeast of; 70 feet south of crossroads, 20 feet east of corner of wire fence, in root of oak tree; copper nail painted "U. S. B. M. 126, No. 6".....	29 48 51.8	96 04 53.1

SEALY QUADRANGLE—Continued.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
Wendt's Ferry, about 0.3 mile north of; 20 feet west of gateway at small negro cabin; iron post stamped "Prim. Trav. Sta. No. 13, 1909, TEXAS, No. 4".....	29 48 39.5	96 05 33.3
Wendt's Ferry, 1 mile north of; 25 feet west of road, in root of oak tree painted "U. S. B. M. 128, No. 7"; copper nail.....	29 49 06.6	96 05 59.9
Wendt's Ferry, 1.9 miles north of; 220 feet southwest of Wesley Chapel, near hackberry tree; iron post stamped "Prim. Trav. Sta. No. 14, 1909, TEXAS, No. 5".....	29 49 52.6	96 06 02.2
Wesley Chapel, 0.8 mile north of; 60 feet west of road, in root of oak tree painted "U. S. B. M. 134, No. 8"; copper nail.....	29 50 27.7	96 05 38.5
Wesley Chapel, 2 miles north of; 25 feet southeast of intersection of east-west road and T lane south, 6 feet east of corner of fence; iron post stamped "Prim. Trav. Sta. No. 15, 1909, TEXAS, No. 6".....	29 51 24.2	96 05 20.1
Wesley Chapel, 2.7 miles north of; at east edge of road, in root of pecan tree painted "U. S. B. M. 134, No. 9"; copper nail.....	29 52 02.3	96 05 12.0
Wesley Chapel, 3.6 miles north of; 90 feet north of gate, on east edge of road, in root of pecan tree, painted "U. S. B. M. 135, No. 10"; copper nail.....	29 52 46.6	96 05 05.2
Wesley Chapel, 4 miles north of; fork in roads.....	29 53 06.1	96 05 07.9
Wesley Chapel, 4.1 miles north of; intersection of roads southeast and southwest.	29 53 10.9	96 05 06.8
Sunnyside, 2.7 miles south of; 500 feet east of intersection of crossroads, 120 feet west of cabin, 5 feet east of corner of wire fence, 10 feet south of large burnt stump; iron post stamped "Prim. Trav. Sta. No. 16, 1909, TEXAS, No. 7".....	29 53 14.0	96 04 51.6
Sunnyside, 2.1 miles south of; T lane south.....	29 53 16.2	96 04 15.4
Sunnyside, 1.8 miles south of; 10 feet south of gate to T lane north, in gate post; nail, marked "U. S. B. M. 143, No. 11".....	29 53 16.8	96 03 58.6
Sunnyside, 1 mile southwest of; 30 feet west of lane, 50 feet southwest of southwest corner of picket fence, in root of hackberry tree painted "U. S. B. M. 144, No. 12"; copper nail.....	29 53 54.8	96 04 00.3
Sunnyside, 0.4 mile southwest of; 25 feet east of intersection of T lane north and east-west road.....	29 54 16.2	96 04 18.7
Sunnyside, about 0.3 mile east of Eckert's house, 5 feet south of corner of wire fence, at intersection of T lane south with east-west road; iron post stamped "Prim. Trav. Sta. No. 17, 1909, TEXAS, No. 8".....	29 54 42.1	96 04 18.8
Sunnyside, about 1 mile northwest of; 15 feet southwest of intersection of crossroads, in corner of wire fence; in oak post 18 inches in diameter; copper nail, marked "U. S. B. M. 171, No. 13".....	29 55 16.8	96 04 17.9
Sunnyside, 1.5 miles north of; 40 feet northeast of small bridge over dry creek, 15 feet east of road, in root of oak tree; painted "U. S. B. M. 153, No. 14"; copper nail.....	29 55 47.3	96 04 18.7
Sunnyside, 1.9 miles north of; T lane north.....	29 56 08.2	96 04 18.0
Sunnyside, 2.3 miles north of; 15 feet southwest of intersection of T lane south with east-west road, in oak post 12 inches in diameter at corner of wire fence; copper nail, marked "U. S. B. M. 168, No. 15".....	29 56 31.1	96 04 19.0
Sunnyside, 2.7 miles north of; intersection of T lane north with east-west lane; iron pin.....	29 56 30.9	96 04 44.2
Sunnyside, 3 miles north of; 330 feet west of Willis's house, 10 feet east of oak tree marked "U. S. B. M. 155"; iron post stamped "Prim. Trav. Sta. No. 18, 1909, TEXAS".....	29 56 40.9	96 04 59.9
Sunnyside, 3.9 miles north of; 600 feet south of cotton gin, 15 feet east of road, in oak tree; copper nail, marked "U. S. B. M. 147, No. 16".....	29 57 12.7	96 05 09.3
Sunnyside, 4.8 miles north of; 10 feet northwest of road, near ash tree painted "P. B. M."; iron post stamped "Prim. Trav. Sta. No. 19, 1909, TEXAS, No. 10".....	29 57 56.6	96 05 11.4
Sunnyside, 5.7 miles north of; 5 feet south of road, in root of small tree; nail, marked "U. S. B. M. 142, No. 17".....	29 58 31.4	96 05 08.5
Clear Creek, 0.5 mile south of; 5 feet west of road, 5 feet north of pecan tree, in corner of fence; iron post stamped "Prim. Trav. Sta. No. 20, 1909, TEXAS, No. 11".....	29 59 16.9	96 05 05.7
Clear Creek, bridge over east end of northeast corner, in plank; copper nail, marked "U. S. B. M. 149, No. 18".....	29 59 34.2	96 05 09.7

Magnetic declination of line, 8° 20' E.

BRENHAM 30' QUADRANGLE.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
Clear Creek, 1 mile north of; at Steele farm, on southwest corner of old convict building, in wooden post; copper nail, marked "U. S. B. M. 153, No. 19".....	30 00 14.9	96 04 50.4
Steele farm, 0.5 mile north of; 5 feet northeast of east gatepost of wire fence; iron post stamped "Prim. Trav. Sta. No. 21, 1909, TEXAS, No. 12".....	30 00 39.0	96 04 53.7
Steele farm, 1.2 miles north of; 15 feet east of well on guardpost at corner of wire fence; copper nail, marked "U. S. B. M. 160, No. 20".....	30 01 11.2	96 04 49.5
Steele farm, 1.8 miles north of; 15 feet west of road, in root of post oak tree; copper nail, marked "U. S. B. M. 180, No. 21".....	30 01 58.0	96 04 59.4

BRENNHAM 30' QUADRANGLE—Continued.**Geographic positions along highways—Continued.**

Stations.	Latitude.	Longitude.
Hempstead, about 3.5 miles south of; 12 feet south of post oak tree painted "P. B. M.", 15 feet east of road; iron post stamped "Prim. Trav. Sta. No. 22, 1909, TEXAS, No. 13"	30 02 46.3	96 05 00.4
Hempstead, about 3 miles southwest of; 5 feet south of road, in root of post oak tree; copper nail, marked "U. S. B. M. 192, No. 22"	30 03 17.0	96 05 32.0
Hempstead, about 3 miles southwest of; crossroads	30 03 16.3	96 05 39.2
Hempstead, about 3 miles southwest of; north end of small bridge	30 03 42.6	96 05 46.7
Hempstead, about 3 miles west of; 20 feet east of road, in root of post oak tree; copper nail, marked "U. S. B. M. 177, No. 23"	30 03 51.2	96 05 45.7
Hempstead, about 2 miles southwest of; 6 feet west of road; iron post stamped "Prim. Trav. Sta. No. 23, 1909, TEXAS, No. 14"	30 04 21.5	96 05 53.8
Hempstead, about 2 miles southwest of; east end of small bridge	30 03 56.4	96 06 30.7
Hempstead, about 2.5 miles southwest of; south side of road, in root of oak tree; copper nail, marked "U. S. B. M. 188, No. 24"	30 03 56.4	96 06 36.2
Hempstead, about 2.2 miles southwest of; about 500 feet north of Lewisville Church; fork in roads	30 04 12.2	96 06 58.0
Lewisville Church, 0.4 mile northwest of; 195 feet east of creek, 15 feet north of road, in root of oak tree; copper nail, marked "U. S. B. M. 148, No. 25"	30 04 13.4	96 07 11.8
Lewisville Church, 0.8 mile northwest of; about 0.2 mile east of Brazos River, 250 feet north of negro cabin; iron post stamped "Prim. Trav. Sta. No. 24, 1909, TEXAS, No. 15"	30 04 29.0	96 07 26.7
Pointer's switch, 2.2 miles south of; west edge of road, in root of oak tree; copper nail, marked "U. S. B. M. 202, No. 26"	30 05 08.8	96 07 44.9
Pointer's switch, 1.5 miles south of; west edge of road, in root of post oak tree; copper nail, marked "U. S. B. M. 208, No. 27"	30 05 46.8	96 07 51.4
Pointer's switch, 0.8 mile south of; 0.3 mile east of house on Faulker farm, 15 feet east of road, in root of post oak tree; copper nail, marked "U. S. B. M. 209, No. 28"	30 06 16.8	96 08 12.2
Pointer's switch, 0.2 mile west of; 150 feet south of main track of Houston & Texas Central R. R., 25 feet south of road; iron post stamped "Prim. Trav. Sta. No. 25, 1909, TEXAS, No. 16"	30 06 39.2	96 07 59.8
Pointer's switch, 0.7 mile west of; 160 feet west of road crossing, 20 feet south of track, in telegraph pole; railroad spike, marked "U. S. B. M. 172, No. 29"	30 06 48.0	96 08 51.8

Magnetic declination of line, 8° 20' E.

Geographic positions along Houston & Texas Central R. R.

Brazos River bridge of Houston & Texas Central R. R., 18 miles east of, 25 feet east of track, in telegraph pole painted "U. S. B. M. 153"; spike (T. B. M. No. 30).	30 06 57.4	96 09 48.9
Harmon, 75 feet southwest of station, 20 feet south of track, in telegraph pole painted "U. S. B. M. 158"; spike (T. B. M. No. 31)	30 06 59.0	96 10 20.6
Houston & Texas Central R. R. bridge over Brazos River, in top of south end of east pier; aluminum tablet stamped "Prim. Trav. Sta. No. 26, 1909, TEXAS"	30 07 01.6	96 11 23.6
Waller-Washington County line	30 07 02.4	96 11 26.7
Brazos River bridge of Houston & Texas Central R. R., 0.5 mile west of; 30 feet north of road crossing, in telegraph pole painted "U. S. B. M. 177"; spike (T. B. M. No. 32)	30 07 15.4	96 11 50.1

Geographic position near Trestle 6-A.

Trestle 6-A, on Western division of Houston & Texas Central R. R., 0.7 mile north of, in root of lone elm tree in cotton field; copper nail; cut in bark marked with red keel "154-1-A" (T. B. M. No. 1-A)	30 07 28.6	96 09 20.1
--	------------	------------

Howth, Jones Bridge, Millican, Sandpit, and Washington special 7½ quadrangles; Gay Hill 15' quadrangle; Brenham and Bryan 30' quadrangles. (Brazos River valley.)

AUSTIN, BURLESON, GRIMES, MILAM, WALLER, AND WASHINGTON COUNTIES.

The following geographic positions on approximate United States standard datum, were established from closed circuits along the Brazos River by F. J. McMaugh and E. L. McNair in 1909 and 1910.

The State cooperated in the work.

HOWTH SPECIAL 7½' QUADRANGLE.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
Brazos River bridge, 1 mile northwest of; 70 feet north of forks in road, in root of post oak tree; nail, marked "U. S. B. M. 242" (T. B. M. No. 33).....	30 07 50.6	96 11 56.0
New Year Creek bridge, at north end of east pier; aluminum tablet stamped "Prim. Trav. Sta. No. 27, 1909, TEXAS".....	30 08 04.8	96 11 30.8
New Year Creek, south end of bridge over.....	30 08 04.1	96 11 32.8
Riverside plantation, gateway.....	30 08 19.0	96 11 17.8
New Year Creek bridge, 1.3 miles northeast of, in root of large pecan tree in field marked "U. S. B. M. 163"; copper nail (T. B. M. No. 34).....	30 08 50.5	96 10 55.3
New Year Creek bridge, 2.1 miles northeast of; about 200 feet north of edge of field, 35 feet east of road, in root of tree marked "U. S. B. M. 168"; copper nail (T. B. M. No. 35).....	30 09 19.6	96 10 15.9
New Year Creek bridge, 2.7 miles northeast of; 7 feet south of trees, 15 feet west of road; iron post stamped "Prim. Trav. Sta. No. 28, 1909, TEXAS".....	30 09 51.3	96 10 16.0
Gravelly Point, between Hughes and McGregor farms, 35 feet south of Brazos River, in root of oak tree painted "U. S. B. M. 168"; copper nail.....	30 10 07.7	96 10 10.6
Gravelly Point, 0.5 mile north of; 30 feet west of road, in root of double oak tree painted "U. S. B. M. 168"; copper nail (T. B. M. No. 37).....	30 10 48.6	96 10 38.7
Buchanan's house, 1 mile south of; 0.7 mile south of sawmill, 10 feet west of road, near gate; iron post stamped "Prim. Trav. Sta. No. 29, 1909, TEXAS" (P. B. M. No. 20).....	30 11 15.3	96 10 35.0
Buchanan's house, 0.4 mile west of; on west side of road, in root of oak tree painted "U. S. B. M. 167"; copper nail (T. B. M. No. 38).....	30 11 37.6	96 09 58.1
Buchanan's house, about 1 mile north of; 6 feet west of road, in root of pin oak tree painted "U. S. B. M. 167"; copper nail (T. B. M. No. 39).....	30 12 14.0	96 10 13.0
Buchanan's house, about 130 feet north of; 210 feet north of gate of wire fence, north end of dam over Jackson Creek, at corner of fence; iron post stamped "Prim. Trav. Sta. No. 30, 1909, TEXAS" (P. B. M. No. 21).....	30 12 22.7	96 10 07.5
Jackson Creek dam, 0.8 mile north of; 200 feet east of negro cabin, 15 feet northeast of southeast corner of wire fence, in root of double pin oak tree painted "U. S. B. M. 192"; copper nail (T. B. M. No. 40).....	30 13 00.8	96 10 04.9
Jackson Creek dam, 1.2 miles northwest of; 20 feet northeast of road, in oak tree painted "U. S. B. M. 192"; copper nail (T. B. M. No. 41).....	30 13 26.7	96 09 28.1
Jackson Creek dam, 1.5 miles north of; 200 feet northwest of negro cabin, 6 feet south of gateway of wire fence; iron post stamped "Prim. Trav. Sta. No. 31, 1909, TEXAS" (P. B. M. No. 22).....	30 13 42.4	96 09 02.2
Graball, 2.8 miles south of; on line of Lott's pasture, 492 feet north of road, in oak tree painted "U. S. B. M. 238"; copper nail (T. B. M. No. 42).....	30 14 01.6	96 07 58.6
Graball, 2.3 miles south of; 50 feet west of crossroads, near wire fence, in root of oak tree painted "U. S. B. M. 211"; copper nail (T. B. M. No. 43).....	30 14 11.2	96 07 35.0
Brown's College, 0.4 mile west of; 150 feet east of negro cabin, west side of road, near wire fence; iron post stamped "Prim. Trav. Sta. No. 32, 1909, TEXAS" (P. B. M. No. 23).....	30 14 38.3	96 07 35.7
Stone's gin, about 0.2 mile southeast of; 20 feet southeast of lone pecan tree in field, 5 feet north of road; iron post stamped "Prim. Trav. Sta. No. 38-A, 1909, TEXAS" (P. B. M. No. 38-A).....	30 08 24.6	96 09 06.4
Wood's gin, about 1 mile southwest of; 150 feet northeast of Torney's house, 150 feet south of corral; iron post stamped "Prim. Trav. Sta. No. 39-A, 1909, TEXAS" (P. B. M. No. 39-A).....	30 09 43.6	96 08 54.0
Wood's gin, about 1 mile northwest of; 100 feet northeast of mouth of ditch, on east bank of Brazos River, in base of small tree painted "U. S. B. M. 2-A"; copper nail (T. B. M. No. 2-A).....	30 10 23.2	96 09 15.3
Wood's gin, about 1.5 miles northwest of; 75 feet west of road, about 0.2 mile southeast of Brazos River, 20 feet west of lone tree in field; iron post stamped "Prim. Trav. Sta. No. 40-A, 1909, TEXAS" (P. B. M. No. 40-A).....	30 10 39.5	96 09 04.6
Wood's gin, about 0.6 mile north of; southwest corner of crossroads, at wire fence, in red oak tree painted "U. S. B. M. 3-A"; copper nail (T. B. M. No. 3-A).....	30 10 36.1	96 07 36.0

Magnetic declination of line, 8° 23' E.

Geographic positions along highways.

Wood's gin, about 1 mile north of; on west side of road, in root of elm tree; copper nail; painted "186.9 4-A" (T. B. M. No. 4-A).....	30 11 10.4	96 07 10.2
Wood's gin, about 2 miles north of; 500 feet north of John Marshall's house, 100 feet east of intersection of east-west road and T lane south, 10 feet north of wire fence; iron post stamped "Prim. Trav. Sta. No. 41-A, 1909, TEXAS" (P. B. M. No. 41-A).....	30 11 35.0	96 07 10.0
Thornton's house, 0.6 mile south of; 150 feet east of road, in root of pecan tree painted "U. S. G. S. 5-A"; copper nail (T. B. M. No. 5-A).....	30 12 02.1	96 07 01.4
Thornton's house, northeast corner of brick pier under northeast corner of piazza, top of offset of first brick above ground (T. B. M. No. 6-A).....	30 12 28.8	96 06 39.5
Thornton's house, 0.7 mile northeast of; 300 feet south of barn, 12 feet south of pecan tree; iron post stamped "Prim. Trav. Sta. No. 42-A, 1909, TEXAS" (P. B. M. No. 42-A).....	30 12 41.8	96 05 57.4
Courtney, 4 miles southwest of; 150 feet south of gate, on east side of road, in root of hackberry tree; copper nail, marked "U. S. B. M. 173.9 7-A" (T. B. M. No. 7-A).....	30 12 57.4	96 05 09.3

HOWTH SPECIAL 7½' QUADRANGLE—Continued.**Geographic positions along the Houston & Texas Central R. R.**

Stations.	Latitude.	Longitude.
Courtney, 3.5 miles south of; 20 feet south of milepost 59, on south end and west side of small wooden culvert; bolt painted red, marked "B. M. 8-A" (T. B. M. No. 8-A).....	° ' "	° ' "
Bridge 60-B, south end of.....	30 12 57.5	96 04 23.5
Waller-Grimes county line post.....	30 13 43.9	96 04 17.1
Courtney, 2.5 miles south of; 150 feet north of milepost 60, 40 feet northwest of road crossing; iron post stamped "Prim. Trav. Sta. No. 43-A, 1909, TEXAS" (P. B. M. No. 43-A).....	30 13 48.0	96 04 16.5
Courtney, 1.8 miles south of; west end of north abutment of culvert 61-A, in stone; chisel mark; painted "U. S. 180.5" (T. B. M. No. 9-A).....	30 13 51.2	96 04 16.4
	30 14 27.9	96 04 10.6

Magnetic declination of quadrangle, 8° 22' E.

WASHINGTON SPECIAL 7½' QUADRANGLE.**Geographic positions along highways.**

Stations.	Latitude.	Longitude.
Graball, 1 mile south of; 6 feet east of road, in oak tree painted "U. S. B. M. 293;" copper nail (T. B. M. No. 44).....	° ' "	° ' "
Flat Prairie Church, 0.8 mile north of; 10 feet west of road, in root of oak tree painted "U. S. B. M. 200;" copper nail (T. B. M. No. 47).....	30 15 17.1	96 07 43.2
Flat Prairie Church, 1.4 miles north of; east side of road, 120 feet south of intersection of road with lane east, in root of oak tree; copper nail, marked "U. S. B. M. 225" (T. B. M. No. 48).....	30 16 57.6	96 07 33.6
Old Washington, 2.8 miles south of; south side of road, in root of oak tree painted "U. S. B. M. 254;" copper nail (T. B. M. No. 49).....	30 17 18.1	96 08 06.4
Old Washington, 2.6 miles south of; 100 feet southeast of German Lodge house, 6 feet east of wire fence near intersection of T road north with east-west lane; iron post stamped "Prim. Trav. Sta. No. 34, 1909, TEXAS" (P. B. M. No. 25).....	30 17 22.8	96 08 46.2
Old Washington, 1.7 miles south of; 175 feet north of bridge, 10 feet west of road, in root of tree painted "U. S. B. M. 240;" copper nail (T. B. M. No. 50).....	30 17 19.2	96 08 57.8
Old Washington, 0.8 mile south of; 190 feet east of T road north, 15 feet west of road, in root of hackberry tree painted "U. S. B. M. 283;" copper nail (T. B. M. No. 51).....	30 18 05.9	96 09 15.6
Old Washington, 150 feet southwest of; southwest corner of old brick building, 356 feet southwest of monument, 75 feet south of signboard, near old fence post; iron post stamped "Prim. Trav. Sta. No. 35, 1909, TEXAS" (P. B. M. No. 26).....	30 18 54.5	96 09 43.1
Old Washington, Independence monument.....	30 19 30.2	96 09 26.5
Old Washington, 0.8 mile north of; on Navasota-Washington road, at northeast corner of wooden bridge on Jordan Creek, in plank; copper nail, marked "U. S. B. M. 179" (T. B. M. No. 52).....	30 19 33.0	96 09 24.1
Old Washington, bridge over Brazos River, on east end of south pier, in top; aluminum tablet stamped "Prim. Trav. Sta. No. 36, 1909, TEXAS" (P. B. M. No. 27).....	30 20 03.8	96 09 46.6
Temporary bench mark on bridge described above.....	30 20 15.7	96 09 36.4
Old Washington, 1.7 miles northeast of; 15 feet west of road, inside of wire fence, in root of pecan tree painted "U. S. B. M. No. 1, 188;" copper nail (T. B. M. No. 1-Semper).....	30 20 17.6	96 09 33.7
Old Washington, 2 miles northeast of; 40 feet southwest of east end of wooden bridge, in root of hackberry tree painted "U. S. B. M. No. 2, 180;" copper nail (T. B. M. No. 2-Semper).....	30 20 46.0	96 09 17.6
Old Washington, 2.4 miles northeast of; 15 feet west of road, in root of hackberry tree painted "U. S. B. M. No. 3, 184;" copper nail (T. B. M. No. 3-Semper).....	30 21 05.2	96 09 05.3
Navasota River bridge, 150 feet southwest of west end, 20 feet west of road, 3 feet east of wire fence; iron post stamped "Prim. Trav. Sta. No. 37, 1909, TEXAS" (P. B. M. No. 28).....	30 21 15.4	96 08 42.3
Navasota River bridge, west end of.....	30 21 50.4	96 08 33.2
Navasota River bridge, east end of.....	30 21 51.0	96 08 31.7
Wilson's gin, 0.3 mile north of; 840 feet northwest of gateway near barn, 10 feet east of wire fence, 20 feet southeast of blazed tree; iron post stamped "Prim. Trav. Sta. No. 38-A, 1909, TEXAS" (P. B. M. No. 47-A).....	30 21 50.4	96 08 28.3
Wilson's gin, 400 feet southeast of; 20 feet northeast of road, in root of red oak tree painted "U. S. B. M. 193.2, 1-A;" copper nail (T. B. M. No. 14-A).....	30 21 02.8	96 07 48.1
	30 20 44.8	96 07 35.8

Magnetic declination of east border of quadrangle, 8° 13' E.

WASHINGTON SPECIAL 7½ QUADRANGLE—Continued.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
Navasota River bridge, 0.6 mile north of; on west post of gateway of wire fence, rail at bottom marked "U. S. B. M. No. 182" (T. B. M. No. 4—no value as level bench mark).....	° ' " 30 22 11.9	° ' " 96 08 51.9
Old Washington, 0.9 mile west of bridge, 34.6 feet northeast of road, 40 feet southwest of house, in root of oak tree; copper nail painted "236.4 ft." (T. B. M.)....	30 20 25.6	96 10 15.7
Old Washington, 1.6 miles north of bridge, 70 feet north of gap in fence, about 300 feet south of bend in road near gate, 30 feet east of road, in root of oak tree; copper nail (T. B. M.); painted elevation "192.1 ft.".....	30 21 05.4	96 10 29.8
Old Washington, 2.7 miles northwest of bridge; 75 feet north of forks in road, 25 feet southeast of corner of wire fence, in root of elm tree; copper nail (T. B. M.); painted elevation "232.3 ft.".....	30 21 47.6	96 10 35.4
Old Washington, 3.4 miles northwest of bridge; on Moore farm, 7 feet south of road, 60 feet northeast of old house; iron post stamped "Prim. Trav. Sta. No. 96-A, TEXAS, 1910" (P. B. M. No. 77-A).....	30 21 51.6	96 11 10.8
Old Washington, 4.6 miles northwest of bridge; 1 mile southeast of St. Matthew's Church, 25 feet north of road; chisel mark on top of rock (T. B. M.); painted elevation "302.4 ft.".....	30 21 52.8	96 12 19.1
Old Washington, 5.5 miles northwest of bridge; 0.3 mile southeast of St. Matthew's Church, 100 feet south of intersection of roads, in root of oak tree; copper nail (T. B. M.); painted elevation "341.2 ft.".....	30 21 33.8	96 13 12.6
St. Matthew's Church, 245 feet southeast of; 20 feet south of road, near wire fence; iron post stamped "Prim. Trav. Sta. No. 97-A, TEXAS, 1910" (P. B. M. 78-A).....	30 21 38.0	96 13 32.5

Magnetic declination of north border of quadrangle, 8° 17' E.

Geographic positions along highways.

Graball, about 2 miles southeast of; 0.1 mile east of T lane southeast, in root of pecan tree painted "U. S. B. M. 216;" copper nail (T. B. M. No. 45).....	30 15 27.2	96 06 52.4
Flat Prairie Church, 0.5 mile south of; east of road, in root of elm tree painted "U. S. B. M. 174;" copper nail (T. B. M. No. 46).....	30 15 53.2	96 06 51.9
Flat Prairie Church, 130 feet north of; north side of road, 6 feet east of gate; iron post stamped "Prim. Trav. Sta. No. 33, 1909, TEXAS" (P. B. M. No. 24)....	30 16 10.4	96 07 11.0
Wilson's gin, 0.9 mile southeast of; 60 feet west of gateway to new negro cabin, west side of road, in root of pecan tree painted "U. S. B. M. 188.4, 2-A;" copper nail (T. B. M. No. 13-A).....	30 20 46.4	96 06 44.9

Geographic positions along Houston & Texas Central R. R.

Courtney, south of station, at crossing.....	30 15 42.6	96 04 07.2
Courtney, 25 feet east of station, at foot of main street; iron post stamped "Prim. Trav. Sta. No. 44-A, 1909, TEXAS" (P. B. M. No. 44-A; bench mark reset in new place by McNair, March 10, 1910).....	30 15 54.8	96 04 05.7
Do.....	30 17 04.5	96 04 05.6
Do.....	30 17 40.6	96 04 04.9
Courtney, 2.2 miles north of; 0.5 mile north of milepost 64, 65 feet west of road crossing; iron post stamped "Prim. Trav. Sta. No. 45-A, 1909, TEXAS" (P. B. M. No. 45-A).....	30 17 51.9	96 04 05.4
Courtney, 2.9 miles north of; 30 feet south of road crossing, on south end, east side of trestle; bolt painted "U. S. B. M. 10-A 188.097" (T. B. M. No. 10-A)....	30 18 29.1	96 04 07.2
Walker's tank, 240 feet north of; southwest corner of steel truss bridge, on top girder painted "U. S. B. M. 11-A 188.151;" chisel mark (T. B. M. No. 11-A)....	30 19 44.9	96 04 22.4
Walker's tank, about 1 mile northwest of; 15 feet west of lone red oak tree on top of hill; iron post stamped "Prim. Trav. Sta. No. 46-A, 1909, TEXAS" (P. B. M. No. 46-A).....	30 20 22.5	96 05 02.1
Walker's tank, 2 miles northwest of; 130 feet east of house, in root of red oak tree painted "U. S. B. M. 189.4, 12-A;" spike (T. B. M. No. 12-A).....	30 20 30.1	96 06 00.3

Magnetic declination of line, 8° 08' E.

GAY HILL 15' QUADRANGLE.**Geographic positions along highways.**

Stations.	Latitude.	Longitude.
St. Matthew's Church, 2.1 miles northwest of; 75 feet west of small creek, about 500 feet north of Brazos River, in cotton field, stump about 1 foot out of ground (T. B. M.; painted elevation "209.7 ft."-West).....	30 21 49.7	96 15 07.7
St. Matthew's Church, 2.6 miles northwest of; about 50 feet east of Brazos River, in cotton field near oak tree; iron post stamped "Prim. Trav. Sta. No. 98-A, TEXAS, 1910" (P. B. M. No. 79-A).....	30 21 53.4	96 15 39.9
St. Matthew's Church, 3.8 miles northwest of; about 0.2 mile west of Brazos River, on edge of gully, in top of stump; copper nail (T. B. M.; painted elevation "205 ft.").....	30 21 30.4	96 16 35.6
St. Matthew's Church, 4.7 miles northwest of; 300 feet west of mouth of creek; iron post stamped "Prim. Trav. Sta. No. 99-A, TEXAS, 1910" (P. B. M. No. 80-A).....	30 21 44.9	96 17 18.2
Sandpit, about 2 miles south of; about 15 feet north of north bank of Brazos River, about 150 feet west of Anthony McFeld's house, in root of pecan tree; copper nail (T. B. M.; painted elevation U. S. 206).....	30 22 29.1	96 17 39.2

Magnetic declination of north border of quadrangle, 8° 54' E.

SANDPIT SPECIAL 7½' QUADRANGLE.**Geographic positions along railroad.**

Stations.	Latitude.	Longitude.
Allenfarm, 1 mile west of, 29 feet north of track, in telephone pole painted "U. S. B. M. 201;" spike (T. B. M. No. 16).....	30 23 57.1	96 15 22.5
Allenfarm, 1.5 miles west of, in telephone pole 17, 29 feet north of track; spike (T. B. M. No. 17).....	30 23 55.8	96 15 53.3

Geographic positions along International & Great Northern R. R.

Royder, 2.6 miles southeast of; north end on east side of bridge No. 123; top of bolt in guard rail, painted "B. M. No. 22" (T. B. M. No. 22).....	33 29 35.6	96 17 20.0
Royder, 3.5 miles southeast of; north end, east side of bridge; top of bolt in guard rail, painted "B. M. 23" (T. B. M. No. 23).....	30 28 55.0	96 16 55.1
Royder, 4.7 miles southeast of; south end, west side of bridge No. 124; top of bolt in guard rail, painted "24" (T. B. M. No. 24).....	30 27 54.8	96 16 13.0
Clay farm, about 0.8 mile east of house, 50 feet west of International & Great Northern R. R. crossing; iron post stamped "Prim. Trav. Sta. No. 94-A, 1910, TEXAS" (P. B. M. 75-A).....	33 27 22.8	96 16 03.8

Geographic positions along highways.

Clay farm, 1 mile south of; 400 feet east of levee, 10 feet east of road, 10 feet north of pecan tree; iron post stamped "Prim. Trav. Sta. No. 95-A, 1910, TEXAS" (P. B. M. 76-A).....	30 26 11.4	96 16 58.0
Clay farm, 1.8 miles east of; 40 feet east of levee, 20 feet west of edge of timber, in top of ash stump; copper bench mark nail, marked "26" (T. B. M. No. 26-West).....	30 25 34.0	96 16 45.8
Clay farm, 1.8 miles east of, stake at top of levee (T. B. M. No. 27).....	30 24 46.6	96 16 29.1

Geographic positions along railroad.

Allenfarm, 2 miles west of; 29 feet north of track, in telegraph pole; spike (T. B. M. No. 17-Semper).....	30 23 54.1	96 16 25.8
Allenfarm, 2.5 miles west of; opposite milepost 16, 40 feet south of track, 5 feet north of road, outside right of way; iron post stamped "Prim. Trav. Sta. No. 53-A 1909, TEXAS" (P. B. M. No. 34).....	30 23 52.5	96 16 51.3
Sandpit, 1.2 miles east of; on south side of bridge 2035½; bolt, painted "U. S. B. M. 204" (T. B. M. No. 18).....	30 23 51.6	96 17 23.6
Sandpit, 0.5 mile east of; top of south end west abutment of Gulf, Colorado & Santa Fe Ry. bridge over Brazos River; iron post stamped "Prim. Trav. Sta. No. 54-A 1909 TEXAS" (P. B. M. No. 35).....	30 23 56.9	96 18 07.1
Sandpit, 150 feet north of track, 20 feet east of road, in root of large oak tree; copper nail, marked "U. S. B. M. 205" (T. B. M. No. 19).....	30 24 03.5	96 18 30.6
Sandpit, 0.4 mile north of; 10 feet east of road, in root of large oak tree painted "U. S. B. M. 205"; copper nail (T. B. M. No. 20).....	30 24 14.6	96 18 58.1
Sandpit, 0.7 mile north of; 20 feet west of fork in roads, in root of oak tree painted "U. S. B. M. 195"; copper nail (T. B. M. No. 21).....	30 24 31.8	96 19 07.2
Sandpit, 1.3 miles north of; 50 feet northwest of road, in root of large pecan tree painted "U. S. B. M. 202"; copper nail (T. B. M. No. 22).....	30 24 59.8	96 18 58.4
Sandpit, 1.6 miles north of; 6 feet west of road, north side of wire fence; iron post stamped "Prim. Trav. Sta. No. 55-A 1909 TEXAS" (P. B. M. No. 36).....	30 25 16.9	96 18 58.0
Sandpit, 1.7 miles north of; 12 feet east of road, in root of elm tree marked "U. S. B. M. 198"; copper nail (P. B. M. No. 23).....	30 25 38.6	96 19 02.6
Sandpit, 2.1 miles north of; east side of road, in root of elm tree painted "U. S. B. M. 203"; copper nail (T. B. M. No. 24).....	30 25 54.5	96 18 45.9
Sandpit, 2.6 miles north of; 350 feet north of station, 20 feet south of roads, in root of post oak tree painted "U. S. B. M. 200"; copper nail (T. B. M. No. 25).....	30 26 14.9	96 18 38.8

SANDPIT SPECIAL 7½' QUADRANGLE—Continued.**Geographic positions along railroad—Continued.**

Stations.	Latitude.	Longitude.
Sandpit, 3 miles north of; 5 feet west of gate, 5 feet north of wire fence; iron post stamped "Prim. Trav. Sta. No. 56-A 1909 TEXAS" (P. B. M. No. 37).....	30 26 32.3	96 18 51.4
Seward's place, 10 feet north of gate, 75 feet southeast of windmill, in root of post oak tree painted "U. S. B. M. 206"; copper nail (T. B. M. No. 26).....	30 26 55.7	96 19 08.2
C. W. Thomas's gin, 1.5 miles south of; 450 feet south of gate, 12 feet east of road, 50 feet west of Brazos River, in base of cottonwood tree painted "U. S. B. M. 209"; nail (T. B. M. No. 27).....	30 27 13.1	96 19 32.3
C. W. Thomas's gin, 1 mile south of; 25 feet east of road, 10 feet east of corner, in northeast corner of pigpen; post oak tree painted "U. S. B. M. 208" (T. B. M. No. 28).....	30 27 29.9	96 19 51.3
C. W. Thomas's gin, 0.01 mile south of; 400 feet south of gin, 20 feet east of road; hackberry tree painted "U. S. B. M. 209" (T. B. M. No. 29).....	30 27 48.5	96 19 55.2
C. W. Thomas's gin, 400 feet southwest of; in corner of fence, 5 feet north of gate; iron post stamped "Prim. Trav. Sta. No. 57-A 1909 TEXAS" (P. B. M. No. 38).....	30 28 17.0	96 20 27.4
C. W. Thomas's gin, 0.4 mile north of; 100 feet west of Brazos River, 50 feet west of road, in root of willow tree painted "U. S. B. M. 211"; copper nail (T. B. M. No. 29).....	30 28 39.3	96 20 20.2
C. W. Thomas's gin, 1.0 mile north of; 50 feet southwest of Brazos River, east part of gate of wire fence, at bottom of post; nail, marked "U. S. B. M. 213" (T. B. M. No. 30).....	30 29 03.7	96 20 05.7
C. W. Thomas's gin, 1.4 miles north of; 150 feet south of Bates's gin, 50 feet west of Brazos River, in bottom of old stump about 10 feet high; nail, marked "U. S. B. M. 214" (T. B. M. No. 31).....	30 29 29.2	96 20 21.1
Bates's gin, 0.3 mile north of; 25 feet south of intersection of T lane west at corner of wire fence, in root of cottonwood tree painted "U. S. B. M. 214"; copper nail (T. B. M. No. 32).....	30 29 41.5	96 20 34.4
Bates's gin, 0.7 mile north of; 10 feet northwest of bridge over ditch, on Coppey farm, 10 feet west of road; iron post stamped "Prim. Trav. Sta. No. 58-A 1909 TEXAS" (P. B. M. No. 39).....	30 29 56.6	96 20 48.0

Magnetic declination of line, 8° 55' E.

MILICAN SPECIAL 7½' QUADRANGLE.**Geographic positions along highways.**

Stations.	Latitude.	Longitude.
Navasota River bridge, 1.5 miles northwest of; 100 feet east of road, in root of pecan tree standing alone in field and painted "U. S. B. M. 185"; copper nail (T. B. M. No. 5).....	30 22 53.3	96 08 55.6
Navasota River bridge, 1.8 miles north of; 15 feet southeast of bridge, 10 feet south of road; iron post stamped "Prim. Trav. Sta. No. 48-A 1909 TEXAS" (P. B. M. No. 29).....	30 22 56.7	96 09 15.2
Hidalgo Falls, 0.7 mile south of; 12 feet northeast of gate of wire fence, south of road, in elm tree; copper nail, marked "U. S. B. M. 186" (T. B. M. No. 6).....	30 23 06.8	96 09 40.8
Hidalgo Falls, 100 feet northwest of corner of office building, about 400 feet east of lock in Brazos River; iron post stamped "Prim. Trav. Sta. No. 49-A 1909 TEXAS" (P. B. M. No. 30).....	30 23 06.8	96 10 20.6
Hidalgo Falls, 0.5 mile north of; 100 feet southeast of house, 50 feet east of road, in root of pecan tree painted "U. S. B. M. 193"; copper nail (T. B. M. No. 7).....	30 23 29.5	96 10 24.0
Hidalgo Falls, 0.9 mile north of; 400 feet north of store, east side of road, in root of pecan tree marked "U. S. B. M. 190"; copper nail (T. B. M. No. 8).....	30 23 49.0	96 10 21.1

Geographic positions along railroads.

Stations.	Latitude.	Longitude.
Harrington, 100 feet south of railroad, 25 feet southwest of southwest corner of gin, in root of pecan tree painted "U. S. B. M. 191"; copper nail (T. B. M. No. 9).....	30 24 08.6	96 10 12.9
Harrington, 0.6 mile west of; 50 feet north of track, at milepost 22; iron post stamped "Prim. Trav. Sta. No. 50-A 1909 TEXAS" (P. B. M. No. 31).....	30 24 08.7	96 10 49.6
Harrington, 1.1 miles west of; 340 feet west of levee, 25 feet north of track, in telephone pole painted "U. S. B. M. 190"; spike (T. B. M. No. 10).....	30 24 07.1	96 11 22.2
Harrington, 1.6 miles west of; 150 feet west of milepost 21, 25 feet north of track, in telephone pole painted "U. S. B. M. 191"; spike (T. B. M. No. 11).....	30 24 06.0	96 11 51.3
Harrington, 2.2 miles west of; 25 feet north of track, in telephone pole painted "U. S. B. M. 191"; spike (T. B. M. No. 12).....	30 24 04.6	96 12 23.8
Allenfarm, 1.6 miles east of; 50 feet north of track, 25 feet north of milepost 20; iron post stamped "Prim. Trav. Sta. No. 51-A 1909 TEXAS" (P. B. M. No. 32).....	30 24 03.6	96 12 51.3
Allenfarm, 1.1 miles east of; second bolt on east end of bridge, painted "U. S. B. M. 198" (T. B. M. No. 13).....	30 24 01.8	96 13 23.4
Allenfarm, 0.6 mile east of; 29 feet north of track, in telephone pole; spike, painted "U. S. B. M. 191" (T. B. M. No. 14).....	30 24 01.0	96 13 49.5
Allenfarm, 70 feet west of station, 28.5 feet north of track, in telephone pole painted "U. S. B. M. 199"; spike (T. B. M. No. 15).....	30 23 59.4	96 14 27.7
Allenfarm, 0.4 mile west of; 50 feet north of track, 40 feet northwest of milepost 18; iron post stamped "Prim. Trav. Sta. No. 52-A 1909 TEXAS" (P. B. M. No. 33).....	30 23 58.5	96 14 52.2

JONES'S BRIDGE 7½' QUADRANGLE.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
Pittbridge, on top of north cylinder at west end of bridge; chisel mark cut in form of square, marked "U. S. B. M. 113-A" (T. B. M. 113-A).....	30 37 05.0	96 29 33.9
Henderson schoolhouse, 1.2 miles south of; about 700 feet southwest of John Zulkowsky's house, 100 feet north of negro cabin, in forks of road; iron post stamped "Prim. Trav. Sta. No. 87-A 1910 TEXAS" (P. B. M. No. 68-A).....	30 37 05.6	96 27 57.9
John Zulkowsky's house, 1 mile south of; 900 feet southeast of south end of lane, 60 feet south of gully, on north side of road, in root of willow tree; copper nail, marked "115-A" (T. B. M. No. 115-A—West 5).....	30 36 32.3	96 27 32.2
Jones's bridge, 4 miles north of; 50 feet northeast of cabin, 150 feet east of Brazos River, in root of chinaberry tree painted "116-A"; copper nail (T. B. M. No. 116-A).....	30 35 36.5	96 27 08.0
Jones's bridge, 3.2 miles northwest of; about 0.5 mile north of Brazos River, east side of road, 7 feet north of corner wire fence, at T lane east; iron post stamped "Prim. Trav. Sta. No. 88-A 1909 TEXAS" (P. B. M. No. 69-A).....	30 35 35.6	96 26 34.8
Jones's bridge, 2.6 miles northwest of; 300 feet northwest of Brazos River, 6 feet southeast of road, on Wm. Griffin's place, 3 feet above ground, in elm tree painted "No. 7 and 117-A"; copper nail (T. B. M. No. 117-A—West No. 7).....	30 35 19.7	96 25 58.4
Mouth of Thompson Creek, 200 feet northwest of; elm tree marked with blue keel "U. S. G. S.".....	30 35 16.4	96 25 24.8
Mouth of Turkey Creek, 170 feet north of; hackberry tree marked "U. S. Sta. 1,555".....	30 35 04.7	96 25 12.5
Jones's bridge, 1.8 miles north of; 0.2 mile south of Turkey Creek, 20 feet south of wire fence, on edge of gully, in root of elm tree; copper nail, marked "118-A" (T. B. M. 118-A).....	30 34 51.4	96 25 12.4
Jones's bridge, 1 mile south of; about 600 feet east of Brazos River, in Geo. Eckles's field, in root of oak tree painted "119-A"; copper nail (T. B. M. No. 119-A).....	30 33 00.4	96 25 05.8
Jones's bridge, 1.8 miles south of; about 300 feet east of Brazos River, about 1,000 feet east of Robinson's house, on opposite bank of river, in root of pecan tree painted "120-A"; copper nail (T. B. M. No. 120-A; West 10).....	30 32 33.6	96 24 35.0
Jones's bridge, 2.3 miles south of; 10 feet west of creek, about 1,000 feet southeast of house on hill; iron post stamped "Prim. Trav. Sta. No. 89-A 1910 TEXAS" (P. B. M. No. 70-A).....	30 32 24.6	96 24 06.2
Jones's bridge, 3.1 miles south of; 150 feet north of Brazos River, in root of elm tree painted "121-A"; copper nail (T. B. M. No. 121-A; West 11).....	30 32 26.3	96 23 21.0
Mouth of White Creek, 200 feet northeast of, 15 feet northwest of fence post, west of bank; small tree marked "Sta. 1600".....	30 32 45.5	96 22 35.0
Coppey's gin, 1 mile north of; north end of small bridge, east side, in guard rail; copper nail, marked "U. S. B. M. 213" (T. B. M. No. 37).....	30 30 37.8	96 22 46.0
Coppey's gin, 1.5 miles north of; on east post of gateway of wire fence, in bottom; nail, marked "U. S. B. M. 216" (T. B. M. No. 38).....	30 30 46.3	96 22 59.2
Coppey's gin, 2.3 miles north of; 100 feet south of Chance's store, 6 feet west of gate; iron post stamped "Prim. Trav. Sta. No. 60-A 1909 TEXAS 218" (P. B. M. No. 41).....	30 31 21.9	96 23 21.4
Chance's store, 0.4 mile north of; west side of road, in root of post oak tree painted "U. S. B. M. 216"; copper nail (T. B. M. No. 39).....	30 31 39.3	96 23 30.7
White Chapel, 413 feet north of; 50 feet west of Brazos River, 10 feet east of road, in root of elm tree painted "U. S. B. M. 221"; copper nail (T. B. M. No. 40).....	30 31 57.8	96 23 36.3
White Chapel, 0.5 mile north of; 30 feet west of Brazos River, on west side of road; oak tree painted "U. S. B. M. 222" (T. B. M. No. 41).....	30 32 07.6	96 24 03.2
White Chapel, 1 mile north of; 10 feet east of road, on bank of Brazos River, in root of elm tree painted "U. S. B. M. 222"; copper nail (T. B. M. No. 42).....	30 32 20.5	96 24 29.8
Robinson's barn, about 100 feet south of; 50 feet east of intersection of T lane south with east-west road; iron post stamped "Prim. Trav. Sta. No. 61-A 1909 TEXAS elev. 221" (P. B. M. No. 42).....	30 32 32.8	96 24 53.7
Robinson's barn, 0.5 mile north of; about 300 feet east of small white cabin, east side of road, at bottom of fence post; nail, marked "U. S. B. M. 220" (T. B. M. No. 43).....	30 32 46.1	96 25 16.0
Robinson's barn, 0.8 mile north of; 20 feet north of gate, inside of wire fence, in root of oak tree painted "U. S. B. M. 220"; copper nail (T. B. M. No. 44).....	30 33 07.7	96 25 25.7
Jones's bridge, 0.4 mile south of; 15 feet southwest of intersection of T lane south with east-west road, at bottom of fence post; nail, marked "U. S. B. M. 221" (T. B. M. No. 45).....	30 33 29.4	96 25 38.9
Jones's bridge, west end of south pier, in top; aluminum tablet stamped "Prim. Trav. Sta. No. 62 A 1909 TEXAS 228" (P. B. M. No. 43).....	30 33 45.2	96 25 27.9
Jones's bridge, 0.5 mile north of; 10 feet south of small bridge, east side of road, in root of pecan tree painted "U. S. B. M. 219"; copper nail (T. B. M. No. 46).....	30 34 02.3	96 25 49.3
Jones's bridge, 1.1 miles north of; 50 feet west of creek, east side of road; pecan tree painted "U. S. B. M. 224" (T. B. M. No. 47).....	30 34 16.5	96 26 14.0
Jones's bridge, 1.7 miles north of; 40 feet east of road, on west bank of creek, in root of pecan tree; copper nail, marked "U. S. B. M. 223" (T. B. M. No. 48).....	30 34 31.9	96 26 37.2
Butler farm, 100 feet south of Foster's house, at southwest corner of fence; iron post stamped "Prim. Trav. Sta. No. 63-A 1909 TEXAS 225" (P. B. M. No. 44).....	30 34 48.2	96 27 02.3
Butler farm, 0.7 mile north of Foster's house, about 150 feet northwest of old cabin, 15 feet west of road, in root of elm tree; copper nail, marked "U. S. B. M. 220" (T. B. M. No. 49).....	30 35 08.8	96 27 25.3
Butler farm, 1.3 miles north of; 10 feet northwest of intersection of crossroads, in root of elm tree painted "U. S. B. M. 219"; copper nail (T. B. M. No. 50).....	30 35 25.8	96 27 51.6
Butler farm, 1.9 miles north of; about northwest of southwest corner of wire fence, north side of road, in root of pecan tree, painted "U. S. B. M. 226"; copper nail (T. B. M. No. 51).....	30 35 36.2	96 28 23.5

JONES'S BRIDGE 7½' QUADRANGLE—Continued.**Geographic positions along highways—Continued.**

Stations.	Latitude.	Longitude.
Butler farm, 2.2 miles north of, 20 feet northwest of forks in road, about 150 feet west of small bridge, north side of road; iron post stamped "Prim. Trav. Sta. No. 64-A 1909 TEXAS 224" (P. B. M. No. 45).....	30 35 35.0	96 28 40.4
Butler farm, 2.8 miles north of, 200 feet west of junction of lane south with east-west road, 150 feet north of corner of wire fence, west side of lane; pecan tree painted "U. S. B. M. 228" (T. B. M. No. 52).....	30 35 46.0	96 29 06.3
Butler farm, 3.2 miles north of; 100 feet south of house, 20 feet west of road, inside of fence, in root of ash tree painted "U. S. B. M. 231"; copper nail (T. B. M. No. 53).....	30 36 00.4	96 29 23.8
Butler farm, 3.6 miles north of; 210 feet north of wooden bridge, east side of road, in root of elm tree painted "U. S. B. M. 230"; copper nail (T. B. M. No. 54)....	30 36 13.5	96 29 42.8

Magnetic declination of line, 8° 47' E.

BRYAN 30' QUADRANGLE.**Geographic positions along highways.**

Stations.	Latitude.	Longitude.
Koppe's bridge, 3 miles north of; 0.2 mile south of Whites Creek, on east bank of small dry creek, in root of oak tree, painted "122-A;" copper nail (T. B. M. 122-A—West 12).....	30 32 46.9	96 22 25.1
Koppe's bridge, 3 miles north of; 0.5 mile south of Whites Creek, on Andrew Shelburne's place, near small, dry creek; iron post stamped "Prim. Trav. Sta. No. 90-A 1910 TEXAS" (P. B. M. No. 71-A).....	30 32 50.8	96 22 07.4
Koppe's bridge, 2.9 miles north of; 1.4 miles south of Whites Creek, in root of post oak tree on edge of gully; painted "123-A;" copper nail (T. B. M. No. 123-A—West 13).....	30 32 40.4	96 21 26.9
Koppe's bridge, 2 miles north of; in clearing about 300 feet east of east bank of Brazos River in root of elm tree; copper nail, marked "14 and 124-A" (T. B. M. No. 124-A—West 14).....	30 31 53.8	96 21 16.0
Koppe's bridge, 1 mile northeast of; about 0.2 mile east of river bank, in cornfield, 3 feet west of road, near ash tree and walnut trees; iron post stamped "Prim. Trav. Sta. No. 91-A 1910 TEXAS" (T. B. M. No. 72-A).....	30 31 03.9	96 21 18.1
Koppe's bridge, 1.8 miles northwest of; south side of road, 2 feet north of wire fence, in north side of oak tree 2 feet above ground; copper nail, marked "125-A 16" (T. B. M. No. 125-A—West 16).....	30 31 25.5	96 20 52.4
Center of iron bridge over creek above southwest steel pier.....	30 31 11.9	96 20 39.8
Wellborn, 2.8 miles southwest of; 350 feet north of crossroads, in top of north end of west rail of wooden bridge; copper nail, marked "126-A 17" (T. B. M. No. 126-A—West 17).....	30 31 07.8	96 20 30.8
Wellborn, 2.4 miles southwest of; in top of west end of north rail of wooden bridge; copper nail, marked "18 127-A" (T. B. M. No. 127-A—West 18).....	30 31 29.5	96 20 14.9
Wellborn, 1.5 miles southwest of; on east side of road, 3 feet west of wire fence; iron post stamped "Prim. Trav. Sta. No. 92-A 1910 TEXAS" (P. B. M. No. 73-A).....	30 31 57.7	96 19 41.7
Wellborn, 0.8 mile south of; 15 feet southeast of International & Great Northern R. R. crossing, at southwest end of bridge 130; top of bolt painted "19" (T. B. M. No. 128-A—West 19).....	30 32 16.0	96 18 43.8

Geographic positions along International & Great Northern R. R.

Royder, 200 feet north of platform, 30.2 feet west of track, in telegraph pole, painted "U. S. B. M. 20;" spike (T. B. M. No. 20).....	30 31 39.6	96 18 16.0
Milepost 67, center of track.....	30 31 27.8	96 18 12.4
Royder, 1.3 miles southeast of; 50 feet east of road crossing, 40 feet north of corner of wire fence; iron post stamped "Prim. Trav. Sta. No. 93-A 1910 TEXAS" (P. B. M. No. 74-A).....	30 30 20.9	96 17 46.3

Geographic positions along highways.

New iron bridge, south end of west abutment, on top; chisel mark painted black, marked "U. S. B. M. 221" (T. B. M. No. 34).....	30 30 22.2	96 21 22.2
New iron bridge, about 0.5 mile southwest of; 150 feet southwest of gate, in field, in root of large lone oak tree painted "U. S. B. M. 213;" copper nail; (T. B. M. No. 35).....	30 30 15.5	96 21 52.3
Coppey's gin, about 400 feet east of; 30 feet north of bridge; iron post stamped "Prim. Trav. Sta. No. 59-A 1909 TEXAS 214" (P. B. M. No. 40).....	30 30 16.3	96 22 01.6
Coppey's gin, 0.4 mile north of; 60 feet southwest of intersection of T lane south with east-west road, in root of old stump painted "U. S. B. M. 214;" copper nail (T. B. M. No. 36).....	30 30 26.9	96 22 23.4

Magnetic declination of line, 8° 57' E.

BRYAN 30' QUADRANGLE—Continued.**Geographic positions along highways.**

Stations.	Latitude.	Longitude.
Stone City, 3.4 miles southeast of; 150 feet southeast of Methodist Church near forks of road, on south side of road west, in root of hackberry tree painted "U.S.B.M. No. 111-A;" nail (T. B. M. No. 111-A).....	° ' " 30 38 26.7	° ' " 96 29 54.9
Pittbridge, 1.1 miles east of; 102 feet west of intersection of T lane north with main road, on north side of main road, in stump near fence post; copper nail, marked "U.S.B.M. 112-A" (T. B. M. No. 112-A—West).....	30 37 47.0	96 29 21.2
Pittbridge, 2.6 miles east of; 35 feet northwest of intersection of main road to Bryan with T lane south; iron post stamped "Prim. Trav. Sta. No. 86-A 1910 TEXAS" (P. B. M. No. 67-A).....	30 38 33.6	96 28 10.3
Pittbridge, 3.4 miles southeast of; 120 feet southwest of Henderson schoolhouse, 100 feet southwest of intersection of T lane north with east-west road, in root of large oak tree painted "U.S.B.M. 113-A;" copper nail (T. B. M. No. 113-A).....	30 38 07.7	96 27 41.7
Henderson schoolhouse, 0.6 mile south of; 100 feet east of wire fence and 50 feet north of blind road, in root of post oak tree; copper nail marked "114-A" (T. B. M. No. 114-A).....	30 37 36.6	96 28 07.5

Magnetic declination of line, 8° 32' E.

Marlin, Temple, and Waco 30' quadrangles. (Brazos River valley.)

CORYELL, FALLS, McLENNAN, MILAM, AND ROBERTSON COUNTIES.

The following geographic positions were determined by primary traverse run by F. J. McMaugh and E. L. McNair in 1910. Traverse lines were run on both sides of the Brazos River from the south border of the Marlin quadrangle to Waco, and a single line from Waco southwest to Windmill triangulation station near Oglesby. All positions are on approximate United States standard datum, based on Windmill triangulation station.

The State cooperated in the work.

MARLIN 30' QUADRANGLE.**Geographic positions along International & Great Northern R. R.**

Stations.	Latitude.	Longitude.
Calvert Junction, 4.5 miles north of; 39 feet west of track, in telegraph pole painted "U.S.M.B. 298;" spike (T. B. M. No. 105).....	° ' " 31 00 14.2	° ' " 96 44 32.8
Calvert Junction, 5 miles north of; 40 feet west of track, at milepost 115; iron post stamped "Prim. Trav. Sta. No. 105-A 1910 TEXAS" (P. B. M. No. 63).....	31 00 40.5	96 44 30.4
Calvert Junction, 5.5 miles north of; 39 feet west of track, in telegraph pole painted "U.S.B.M. 295;" spike (T. B. M. No. 106).....	31 01 02.6	96 44 28.2
Calvert Junction, 6 miles north of; south of Salter, on trestle 204, on west side at north end; bolt, marked "U.S.B.M. 294" (T. B. M. No. 107).....	31 01 29.8	96 44 28.2
Salter, 0.5 mile south of; on trestle 206, on west side at north end; bolt, marked "U.S.B.M. 295" (T. B. M. No. 108).....	31 01 57.5	96 44 41.4
Salter, 700 feet south of section house, 40 feet west of track, at milepost 117; iron post stamped "Prim. Trav. Sta. No. 106-A 1910 TEXAS elev. 298" (P. B. M. No. 64).....	31 02 19.5	96 44 52.2
Salter, 0.5 mile north of; 5.5 feet west of track, on west side of north end of trestle; painted "U.S.B.M. 299;" bolt (T. B. M. No. 109).....	31 02 46.3	96 45 04.6
Salter, 1 mile north of; 33 feet west of track, in milepost 118; spike, marked "U.S. B.M. 303" (T. B. M. 110).....	31 03 06.0	96 45 19.2
Salter, 2.5 miles north of; 50 feet west of track, in telegraph pole painted "U.S. B.M. 295;" spike (T. B. M. No. 111).....	31 03 15.6	96 45 47.3
Bufkin, 0.5 mile south of; 6 feet west of track, on west side of south end of trestle No. 212; bolt, marked "U.S.B.M. 300" (T. B. M. No. 112).....	31 03 34.0	96 46 48.5
Bufkin, 0.1 mile north of; 41 feet west of track, in milepost 120; spike, marked "U.S.B.M. 305" (T. B. M. No. 113).....	31 03 46.4	96 47 08.8
Bufkin, 0.5 mile north of; 41 feet west of track, in telegraph pole painted "U.S. B.M. 302;" spike (T. B. M. No. 114).....	31 04 03.0	96 47 34.8
Bufkin, 1 mile north of; 40 feet west of track, at milepost 121; iron post stamped "Prim. Trav. Sta. No. 108-A 1910 TEXAS elev. 301" (P. B. M. No. 66).....	31 04 17.3	96 47 57.3
Bufkin, 1.5 miles north of; 41 feet west of track, in telegraph pole painted "U.S. B.M. 300;" spike (T. B. M. No. 115).....	31 04 42.0	96 48 11.4
Bufkin, 2 miles north of; 41 feet west of track, in milepost 122, painted "U.S. B.M. 302;" spike (T. B. M. No. 116).....	31 05 05.4	96 48 19.2
Bufkin, 2.5 miles north of; 5.5 feet west of track, west side of south end of trestle, about 75 feet south of crossroads; bolt, marked "U.S.B.M. 305" (T. B. M. No. 117).....	31 05 34.6	96 48 28.5

MARLIN 30' QUADRANGLE—Continued.

Geographic positions along International & Great Northern R. R.—Continued.

Stations.	Latitude.	Longitude.
Buflin, 3 miles north of; 13 feet southwest of Robertson-Falls county line post, at milepost 123; iron post stamped "Prim. Trav. Sta. No. 109-A 1910 TEXAS elev. 303" (T. B. M. No. 67).....	31 05 55.6	96 48 36.0
Buflin, 3.5 miles north of; about 1 mile south of Eloise, 48 feet west of track, in telegraph pole painted "U.S.B.M. 306"; spike (T. B. M. No. 118).....	31 06 22.3	96 48 44.9
Eloise, 0.5 mile south of; 47 feet west of track, in milepost 124 painted "U.S. B.M. 304"; spike (T. B. M. No. 119).....	31 06 47.5	96 48 53.2
Eloise, opposite north end of switch, in telegraph pole painted "U.S.B.M. 306"; spike (T. B. M. No. 120).....	31 07 13.0	96 49 01.7

Geographic positions along highways.

Brazos River, about 100 feet south of; in root of pecan tree at right-angle corner of 2 wire fence lines; copper nail (T. B. M. No. 24).....	31 00 13.1	96 45 20.3
Black bridge, 3 miles above, about 640 feet southwest of river bank along wire fence north 49° east, 3 feet north of north fence line of uncultivated lane 80 feet wide, with large cultivated fields on either side, on Mr. Snead's land; iron post stamped "Prim. Trav. Sta. No. 32 1910 TEXAS elev. 299".....	31 00 23.0	96 46 28.6
Brazos River, 1,000 feet southwest of; on Mr. Snead's land, 40 feet south of wire fence, 350 feet southwest of negro cabin, in root of low branching elm tree in open cultivated ground; copper nail (T. B. M. No. 26).....	31 00 58.0	96 46 38.3
Brazos River, approximately 0.2 mile west of; in root of pecan tree, 1 of a group; copper nail (T. B. M. No. 27).....	31 01 20.2	96 46 51.1
Pond Creek, 700 feet west of; in root of pecan tree in cultivated field; copper nail (T. B. M. No. 28).....	31 01 43.6	96 46 51.6
Dwelling house on hill, 800 feet from; in open cultivated field about western edge of bottom land, in root of large pecan tree; copper nail (T. B. M. No. 29).....	31 02 02.6	96 46 54.1
Brazos River, 0.5 mile east of, at edge of Ball Bros.' land, on land owned by Mr. Woodall, at foot of sloping point of hill and edge of bottom land, 2 feet south of wire fence line north 50° east; iron post stamped "Prim. Trav. Sta. No. 33 1910 TEXAS elev. 305".....	31 02 25.0	96 46 50.3
Brazos River, 175 feet from; in root of oak tree in open field; copper nail (T. B. M. No. 30).....	31 02 47.1	96 47 05.5
Brazos River, about 600 feet west of; on Mr. Woodall's land, in open ground, at wire fence line, in root of large pecan tree; copper nail (T. B. M. No. 31).....	31 03 21.4	96 47 29.8
Brazos River, 700 feet south of; hills and timber about 300 feet south of Mr. Woodall's land, on east side of north-south wire fence in open ground; iron post stamped "Prim. Trav. Sta. No. 34, 1910 TEXAS elev. 320".....	31 03 20.0	96 48 24.3
Field, just east of brushy ravine, in root of small pecan tree; copper nail (T. B. M. No. 32).....	31 03 28.3	96 48 51.0
Brazos River, about 500 feet east of bank, brushy ravine, in root of spreading oak tree; copper nail (T. B. M. No. 33).....	31 04 11.4	96 49 20.9
Brazos River, at bend east, on land of E. L. Roberts, in edge of wood with cleared fields in west, in root of live oak tree; copper nail (T. B. M. No. 34).....	31 04 46.0	96 49 16.5
Brazos River, 0.2 mile west of; on wire fence line, in open field, in root of small double elm tree; copper nail (T. B. M. No. 35).....	31 05 17.6	96 49 26.5
Brazos River, 1,000 feet east of, on Mr. Ellison's land, 350 feet north of a spring branch, on rising knoll, 4 feet east of wire fence; iron post stamped "Prim. Trav. Sta. No. 35 1910 TEXAS elev. 326".....	31 05 32.7	96 49 35.3
Brazos River, about 500 feet southwest of, 60 feet above bank, in open field with several dead trees standing, in root of small oak tree on sandy knoll; copper nail (T. B. M. No. 36).....	31 05 58.8	96 49 58.6
South side of brushy, dry water course, 0.2 mile northeast of house in timber on hill, in root of white oak tree; copper nail (T. B. M. No. 37).....	31 06 13.9	96 50 02.3
Ravine, 100 feet north of; 60 feet south of wire fence and open field, in root of elm tree in woods; copper nail (T. B. M. No. 38).....	31 06 34.8	96 49 52.7
Brazos River, about 500 feet east of; on south side of brushy, dry ravine, in root of small elm tree; copper nail (T. B. M. No. 39).....	31 07 14.8	96 49 45.0

Magnetic declination of line, 8° 32' E.

Geographic positions along highways.

Mr. Linorst's place, 700 feet west of river, 50 feet from open field on east, in woods, in root of oak tree; copper nail (T. B. M. No. 40).....	31 07 40.8	96 49 35.5
Brazos River, 0.2 mile west of, on south side of lane 35 feet wide, 2 feet north of wire fence west at right angles to lane fence, just east of two oak trees in lane; iron post stamped "Prim. Trav. Sta. No. 36 1910 TEXAS elev. 324".....	31 07 55.2	96 49 44.7
On north edge of wood pasture, 6 feet north of wire fence line north 12° 30' east, in large cultivated field, in root of elm tree; copper nail (T. B. M. No. 41).....	31 08 10.8	96 50 00.6
Clump of several small oak trees and bushes, in open ground, about 180 feet south of river bank, in root of small live oak tree; copper nail (T. B. M. No. 42).....	31 08 30.4	96 50 16.7
Timber and brush thicket, 50 feet south of bank of river and 35 feet west of wire fence, in root of elm tree; copper nail (T. B. M. No. 43).....	31 08 37.8	96 50 55.4
Point near line between brush and timber on west and cultivated field on east, in root of elm tree 4 feet west of wire fence; copper nail (T. B. M. No. 44).....	31 08 43.5	96 51 23.3
Iron bridge over Brazos River, 915 feet south 25° west of; on Highbank-Rosebud road, on west side of public road, 2 feet from wire fence; iron post stamped "Prim. Trav. Sta. No. 37, 1910 TEXAS elev. 316".....	31 09 07.9	96 51 41.5

MARLIN 30' QUADRANGLE—Continued.

Geographic positions along International & Great Northern R. R.

Stations.	Latitude.	Longitude.
Eloise, 0.5 mile north of; at milepost 125, 40 feet west of track; iron post stamped "Prim. Trav. Sta. No. 110-A 1910 TEXAS elev. 309" (P. B. M. No. 68).....	31 07 37.7	96 49 09.9
Eloise, 1 mile north of; 48 feet west of track, in telegraph pole painted "U. S. B. M. 311"; spike (T. B. M. No. 121).....	31 08 03.2	96 49 18.3
Eloise, 1.5 miles north of; 48 feet west of track, in milepost 126 painted "U. S. B. M. 310"; spike (T. B. M. No. 122).....	31 08 23.5	96 49 25.0
Eloise, 2 miles north of; 48 feet west of track, in telegraph pole painted "U. S. B. M. 316"; spike (T. B. M. No. 123).....	31 08 48.9	96 49 33.4
Highbank, 1.5 miles south of; 40 feet west of track, at milepost 127; iron post stamped "Prim. Trav. Sta. No. 111-A 1910 TEXAS elev. 315" (P. B. M. No. 69).....	31 09 13.3	96 49 41.4
Highbank, 0.8 mile south of; 48 feet west of track, 150 feet north of road crossing, in telegraph pole painted "U. S. B. M. 316"; spike (T. B. M. No. 124).....	31 09 36.9	96 49 49.3
Highbank, 0.2 mile south of; at bottom of west side of north end of trestle 223, painted "U. S. B. M. 316"; spike (T. B. M. No. 125).....	31 09 56.5	96 49 55.3
Highbank, about 2,400 feet east of; 40 feet west of center of public road, in root of tall slender pecan tree; copper nail (T. B. M. No. 45).....	31 10 08.9	96 50 33.7

Geographic positions along highways.

Iron bridge over Brazos River, 2,400 feet northeast of; 25 feet east of public road, in root of large elm tree; copper nail (T. B. M. No. 46).....	31 09 38.0	96 51 08.4
Highbank bridge, 0.5 mile west of; in root of elm tree in lane about 30 feet wide with wire fences on each side, 600 feet south of river; wire nail (T. B. M. No. 47).....	31 09 25.0	96 52 03.3
Open pasture about 100 feet south of river bank, in root of ash tree; wire nail (T. B. M. No. 48).....	31 09 40.4	96 52 24.2

Geographic positions along International & Great Northern R. R.

Highbank, bottom of east side of north end of trestle 224; spike painted "U. S. B. M. 319" (T. B. M. No. 126).....	31 10 35.4	96 50 26.1
Highbank, 0.5 mile north of; 48 feet west of track, 200 feet south of crossroads, in telegraph pole painted "U. S. B. M. 317"; spike (T. B. M. No. 127).....	31 10 37.1	96 50 28.3
Highbank, 1 mile north of; 40 feet west of track, at milepost 129; iron post stamped "Prim. Trav. Sta. No. 112-A 1910 TEXAS elev. 319" (P. B. M. No. 70).....	31 10 45.1	96 50 35.9
Highbank, 1.5 miles north of; 48 feet west of track, in telegraph pole painted "U. S. B. M. 321"; spike (T. B. M. No. 128).....	31 11 04.6	96 50 54.2
Highbank, 2 miles north of; 21 feet west of track, 100 feet north of milepost 130, at road crossing, in danger signal painted "U. S. B. M. 321"; spike (T. B. M. No. 129).....	31 11 26.7	96 51 14.7
Rio Nel, 1 mile south of; 300 feet north of Clarkeview signboard, on trestle 227, on west side of north end; bolt, marked "U. S. B. M. 321" (T. B. M. No. 130).....	31 11 47.8	96 51 34.4
Rio Nel, 0.4 mile south of; 40 feet west of track, at milepost 131; iron post stamped "Prim. Trav. Sta. No. 113-A 1910 TEXAS elev. 320" (P. B. M. No. 71).....	31 12 07.1	96 51 53.2
Rio Nel, 0.3 mile north of; 5.5 feet west of track, west side of north end of trestle 229; bolt, marked "U. S. B. M. 321" (T. B. M. No. 131).....	31 12 27.1	96 52 11.5

Magnetic declination of quadrangle, 8° 29' E.

Geographic positions along highways.

Brazos River, about 100 feet west of; at edge of wood, open field on south, woods on north, in root of elm tree; wire nail (T. B. M. No. 49).....	31 10 01.5	96 52 48.4
Brazos River, about 100 feet southwest of; on land owned by Joe Good, in root of becan tree in open cultivated field; nail (T. B. M. No. 50).....	31 10 26.4	96 52 57.2
Woods belonging to Mr. Good, in root of elm tree; copper nail (T. B. M. No. 51).....	31 10 46.7	96 53 02.0
Joe Good's land, in woods pasture, 18 inches south of wire fence, south of lane 40 feet wide northeast to river bank, 2,130 feet distant, bounding Mr. Peacock's land; iron post stamped "Prim. Trav. Sta. No. 38 1910 TEXAS elev. 328".....	31 10 53.1	96 53 00.5
River, 400 feet east of; in woods, south of small ravine, on Mr. Peacock's land, in root of elm tree; copper nail (T. B. M. No. 52).....	31 11 09.7	96 52 56.4
Clearing on northeast side of road at bend, 150 feet north of; beside log road, in root of elm tree; copper nail (T. B. M. No. 53).....	31 11 29.9	96 53 28.1
Highbank bridge, 0.2 mile southwest of; on north side of road, close to wire fence; adjoining land of C. E. Bargainier; iron post stamped "Prim. Trav. Sta. No. 39 1910 TEXAS elev. 336".....	31 11 41.7	96 53 52.7
Land of C. E. Bargainier, 150 feet south of river bank, in thick timber, 8 feet from blazed tree, in top of elm stump 5 inches in diameter cut off 6 inches above ground; copper nail (T. B. M. No. 54).....	31 12 03.1	96 54 16.2
Creek, 200 feet east of; edge of timber and clearing, in root of small blackjack oak tree; copper nail (T. B. M. No. 55).....	31 11 58.2	96 54 57.7
In woods, about 15 feet north of cleared field, in root of elm tree; copper nail (T. B. M. No. 56).....	31 12 15.1	96 55 18.1
In thick woods, 115 feet south of river bank, in root of small elm tree; copper nail (T. B. M. No. 57).....	31 12 40.9	96 55 36.6

MARLIN 30' QUADRANGLE—Continued.

Geographic positions along highways—Continued.

Stations.	Latitude.	Longitude.
Brazos River, about 500 feet south of; on land of Mrs. Daniels of Houston, in thick timber; iron post stamped "Prim. Trav. Sta. No. 40 1910 TEXAS elev. 329".....	31 12 52.8	96 55 46.2
Open field about 50 feet west of river bank, in root of large pecan tree; copper nail (T. B. M. No. 58).....	31 13 28.5	96 56 10.8
Brazos River, 100 feet west of; in partly open ground, in root of elm tree; copper nail (T. B. M. No. 59).....	31 14 01.5	96 56 03.2
Brazos River, 1,000 feet west of; in open ground at edge of strip of brush, 0.2 mile southwest of falls in river, in root of elm tree; copper nail (T. B. M. No. 60).....	31 14 33.8	96 55 29.5
Brazos River, 390 feet west of; about 0.2 mile northwest of clubhouse at Falls, at ford over rocky bottom, on southeast side of road, 2 feet outside of wire fence; timber to northwest, open field on southeast; iron post stamped "Prim. Trav. Sta. No. 41 1910 TEXAS elev. 335".....	31 15 01.8	96 55 28.3

Geographic positions along International & Great Northern R. R.

Rio Nel, 0.8 mile north of; east side of south end of trestle 230; bolt, marked "U. S. B. M. 321" (T. B. M. No. 132).....	31 12 45.8	96 52 29.0
Rio Nel, 2 miles north of; 48 feet west of track, 0.2 mile south of Connelly, in telegraph pole painted "U. S. B. M. 325; spike (T. B. M. No. 133).....	31 13 07.4	96 52 50.0
Connelly, 0.5 mile north of; 40 feet west of track, at milepost 133; iron post stamped "Prim. Trav. Sta. No. 114-A 1910 TEXAS elev. 332" (P. B. M. No. 72).....	31 13 28.9	96 53 10.3
Connelly, 1 mile north of; 5.5 feet west of track, west side of south end of trestle 234, at Jones; bolt, marked "U. S. B. M. 331" (T. B. M. No. 133).....	31 13 53.9	96 53 33.3
Jones, 0.4 mile north of; 48 feet west of track, in milepost 134, painted "U. S. B. M. 327"; spike (T. B. M. No. 134).....	31 14 11.6	96 53 50.5
Jones, 0.6 mile north of; 40 feet west of track, in telegraph pole painted "U. S. B. M. 325"; spike (T. B. M. No. 135).....	31 14 35.7	96 54 05.6
Jones, 1 mile north of; 40 feet west of track, at milepost 135; iron post stamped "Prim. Trav. Sta. No. 115-A 1910 TEXAS elev. 327" (P. B. M. No. 73).....	31 15 00.5	96 54 04.3

Magnetic declination of line, 8° 40' E.

Geographic positions along International & Great Northern R. R.

Jones, 1.5 miles north of; 37 feet west of track, in telegraph pole painted "U. S. B. M. 329"; spike (T. B. M. No. 136).....	31 15 26.9	96 54 02.5
Jones, 2 miles north of; 5.5 feet west of track, west side of south end of trestle No. 237; bolt, marked "U. S. B. M. 334" (T. B. M. No. 137).....	31 15 46.4	96 54 00.8
Marlin, 2 miles south of; 40 feet west of track, at milepost 137; iron post stamped "Prim. Trav. Sta. No. 116-A 1910 TEXAS elev. 364" (P. B. M. No. 74).....	31 16 44.2	96 53 57.2
Marlin, 1 mile south of; 20 feet west of track, in milepost 138, painted "U. S. B. M. 372"; spike (T. B. M. No. 140).....	31 17 36.7	96 53 54.3
Marlin, 0.5 mile south of; in crossing post 18 feet east of track, painted "U. S. B. M. 377"; spike (T. B. M. No. 141).....	31 17 58.8	96 53 53.7

Geographic positions along highways.

Marlin, Falls County courthouse, east entrance; aluminum tablet stamped "Prim. Trav. Sta. No. 117-A 1910 TEXAS" (P. B. M. No. 75).....	31 18 23.1	96 53 55.4
Marlin, 0.5 mile west of; 200 feet east of road bridge, 25 feet south of road, in root of elm tree; spike (T. B. M. No. 142).....	31 18 18.9	96 54 26.8
Marlin, 1 mile west of; south side of road, in root of mesquite tree; spike, marked "U. S. B. M. 337" (T. B. M. No. 143).....	31 18 10.0	96 54 58.0
Marlin, 1.5 miles west of; north side of road, in root of hackberry tree; spike, marked "U. S. B. M. 399" (T. B. M. No. 144).....	31 18 01.4	96 55 30.6
Marlin, 2 miles west of; 200 feet north of Elm Grove Church, 15 feet north of pecan tree, south side of road; iron post stamped "Prim. Trav. Sta. No. 118-A 1910 TEXAS" (P. B. M. No. 76).....	31 17 53.7	96 55 56.0
Marlin, 2.5 miles west of; northwest corner of T road north, in root of hackberry tree painted "U. S. B. M. 339"; spike (T. B. M. No. 145).....	31 17 48.4	96 56 17.1
Brazos River, 400 feet southwest of; on wire fence line between thick woods and partly open brush land, in root of double elm tree; copper nail (T. B. M. No. 61).....	31 15 12.9	96 55 47.1
Brazos River, 1,500 feet south of; 1,200 feet southwest of house, in root of pecan tree in open field; copper nail (T. B. M. No. 62).....	31 15 15.6	96 56 24.4
Cultivated field, 150 feet south of willow wood line, in root of lone pecan tree; copper nail (T. B. M. No. 63).....	31 15 23.4	96 56 46.0
Edge of woods and pasture, open field to southeast, woods north and west, 150 feet northwest of small cabin, in root of elm tree; copper nail (T. B. M. No. 64).....	31 15 36.4	96 57 18.9
Woods on north side of well-traveled farm road, in ash tree; copper nail (T. B. M. No. 65).....	31 15 54.7	96 57 35.5

MARLIN 30' QUADRANGLE—Continued.

Geographic positions along highways—Continued.

Stations.	Latitude.	Longitude.
Deer Creek, 0.6 mile south of; at edge of timber and cleared field, timber on south, cleared field on north, wire fences north, east, and west, 7 feet from corner of fence; iron post stamped "Prim. Trav. Sta. No. 42 1910 TEXAS elev. 341"	31 16 06.7	96 57 38.6
Deer Creek, north bank of; cleared field on north, in root of elm tree; copper nail (T. B. M. No. 66)	31 16 35.4	96 58 02.1
Iron bridge across river, about 550 feet south of, about 250 feet south of pike road, in root of pecan tree; copper nail (T. B. M. No. 67)	31 17 10.9	96 58 15.2
Tree on north side of road; nail (T. B. M.)	31 17 28.2	96 57 29.8

Magnetic declination of line, 8° 39' E.

Geographic positions along west side of Brazos River north from Marlin bridge.

Marlin bridge, about 0.4 mile northwest of; at wire fence line between open field and timbered pasture, 125 feet southwest of river bank; iron post stamped "Prim. Trav. Sta. No. 43, 358"	31 17 25.9	96 58 34.8
Marlin bridge, about 1 mile northwest of; in open pasture land above river bottom, in root of oak tree; copper nail (elevation, 381 feet; T. B. M. No. 68)	31 17 38.8	96 59 12.3
Marlin bridge, about 1.8 miles northwest of; at bank of small stream with fringe of timber, open field on either side, in root of wild chinaberry tree; copper nail (T. B. M. No. 69; elevation, 348 feet)	31 18 04.1	96 59 41.2
Sanger farm, about 1,000 feet north of large barns, on east side of road leading north past tenant houses, in root of small chinaberry tree; copper nail (T. B. M. No. 72)	31 19 57.9	96 59 54.6
Sanger farm, about 0.5 mile northeast of barn, about 0.25 mile from river bank, at wire fence line in open field, in root of large pecan tree; copper nail (T. B. M. No. 73)	31 20 12.8	96 59 19.8
J. M. Samples farm, east side of farm lane, 400 feet south 35° west from river bank; iron post stamped "Prim. Trav. Sta. No. 45"	31 20 48.7	96 59 10.2
Rock Dam bridge, about 2 miles northwest of; 400 feet north of public road, in open field, in root of pecan tree; copper nail (T. B. M. No. 74)	31 21 43.1	96 59 12.4
Rock Dam bridge, about 1.8 miles northwest of; at wire fence line, on west side of public road at point where road makes a right-angle turn; iron post stamped "Prim. Trav. Sta. No. 46"	31 21 58.2	96 59 04.7
Rock Dam bridge, 2.5 miles northwest of; 0.5 mile south of river, on land of Bill Gray (colored), in open field, 30 feet north of a lane, in root of elm (large) tree; copper nail (T. B. M. No. 75)	31 21 53.3	96 59 58.2

Geographic positions along highways on east side of Brazos River.

Marlin, 3 miles west of; at angle in road, in southwest corner fence post; spike, painted "344-146"	31 18 06.6	96 56 38.1
Marlin, 3.5 miles west of; on south side of road, in root of elm tree; spike, marked "343-147" (T. B. M. 147)	31 17 55.4	96 57 07.2
Marlin, 4 miles west of; southeast corner of John Tuyman's farm at gate; iron post stamped "Prim. Trav. Sta. No. 119-A, 341-77" (P. B. M. 77)	31 17 48.8	96 57 33.1
East side of road, in root of old stump; spike, marked "344-148" (T. B. M. 148)	31 18 07.2	96 57 54.5
Marlin, 5 miles west of; near negro house, west side of road, in root of pecan tree; spike, marked "346-149" (T. B. M. 149)	31 18 30.2	96 58 03.9
South side of road, in root of pecan tree; spike, marked "347-150" (T. B. M. 150)	31 18 44.7	96 57 50.8
John Slaughter's place, south side of road, 12 feet north of house, 4 feet north of telephone pole; iron post stamped "Prim. Trav. Sta. No. 120, 346-78" (P. B. M. 78)	31 19 02.8	96 57 27.4
South side of road, in root of elm tree; copper nail, marked "347-151" (T. B. M. 151)	31 19 14.9	96 57 05.5
Marlin, 3 miles northwest of; south side of private road, in root of elm tree; spike, marked "347-152" (T. B. M. 152)	31 19 35.3	96 56 42.3
Marlin, 3 miles northwest of; north side of private road, in root of pecan tree; copper nail, marked "349-153" (T. B. M. 153)	31 19 53.1	96 56 22.7
Marlin, 3 miles northwest of; on Rock Dam road, on east side of road, in root of post oak tree; spike, marked "366-154" (T. B. M. 154)	31 20 10.0	96 56 07.8
Marlin, 3.5 miles northwest of; on Rock Dam road, opposite A. M. E. Church, at corner of road east; iron post stamped "Prim. Trav. Sta. No. 121-A, 358, 79" (P. B. M. 79)	31 20 35.2	96 56 45.2
Marlin, 4 miles northwest of; north side of road, in root of elm tree; spike, marked "365-155" (T. B. M. 155)	31 21 00.6	96 56 45.8
Rock Dam bridge, 0.8 mile southeast of; east side of public road, in root of hackberry tree; spike, marked "345-156" (T. B. M. 156)	31 21 16.0	96 57 04.5
Rock Dam bridge, 700 feet southeast of; west edge of gully, in root of hackberry tree; spike, marked "347-157" (T. B. M. 157)	31 21 42.3	96 57 32.2
Rock Dam bridge, 1,700 feet northwest of; east side of river, east margin of road; iron post stamped "353-80, Prim. Trav. Sta. No. 122-A" (P. B. M. 80)	31 21 57.7	96 57 53.9
Rock Dam bridge, 0.8 mile northwest of; north side of road, in root of box elder tree; spike, marked "353-158" (T. B. M. 158)	31 22 13.8	96 58 14.8
Rock Dam bridge, 1.25 miles north of; west side of road, in root of hackberry tree; spike, marked "348-159" (T. B. M. 159)	31 22 27.4	96 58 06.0

Magnetic declination of line, 8° 43' E.

MARLÍN 30' QUADRANGLE—Continued.

Geographic positions along highways on east side of Brazos River.

Stations.	Latitude.	Longitude.
Rock Dam bridge, 1.8 miles northwest of; 90 feet west of road, in root of china-berry tree; spike, marked "357, 160" (T. B. M. 160).....	31 22 52.0	96 58 32.0
Rock Dam bridge, 2.25 miles northwest of; 80 feet west of vacant house, 4 feet north of telephone pole; iron post stamped "357, 81, Prim. Trav. Sta. 123-A" (P. B. M. 81).....	31 23 16.9	96 58 45.2
Rock Dam bridge, 3 miles northwest of; west side of road, in root of post oak tree used as gatepost; spike, marked "378, 161" (T. B. M. 161).....	31 23 42.2	96 58 50.1
Rising Sun A. M. E. Church, 1 mile southeast of; east side of road, in root of post oak tree; spike, marked "387, 162" (T. B. M. 162).....	31 24 06.6	96 58 55.0
Rising Sun Church, 0.5 mile southeast of; west side of road, in root of post oak tree; spike, marked "374, 163" (T. B. M. 163).....	31 24 29.1	96 59 11.7
Rising Sun Church, in front of, at margin of road; iron post stamped "Prim. Trav. Sta. No. 124-A, 388, 82" (P. B. M. 82).....	31 24 52.8	96 59 21.5
Rising Sun Church, 0.5 mile north of; opposite ginhouse, west side of road, in root of elm tree; spike, marked "376, 164" (T. B. M. 164).....	31 25 16.7	96 59 26.3
Rising Sun Church, 1 mile north of; west side of road, in root of oak tree; spike, marked "411, 165" (T. B. M. 165).....	31 25 36.8	96 59 12.6
Rising Sun Church, 1.4 miles north of; east side of road, in root of oak tree; spike, marked "391, 166" (T. B. M. 166).....	31 25 57.6	96 59 03.2
Rising Sun Church, 1.8 miles north of; east side of road, in root of oak tree; spike, marked "367, 167" (T. B. M. 167).....	31 26 20.5	96 59 09.8
Rising Sun Church, 2.2 miles north of; 0.2 mile north of road to Riesel, on west side of road, at fence line; iron post stamped "Prim. Trav. Sta. No. 125-A, 414, 83" (P. B. M. 83).....	31 26 42.4	96 59 14.2
Rising Sun Church, 2.8 miles north of; at east side of road, in oak tree; spike, marked "416, 168" (T. B. M. 168).....	31 27 06.2	96 59 04.9
Rising Sun Church, 3 miles north of; 80 feet east of bridge over gully, 50 feet south of road, in root of elm tree; spike, marked "365, 169" (T. B. M. 169).....	31 27 14.0	96 59 08.9
Rising Sun Church, 3.4 miles north of; west side of road, in front of negro house, in root of large oak tree; spike, marked "405, 170" (T. B. M. 170).....	31 27 32.7	96 59 21.8
Rising Sun Church, 4 miles north of; east side of road, in root of oak tree; spike, marked "406, 171" (T. B. M. 171).....	31 27 59.9	96 59 20.5
Rising Sun Church, 4.5 miles north of; west side of road, in root of oak tree; spike, marked "371, 172" (T. B. M. 172).....	31 28 23.8	96 59 35.8
Rising Sun Church, 4.8 miles north of; west side of road, at fence line, under oak tree; iron post stamped "Prim. Trav. Sta. No. 126-A, 427, 84" (P. B. M. 84).....	31 28 33.4	96 59 41.7
Rising Sun Church, 5 miles north of; west side of road, in root of large oak tree; spike, marked "428, 173" (T. B. M. 173).....	31 28 51.1	96 59 54.2

TEMPLE 30' QUADRANGLE.

Geographic positions along highways on west side of Brazos River.

Stations.	Latitude.	Longitude.
Sanger farm, 1.25 miles southwest of farm buildings, on south bank of Cow Bayou, at north edge of cultivated field, 1,000 feet below bridge; iron post stamped "Prim. Trav. Sta. No. 44, elev. 347".....	31 18 34.1	97 00 02.5
Sanger farm buildings, about 0.8 mile southwest of; in open field, in root of lone pecan tree; copper nail (elevation, 346.8 feet; T. B. M. No. 70).....	31 18 53.2	97 00 04.1
Sanger farmhouse, about 0.4 mile southwest of; in open field beside small coulee, in root of small double elm tree; copper nail (T. B. M. No. 71).....	31 19 12.2	97 00 03.7
Gurley, about 2 miles east of station, in open field, in root of pecan tree; copper nail (T. B. M. No. 76).....	31 22 03.1	97 00 18.8
Gurley, about 1.25 miles east of station, in open field on Gurley farm, in root of large pecan tree; copper nail (T. B. M. No. 77).....	31 22 24.5	97 01 01.3

Magnetic declination of northeast corner of quadrangle, 8° 46' E.

Geographic positions along highways on west side of Brazos River.

Gurley, about 3,000 feet east of San Antonio & Aransas Pass Ry. station, 1,800 feet east of Mr. Gurley's house, beside lone cedar tree in open field; iron post stamped "Prim. Trav. Sta. No. 47".....	31 22 42.4	97 01 29.0
Gurley's farm, 1,200 feet south of levee, in root of elm tree (1 of 2 standing side by side); copper nail (T. B. M. No. 78).....	31 23 02.9	97 01 44.0

TEMPLE 30' QUADRANGLE—Continued.

Geographic positions along San Antonio & Aransas Pass Ry.

Stations.	Latitude.	Longitude.
Bridge 275.6, San Antonio & Aransas Pass Ry., south end of, 40 feet west of track, in telegraph post; track spike (T. B. M. No. 79).....	31 23 17.7	97 02 16.8
Milepost 276, 85 feet north of and 42 feet east of center of track; iron post stamped "Prim. Trav. Sta. No. 48".....	31 23 41.6	97 02 27.8
Trestle 276.7, 290 feet south of; 20 feet east of center of track, in telegraph pole; spike (T. B. M. No. 80).....	31 24 08.3	97 02 46.5
Milepost 277, 23 feet east of center of track, in base of; spike (T. B. M. No. 81).....	31 24 25.4	97 02 58.3
Norwood crossing, 480 feet south of, 34 feet west of center of track, in telegraph pole; spike (T. B. M. No. 82).....	31 24 47.3	97 03 14.1
Milepost 278, 29 feet north of and 38 feet east of center of track; iron post stamped "Prim. Trav. Sta. No. 49".....	31 25 10.8	97 03 26.4
540 feet south of road crossing, 22 feet east of center of track, in telegraph pole; spike (T. B. M. No. 82½).....	31 25 34.4	97 03 34.3
22 feet east of center of track, in base of milepost 279; spike (T. B. M. No. 83).....	31 25 59.9	97 03 42.6
1,600 feet south of road crossing, 22 feet east of center of track, in telegraph pole; spike (T. B. M. No. 84).....	31 26 25.7	97 03 51.1
Downs, 0.5 mile south of station, 156 feet south of road crossing, 47 feet east of center of track, 22 feet from milepost 280; iron post stamped "Prim. Trav. Sta. No. 50".....	31 26 51.5	97 03 59.2
Downs, road crossing.....	31 27 15.5	97 04 07.6
Downs, road crossing, 28 feet east of center of track, in telegraph pole; spike (T. B. M. No. 85).....	31 27 15.7	97 04 07.4

Positions in fields in river bottom.

Downs, about 0.5 mile east of station, at edge of bottom land in field, in root of cottonwood tree; copper nail (T. B. M. No. 86).....	31 27 32.4	97 03 53.2
Downs, about 0.8 mile northeast of; in open field, in root of pecan tree; copper nail (T. B. M. No. 87).....	31 28 03.1	97 03 37.9
Downs, about 1.5 miles northeast of; in open bottom land, 2 feet south of wire fence and brushy lane, 0.2 mile northeast of negro houses; iron post stamped "Prim. Trav. Sta. No. 51".....	31 28 33.2	97 03 17.4
At wire fence line and farm roadway in open bottom land, in root of hackberry tree; copper nail (T. B. M. No. 88).....	31 29 09.4	97 03 12.2
North bank of Flat Creek, 0.2 mile from river bank, at edge of brush, in root of oak tree; copper nail (T. B. M. No. 89).....	31 29 44.5	97 03 17.5

Geographic positions along highways on east side of Brazos River.

Rising Sun Church, 6.5 miles north of; west side of road, in oak tree painted "415, 174"; spike (T. B. M. No. 174).....	31 29 10.2	97 00 11.3
Rising Sun Church, 7 miles north of; on west side of road, in oak tree; spike marked "413, 175" (T. B. M. No. 175).....	31 29 36.9	97 00 24.6
Houston & Texas Central R. R. track, 1.5 miles south of; in oak tree at fence line; spike; painted "416, 176" (T. B. M. 176).....	31 29 55.1	97 00 38.4

Geographic positions along highways between Gurley and Downs.

Farm lane, 15 feet north of; wire fence line; in root of oak tree; copper nail (elevation, 363 feet; T. B. M. No. 96).....	31 23 42.5	97 01 40.2
Large pecan tree in open field, at edge of bench or flood plain, in root; copper nail (elevation, 368 feet; T. B. M. No. 97).....	31 24 06.8	97 01 29.9
Rear of negro house, 75 feet southeast of public road, in root of elm tree; copper nail (elevation, 368 feet; T. B. M. No. 98).....	31 24 25.6	97 01 43.1
Gurley, near, public road between Joe Gorman's land on east and Mr. Gurley's on west, 30 feet east of double oak tree at meeting of road northeast-southwest and road southeast, 2 feet from wire fence line; iron post stamped "Prim. Trav. Sta. No. 56, 367".....	31 24 47.4	97 01 54.3
Cliff Torrence's farm, 1,900 feet northwest of public road, in open field, in root of elm tree; copper nail (elevation, 366 feet; T. B. M. No. 99).....	31 25 03.5	97 02 06.1
Dr. Steiner's farm, in open field, in root of pecan tree; copper nail (elevation, 369 feet; T. B. M. No. 100).....	31 25 23.5	97 02 20.6
Dr. Steiner's land, in open field, in root of pecan tree; copper nail (elevation, 374 feet; T. B. M. No. 101).....	31 25 46.4	97 03 00.4
Bullhide Creek, wire fence line just south of; 400 feet northeast of a house, 1,600 feet north of public road; iron post stamped "Prim. Trav. Sta. No. 57, 379".....	31 26 00.6	97 03 12.0
Open field, 40 feet south of ditch with brush on each side, in root of pecan stump; copper nail (elevation, 376 feet; T. B. M. No. 102).....	31 26 29.8	97 03 20.8
Downs, 0.8 mile southeast of, in open field, in root of large pecan tree; copper nail (elevation, 376 feet; T. B. M. 103).....	31 26 45.7	97 03 23.3

Magnetic declination of line, 8° 44' E.

TEMPLE 30' QUADRANGLE—Continued.

Geographic positions along St. Louis Southwestern Ry. of Texas, Waco to Oglesby (portion of line).

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
Road crossing.....	31	29	45.7	97	12	39.9
Bridge 755, north end of.....	31	29	13.9	97	13	13.0
Bridge 756, north end of; center of track.....	31	29	00.6	97	13	22.9
Ritchie; signboard.....	31	28	39.9	97	13	40.1
Road crossing.....	31	28	50.4	97	15	24.0
Do.....	31	28	55.4	97	15	49.3
Lamoka, road crossing at.....	31	28	54.7	97	16	03.8
South Bosque; station sign.....	31	28	43.5	97	16	26.7
Road crossing.....	31	28	09.5	97	18	11.4
Do.....	31	27	59.5	97	18	51.6
Harris Creek, signboard at station.....	31	27	50.7	97	19	27.4
Bridge 761, north end of.....	31	27	23.0	97	21	18.8
Road crossing.....	31	27	09.0	97	22	15.2
Do.....	31	26	44.6	97	23	52.9
McGregor station.....	31	26	35.5	97	24	16.5
Bridge 764, north end of.....	31	25	59.3	97	25	21.3
Bridge 765, north end of.....	31	25	40.9	97	26	35.6
Road crossing.....	31	25	35.6	97	27	09.6
Do.....	31	25	24.0	97	28	24.0
Windmill triangulation station.....	31	25	55.3	97	30	06.2

WACO 30' QUADRANGLE.

Geographic positions along highways.

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
Drake's farm, in open field, in root of lone hack berry tree; copper nail (T. B. M. 90).....	31	30	19.7	97	03	24.4
Waco, 5 miles southeast of; in open field, on second bench of river bottom, 1,000 feet south of building with windmill, in private laneway, 18 inches from wire fence line; iron post stamped "Prim. Trav. Sta. No. 52".....	31	30	27.5	97	03	29.4
Waco, 4.5 miles southeast of; at wire fence line, 60 feet southwest of cross fence, in root of pecan tree; copper nail (T. B. M. 91).....	31	30	41.3	97	03	53.5
Waco, 4 miles southeast of; 400 feet northeast of edge of bottom land, in open field beside wire fence north 50° east, 65 feet southwest of fence corner; iron post stamped "Prim. Trav. Sta. No. 53".....	31	31	03.7	97	04	29.8
Waco, 3.5 miles southeast of; 1,000 feet north of public road, 175 feet west of ravine, in open field, in root of pecan tree 7 inches in diameter; copper nail (T. B. M. 92).....	31	31	15.3	97	04	52.6
Waco, 2.8 miles southeast of; 47 feet northeast of center of San Antonio & Aransas Pass Ry. track, 75 feet north of road crossing; iron post stamped "Prim. Trav. Sta. No. 54".....	31	31	35.2	97	05	32.2

Geographic positions along San Antonio & Aransas Pass Ry.

Waco, 2 miles southeast of; 75 feet northwest of road crossing, in telegraph pole; spike (T. B. M. 93).....	31	32	06.1	97	05	54.4
Milepost 287, 1,500 feet southeast of; road crossing.....	31	32	19.0	97	06	10.2
Waco, 1.5 miles southeast of, in telegraph-pole milepost 287; spike (T. B. M. 94).....	31	32	29.8	97	06	22.6
Waco, 0.8 mile southeast of; 41 feet north of center of track, in electric-light pole; spike (T. B. M. 95).....	31	32	59.0	97	06	57.1
Waco, 1,142 feet northeast of intersection of Missouri, Kansas & Texas Ry. and San Antonio & Aransas Pass Ry., at north end of railroad bridge, west side, on top of pier; aluminum tablet stamped "Prim. Trav. Sta. No. 131-A, 397, 89".....	31	33	34.6	97	07	21.2

Geographic positions along east side of Brazos River.

Houston & Texas Central R. R. track, 1.7 miles south of; 200 feet south of gate at intersection of road to Riesel, west side of main road to Waco; iron post stamped "421, 85, Prim. Trav. Sta. No. 127-A".....	31	30	03.4	97	00	43.2
Houston & Texas Central R. R. track, about 1.3 miles south of; east side of road at fence line, in front of negro house, in root of oak tree; copper nail, marked "403, 177" (T. B. M. 177).....	31	30	29.0	97	01	05.9
Houston & Texas Central R. R. track, 0.6 mile south of; west side of road, opposite house, in root of oak tree; spike (T. B. M. 178).....	31	30	56.6	97	01	21.5
Shaw Creek, south bank of, at fork in road, in root of Spanish oak tree; spike, marked "387, 179" (T. B. M. 179).....	31	31	17.8	97	01	18.0

WACO 30' QUADRANGLE—Continued.

Geographic positions along Houston & Texas Central R. R.

Stations.	Latitude.	Longitude
Waco, 6.4 miles southeast of; bridge No. 38-B, south end, west side, in guard-rail; bolt, marked "385, 180" (T. B. M. 180)	31 31 35.3	97 01 51.3
Waco, 6.25 miles southeast of; 100 feet west of Houston & Texas Central R. R. trestle, 190 feet north of steel wagon bridge, at southeast fence corner; iron post stamped "Prim. Trav. Sta. No. 128-A, 374, 86" (P. B. M. 86)	31 31 37.4	97 01 56.4
Waco, 5.8 miles southeast of; east side of road, in telegraph pole; spike, marked "378, 181" (T. B. M. 181)	31 31 51.0	97 02 22.4
Waco, 5.2 miles southeast of; on east side of road, in telegraph pole; spike, painted "376, 182" (T. B. M. 182)	31 32 02.2	97 02 51.1
Milepost 39, 0.5 mile north of, in telegraph pole; spike, marked "380, 183" (T. B. M. 183)	31 32 10.7	97 03 11.4
Waco, 4 miles southeast of; 75 feet west of Houston & Texas Central R. R. section house, east side of road; iron post stamped "Prim. Trav. Sta. No. 129-A, 385, 87" (P. B. M. 87)	31 32 24.2	97 03 44.7
Waco, 3.5 miles southeast of; at fence line, in telegraph pole; spike, marked "385, 181" (T. B. M. 184)	31 32 42.3	97 04 10.2

Geographic positions along highways.

Waco, 3 miles southeast of; 10 feet east of fence line in pecan tree in field; spike, marked "385, 185" (T. B. M. 185)	31 33 07.8	97 04 49.6
Waco, 2.5 miles southeast of; at east side of road, in root of oak tree; spike, marked "383, 186" (T. B. M. 186)	31 33 17.4	97 05 08.6
Waco, 2 miles southeast of; 175 feet east of house of J. C. McGanghy, at gate on west side of road; iron post stamped "Prim. Trav. Sta. No. 130-A, 393, 88" (P. B. M. 88)	31 33 24.9	97 05 38.4
Waco, 1.5 miles southeast of; Houston & Texas Central R. R. trestle 321, south end, east side, top of bent; bolt, marked "389, 187" (T. B. M. 187)	31 33 26.3	97 06 09.3
Waco, 1.2 miles southeast of; on west side at south end of trestle No. 322, top of guard rail; bolt, marked "388, 188" (T. B. M. 188)	31 33 30.9	97 06 27.5
Waco, 0.6 mile southeast of; crossing of Missouri, Kansas & Texas Ry. and San Antonio & Aransas Pass Ry., in telegraph pole; spike, marked "387, 189" (T. B. M. 189)	31 33 43.2	97 06 59.6

Magnetic declination of southwest corner of quadrangle, 8° 43' 30" E.

Geographic positions at Waco.

Waco, intersection of Missouri, Kansas & Texas Ry. and San Antonio & Aransas Pass Ry.	31 33 26.3	97 07 30.3
Waco, southeast corner of South First and Jackson streets; top of hydrant (Coast and Geodetic Survey bench mark)	31 33 26.5	97 07 29.7
Waco, in brick building on southeast corner of South Third and Jackson streets, occupied by McCleary's feed store, 1.5 feet from southernmost window facing Missouri, Kansas & Texas Ry. (Coast and Geodetic Survey bench mark)	31 33 20.5	97 07 36.3
Waco, northwest corner of South Fifth and Jackson streets, in brick building occupied by bottling works, 10 inches below third window from front of building on side toward Missouri, Kansas & Texas Ry. (Coast and Geodetic Survey bench mark)	31 33 14.1	97 07 44.8

Geographic positions along the St. Louis Southwestern Ry. of Texas, Waco to Oglesby (portion of line).

Trestle 749, fourth tie from west end of, center of track	31 31 27.9	97 09 31.3
Trestle 750, south end of, center of track	31 31 07.5	97 10 05.4
Trestle 751, south end of, center of track	31 30 55.0	97 10 36.7
Road crossing	31 30 35.0	97 11 03.0
Bridge 752, south end of, center of track	31 30 19.6	97 11 24.9
Bridge 753, center of track; east end of	31 30 07.8	97 11 51.0

Hearne, Taylor, and Temple 30' quadrangles.

BELL, BURLESON, MILAM, AND ROBERTSON COUNTIES.

The following are final geographic positions on approximate United States standard determined by E. L. McNair and P. W. McMillen in 1910. Lines were run along both sides of Brazos River in the Hearne quadrangle, and another line was run west and north from a point near Valley Junction and tied to Lynch triangulation station.

The State cooperated in the work.

HEARNE 30' QUADRANGLE.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
Stone City, 0.6 mile east of; on south side of road, in second telephone pole west of house on north side of road, in side of pole 18 inches above ground; nail; pole painted "249.5 ft. 108-A" (T. B. M. No. 108-A).....	30 38 12.0	96 32 03.3
Stone City, 1.3 miles east of; 120 feet north of wooden bridge at fork in roads, 35 feet west of wire fence, in root of tree; nail marked "238.3 ft. 109-A" (T. B. M. 109-A).....	30 38 33.9	96 31 38.3
Stone City, 1.9 miles east of; 50 feet west of iron bridge over Little Brazos River, 10 feet south of road; iron post stamped "Prim. Trav. Sta. No. 85-A 1910 TEXAS 235" (P. B. M. No. 66-A).....	30 38 10.7	96 31 09.7
Stone City, 2.8 miles east of; 150 feet north of Dennis Ballard's house, north side of road, in root of post oak tree; nail, marked "U. S. B. M. No. 110-A" (T. B. M. No. 110-A).....	30 38 27.2	96 30 26.1

Geographic positions along highways.

Pittbridge, about 0.5 mile west of; 15 feet southwest of intersection of T lane south with east-west road, at corner of wire fence; iron post stamped "Prim. Trav. Sta. No. 65-A 1909 TEXAS 232" (P. B. M. No. 46).....	30 36 38.6	96 30 06.3
Pittbridge, about 1 mile west of; north side of road, in root of old stump painted "U. S. B. M. 232"; copper nail (T. B. M. No. 55).....	30 36 22.4	96 30 24.5
Pittbridge, about 1.5 miles west of; 340 feet west of T lane south, south side of road, inside wire fence, in root of oak tree painted "U. S. B. M. 233"; copper nail (T. B. M. No. 56).....	30 36 05.2	96 30 44.1
Parker's store, 450 feet south of; corner east side of road, in second support from south end; copper nail marked "U. S. B. M. 237" (T. B. M. No. 57).....	30 36 14.0	96 31 15.4
Parker's store, 0.4 mile north of, 10 feet north of gate, in corner of wire fence; iron post stamped "Prim. Trav. Sta. No. 66-A 1909 TEXAS 243" (P. B. M. No. 47).....	30 36 27.3	96 31 32.2
Parker's store, 1.1 miles north of; 100 feet west of road, in root of tree; copper nail, marked "U. S. B. M. 243" (T. B. M. No. 58).....	30 36 56.3	96 31 54.8
Parker's store, 2 miles north of; 10 feet north of road, in root of hackberry tree painted "U. S. B. M. 253"; copper nail (T. B. M. No. 59).....	30 37 23.1	96 32 35.5
Parker's store, 2.2 miles north of; 20 feet east of Wilson's store, east side of gate, south of road; iron post stamped "Prim. Trav. Sta. No. 67-A 1909 TEXAS 262" (P. B. M. No. 48).....	30 37 31.6	96 32 41.5

Magnetic declination of line, 8° 44' E.

Geographic positions along highways.

Sixmile bridge, 1.9 miles south of; west side of road, in root of oak tree painted "99-A 279.6"; wire nail (T. B. M. No. 99-A).....	30 43 36.7	96 37 10.4
Sixmile bridge, 2.4 miles south of; on J. T. Hardie farm, south side of road; iron post stamped "Prim. Trav. Sta. No. 81-A 1910 TEXAS 258" (P. B. M. No. 62-A).....	30 43 17.0	96 36 22.2
Reta, 2 miles northeast of; on Twigg's place, 50 feet northeast of Rufus Hene-gon's house, in root of leaning oak tree; nail, marked "279.2 100-A" (T. B. M. 100-A).....	30 42 40.6	96 35 58.1
Reta, 2 miles east of; 0.5 mile northwest of derrick at old oil well at north end of lane at bottom of west gate post painted "380-101-A"; copper nail (P. B. M. No. 101-A).....	30 42 28.7	96 35 22.2
Reta, about 3 miles southeast of; about 400 feet south of derrick at old oil well, 20 feet east of intersection of T lane west with north-south lane, inside wire fence; iron post stamped "Prim. Trav. Sta. No. 82-A 1910 TEXAS" (P. B. M. No. 63-A).....	30 42 02.2	96 34 53.5
Reta, about 3.5 miles southeast of; 450 feet west of large ravine, 180 feet south-east of intersection of east-west wire fence with wire fence north in old corn field, inside of small oak tree painted "266.9 102-A" (1 foot above ground); nail (T. B. M. No. 102-A).....	30 41 27.6	96 35 05.1
Reta, about 3 miles southeast of; on Jim Mayre's farm, about 0.5 mile west of Baker's house, 300 feet north of old road, in root of oak tree painted "103-A 289.4"; copper nail (T. B. M. No. 103-A).....	30 40 57.6	96 35 27.7
Reta, about 2.5 miles south of; about 300 feet from Brazos River, in root of wild cherry tree painted "249.9 104-A"; nail (T. B. M. No. 104-A).....	30 39 33.7	96 35 33.6
Reta, about 3 miles south of; 500 feet north of Brazos River, 20 feet north of gully; iron post stamped "Prim. Trav. Sta. No. 83-A 1910 TEXAS 247" (P. B. M. No. 64-A).....	30 39 11.5	96 35 43.2
Reta, about 4 miles south of; 0.8 mile southwest of house occupied by George Washington, 250 feet west of stream, in large cottonwood tree, 1 foot above ground; copper nail, marked "244 105-A" (T. B. M. No. 105-A).....	30 38 37.4	96 36 08.5
Dead Creek, about 800 feet east of mouth of; in Hiram Williams's field, in root of walnut tree painted "106 A 246.6"; copper nail (T. B. M. No. 106-A).....	30 38 18.1	96 35 52.4
Dead Creek, mouth of, 1 mile south of; on Jenkins's place, 500 feet south of corner of wire fence, near river bank, 20 feet east of wire fence, on west side of cotton field; iron post stamped "Prim. Trav. Sta. No. 84-A 1909 TEXAS" (P. B. M. No. 65-A).....	30 38 08.2	96 35 02.0
Dead Creek, mouth of, 1.6 miles south of; 120 feet west of Brazos River, in timber, in small cottonwood tree 1 foot above ground; copper nail, marked "235.2 107-A" (T. B. M. No. 107-A).....	30 38 02.1	96 34 30.0
Stone City, 1 mile west of; about 300 feet south of west bank of Brazos River, 10 feet southeast of southwest corner of wire fence, in corn field, in top of stump, painted "108-A 251"; copper nail (T. B. M. No. 108-A).....	30 37 47.7	96 33 32.2

HEARNE 30' QUADRANGLE—Continued.

Geographic positions along railroad.

Stations.	Latitude.	Longitude.
Stone City, about 150 feet southeast of store, 40 feet south of road, in root of elm tree painted "U. S. B. M. 239"; copper nail (T. B. M. No. 60).....	30 37 45.4	96 32 33.4
Stone City, 0.4 mile west of; 120 feet west of track, in root of pecan tree painted "U. S. B. M. 239"; copper nail (T. B. M. No. 61).....	30 38 01.7	96 32 39.0
Stone City, 0.9 mile north of; 60 feet west of track, in root of pecan tree painted "U. S. B. M. 245"; copper nail (T. B. M. No. 62).....	30 38 27.8	96 32 34.5
Stone City, 1.6 miles north of; 8 feet west of track, 20 feet northwest of crossing, at corner of wire fence; iron post stamped "Prim. Trav. Sta. No. 68-A 1909 TEXAS 241" (P. B. M. No. 49).....	30 39 04.7	96 32 33.4
Stone City, 1.9 miles north of; 15 feet east of track, 100 feet north of crossing, in root of cottonwood tree painted "U. S. B. M. 241"; copper nail (T. B. M. No. 63).....	30 39 21.0	96 32 43.2
Mudville, 1.3 miles south of; 110 feet west of track, in root of pecan tree painted "U. S. B. M. 245"; copper nail (T. B. M. No. 64).....	30 39 43.2	96 32 51.3
Mudville, 0.5 mile south of; 53 feet west of track, east side of road, in root of hackberry tree painted "U. S. B. M. 244"; copper nail (T. B. M. No. 65).....	30 40 22.6	96 33 02.0
Mudville, 20 feet northeast of railroad crossing, about 120 feet north of gin, at corner of wire fence; iron post stamped "Prim. Trav. Sta. No. 69-A TEXAS 245" (P. B. M. No. 50).....	30 40 47.6	96 33 09.3
Mudville, 0.8 mile north of; 4 feet west of track, on north beam west side of trestle, in top; copper nail, marked "U. S. B. M. 243" (T. B. M. No. 66).....	30 41 12.4	96 33 18.7
Mudville, 1.2 miles north of; 22 feet west of track, in root of elm tree painted "U. S. B. M. 248"; copper nail (T. B. M. No. 67).....	30 41 36.7	96 33 29.3
Mudville, 1.8 miles north of; about 100 feet southwest of road crossing, 30 feet south of cabin, in root of cottonwood tree painted "U. S. B. M. 252"; copper nail (T. B. M. No. 68).....	20 42 02.1	96 33 41.9
Mumford, 1.9 miles south of; 10 feet northwest of road crossing, about 300 feet north of gin; iron post stamped "Prim. Trav. Sta. No. 70-A 1909 TEXAS 251" (P. B. M. No. 51).....	30 42 23.0	96 33 49.5
Mumford, 1.3 miles south of; about 150 feet west of track, in root of cottonwood tree painted "U. S. B. M. 249"; copper nail (T. B. M. No. 69).....	30 42 52.0	96 33 54.3
Mumford, 0.6 mile south of; 64 feet west of track, in root of elm tree painted "U. S. B. M. 246"; copper nail (T. B. M. No. 70).....	30 43 29.3	96 33 54.4
Mumford, about 75 feet south of station, 150 feet north of gin, in base of small platform east of track; copper nail, marked "U. S. B. M. 255" (T. B. M. No. 71).....	30 43 59.8	96 33 57.5
Mumford, 1,230 feet north of; 50 feet east of water tank, between tracks of Hearne & Brazos Valley R. R. and International & Great Northern R. R.; iron post stamped "Prim. Trav. Sta. No. 71-A 1909 TEXAS 254" (P. B. M. No. 52).....	30 44 11.0	96 34 03.1
Mumford, 0.5 mile north of; 18 feet east of track, at crossing, between Hearne & Brazos Valley R. R. and International & Great Northern R. R., at bottom of telegraph pole; railroad spike, marked "U. S. B. M. 258" (T. B. M. No. 72).....	30 44 33.4	96 34 15.8

Magnetic declination of line, 8° 53' E.

Geographic positions along railroad.

Mumford, 1.2 miles north of; 23 feet east of railroad crossing, about 50 feet west of barn between Hearne & Brazos Valley R. R. and International & Great Northern R. R., at bottom of fence post; spike, marked "U. S. B. M. 253" (T. B. M. No. 73).....	30 45 06.6	96 34 33.8
Mumford, 1.3 miles north of; 24 feet west of Hearne & Brazos Valley R. R. track, between track and highway, at bottom of telegraph pole painted "U. S. B. M. 257"; spike (T. B. M. No. 74).....	30 45 33.2	96 34 49.0
Olinda, 15 feet southeast of road crossing Hearne & Brazos Valley R. R., 2 feet west of gate of cattle pen; iron post stamped "Prim. Trav. Sta. No. 72-A 1910 260" (P. B. M. No. 53).....	30 45 55.9	96 35 04.8
Olinda, 0.5 mile north of; 36 feet east of Hearne & Brazos Valley R. R. track, on east side of road, in base of telegraph pole painted "M. P. 95" and "U. S. B. M. 261"; spike (T. B. M. No. 75).....	30 46 19.2	96 35 20.3
Nicholas, 200 feet south of road crossing, 35 feet east of Hearne & Brazos Valley R. R. track, at bottom of telegraph pole painted "U. S. B. M. 261"; spike (T. B. M. No. 76).....	30 46 47.9	96 35 33.6
Nicholas, 0.3 mile north of; 37 feet east of railroad, at bottom of telegraph pole painted "U. S. B. M. 260"; spike (T. B. M. No. 77).....	30 47 04.4	96 35 49.2
Nicholas, 0.9 mile north of; 36 feet east of railroad, at bottom of telegraph pole painted "U. S. B. M. 257"; spike (T. B. M. No. 73).....	30 47 29.8	96 36 05.4
Tatsie, 3 feet east of signboard, south of Hearne & Brazos Valley R. R. and International & Great Northern R. R. crossing; iron post stamped "Prim. Trav. Sta. No. 73-A 1910 TEXAS 261" (P. B. M. No. 54).....	30 47 59.8	96 36 24.1
Tatsie, 0.5 mile north of; 40 feet west of International & Great Northern R. R. track, 12 feet west of signboard "railroad crossing, 1,000 feet," at bottom of telegraph pole painted "U. S. B. M. 263"; spike (T. B. M. No. 79).....	30 48 19.1	96 36 40.7
Tatsie, 1 mile north of; 42 feet west of International & Great Northern R. R. track, at bottom of telegraph pole painted "U. S. B. M. 265"; spike (T. B. M. No. 80).....	30 48 40.3	96 36 53.9
Valley Junction, 2 miles south of; 40 feet west of track, at bottom of telegraph pole painted "U. S. B. M. 263"; spike (T. B. M. No. 81).....	30 49 01.0	96 37 14.2
Valley Junction, 1.6 miles south of; 5 feet north of milepost 99, 40 feet west of track; iron post stamped "Prim. Trav. Sta. No. 74-A 1910 TEXAS 261" (P. B. M. No. 55).....	30 49 17.5	96 37 27.0

Magnetic declination of line, 8° 56' E.

HEARNE 30' QUADRANGLE—Continued.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
Sixmile bridge, 15 feet north of; 10 feet east of road, 2 feet west of wire fence; iron post stamped "Prim. Trav. Sta. No. 80-A 1910 TEXAS 264" (P. B. M. No. 61-A).....	° ' "	° ' "
Sixmile bridge, 0.9 mile south of; 450 feet south of negro house, 30 feet west of road, in root of oak tree painted "U. S. B. M. 97-A"; wire nail (T. B. M. No. 97-A).....	33 44 23.6	96 38 33.6
Sixmile bridge, 1.4 miles south of; 15 feet west of dirt road, in root of oak tree painted "305.7 93-A"; wire nail (T. B. M. 98-A).....	30 44 00.1	96 37 52.2
	30 43 39.3	96 37 39.8

Magnetic declination of line, 8° 56' E.

Geographic positions along highways.

Brazos River, about 200 feet south of; across open ground, in root of elm tree; copper nail (T. B. M. No. 1).....	30 50 02.2	96 40 13.4
Brazos River, about 500 feet southwest of; in timber pasture, in root of elm tree; copper nail (T. B. M. No. 2).....	30 50 18.8	96 40 30.0
Brazos River, 75 feet from; in timbered bottom land, in root of elm tree; copper nail (T. B. M. No. 3).....	30 50 37.0	96 40 45.5
Brazos River, 250 feet from; in timbered bottom land, in root of hackberry tree; copper nail (T. B. M. No. 4).....	30 50 32.9	96 41 13.0
Little River, 0.2 mile south of; 0.3 mile from mouth of Little River, on bank of timbered slough 300 feet wide, which bears S. 69° W.; open field south of post and north of slough; iron post stamped "Prim. Trav. Sta. No. 25, TEXAS 1910".....	30 50 37.0	96 41 35.5
Brazos River, about 700 feet north of; on edge of bench about 20 feet above low, wooded, bottom land, in root of red elm tree; copper nail (T. B. M. No. 5).....	30 50 55.6	96 41 16.0
Brazos River, 500 feet southwest of; 1,800 feet south of bridge over river, on bank of dry run, about 350 feet southwest of gate on farm road, in root of leaning elm tree; copper nail (T. B. M. No. 6).....	30 51 32.2	96 41 34.3
Primary traverse station No. 1; iron post (McMillen's No. 1).....	30 51 57.8	96 42 16.2
Cole's store, 1,200 feet southeast of; 350 feet west of Brazos River, 75 feet south of negro cabin, in root of oak tree painted "287.2"; copper nail (T. B. M. No. 7).....	30 52 23.6	96 41 54.7

Magnetic declination of line, 8° 33' E.

Geographic positions along highways.

Port Sullivan highway bridge, about 1 mile north of; 300 feet southeast of Henry Bank's house, 60 feet west of Brazos River, at point of Rock Rapids at bend of river, in root of large oak tree painted "1-283.9"; copper nail (T. B. M. No. 8).....	30 52 49.3	96 41 39.9
Brazos River, approximately 600 or 800 feet west of; in cultivated field, in root of lone pecan tree painted "276.2"; copper nail (T. B. M. No. 9).....	30 53 07.2	96 41 26.2
Port Sullivan highway bridge, about 1.8 miles north of; 2 feet north of wire fence south 49° west, 225 feet from Brazos River, on land owned by John Livingston (colored), north of land owned by Mr. Cole; iron post stamped "Prim. Trav. Sta. No. 26 TEXAS 1910 elev. 281".....	30 53 30.5	96 41 40.4
Brazos River, 150 feet southwest of fringe of timber along bank, in cultivated field, in root of lone pecan tree; copper nail (T. B. M. No. 10).....	30 53 56.4	96 41 58.8
Brazos River, about 200 feet southeast of bank, on knoll, near brush and timber along river, in root of hackberry tree; copper nail (T. B. M. No. 11).....	30 54 00.2	96 42 37.7
Brazos River, 150 feet south of; in root of oak tree; copper nail (T. B. M. No. 12).....	30 53 48.4	96 43 11.0
Brazos River, 550 feet south of bank, on open sloping ground, at edge of timber line, near wire fence to river bearing north 35° east; iron post stamped "Prim. Trav. Sta. No. 27, 1910 TEXAS 311".....	30 53 53.3	96 43 54.6
Clump of mesquite and elm brush in open field, about 25 feet west of 3-pronged dead tree, in root of mesquite brush; copper nail (T. B. M. No. 13).....	30 54 15.5	96 44 14.7
Open bottom land, in root of 42-inch pecan tree; copper nail (T. B. M. No. 14).....	30 54 37.7	96 44 35.8
Petersen siding, about 150 feet north of, road crossing of International & Great Northern R. R.	30 56 30.2	96 44 15.8

Geographic positions along International & Great Northern R. R.

Valley Junction, 2.9 miles north of Calvert Junction, 33 feet west of track, in telegraph pole painted "U. S. B. M. 272"; spike (T. B. M. No. 88).....	30 52 34.6	96 39 52.3
Valley Junction, 3.4 miles north of; 33 feet west of track, 50 feet north of road crossing, in milepost 104, painted "U. S. B. M. 277"; spike (T. B. M. No. 89).....	30 52 59.6	96 40 10.8
Valley Junction, 4 miles north of; 33 feet west of track, 300 feet south of road crossing, in telegraph pole painted "U. S. B. M. 273"; spike (T. B. M. No. 90).....	30 53 23.0	96 40 28.1
Valley Junction, 4.4 miles north of; 10 feet west of track at milepost 105; iron post stamped "Prim. Trav. Sta. No. 100-A 1910 TEXAS" (P. B. M. No. 58).....	30 53 41.8	96 40 44.7
Valley Junction, 5.1 miles north of; 33 feet west of track, about 300 feet south of road crossing, in telegraph pole painted "U. S. B. M. 277"; spike (T. B. M. No. 91).....	30 53 59.5	96 41 07.4

HEARNE 30' QUADRANGLE—Continued.

Geographic positions along International & Great Northern R. R.—Continued.

Stations.	Latitude.	Longitude.
Valley Junction, 5.6 miles north of; 38 feet west of track, in milepost 106, painted "U. S. B. M. 276"; spike (T. B. M. No. 92).....	30 54 17.0	96 41 29.6
Valley Junction, 6.2 miles north of; 38 feet west of track, in telegraph pole painted "U. S. B. M. 282"; spike (T. B. M. No. 93).....	30 54 35.8	96 41 53.3
Valley Junction, 6.6 miles north of; at Marvin crossing, 50 feet northeast of road crossing near "Marvin" signboard; iron post stamped "Prim. Trav. Sta. No. 101-A 1910 TEXAS 282" (P. B. M. No. 59).....	30 54 51.2	96 42 12.2
Marvin, 0.5 mile north of; 38 feet west of track, in telegraph pole painted "U. S. B. M. 280"; spike (T. B. M. No. 94).....	30 55 07.4	96 42 36.3
Marvin, 1.1 miles north of; 38 feet west of track, in telegraph pole at milepost 108, painted "U. S. B. M. 283"; spike (T. B. M. No. 95).....	30 55 25.6	96 43 04.0
Marvin, 1.6 miles north of; 38 feet west of track, in telegraph pole painted "U. S. B. M. 282"; spike (T. B. M. No. 96).....	30 55 41.3	96 43 28.2
Calvert Junction, about 1 mile south of; 5 feet north of milepost 109 (Semper's bench mark No. 60).....	30 55 55.6	96 43 50.1
Calvert Junction, 0.5 mile south of; 38 feet west of track, in telegraph pole painted "U. S. B. M. 284"; spike (T. B. M. No. 97).....	30 56 18.6	96 44 08.1
Calvert Junction, 0.2 mile south of; 38 feet west of track, in first telegraph pole south of milepost 110; spike, marked "U. S. B. M. 286" (T. B. M. No. 98).....	30 56 37.6	96 44 21.4
Calvert Junction, station.....	30 56 48.6	96 44 28.6
Calvert Junction, 0.5 mile north of; 38 feet west of track, in telegraph pole painted "U. S. B. M. 291"; spike (T. B. M. No. 99).....	30 56 59.8	96 44 36.9
Calvert Junction, 1 mile north of; 40 feet west of track at milepost 111; iron post stamped "Prim. Trav. Sta. No. 103-A 1910 TEXAS" (P. B. M. No. 61).....	30 57 10.0	96 44 44.2
Calvert Junction, 1.5 miles north of; 38 feet west of track, in telegraph pole painted "U. S. B. M. 289"; spike (T. B. M. No. 100).....	30 57 39.6	96 44 47.5
Calvert Junction, 2 miles north of; 38 feet west of track, in milepost 112, painted "U. S. B. M. 294"; spike (T. B. M. No. 101).....	30 58 02.3	96 44 45.3
Calvert Junction, 2.5 miles north of; 39 feet west of track, in telegraph pole painted "U. S. B. M. 293"; spike (T. B. M. No. 102).....	30 58 29.8	96 44 42.7
Calvert Junction, 3 miles north of; 40 feet west of track at milepost 113; iron post stamped "Prim. Trav. Sta. No. 104-A 1910 TEXAS" (P. B. M. No. 62).....	30 58 55.9	96 44 40.2
Calvert Junction, 3.5 miles north of; 39 feet west of track, in telegraph pole painted "U. S. B. M. 288"; spike (T. B. M. No. 103).....	30 59 23.6	96 44 37.6
Calvert Junction, 4 miles north of; 39 feet west of track, in first telegraph pole south of milepost 114; spike, marked "U. S. B. M. 298" (T. B. M. No. 104).....	30 59 46.1	96 44 35.4

Magnetic declination of line, 8° 33' E.

Geographic positions along highways.

Wildcat bridge across Brazos River, about 0.9 mile south of; about 0.5 mile west of river bank, at edge of timber bearing north-south, 5 feet south of wire fence to river, open cultivated land between bench mark and river, on land owned by Mr. Martin; iron post stamped "Prim. Trav. Sta. No. 28 1910 TEXAS 322".....	30 54 50.8	96 45 10.8
Wildcat bridge, 0.5 mile south of; in open field, 300 feet west of river bank, 300 feet east of rising wooded ground, in root of pecan tree; copper nail (T. B. M. No. 15).....	30 55 14.2	96 45 13.5
Calvert, 6 miles southwest of; at Wildcat bridge across Brazos River, in concrete wing wall 8 feet from southeast corner of bridge; aluminum tablet stamped "Prim. Trav. Sta. No. 29 1910 TEXAS elev. 288".....	30 55 38.1	96 45 10.6
Wildcat bridge, 0.5 mile north of; in pecan grove about 700 or 800 feet west of river, in cultivated field, in root of small pecan tree; copper nail (T. B. M. No. 16).....	30 55 57.5	96 45 31.5
Wildcat bridge, 1 mile north of; about 600 feet west of river in cultivated field, in root of pecan tree; copper nail (T. B. M. No. 17).....	30 56 19.0	96 45 33.2
Wildcat bridge, 1.5 miles north of; about 400 feet west of river bank in open field, in root of brushy cedar tree; nail (T. B. M. No. 18).....	30 56 43.1	96 45 33.4
Wildcat bridge, 2 miles north of; about opposite Calvert coal mine, across river, at edge of timber and open field, about 2,000 feet west of river; iron post stamped "Prim. Trav. Sta. No. 30 1910 TEXAS elev. 308".....	30 57 06.6	96 45 58.2
Brazos River, on bank, 100 feet southeast of dry ravine, timber thicket to north-west, field on south and southeast, in root of hackberry tree; copper nail (T. B. M. No. 19).....	30 57 29.4	96 46 13.3
Black bridge, 1.3 miles southwest of; on wire-fence line, open field 200 feet west of river bank, in root of pecan tree; copper nail (T. B. M. No. 20).....	30 58 02.8	96 46 23.9
Black bridge, 0.8 miles southwest of; on river bank, in root of oak tree; copper nail (T. B. M. No. 21).....	30 58 24.3	96 46 09.4
Black bridge, 1 mile west of; on International & Great Northern R. R., in top of north end of west pier; aluminum tablet stamped "Prim. Trav. Sta. No. 31 1910 TEXAS elev. 300".....	30 58 47.9	96 45 33.6
Black bridge, 3,000 feet west of; in timber, about 500 feet or 600 feet west of river bank, in root of oak tree; copper nail (T. B. M. No. 22).....	30 59 15.8	96 45 31.3
Black bridge, 1 mile north of; 75 feet west of river bank, between woods and open ground, in root of small elm tree; wire nail (T. B. M. No. 23).....	30 59 41.2	96 45 30.4
Brazos River, about 300 to 500 feet south of bank, just east of ravine and open field in brush and wood thicket, in root of elm tree; copper nail (T. B. M. No. 25).....	31 00 03.0	96 45 48.4

Magnetic declination of quadrangle, 8° 33' E.

HEARNE 30' QUADRANGLE—Continued.

Geographic positions along railroads.

Stations.	Latitude.	Longitude.
Valley Junction, 1 mile south of; 100 feet east of road crossing, south side of road, in root of oak tree painted "U. S. B. M. 265"; copper nail (T. B. M. No. 82)...	30 49 44.6	96 37 45.2
Valley Junction, 0.6 mile south of; 39 feet west of track, in base of telegraph pole painted, "U. S. B. M. 268"; spike (T. B. M. No. 83).....	30 50 02.5	96 37 59.6
Valley Junction, 30 feet southeast of junction, 50 feet east of station; iron post stamped "Prim. Trav. Sta. No. 75 A 1910 TEXAS".....	30 50 28.6	96 38 18.4
Valley Junction, 0.4 mile north of; 39 feet west of track, in base of telephone pole painted "U. S. B. M. 270"; spike (T. B. M. No. 84).....	30 50 46.7	96 38 32.2
Valley Junction, 0.8 mile north of; 38 feet west of track, in base of telegraph pole painted "U. S. B. M. 270"; spike (T. B. M. No. 85).....	30 51 06.0	96 38 46.5
Valley Junction, 1.4 miles north of; about 200 feet north of Algodon crossing; 38 feet west of track, in bottom of milepost 102; spike, marked "U. S. B. M. 266" (T. B. M. No. 86).....	30 51 29.5	96 39 03.8
Valley Junction, 1.9 miles north of; 39 feet west of track, in base of telegraph pole painted "U. S. B. M. 269"; spike (T. B. M. No. 87).....	30 51 51.7	96 39 20.2
Valley Junction, 2.5 miles north of; 20 feet east of track, at corner of wire fence; iron post stamped "Prim. Trav. Sta. No. 76 A 1910 TEXAS elev. 275" (P. B. M. No. 57).....	30 52 12.8	96 39 35.4
Bois d'arc tree, north side of road (T. B. M. No. 1).....	30 52 00.8	96 40 41.9
Bois d'arc post near gate post at sharp turn in road (T. B. M. No. 2).....	30 51 51.1	96 41 09.8
Brazos River, south bank of; at end of bridge; oak tree (T. B. M. No. 3).....	30 51 57.2	96 41 40.2
Private road southwest, 0.2 mile from public highway, in front of vacant house; iron post stamped "Prim. Trav. Sta. No. 1 1909 TEXAS elev. 302" (P. B. M. No. 1).....	30 51 57.8	96 42 16.2
Bushy-topped elm tree in center of field (T. B. M. No. 3).....	30 51 54.6	96 42 43.1
Double hackberry tree at south side of road (T. B. M. No. 4).....	30 51 54.6	96 43 21.4
Oak tree at west end of field (T. B. M. No. 5).....	30 51 51.5	96 43 40.5
Oak tree at center of field near vacant house (T. B. M. No. 6).....	30 52 00.3	96 44 07.2
Rufus Smith's place, east of private road, about 350 feet south of house, 75 feet south of gate, 13 feet east of oak tree; iron post stamped "Prim. Trav. Sta. No. 2 1909 TEXAS elev. 291".....	30 52 15.2	96 44 07.5
Oak tree (T. B. M. No. 8).....	30 52 08.0	96 44 25.7
Large pecan tree near road (T. B. M. No. 9).....	30 52 00.3	96 44 42.2

Geographic positions along highways.

Valley Junction, 0.9 mile west of; 2 feet south of track, on culvert 95-A; bolt, marked with white paint "U. S. B. M. 276" (T. B. M. No. 88-A).....	30 50 07.8	96 39 06.0
Valley Junction, 1.7 miles west of; west abutment, south end, of International & Great Northern R. R. bridge over Brazos River; aluminum tablet stamped "Prim. Trav. Sta. No. 77 A 1910 TEXAS" (P. B. M. No. 58-A).....	30 49 43.3	96 39 41.2
Milan-Robertson county-line post.....	30 49 43.1	96 39 41.0
Brazos River bridge, 0.5 mile southeast of, 110 feet east of wire fence, on east side of lane, in root of post oak tree; painted "U. S. 89 A elev. 307"; copper nail (T. B. M. No. 89 A).....	30 49 28.5	96 39 14.8
Brazos River bridge, 0.9 mile southeast of; 420 feet south of Frank Thomas's house, 110 feet northeast of corner of wire fence, in root of post oak tree; copper nail, marked "90 A elev. 302.8" (T. B. M. No. 90 A).....	30 49 16.3	96 38 58.6
Brazos River bridge, 1.6 miles south of; 100 feet north of old barn, 300 feet west of old house, 5 feet south of oak tree; iron post stamped "Prim. Trav. Sta. No. 78 A 1910 elev. 299" (P. B. M. No. 59-A).....	30 48 45.5	96 38 40.9
Brazos River bridge, 2.2 miles south of; 250 feet northeast of corner of wire fence at southwest corner of cotton field, in root of pecan tree leaning west, painted "270.7"; copper nail (T. B. M. No. 91-A).....	30 48 17.0	96 38 25.5
Brazos River bridge, 2.8 miles south of; about 950 feet southwest of northeast corner of corn field, 300 feet south of wire fence at edge of woods, in root of hickory tree painted "265 92 A"; copper nail (T. B. M. No. 92-A).....	30 47 47.9	96 38 41.2
Brazos River bridge, 4 miles south of; on Brown's place, about 0.25 mile south of D. W. William's house, on west side of road; iron post stamped "Prim. Trav. Sta. No. 79-A 1910" (P. B. M. No. 60-A).....	30 47 00.0	96 39 16.0
Brazos River bridge, 4.5 miles south of; about 0.5 mile south of Brown's farm, about 500 feet south of big gully, in root of pecan tree painted "263.7"; copper nail (T. B. M. No. 93-A).....	30 46 36.0	96 38 55.0
Brazos River bridge, 5 miles south of; 25 feet south of dim road and wire fence, in root of post oak tree painted "368.5"; copper nail (T. B. M. No. 94-A).....	30 46 16.2	96 38 40.9
Lane, 10 feet southwest of tree blazed and marked with letters "U. S.".....	30 46 03.7	96 38 39.0
Snag in lane, about 30 feet east of old snag north of road.....	30 46 02.3	96 38 44.4
Brazos River bridge, 5.8 miles south of; 200 feet east of small wooden bridge, 30 feet north of gate, in root of oak tree painted "321.9"; copper nail (T. B. M. No. 95-A).....	30 45 47.1	96 38 44.5
Lowrey place, 0.6 mile south of; 160 feet south of junction of branch east with main branch south, 40 feet east of east bank of branch south; post oak tree marked "286.3 96-A" (T. B. M. No. 96-A).....	30 45 22.1	96 38 31.7
Dead pecan tree in cornfield.....	30 51 43.6	96 45 14.4
Large pecan tree in cotton field (T. B. M. No. 10).....	30 51 24.9	96 45 29.2
Clint Tyson's place, 0.5 mile south of house, 20 feet west of road to Forbin bridge; iron post stamped "Prim. Trav. Sta. No. 3 1909 TEXAS elev. 281".....	30 51 14.4	96 45 44.8
Slough, about 70 feet east of, in cotton field; pecan tree (T. B. M. No. 11).....	30 51 13.4	96 46 09.5
Large pecan tree in cornfield (T. B. M. No. 12).....	30 51 17.5	96 46 37.4

HEARNE 30' QUADRANGLE—Continued.

Geographic positions along highways—Continued.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Brazos River, 200 feet east of, near vacant cabin; large elm (T. B. M. No. 13).....	30 51 38.0	96 47 28.2
Mulberry tree on highest point of cotton field (T. B. M. No. 14).....	30 52 00.9	96 47 33.3
Brazos River, 60 feet north of; near line of fence, 70 feet south to sycamore tree; iron post stamped "Prim. Trav. Sta. No. 4 TEXAS 1909".....	30 52 05.7	96 47 36.9
Small elm on edge of woods (T. B. M. No. 15).....	30 52 13.2	96 48 07.1
Small pecan tree in cornfield on east edge of road through cotton field (T. B. M. No. 16).....	30 52 06.0	96 48 20.7
Elm tree (T. B. M. No. 17).....	30 51 51.0	96 48 56.2
Elm tree near ditch, in root of (T. B. M. No. 18).....	30 51 38.7	96 49 32.3
Sandy ridge, about 20 feet higher than river bottom, about 300 feet north of woods, 90 feet east of negro cabin; iron post stamped "Prim. Trav. Sta. No. 5 TEXAS 1909 elev. 307".....	30 51 37.2	96 49 59.1
Cottonwood tree in edge of woods (T. B. M. No. 19).....	30 51 55.8	96 50 40.2
Elm tree in small strip of woods (T. B. M. No. 20).....	30 52 04.9	96 50 54.0
Large persimmon tree in large pasture (T. B. M. No. 21).....	30 52 08.6	96 51 29.2
House and large windmill on knoll, 3,000 feet southwest of; 10 feet north of large sycamore tree; iron post stamped "Prim. Trav. Sta. No. 6 1909 TEXAS elev. 299".....	30 52 18.7	96 51 45.6
Pecan tree in large flat pasture (T. B. M. No. 22).....	30 52 34.5	96 52 21.4
River, about 200 feet north of; oak tree (T. B. M. No. 23).....	30 53 00.4	96 52 49.4
River, about 1,000 feet west of; on high ground among scattering timber; mesquite tree (T. B. M. No. 24).....	30 53 27.3	96 52 56.8
Bottom land, 100 feet east of; base of oak tree (T. B. M. No. 25).....	30 53 28.0	96 53 20.6
River bottom, near gate at edge of; 500 feet south of house; iron post stamped "Prim. Trav. Sta. No. 7 1909 TEXAS".....	30 53 21.8	96 53 37.3
House, about 250 feet south of, in edge of woods; pecan tree (T. B. M. No. 27).....	30 53 45.5	96 54 41.1
Near small drain in strip of woods; pecan tree (T. B. M. No. 28).....	30 54 06.4	96 54 57.8
Edge of cornfield; elm tree (T. B. M. No. 29).....	30 54 12.1	96 55 23.5
Vacant cabin, 400 feet southwest of; on west side of private road, cultivated fields north and east, woods west, 10 feet south of elm tree; iron post stamped "Prim. Trav. Sta. No. 8 1909 TEXAS elev. 306".....	30 54 00.3	96 56 09.9
Cultivated field, 20 feet east of private road; elm tree (T. B. M. No. 30).....	30 54 02.4	96 56 28.2
Large field to east, in edge of woods; elm tree (T. B. M. No. 31).....	30 54 04.6	96 56 58.9
Elm Creek, 150 feet from center of; 60 feet east of center of highway; iron post stamped "Prim. Trav. Sta. No. 9 TEXAS 1909 elev. 308".....	30 54 07.6	96 57 28.0
Near fence at edge of woods; elm tree (T. B. M. No. 32).....	30 53 33.9	96 57 25.5
Cultivated fields east and north, in corner of woods; elm stump (T. B. M. No. 33).....	30 53 23.7	96 56 46.4
White house on high ground, 50 feet east of oak tree (T. B. M. No. 34).....	30 53 10.8	96 56 13.1
Tree at east end of field (T. B. M. No. 35).....	30 53 01.4	96 56 42.6
River bottom, near fence at north side of river road, 60 feet southwest of large cottonwood tree; iron post stamped "Prim. Trav. Sta. No. 10 1909 TEXAS elev. 310".....	30 52 02.9	96 56 57.3
Large cottonwood tree at north edge of public highway (T. B. M. No. 36).....	30 51 36.0	96 57 02.2
Hackberry tree near small drain, 900 feet north of railroad (T. B. M. No. 37).....	30 51 10.0	96 57 14.4
Oak tree 40 feet north of public road, near cemetery west of road (T. B. M. No. 38).....	30 50 41.2	96 57 33.8
Cameron-Stonewall road, 30 feet west of; near small drain; iron post stamped "Prim. Trav. Sta. No. 11 1909 TEXAS elev. 313".....	30 50 32.2	96 57 27.1
Cameron pumping station, 150 feet northwest of; 60 feet south of road; cottonwood tree (T. B. M. No. 39).....	30 50 27.1	96 57 53.9
Elm tree in large flat field (T. B. M. No. 40).....	30 49 59.5	96 58 11.9
Lone oak tree in river bottom (T. B. M. No. 41).....	30 49 49.1	96 58 30.8
Red elm on creek land.....	30 49 29.3	96 58 41.0
San Antonio & Aransas Pass R. R. bridge over Little River, 235 feet from north end of, 30 feet west of small trestle; iron post stamped "Prim. Trav. Sta. No. 12 1909 TEXAS".....	30 49 04.4	96 58 47.8
Oak tree in edge of wood, 60 feet south of private road (T. B. M. No. 42).....	30 48 49.4	96 59 12.5
Ash tree in scattering timber on creek land, cultivated field to south (T. B. M. No. 43).....	30 48 25.2	96 59 29.0

TAYLOR QUADRANGLE.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Mesquite tree in river bottom among small scattering trees (T. B. M. No. 44)....	30 48 14.8	97 00 02.4
Ash tree east at end of large flat field (T. B. M. No. 45).....	30 47 49.6	97 00 07.8
Elm tree at west edge of cotton field and east edge of woods (T. B. M. No. 46)....	30 47 20.5	97 00 19.1
Tompkins's convict camp, about 1 mile southwest of; on Tompkins's farm near fence at edge of woods, 280 feet from slough; iron post stamped "Prim. Trav. Sta. No. 13 1909 TEXAS".....	30 47 13.4	97 00 25.6
Levee, 700 feet west of; root of oak tree in river bottom (T. B. M. No. 47).....	30 46 45.3	97 01 08.5
Ash tree on east side of road in small drain (T. B. M. No. 48).....	30 46 46.4	97 01 33.5
Elm tree on north side of road, cleared field north in river bottom (T. B. M. No. 49).....	30 46 47.1	97 02 16.3
Cameron-Thorndale road, west side of; 85 feet north of small culvert; iron post stamped "Prim. Trav. Sta. No. 14 1909".....	30 46 51.4	97 02 44.4

TAYLOR QUADRANGLE—Continued.

Geographic positions along highways—Continued.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Double elm tree in large cornfield, 832 feet west of county road (T. B. M. No. 50) ..	30 46 52.8	97 02 53.7
Large elm tree in river bottom, center of large cornfield (T. B. M. No. 51)	30 47 11.1	97 03 18.7
Hackberry tree on high ground, 200 feet east of house (T. B. M. No. 52)	30 47 13.1	97 03 49.1
House, about 0.5 mile south of; 15 feet east of hedge fence on high ground; iron post stamped "Prim. Trav. Sta. No. 15 1909 TEXAS"	30 47 49.9	97 04 10.4
Mesquite stump, 15 feet east of private road, on edge of field among scattering trees (T. B. M. No. 53)	30 48 14.7	97 04 24.2
Post oak tree, 560 feet south of drain, on high ground, in mesquite brush (T. B. M. No. 54)	30 48 18.1	97 04 50.6
Elm tree in small strip of woods, on bank, 300 feet east of river bottom (T. B. M. No. 55)	30 47 51.5	97 05 04.4
Oak tree in edge of river bottom, at foot of steep bank (T. B. M. No. 56)	30 47 47.6	97 05 23.4
Creek, 400 feet west of; near fence in river bottom, 15 feet south of hackberry tree; iron post stamped "Prim. Trav. Sta. No. 16 1909 TEXAS"	30 47 39.6	97 06 05.4
Tree in cornfield, on east bank of slough (T. B. M. No. 57)	30 47 47.0	97 06 27.1
Oak tree, 30 feet north of public road and about 1,000 feet north of bridge across river (T. B. M. No. 59)	30 47 54.3	97 06 45.5
Elm tree in northeast corner of field, 40 feet south of slough (T. B. M. No. 60)	30 48 11.3	97 07 12.1
Oak tree on north side of river bottom, 75 feet south of slough (T. B. M. No. 61) ..	30 48 27.1	97 07 27.4
Elm tree in small slough between two large fields (T. B. M. No. 62)	30 48 49.4	97 07 51.9
East bank of intermittent stream, opposite private road on west side, 300 feet south of bank along edge of river bottom, west end of long field; iron post stamped "Prim. Trav. Sta. No. 17 1909 TEXAS"	30 49 05.4	97 08 11.9
Lone elm tree, 760 feet west of county road to Cummin's bridge, 600 feet south of slough (T. B. M. No. 63)	30 49 16.7	97 08 40.2
Leaning elm tree, south side of slough, among scattering timber, north of cornfield (T. B. M. No. 64)	30 49 28.2	97 09 03.8
Hackberry tree at east end of field, in river bottom (T. B. M. No. 65)	30 49 46.0	97 09 14.4
Elm tree in small strip of woods, 600 feet east of Corley road (T. B. M. No. 66) ..	30 50 12.3	97 09 42.4
Corley road, 300 feet west of; in river bottom, 400 feet north of slough, in edge of woods; iron post stamped "Prim. Trav. Sta. No. 18 1909 TEXAS elev. 373" ..	30 50 12.1	97 09 56.9
Small willow stump in river bottom near small slough (T. B. M. No. 67)	30 50 25.9	97 10 24.6
Slough, on bank of; 10 feet south of wire fence, 150 feet south of rising ground, nail in base of willow tree (T. B. M. No. 68)	30 50 40.4	97 10 53.5
Bryant's station, east of public highway, about 600 feet north of bridge across river; iron post stamped "Prim. Trav. Sta. No. 19 1909 TEXAS elev. 431" ..	30 51 00.0	97 11 40.9
Elm tree on high ground, 500 feet east of river bottom, 150 feet west of private road (T. B. M. No. 69)	30 51 16.0	97 12 04.2
Elm tree at edge of woods, at west end of cornfield, in river bottom (T. B. M. No. 70) ..	30 51 28.8	97 12 39.0
Oak tree in large flat field, 300 feet south of 20-foot slough (T. B. M. No. 71) ..	30 51 35.7	97 13 16.7
River bottom, at edge of private road, in woods; iron post stamped "Prim. Trav. Sta. No. 20 1909 TEXAS"	30 51 55.9	97 13 49.2
Elm tree in river bottom, 20 feet west of river road, 500 feet south of house on knoll, on land owned by W. M. Clary (T. B. M. No. 72)	30 52 10.9	97 14 25.2
Northeast pillar of bridge across river	30 52 06.4	97 14 50.2
Ash tree on river bank, west edge of public road, about 600 feet north of bridge (T. B. M. No. 73)	30 52 12.9	97 14 53.2
Elm tree on east bank of slough, 500 feet north of river (T. B. M. No. 74)	30 52 31.7	97 15 27.3
River, 600 feet east of, in southwest corner of cultivated field surrounded by woods, set 36 inches in ground; iron post stamped "Prim. Trav. Sta. No. 21 TEXAS 1909 elev. 405"	30 52 30.2	97 16 23.7
Large leaning elm tree, in woods, 250 feet east of field (T. B. M. No. 76)	30 52 31.5	97 16 37.0
River, 50 feet north of; oak tree (T. B. M. No. 77)	30 52 53.3	97 17 41.4
River, 100 feet north of, in woods; elm tree (T. B. M. No. 78)	30 52 54.5	97 18 14.4
River bank, at gate across private road; hackberry tree (T. B. M. No. 79)	30 53 22.0	97 18 05.5
Edge of woods just west of cultivated field; hackberry tree (T. B. M. No. 80) ..	30 53 53.5	97 18 23.4
House, 1,000 feet west of; 25 feet south of private road, in open field; double cottonwood tree (T. B. M. No. 81)	30 54 25.3	97 18 22.6
Full strip of woods between fields, east side of private road; hackberry tree (T. B. M. No. 82)	30 55 03.0	97 18 37.0
Open field in small sag, 800 feet east of public highway; hackberry tree (T. B. M. No. 83)	30 55 32.6	97 18 41.5
Open field, 50 feet north of private road; pecan tree (T. B. M. No. 84)	30 56 05.6	97 18 47.4
Burgess, 425 feet west of wire bridge, about 425 feet northeast of schoolhouse, 200 feet north of Reeds Lake; iron post stamped "Prim. Trav. Sta. No. 23 1909 TEXAS"	30 56 43.2	97 18 53.3
East side of private road, in large cultivated field; hackberry tree (T. B. M. No. 85)	30 56 46.0	97 19 31.0
Edge of woods, in large cultivated field to east; hackberry tree (T. B. M. No. 86) ..	30 56 52.1	97 19 56.3
House, 500 feet south of, west edge of private road; oak tree on high ground (T. B. M. No. 87)	30 57 16.4	97 20 26.6

TAYLOR QUADRANGLE—Continued.

Geographic positions along the Missouri, Kansas & Texas Ry.

Stations.	Latitude.	Longitude.
Little River, 2.2 miles south of, south abutment of Missouri, Kansas & Texas Ry. bridge across Little River; aluminum tablet stamped "Prim. Trav. Sta. No. 24 1909 TEXAS".....	° ' "	° ' "
Center of trestle.....	30 57 34.4	97 21 01.6
Trestle.....	30 57 56.5	97 21 22.0
Road crossing.....	30 58 17.9	97 21 39.4
Trestle.....	30 58 39.1	97 21 56.7
Little River, in front of station; center of track.....	30 58 48.8	97 22 01.7
Little River, 1,115 feet north of station, 45 feet east of track; iron post stamped "Prim. Trav. Sta. No. 25 1910 TEXAS".....	30 59 20.2	97 21 59.9
	30 59 31.2	97 21 58.1

Geographic positions along highways.

Holtzclaw bridge over Little River, about 600 feet north of; on wire fence line, on west side of Cameron-Thorndale road, in root of ash tree; copper nail (T. B. M. No. 104).....	30 46 28.1	97 03 00.5
River bank, 40 feet west of; near point of hill descending to river, 10 feet south of wire fence, in root of small hackberry tree; copper nail (T. B. M. No. 105).....	30 46 01.0	97 02 15.4
Open field belonging to A. L. Lensing, in root of pecan tree; copper nail (T. B. M. No. 106).....	30 45 40.4	97 01 50.4
San Gabriel Creek, about 0.5 mile from mouth of; 0.2 mile west of Little River, in open field owned by A. L. Lensing about 1.5 miles east of his house; iron post stamped "Prim. Trav. Sta. No. 60 1910 TEXAS".....	30 45 18.3	97 01 42.9
San Gabriel Creek, about 225 feet northwest of; about 1 mile south 70° east from Mr. Lensing's house, on edge of brushy ravine, in root of large oak tree; copper nail (T. B. M. No. 107).....	30 44 55.3	97 02 07.8
Open field, 100 feet north of, in root of elm tree in woods; copper nail (T. B. M. No. 108).....	30 44 29.7	97 02 12.8
Holtzclaw bridge over San Gabriel Creek, N. 56° W., of, on north side of road, 3 feet from wire fence, 125 feet northwest of small wooden bridge, about 7.5 miles northwest of Rockdale; iron post stamped "Prim. Trav. Sta. No. 61 1910 TEXAS".....	30 43 49.8	97 02 34.6
Northwest corner of iron bridge over San Gabriel Creek.....	30 43 38.0	97 02 19.5
Temporary bench mark No. 109.....	30 43 36.3	97 02 56.1
San Gabriel Creek, 600 feet south of, in cultivated field; elm tree (T. B. M. No. 110).....	30 43 20.0	97 03 12.9
Lone oak tree in open field (T. B. M. No. 111).....	30 42 43.0	97 03 29.1
Elm tree on north bank of Brushy Creek (T. B. M. No. 112).....	30 42 18.4	97 03 05.9
Ash tree at edge of timber, south side of field (T. B. M. No. 113).....	30 41 44.8	97 04 01.0
Bridge across Brushy Creek, 0.5 mile east of; on south side of road, in elm tree (T. B. M. No. 114).....	30 41 30.2	97 04 13.9
Brushy Creek, 800 feet west of iron bridge over, on north side of Rockdale-Tracy road; iron post stamped "Prim. Trav. Sta. No. 62, 1910 TEXAS".....	30 41 39.8	97 04 50.5
Elm tree at west side of crossroads (T. B. M. No. 115).....	30 41 51.1	97 05 10.5
Elm tree at north side of public highway (T. B. M. No. 116).....	30 42 08.6	97 05 43.6
Small stump 150 feet north of highway in small strip of timber (T. B. M. No. 117).....	30 42 13.8	97 06 20.5
Brushy Creek, 300 feet west of; 500 feet southeast of mouth of Alligator Creek, 500 feet east of house, on high ground; iron post stamped "Prim. Trav. Sta. No. 63 1910 TEXAS".....	30 42 31.9	97 06 47.7
Stump at east end of peach orchard, 300 feet east of negro cabin (T. B. M. No. 118).....	30 42 43.2	97 06 55.9
Elm tree on west side of road, near small barn (T. B. M. No. 119).....	30 42 54.8	97 07 08.9
Mesquite tree in open field near vacant house (T. B. M. No. 120).....	30 43 20.2	97 07 19.2
Small wooden bridge in cultivated field (T. B. M. No. 121).....	30 43 36.7	97 07 20.1
Post on west side of road (T. B. M. No. 125).....	30 46 14.5	97 07 21.9
Elm tree on east side of road, at foot of hill (T. B. M. No. 126).....	30 46 49.0	97 07 07.9
Southwest corner of river bridge (T. B. M. No. 127).....	30 47 31.6	97 06 49.8
Station 529 equals station 190, Little River primary traverse line.....	30 47 54.2	97 06 45.4

Magnetic declination of line, 8° 28' E.

Geographic positions along highways.

Mesquite tree near house (T. B. M. No. 122).....	30 44 14.3	97 07 31.4
Tracy, about 1.8 miles west of; north side of crossroads; iron post stamped "Prim. Trav. Sta. No. 64, 1910 TEXAS".....	30 44 49.7	97 07 54.6
Gatepost at private road west (T. B. M. No. 123).....	30 45 24.4	97 07 41.5
Gatepost brace on south side of T road west (T. B. M. No. 124).....	30 45 50.2	97 07 31.5

Magnetic declination of northeast corner of quadrangle, 8° 25' E.

TEMPLE 30' QUADRANGLE.

Geographic positions along the Gulf, Colorado & Santa Fe Ry.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Middle of small trestle.....	31 00 48.7	97 21 49.6
Road crossing.....	31 01 54.9	97 21 41.1
Switch stand.....	31 02 52.8	97 21 16.0
Small trestle.....	31 03 46.7	97 20 52.4
Do.....	31 04 38.9	97 20 29.4
Public road crossing.....	31 05 00.3	97 20 20.0
Temple, 157.4 feet south 15° east of crossing of Gulf, Colorado & Santa Fe Ry. and Missouri, Kansas & Texas Ry.....	31 05 12.6	97 20 15.5
Temple, crossing of Gulf, Colorado & Santa Fe Ry. and Missouri, Kansas & Texas Ry.....	31 05 11.0	97 20 15.3
Temple triangulation station, center of water tower foundation, approximate U. S. standard datum.....	31 05 49.0	97 20 28.0
Road crossing.....	31 07 33.7	97 20 31.4
Switch stand.....	31 08 05.8	97 20 22.6
Road crossing.....	31 09 37.0	97 20 30.6
Do.....	31 11 19.0	97 21 01.3
Pendleton, in front of station, center of track.....	31 11 43.0	97 21 04.8
Lynch triangulation station, approximate U. S. standard datum.....	31 12 23.0	97 20 23.1

UTAH.

TRIANGULATION STATIONS.

Castle Gate, Clear Creek, Kyune, Nine Mile, Poison Spring, Reed Creek, Soldier Summit, Sunnyside, and Wellington quadrangles.

CARBON, EMERY, AND UTAH COUNTIES.

T. M. Bannon extended triangulation over the coal areas of Carbon County during the summer of 1910. Four old stations and twelve new stations were occupied, and numerous points were located by intersections. All positions are on United States standard datum, starting from Strawberry, Grey Head, and Indian Head, and closing on Patmos Head, a Coast and Geodetic Survey station. The azimuth at Patmos Head was checked by sighting the azimuth mark established by the Coast and Geodetic Survey. The azimuth mark was also occupied as a triangulation station and the position computed.

BEAVER, CARBON COUNTY, UTAH.

On the highest grassy hill of Ford Ridge, between Beaver and Spring creeks. The hill is very prominent, and is visible from all directions. The view is good from Colton and Price. It is about 7 miles southeast of Colton, 4 miles south of Kyune, and two miles east of Richardson's sheep ranch on Beaver Creek. The station is easily reached from the Kyune or Beaver Creek side.

Station mark: Chiseled cross on solid rock, under large monument.

Reference mark: Chiseled cross on a rock set in ground; azimuth $236^{\circ} 49'$, distance 20.9 feet.

[Latitude $39^{\circ} 45' 22.19''$. Longitude $110^{\circ} 59' 26.83''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Strawberry.....	181 00 52.49	1 01 07.98	4.5095812	20.088
Indian Head.....	209 43 51.45	29 47 18.59	4.1903474	9.6316
Kyune.....	216 08 12.40	36 12 06.17	4.1678014	9.1443
Road.....	235 20 07.48	55 29 33.58	4.4071612	15.868
Graves.....	278 54 43.83	99 03 49.86	4.3136206	12.793

BRUIN, CARBON COUNTY, UTAH.

On a high white mountain at the head of Range Creek and the divide between Whitmore Creek and Minnie Maud Creek, about 10 miles north of Sunnyside. It is easily reached by wagon road up Whitmore Canyon from Sunnyside.

Station mark: Tablet cemented into rock, centered under large monument.

Reference mark: Nail in blazed tree, 109.9 feet north.

The old station of the Powell survey was destroyed.

[Latitude 39° 38' 39.83". Longitude 110° 20' 51.38".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Dubuious.....	63 57 13.37	243 46 17.72	4.4369013	16.992
Soldier.....	114 35 10.26	294 29 21.43	4.1558550	8.896
Patmos Head.....	350 14 46.26	170 15 58.53	4.2040544	9.940

CAT, UTAH COUNTY, UTAH. (Not occupied.)

On the reservation ridge at the head of Cat Creek, about 6 miles by the Cat Creek trail from Colton station, on the Denver & Rio Grande Railroad.

Station mark: Chiseled cross on a flat rock buried flush with ground surface, over which was placed a small pile of rock.

[Latitude 39° 53' 50.7". Longitude 110° 57' 31.4".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Beaver.....	9 56 16.1	189 55 02.2	4.20200	9.8935
Indian Head.....	294 14 12.4	114 16 25.8	3.73417	3.3692
Kyune.....	302 38 14.3	122 40 54.4	3.84807	4.3795

COAL, CARBON COUNTY, UTAH. (Not occupied.)

On high ridge between Price Valley and Emma's Park, between Coal and Soldier creeks. It is easily reached from the Park road (county road, Price to Colton).

Station mark: Tablet cemented into solid rock under a large monument.

[Latitude 39° 43' 09.5". Longitude 110° 38' 50.7".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Wellington.....	17 32 52.6	197 29 54.0	4.3459042	13.780
Price.....	49 02 52.6	228 56 30.5	4.2765985	11.747
Graves.....	95 31 52.2	275 27 48.1	3.9609664	5.6796

COLTON, UTAH COUNTY, UTAH.

On a prominent peak 1 mile north of Colton. It is easily reached by taking the Cat Creek trail to the north side of the hill.

Station mark: Tablet cemented into ledge under a rock monument.

[Latitude 39° 52' 09.1". Longitude 110° 59' 39.6".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Indian Head.....	263 29 48.4	83 33 24.0	3.90532	4.9966
Kyune.....	274 13 46.9	94 17 49.1	3.95449	5.5956
Beaver.....	358 37 01.2	178 37 09.4	4.09876	7.8003

344. TRIANGULATION AND PRIMARY TRAVERSE FOR 1909 AND 1910.

DUBUOUS, CARBON COUNTY, UTAH.

On the north one of two sharp isolated peaks on the low cedar ridges east of Cat Creek. It is 6 miles east of Wellington, 13 miles a little south of east of Price, and 15 miles west of Sunnyside. The county road from Price to Sunnyside passes 1 mile north of station. A wagon can be driven from the 12-mile post to the top of the ridge, thence along the ridge to a point 500 feet from the monument.

Station mark: Chiseled cross on solid rock 4 inches below surface under a large rock monument.

Reference mark: Chiseled cross on flat rock; azimuth $271^{\circ} 59'$, distance 15 feet.

[Latitude $39^{\circ} 32' 09.20''$. Longitude $110^{\circ} 38' 00.20''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Shiner.....	93 51 28.15	273 43 06.10	4.2758215	11.727
Graves.....	154 07 57.66	334 03 21.76	4.3731368	14.672
Soldier.....	212 33 22.78	32 38 30.36	4.3295439	13.271
Bruin.....	243 46 17.72	63 57 13.37	4.4369013	16.992
Patmos Head.....	277 39 46.31	97 51 53.17	4.4399179	17.110

FORD, CARBON COUNTY, UTAH. (Not occupied.)

On a prominent grassy hill with bluff on southeast face, on a ridge between Spring Creek and Price River. It is about 10 miles northwest of Castle Gate, and is best reached from the ridges about 2 miles down Price River from Kyune.

Reference mark: Chisel mark "U. S. Δ " on rock under a large monument.

[Latitude $39^{\circ} 45' 12.2''$. Longitude $110^{\circ} 57' 32.9''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Beaver.....	96 29 24.1	276 28 11.2	3.43613	1.6962
Kyune.....	206 05 35.3	26 08 16.1	4.13270	8.4344
Price.....	322 19 33.4	142 25 07.8	4.31053	12.702
Shiner.....	338 10 17.1	158 14 22.2	4.39205	15.325

GRAVES, CARBON COUNTY, UTAH.

On the highest point of the long ridge between Emma's Park and Price River Valley. This ridge ends in a bluff on the south, but has a smooth slope on the north. The station, which is at the head of Summit Creek, a tributary of Willow Creek, can be seen from Price, from which place it is distant about 8 miles by a very rough route. The best route to the station is from the north, along the Price-Colton road to the divide between Coal and Willow Creeks, 30 miles from Price. This station was occupied by Walter Graves in 1877.

Station mark: Chiseled cross on solid rock under a large monument.

Reference mark: Chiseled cross on flat rock marked "U. S. G. S.," azimuth $47^{\circ} 08'$, distance 66.4 feet.

[Latitude $39^{\circ} 43' 37.89''$. Longitude $110^{\circ} 45' 12.76''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Price.....	21 15 13.80	201 12 55.60	4.1537466	8.8531
Shiner.....	23 02 24.52	202 58 37.40	4.3368735	13.496
Beaver.....	99 03 49.86	278 54 43.83	4.3136206	12.793
Kyune.....	142 25 38.71	322 20 25.77	4.2800950	11.842
Soldier.....	278 23 32.77	98 33 17.36	4.3431111	13.692
Dubuous.....	334 03 21.76	154 07 57.66	4.3731368	14.672
Wellington.....	353 41 04.18	173 42 09.27	4.3455241	13.768

GREY HEAD, WASATCH COUNTY, UTAH.

On a high grassy-topped hill on a ridge between two forks of Indian Creek. It is about 25 miles northeast of Colton, and is best reached by the Colton-Theodore road to the summit or Reservation Ridge, thence along the ridge to station.

Station mark: 20-penny nail pushed into the ground under a rock buried flush with the surface of the ground under a large monument.

Reference mark: Chiseled cross on rock 9.8 feet south of station mark.

[Latitude 39° 58' 01.23". Longitude 110° 42' 33.54".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Kyune.....	53 13 34.77	233 06 38.88	4.2840527	11.951
Indian Head.....	58 46 42.25	238 39 19.57	4.2825883	11.911
Strawberry.....	110 53 26.52	290 42 50.61	4.3996275	15.595

HIAWATHA, CARBON COUNTY, UTAH. (Not occupied.)

On a high, round-topped, grassy hill on the high divide at the head of Miller Creek., It is 3 miles west of Hiawatha coal camp, and is best reached from the west.

Signal: Tripod.

Station mark: Tablet cemented into a rock buried flush with the ground.

[Latitude 39° 31' 48.0". Longitude 111° 03' 04.0".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Beaver.....	191 38 03.9	11 40 22.5	4.40888	15.930
Price.....	247 02 22.7	67 11 27.2	4.34530	13.760
Shiner.....	263 35 24.5	83 42 59.8	4.23517	10.679

INDIAN HEAD, NEAR UTAH-WASATCH COUNTY LINE, UTAH.

On Indian Head, a flat-topped mountain, on the boundary of the Uinta Reservation. It is near the Utah-Wasatch county line, about 10 miles northeast of Colton, and can easily be reached from that place by the Cat Creek trail and the wagon road along Reservation Ridge, or from Kyune on the Colton-Theodore-Price wagon roads.

Station mark: Iron bench-mark post set 3 feet in the ground.

[Latitude 39° 52' 38.50". Longitude 110° 54' 03.35".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Beaver.....	29 47 18.59	209 43 51.45	4.1903474	9.6316
Spanish Fork Peak.....	113 50 15.14	293 26 06.7	4.7662926	36.278
Strawberry.....	159 23 31.97	339 20 19.71	4.3044933	12.527
Grey Head.....	238 39 19.57	58 46 42.25	4.2825883	11.911
Kyune.....	327 52 15.38	147 52 42.07	3.2697458	11.564

KYUNE, CARBON COUNTY, UTAH.

On the south end of a prominent white ridge extending south from the main reservation ridge between Horse and Kyune creeks. It is about 5 miles northeast of Kyune and 10 miles northeast of Colton. The station is visible all along the wagon road from Colton to Price and Theodore, and is easily reached by the Cat Creek trail from Colton or from the stone quarry east of Kyune.

Signal: Tripod.

Station mark: Two nails driven into slate rock under a small pile of stones under tripod signal.

Reference mark: Nail in blazed place on tree on east slope of ridge; azimuth 270° 47', distance 507 feet.

[Latitude 39° 51' 47.40". Longitude 110° 53' 21.71'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Beaver.....	36 12 06.17	216 08 12.40	4.1678014	9.1443
Indian Head.....	147 52 42.07	327 52 15.38	3.2697458	11.564
Grey Head.....	233 06 38.88	53 13 34.77	4.2840527	11.951
Graves.....	322 20 25.77	142 25 38.71	4.2800950	11.842
Shiner.....	354 49 55.66	174 51 20.57	4.5469370	21.892

MILLERTON, CARBON COUNTY, UTAH. (Not occupied.)

On the highest point of a rocky ridge near Millerton siding, on the Southern Utah R. R.; it is 17 miles southwest of Price. The railroad and wagon road from Price to Hiawatha and Miller Creek pass the foot of the hill.

Station mark: Tablet cemented into rock under a large monument.

[Latitude 39° 28' 53.5". Longitude 110° 56' 20.5'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Beaver.....	171 43 16.2	351 41 17.4	4.48871	19.145
Shiner.....	225 36 34.2	45 39 52.5	4.01767	6.4718
Wellington.....	253 59 36.1	74 07 45.8	4.28162	11.884
Washboard.....	238 12 09.4	118 15 36.7	3.94654	5.4941

MOUNDS, EMERY COUNTY, UTAH. (Not occupied.)

On the southeast end of a flat mesa point 0.25 mile north of Mounds, the junction point of the Sunnyside branch with the main line of the Denver & Rio Grande R. R. The station is visible from Mounds.

Station mark: Chiseled cross on a rock buried under a large monument.

[Latitude 39° 27' 52.00". Longitude 110° 35' 22.6'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Washboard.....	84 13 27.33	264 03 35.05	4.35025	13.919
Dubuous.....	154 37 04.07	334 35 23.84	3.94353	5.4561
Pierson.....	230 15 04.46	50 19 17.86	4.09261	7.6906

MYRTLE, CARBON COUNTY, UTAH. (Not occupied; unchecked.)

On a large hill on the divide between The Park and Ninemile Creek; it is 3 miles northwest of milepost 19, on the Soldier Creek road, where the Park road to Colton forks. Whitmore's horse ranch is at the east foot of the hill.

Station mark: Tablet cemented into a rock buried flush with the ground surface under a large monument.

[Latitude 39° 45' 45.8". Longitude 110° 36' 13.00'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Graves.....	72 58 55.5	252 53 10.3	4.1285199	8.3536
Beaver.....	88 51 55.5	268 37 04.0	4.5209731	20.622

PATMOS HEAD, EMERY COUNTY, UTAH.

Coast and Geodetic Survey station, occupied by the United States Geological Survey in 1910, situated in the range of mountains known as the West Tavaputs Plateau, about 12.5 miles N. 72° 30' E. from Sunnyside, a station on the Denver & Rio Grande R. R. These mountains are known as "tables," and have a general trend somewhat west of north. The station is located on the highest point within several miles.

Station mark: Copper bolt set in rock bedded in ground, around and over which was built the stone foundation pier for the theodolite, capped with a stone slab having a drill hole through it, as a surface mark. The copper bolt is about 8.5 inches below the drill hole. Around this was built the usual circular ring wall of 11 feet inner diameter, concentric to the station bolt, which was left standing.

Reference marks: Drill hole in bedded rock N. 53° 16' E., distant 8.5 feet; drill hole in bedded rock S. 32° 53' E., distant 8.58 feet; copper bolt S. 16° 44' E., distant 11.33 feet; stump of tree N. 89° 54' W., distant 11 feet from geodetic point.

[Latitude 39° 30' 08.567". Longitude 110° 18' 57.954".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Dubuous.....	97 51 53.17	277 39 46.32	4.4399179	17.111
Pierson.....	104 50 21.34	284 44 08.35	4.1607977	8.998
Soldier.....	144 06 44.83	323 59 44.21	4.4284565	16.665
Bruin.....	170 15 58.53	350 14 46.26	4.2040544	9.940
Tavaputs ¹	267 27 41.65	88 17 44.58	5.05226431	
Mount Waas ¹	318 14 45.56	138 55 53.49	5.15397433	

¹ By the Coast and Geodetic Survey.

PATMOS LOGICAL, CARBON COUNTY, UTAH.

On the south end of Patmos Ridge, about 5 miles southeast of Sunnyside. It is easily reached by the trail from Sunnyside to the pumping station on Range Creek, thence to the top of the ridge, and south along ridge to station. This station is the azimuth point established by the Coast and Geodetic Survey.

Signal: Tripod.

Station mark: Copper bolt cemented into solid rock under a small monument.

Reference mark: Tablet cemented in a big, flat sandstone; azimuth 321° 22', distance 16.9 feet.

[Latitude 39° 30' 58.52". Longitude 110° 19' 10.76".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Pierson.....	98 59 52.66	278 53 47.77	4.1418461	8.6138
Patmos Head.....	348 45 30.35	168 45 38.50	3.1959445	0.97565
By Coast Survey.....		168 45 40.48		

PIERSON, CARBON COUNTY, UTAH.

On north side of Sunnyside branch of Denver & Rio Grande R. R. at Pierson's ranch. It is 200 feet east of a white post marked "Station (White siding) 1 mile", and 5 miles west of Sunnyside. The wagon road to Sunnyside, Price, and Mounds passes 300 feet north of the station.

Signal: Tripod.

Station mark: Tablet cemented in a big boulder buried flush with the ground.

Reference mark: Chiseled cross on placed rock; azimuth 90° 19', distance 25.9 feet.

[Latitude 39° 32' 08.43". Longitude 110° 28' 44.10".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Dubuouss.....	90 09 08.98	270 03 15.00	4.1232040	8.2519
Soldier.....	174 25 56.13	354 25 09.13	4.2577304	11.248
Patmos Head.....	284 44 08.35	104 50 21.34	4.1607977	8.9980

PRICE, CARBON COUNTY, UTAH.

On the south end of a mesa point just east of the Price city reservoir, 0.8 mile north-west of the courthouse.

Signal: Tripod.

Station mark: Tablet cemented into a large rock buried under a large monument and tripod signal.

Reference mark: Chiseled cross on solid rock on point of ridge.

[Latitude 39° 36' 27.30". Longitude 110° 48' 49.26".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Shiner.....	26 23 59.30	206 22 30.41	3.8746568	4.6559
Beaver.....	137 24 40.16	317 17 53.06	4.3507831	13.936
Graves.....	201 12 55.60	21 15 13.80	4.1537466	8.8531
Dubuouss.....	297 08 03.43	117 14 56.91	4.2409785	10.822

PRICE COURTHOUSE, CARBON COUNTY, UTAH. (Not occupied.)

Station mark: Statue of "Justice" on the cupola of the Carbon County courthouse at Price.

[Latitude 39° 35' 57.9". Longitude 110° 48' 29.0".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Shiner.....	33 17 53.4	213 16 11.6	3.84185	4.3172
Price.....	151 55 33.70	331 55 20.82	3.01051	0.63659
Graves.....	198 14 14.73	18 16 20.0	4.17425	9.2811
Wellington.....	317 42 50.5	137 46 00.5	4.02490	6.5804

RATTLE, CARBON COUNTY, UTAH. (Not occupied.)

On the highest point of a grassy ridge between The Park and Price Valley, on the east side of Willow Creek canyon. It is easily reached from the Park road by following the long ridge south from the road crossing of Willow Creek.

Station mark: Tablet cemented into rock under a large monument.

[Latitude 39° 43' 46.2". Longitude 110° 46' 53.6".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Price.....	11 31 22.0	191 30 08.2	4.1403112	8.5835
Shiner.....	16 44 55.4	196 42 12.6	4.3251668	13.138
Beaver.....	99 26 32.8	279 18 30.3	4.2594367	11.292
Graves.....	276 04 09.2	96 05 13.5	3.3829838	1.5008

ROAD, UINTA INDIAN RESERVATION LINE, UTAH.

On the first hill with scattering trees on the east side of the Colton-Theodore road where it crosses the summit of Reservation Ridge between Indian Creek, on the north, and Willow Creek, on the south. The station is situated on the south end of the highest point and trees have been cut down and trimmed in order to afford a good view. A closing corner of the reservation line is located on the ridge 439 feet south-east of the station. The station is approximately 22 miles from Colton and 7 miles from Daniel's ranch and can easily be reached by wagon.

Station mark: Nail driven into the ground under a large stone with a chiseled cross and buried flush with the surface of ground.

Reference mark: Nails driven into blazes on the south side of two trimmed trees; azimuth $173^{\circ} 27'$, distance 31.35 feet. Stone on reservation line; azimuth $251^{\circ} 42'$, distance 439.2 feet.

[Latitude $39^{\circ} 53' 12.20''$. Longitude $110^{\circ} 44' 42.85''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Beaver.....	55 29 33.58	235 20 07.48	4.4071612	15.867
Indian Head.....	85 35 15.73	265 29 16.33	4.1257724	8.3009
Strawberry.....	131 13 05.85	311 03 53.54	4.4329144	16.837

SHAYA, CARBON COUNTY, UTAH. (Not occupied.)

On a grassy hill on Wild Cattle Ridge, north of Gordon Creek. It is about 17 miles northwest of Price, and is best reached from Shaya's ranch on Gordon Creek by means of the wagon road from Price to Schofield.

Station mark: Tablet cemented into rock under a monument.

[Latitude $39^{\circ} 41' 23.7''$. Longitude $111^{\circ} 00' 00.2''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Beaver.....	186 09 10.2	6 09 31.5	3.86922	4.5981
Price.....	299 41 08.9	119 48 17.0	4.26540	11.449
Wellington.....	307 03 34.5	127 14 05.5	4.47153	18.403
Shiner.....	321 18 30.7	141 24 09.5	4.30743	12.612

SHINER, CARBON COUNTY, UTAH.

On the west end of a long east-west mesa about 5 miles south of Price. The wagon road and the Southern Utah R. R., from Price to Miller Creek, Hiawatha, and Moreland, pass around the northwest foot of ridge.

Station mark: Chiseled cross on placed rock, over which a large monument was erected.

Reference mark: Tablet cemented into a large boulder; azimuth $320^{\circ} 53'$, distance 15.05 feet.

[Latitude $39^{\circ} 32' 49.64''$. Longitude $110^{\circ} 51' 08.80''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Beaver.....	152 56 59.80	332 51 41.99	4.4161436	16.199
Kyune.....	174 51 20.57	354 49 55.66	4.5469370	21.892
Graves.....	202 58 37.39	23 02 24.51	4.3368735	13.497
Soldier.....	240 58 15.92	61 11 46.44	4.5394788	21.519
Dubuous.....	273 43 06.10	93 51 28.15	4.2758215	11.727

SOLDIER, CARBON COUNTY, UTAH.

On a high grassy hill on main divide between Price Valley drainage and Nine-mile Creek, about 10 miles northeast of Soldier station, on the Price-Reservation wagon road. It is best reached by the above road to Ninemile Pass, about 21 miles (according to road mileposts) from Price, thence up the side of the high ridge on the east to its summit, and along the backbone of the ridge to the station.

Station mark: Chiseled cross on a small, long stone buried flush with the ground under a large monument.

Reference mark: Chiseled cross "U. S. G. S. + " on a big, flat rock over the point of the hill; azimuth $355^{\circ} 40'$, distance 143.5 feet.

[Latitude $39^{\circ} 41' 52.62''$. Longitude $110^{\circ} 29' 57.82''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Dubuous.....	32 38 30.35	212 33 22.77	4.3295439	13.271
Shiner.....	61 11 46.47	240 58 15.92	4.5394788	21.519
Bruin.....	294 29 21.43	114 35 10.26	4.1558550	8.896
Patmos Head.....	323 59 44.21	144 06 44.83	4.4284565	16.665

STRAWBERRY, WASATCH COUNTY, UTAH.

On a high plateau about 12 miles north of Soldier Summit station. It is easily reached by wagon road from Colton or Soldier Summit station to the top of Reservation Ridge, thence along the main ridge west to the station.

Station mark: Chiseled cross on a rock under a large rock monument.

Reference mark: Two rock monuments, one azimuth $45^{\circ} 05'$, distant 8.23 feet; the other azimuth $217^{\circ} 05'$, distant 15.30 feet from the station.

[Latitude $40^{\circ} 02' 50.22''$. Longitude $110^{\circ} 59' 02.69''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Spanish Fork.....	95 46 24.68	275 25 26.34	4.6679018	28.924
Curant Peak.....	156 17 42.84	336 10 20.71	4.6040340	24.968
Grey Head.....	290 42 50.61	110 53 26.52	4.3996275	15.595
Road.....	311 03 53.54	131 13 05.85	4.4329144	16.837
Indian Head.....	339 20 19.71	159 23 31.97	4.3044933	12.527

SUNNYSIDE, CARBON COUNTY, UTAH. (Not occupied.)

On a high rocky mountain at the extreme south end of the ridge west of Whitmore Canyon. Sunnyside is at the east and south foot of the ridge. The point can only be reached on foot.

Station mark: Tablet cemented in rock under a large monument.

[Latitude $39^{\circ} 33' 45.67''$. Longitude $110^{\circ} 23' 24.36''$.]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Pierson.....	68 34 57.30	248 31 33.70	3.9139284	5.0965
Dubuous.....	81 58 51.30	261 49 33.62	4.3247433	13.125

TIPPLE, CARBON COUNTY, UTAH. (Not occupied.)

On a prominent rocky hill on a ridge between two forks of Miller Creek, near Hia-watha coal camp. It is about 20 miles southwest of Price.

Station mark: Tablet cemented into rock under a large monument.

[Latitude 39° 30' 17.6". Longitude 110° 01' 13.6"']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Price.....	237 15 06.1	57 23 00.20	4.32460	13.121
Shiner.....	251 57 45.5	72 04 10.4	4.18153	9.438
Washboard.....	294 33 10.4	114 39 43.9	4.21142	10.111

TUCKER, UTAH COUNTY, UTAH. (Not occupied.)

On the highest point of the long high ridge between Price River and Soldier Creek. It is about 6 miles south of Soldier Summit, 10 miles southeast of Tucker, and 10 miles southwest of Colton, all of which are stations on the main line of the Denver & Rio Grande Railroad.

Station mark: Tablet cemented into a large rock buried under a 6-foot monument.

[Latitude 39° 53' 59.2". Longitude 111° 07' 09.0"']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Indian Head.....	277 31 33.9	97 39 57.79	4.27491	11.702
Colton.....	287 35 55.1	107 40 43.4	4.04950	6.9639
Beaver.....	325 23 09.2	145 28 05.2	4.28701	12.033

WASHBOARD, NEAR EMERY-CARBON COUNTY LINE, UTAH.

On the east of two sharp peaks in the Washboard district, about 0.5 mile east of milepost 12 on the county road south from Price to Huntington. It is 6 miles north-west of Cleveland. A wagon can be driven to the foot of the hill.

Signal: Tripod.

Station mark: Cross chiseled on rock in place, about 6 inches below the surface, under a small pile of rock.

Reference mark: Tablet cemented in rock; azimuth 192° 31', distance 11.1 feet.

[Latitude 39° 26' 37.86". Longitude 110° 50' 54.61"']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Shiner.....	178 18 30.47	358 18 21.46	4.0593704	7.1273
Price.....	189 20 31.21	9 21 50.98	4.2653464	11.447
Wellington.....	228 18 47.78	48 23 30.00	4.1521840	8.8213
Dubuious.....	241 01 32.65	61 09 45.14	4.3250991	13.135

WELLINGTON, CARBON COUNTY, UTAH.

On the west end of a grassy mesa on the south bank of Price River, about 3 miles southeast of Wellington. The station is easily reached by the Cleveland road south from Wellington across Price River to the top of the divide, thence east along divide road to station.

Signal: Tripod.

Station mark: Tablet cemented into a rock buried flush with the ground under a small pile of rock.

Reference mark: Chiseled cross on small rock centered under a small pile of stone; azimuth 21° 35', distance 10.9 feet.

352 TRIANGULATION AND PRIMARY TRAVERSE FOR 1909 AND 1910.

[Latitude 39° 31' 43.78". Longitude 110° 43' 30.71".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Shiner.....	100 33 27.97	280 28 36.36	4.0463418	6.9134
Price.....	139 00 55.08	318 57 32.16	4.0639745	7.1999
Graves.....	173 42 09.27	353 41 04.18	4.3455241	13.768
Dubuious.....	264 17 53.62	84 21 23.99	3.8993941	4.9402

WHITE, CARBON COUNTY, UTAH. (Not occupied.)

On the highest point of a low hill on the south edge of the right of way at White siding, on the Sunnyside branch of the Denver & Rio Grande Railroad. It is 9 miles east of Sunnyside.

Station mark: Chiseled cross on a rock under a large rock monument.

[Latitude 39° 32' 03.4". Longitude 110° 30' 36.1".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Dubuious.....	91 00 55.9	270 56 13.2	4.0256160	6.5912
Soldier.....	182 52 18.9	2 52 43.4	4.2599810	11.306

WILLOW, CARBON COUNTY, UTAH. (Not occupied.)

On a white hill with scattering trees on the divide between The Park and Ninemile Creek, about 1 mile north of the Park road from Colton to Price and about opposite the low divide in the Park separating the drainage of Willow and Coal creeks.

Signal: Tripod.

Station mark: Tablet cemented into a rock buried flush with ground.

[Latitude 39° 48' 29.9". Longitude 110° 41' 04.9".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Graves.....	33 14 22.3	213 11 43.9	4.0319855	6.6877
Beaver.....	77 38 54.6	257 27 09.5	4.4290185	16.686
Kyune.....	109 14 06.4	289 06 14.4	4.2683312	11.526

UTAH-WYOMING.**TRIANGULATION STATIONS.**

Fossil, Montpelier, and Randolph quadrangles.

RICH COUNTY, UTAH; UINTA COUNTY, WYO.

Triangulation control in northeastern Utah was extended in 1909 by C. F. Urquhart from stations Lake View, Utah, Nugget, and Chimney, Wyo. Eleven new points were located.

LAKEVIEW, RICH COUNTY, UTAH.

A sharp peak about 2 miles east of Bear Lake and about 4 miles southwest of the corner of Utah, Idaho, and Wyoming. The summit is sharp, bald, and rocky. A good spring, 100 yards north of station in grove of quaking asp trees, is accessible to a pack train.

Signal: Cairn 6 feet high and 5 feet in diameter.

Station mark: Aluminum tablet cemented in rock under center of cairn.

[Latitude 41° 57' 38.89". Longitude 111° 13' 50.14".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
South Twin.....	18 56 08.73	198 52 01.26	4.4218707	16.414
Redspot.....	22 25 54.81	202 18 41.01	4.5964006	24.533
Logan.....	81 44 06.99	261 26 18.44	4.5709584	23.137
Swan Creek.....	96 30 50.08	276 21 25.74	4.2912251	12.150
Paris.....	135 46 43.97	315 33 57.03	4.5756778	23.390
Paris schoolhouse tower.....	153 52 53	333 45 49	4.51826	20.493
Preuss.....	178 36 03.36	358 35 20.66	4.7741109	36.937
Sublette.....	209 49 48.36	29 58 57.55	4.5768345	23.452
Red.....	252 12 36.70	72 20 27.71	4.2308900	10.574
Coke.....	252 19 16.40	72 36 43.23	4.5768584	23.454
Rock.....	270 29 00.75	90 45 50.93	4.5415462	21.622
Fossil.....	296 42 02.15	117 05 53.91	4.7443841	34.493
Nugget.....	308 00 35.51	128 16 51.95	4.6328962	26.684
Rex.....	341 19 01.93	161 24 31.18	4.5523639	22.167
Limestone.....	359 50 33.80	179 50 36.96	4.6026509	24.889

LIMESTONE, RICH COUNTY, UTAH.

Highest point of a low mountain about 5 or 6 miles west-southwest of the town of Randolph, in Rich County, Utah. One can drive very near the summit.

Signal: Cairn 6 feet high.

Station mark: Triangulation tablet in rock under center of cairn.

[Latitude 41° 36' 00.62". Longitude 111° 13' 45.39".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Redspot.....	103 12 05.02	283 04 49.60	4.1927773	9.686
South Twin.....	150 02 58.79	329 58 49.04	4.2403010	10.806
Lakeview.....	179 50 36.96	359 50 33.80	4.6026509	24.889
Randolph.....	207 08 17.57	27 10 04.22	3.9107160	5.059
Rex.....	241 03 24.00	61 08 48.94	4.1117055	8.036
Chimney.....	285 06 48.40	105 20 23.43	4.4698105	18.330
Woodruff.....	327 55 39.76	147 58 18.53	4.0191444	6.494

LOGAN PEAK, RICH COUNTY, UTAH. (Not occupied.)

Highest point of a high mountain, well known as North Logan Peak.

[Latitude 41° 54' 42.31". Longitude 111° 40' 29.04".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Lakeview.....	261 26 18.44	81 44 06.99	4.5709584	23.137
Rex.....	300 12 30.70	120 35 45.18	4.7484373	34.817
Redspot.....	324 43 54.82	144 54 26.36	4.5798325	23.615

RANDOLPH, RICH COUNTY, UTAH. (Not occupied.)

Center of spire on tabernacle in town of Randolph.

[Latitude 41° 39' 55.44". Longitude 111° 11' 04.87".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Limestone.....	27 10 04.22	207 08 17.57	3.9107160	5.059
Redspot.....	78 59 20.87	258 50 18.49	4.2843303	11.959
South Twin.....	122 17 01.84	302 11 05.14	4.1660611	9.108
Rex.....	277 25 15.81	95 28 54.25	3.8846696	4.765

REDSPOT, RICH COUNTY, UTAH.

On a high flat-topped ridge at the source of Old Canyon, a stream flowing into Bear River. It is about 12 miles a little south of west of Randolph. The station can be reached by road up Old Canyon 7 or 8 miles, thence on horseback up the ridge. The ridge is covered with quaking-asptrees, which make passing difficult. The point can also be reached by the Logan road, or, from the north, by way of the Twin Peaks, on horseback.

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

Station mark: Triangulation tablet in rock under center of cairn.

[Latitude 41° 37' 55.49". Longitude 111° 24' 41.02'']

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Logan.....	144 54 26.36	324 43 54.82	4.5798325	23.615
Swan Creek.....	173 27 04.71	353 24 56.06	4.5905941	24.207
Lakeview.....	202 18 41.01	22 25 54.81	4.5964006	24.533
South Twin.....	209 18 49.69	29 21 55.86	4.1210225	8.211
Red.....	216 44 55.03	36 59 58.54	4.7169770	32.384
Nugget.....	258 15 58.51	78 39 24.61	4.6983003	31.021
Randolph.....	258 50 18.49	78 59 20.87	4.2843303	11.959
Rex.....	264 03 42.43	84 16 23.13	4.4253802	16.547
Limestone.....	283 04 49.60	103 12 05.02	4.1927773	9.686
Woodruff.....	300 48 12.21	120 58 06.11	4.3830813	15.012

REX, RICH COUNTY, UTAH.

On the highest point of Crawford Range, about 3 miles east of Mr. Rex's residence on the east side of Bear River, which is about 2 miles east of Randolph. Horses can be ridden to signal from the road, which is built to a point about 1 mile from the station.

Signal: Small cairn with tree in center.

Station mark: Triangulation tablet in rock, 1.4 meters south of cairn.

[Latitude 41° 39' 23.21". Longitude 111° 05' 36.25'']

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Limestone.....	61 08 48.94	241 03 24.00	4.1117055	8.036
Redspot.....	84 16 23.13	264 03 42.43	4.4253802	16.547
Randolph.....	97 28 54.25	277 25 15.81	3.8846696	4.765
South Twin.....	113 51 40.45	293 42 05.19	4.3395260	13.579
Logan.....	120 35 45.18	300 12 30.70	4.7484373	34.817
Lakeview.....	161 24 31.18	341 19 01.93	4.5523639	22.167
Red.....	187 04 27.03	7 06 47.25	4.5942345	24.411
Rock.....	214 59 20.07	35 10 38.04	4.6111528	25.381
Nugget.....	251 55 47.68	72 06 32.76	4.3725869	14.653
Chimney.....	309 11 52.53	129 20 03.31	4.3447044	13.742

SOUTH TWIN, RICH COUNTY, UTAH.

On the highest point of the most southern of the Twin Peaks, well known locally. It can be best reached from Randolph or from Laketown on horseback.

Signal: Cairn 7 feet high.

Station mark: Triangulation tablet in rock, 1.6 meters to west of cairn.

[Latitude 41° 44' 08.85". Longitude 111° 20' 01.08'']

To station—	Azimuth.	Back azimuth.	Distance.	
			<i>Log. meters.</i>	<i>Miles.</i>
Redspot.....	29 21 55.86	209 18 49.69	4.1210225	8.211
Swan Creek.....	158 10 42.99	338 05 27.40	4.4667274	18.200
Lakeview.....	198 52 01.26	18 56 08.73	4.4218707	16.414
Rex.....	293 42 05.19	113 51 40.45	4.3395260	13.579
Randolph.....	302 11 05.14	122 17 01.84	4.1666611	9.108
Limestone.....	329 58 49.04	150 02 58.79	4.2403010	10.806

SWAN CREEK, RICH COUNTY, UTAH.

On the highest point of a timbered mountain at the source of Swan Creek, just above Garden City, on Bear Lake. There are higher mountains west of this point.

Signal: Tree, trimmed up.

Station mark: Triangulation tablet in rock, 0.7 meter south-southeast from signal.

[Latitude 41° 58' 49.93". Longitude 111° 27' 54.01".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Lakeview.....	276 21 25.74	96 30 50.08	4.2912251	12.150
South Twin.....	338 05 27.40	158 10 42.99	4.4667274	18.200
Redspot.....	353 24 56.06	173 27 04.71	4.5905941	24.207

CHIMNEY, UINTA COUNTY, WYO.

A prominent butte about 20 miles north of Evanston, Wyo., and 8 miles east of Randolph, Utah, on the Bear River divide. It has about an acre of level summit.

Signal: Cairn 7 feet high and 5 feet in diameter, on west end of butte.

Station mark: Aluminum tablet cemented in solid rock 7 feet northeast of signal.

[Latitude 41° 31' 49.49". Longitude 110° 53' 16.97".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Medicine Butte.....	4 40 32.33	184 39 46.38	4.2966026	12.301
Limestone.....	105 20 23.43	285 06 48.40	4.4698105	18.330
Rex.....	129 20 03.31	309 11 52.53	4.3447044	13.742
Nugget.....	194 03 50.56	14 06 23.75	4.3411760	13.631
Fossil.....	222 52 37.33	43 02 43.71	4.4913700	19.263
Cumberland.....	288 57 48.08	109 08 55.04	4.3927804	15.351
Bridger.....	305 58 12.29	126 15 02.99	4.6426971	27.293

COKE, UINTA COUNTY, WYO.

About 8 miles east by 1 mile south of Cokeville, on highest part of bald ridge. Sheep trail on top of ridge passes close to station. There is a grove of tamarack about 2,000 feet south of station.

Signal: Cairn 6 feet high and 6 feet in diameter.

Station mark: Aluminum tablet in granite boulder, 12.5 feet nearly west of cairn.

[Latitude 42° 03' 47.45". Longitude 110° 47' 46.01".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Rock.....	5 57 22.51	185 56 46.89	4.0723859	7.341
Lakeview.....	72 36 43.23	252 19 16.40	4.5768584	23.454
Red.....	72 42 11.38	252 32 35.55	4.3165513	12.880
Sublette.....	141 21 45.70	321 13 25.60	4.4370209	16.997
Fossil.....	339 45 52.37	159 52 21.01	4.5896474	24.155

NUGGET, UINTA COUNTY, WYO.

On prominent butte sometimes called Elk Mountain, about 7 miles south of Nugget station, on Oregon Short Line Railroad.

Signal: Cairn 5 feet high and 3 feet in diameter on highest part of butte and about 100 yards east of west end.

Station mark: Aluminum tablet cemented in rock under center of cairn.

356 TRIANGULATION AND PRIMARY TRAVERSE FOR 1909 AND 1910.

[Latitude 41° 43' 19.17". Longitude 110° 49' 26.35'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Chimney.....	14 06 23.75	194 03 50.56	4.3411760	13.631
Rex.....	72 06 32.76	251 55 47.68	4.3725869	14.653
Redspot.....	78 39 24.61	258 15 58.51	4.6983003	31.021
Lakeview.....	128 16 51.95	308 00 35.51	4.6328962	26.684
Red.....	151 08 41.85	331 00 14.86	4.5589989	22.509
Rock.....	182 22 32.37	2 23 03.79	4.4177749	16.260
Fossil.....	264 49 42.85	84 57 16.87	4.1994342	9.835
Cumberland.....	328 26 17.06	148 34 52.19	4.5366981	21.382

RED, UINTA COUNTY, WYO.

This station is very near the corner of Utah, Wyoming, and Idaho, but is probably in Wyoming. It can be reached from Austen's ranch, on Bear Lake, or from the Nebaker ranch, on North Eden Creek, on the west, or from the Bear River country near Cokeville from the east. The station is on a high, red hill, the highest in the vicinity.

Signal: Cairn 6 feet high.

Station mark: Triangulation tablet in rock placed in ground under center of cairn.

[Latitude 42° 00' 26.81". Longitude 111° 02' 06.02'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Rex.....	7 06 47.25	187 04 27.03	4.5942345	24.411
Redspot.....	36 59 58.54	216 44 55.03	4.7169770	32.384
Lakeview.....	72 20 27.71	252 12 36.70	4.2308900	10.574
Coke.....	252 32 35.53	72 42 11.38	4.3165513	12.880
Rock.....	286 35 22.84	106 44 22.48	4.2875097	12.046
Nugget.....	331 00 14.86	151 08 41.85	4.5589989	22.509

ROCK, UINTA COUNTY, WYO.

About 8 miles nearly north of Nugget station, on knob on ridge on east side of Rock Creek. A sheep trail passes over the ridge near the station.

Signal: Cairn 6 feet high and 5 feet in diameter.

Station mark: Aluminum tablet cemented in large boulder 6 feet north of cairn.

[Latitude 41° 57' 26.61". Longitude 110° 48' 39.25'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Nugget.....	2 23 03.79	182 22 32.37	4.4177749	16.260
Rex.....	35 10 38.04	214 59 20.07	4.6111528	25.381
Lakeview.....	90 45 50.93	270 29 00.75	4.5415462	21.622
Red.....	106 44 22.48	286 35 22.84	4.2875097	12.046
Sublette.....	154 24 30.73	334 16 46.85	4.5648516	22.814
Coke.....	185 55 46.89	5 57 22.51	4.0723859	7.341
Fossil.....	329 18 18.35	149 25 21.99	4.4586238	17.864

VIRGINIA.

PRIMARY TRAVERSE.

Bybel, Charlottesville, Culpeper, Fredericks Hall, Glenora, Massaponax, Rapidan, and Scottsville quadrangles.

ALBEMARLE, FLUVANNA, GOOCHLAND, LOUISA, ORANGE, AND SPOTTSYLVANIA COUNTIES.

The following geographic positions on United States standard datum were determined from primary traverse by D. H. Baldwin in 1910. The line starts from the dome of the University of Virginia and from the dome of McCormick Observatory, follows railroads and highways through the quadrangles named above, and is tied to Clark triangulation station of the Coast and Geodetic Survey.

The State cooperated in the work.

CHARLOTTESVILLE QUADRANGLE.

Geographic positions along Chesapeake & Ohio Ry. from Charlottesville to Rugby, thence along highways to Zion.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Charlottesville, dome of rotunda of University of Virginia (Coast and Geodetic Survey point).....	38 02 08.3	78 30 13.0
Charlottesville, McCormick Observatory, latitude and longitude pier (Coast and Geodetic Survey point).....	38 01 58.1	78 31 20.6
Charlottesville, observatory dome.....	38 01 58.2	78 31 21.2
Charlottesville, union station.....	38 01 52.4	78 29 32.3
Charlottesville, university station.....	38 01 43.2	78 28 40.0
Charlottesville, 0.6 mile southeast of; road crossing.....	38 01 26.5	78 28 08.5
Bridge over Moores Creek.....	38 01 10.6	78 27 17.3
Milepost "Ft. M. 179".....	38 00 51.2	78 26 23.9
Milepost "Ft. M. 178".....	38 00 36.0	78 25 27.7
Massie station.....	38 00 34.0	78 25 00.3
Shadwell station.....	38 00 46.8	78 23 41.5
Shadwell station, about 1.3 miles southeast of; road crossing.....	38 01 07.1	78 22 21.2
Keswick, in front base sill of ticket office; aluminum tablet stamped "Prim. Trav. Sta. No. 1 VA".....	38 01 21.4	78 21 30.7
Milepost "Ft. M. 173".....	38 00 57.2	78 20 26.2
Rugby station.....	38 00 52.3	78 19 35.5
Rugby station, about 1.3 miles east of; forks of road.....	38 00 53.0	78 18 07.0
Crossroads near rocks.....	38 00 53.4	78 17 44.5
Large stream crossing highway.....	38 00 52.1	78 16 15.9
Point opposite house, about 1.25 miles southeast of stream.....	38 00 15.2	78 15 20.2

Magnetic declination at southeast corner of quadrangle, 4° 00' W.

SCOTTSVILLE QUADRANGLE.

Geographic position on Virginia Air Line branch, Chesapeake & Ohio Ry.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Zion, about 5.5 miles south of; first-class road crossing.....	37 55 17.7	78 15 30.0

SCOTTSTVILLE QUADRANGLE—Continued.

Geographic positions along Virginia Air Line branch from Zion to Carysbrook station.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
First-class road crossing.....	37 54 26.1	78 15 33.4
Do.....	37 53 26.0	78 15 46.2
Overhead road crossing.....	37 52 46.4	78 15 50.8
Do.....	37 52 14.1	78 15 51.5
Bridge No. 169.....	37 51 32.7	78 15 55.0
Palmyra, in west front of courthouse, near southwest corner; aluminum tablet stamped "Prim. Trav. Sta. No. 3 VA".....	37 51 39.2	78 15 52.2
Rockaway, water tank.....	37 50 15.0	78 15 34.7
Bridge over Ravenna River, west end.....	37 49 35.2	78 15 10.9

Magnetic declination near east border of quadrangle, 4° 35' W.

BYBEL QUADRANGLE.

Geographic positions along Virginia Air Line branch from Zion to Carysbrook and along highway to Columbia.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Forks of road to Zion.....	37 59 52.9	78 14 47.5
Zion, in concrete foundation of W. M. Paynes's store (Zion post office), 3 feet east of steps on north front; tablet stamped "Prim. Trav. Sta. No. 2 VA".....	37 59 49.3	78 14 02.2
Zion, about 1.8 miles south of; first-class road crossing.....	37 58 13.7	78 14 09.4
House on west side of track.....	37 57 03.4	78 14 45.0
Zion, about 4.2 miles south of; first-class road crossing.....	37 56 17.1	78 14 47.6

Magnetic declination of west border of quadrangle, 4° 35' W.

Geographic positions along highways from Carysbrook station, on Chesapeake & Ohio Ry., to Columbia, Caledonia, and Yanceyville.

Carysbrook station.....	37 48 48.2	78 14 34.5
Carysbrook station, about 1.3 miles south of; opposite Mann's house.....	37 47 38.4	78 14 27.2
House, opposite, near T road to Fort Union.....	37 46 57.4	78 14 02.1
Forks of road.....	37 46 26.8	78 13 05.5
Holmhead post office, in front of store.....	37 46 24.8	78 12 39.7
Forks of road.....	37 45 37.6	78 12 01.1
Road, southeast at forks.....	37 45 16.0	78 11 31.0
Old aqueduct bridge, south end.....	37 45 09.0	78 10 17.5
Columbia, in stone foundation of store of B. R. Cowherd, 1 foot north of southwest corner of building, 20 inches above surface of ground, 168 feet north of Chesapeake & Ohio Ry. station; tablet stamped "Prim. Trav. Sta. No. 4 VA".....	37 45 05.5	78 09 38.4
Second-class road south at forks.....	37 45 29.0	78 08 58.6
Columbia, about 1.5 miles northeast of; center of crossroads.....	37 45 52.8	78 08 14.0
Bridge over Byrd Creek, center.....	37 46 12.1	78 07 16.5
Second-class road.....	37 46 35.1	78 06 42.7
Second-class road east.....	37 47 00.8	78 06 22.1
Road forks.....	37 47 38.5	78 06 21.3
Road forks near Lantana.....	37 48 30.3	78 05 55.9
Caledonia, southwest corner of crossroads formed by junction of Whitehall and Columbia roads, in north face of stone chimney of store of G. B. Harris, 1.2 feet from northwest corner of chimney and 2.5 feet above ground; tablet stamped "Prim. Trav. Sta. No. 5 VA".....	37 49 16.5	78 06 23.7
Caledonia, 1 mile north of; forks of road.....	37 50 09.2	78 06 03.2
Forks of Columbia and Moss mine roads, in triangle.....	37 50 48.8	78 05 23.9
Forks of road, at road northwest.....	37 51 15.4	78 04 38.1
Forks of road south.....	37 52 48.1	78 02 26.5
Forks of road southeast.....	37 53 28.9	78 01 12.2
Road forks near store.....	37 54 20.0	78 00 17.5

Geographic position at Dunreath.

Dunreath, opposite E. T. McGehee's store.....	37 59 06.5	78 00 02.9
---	------------	------------

Magnetic declination in southeast quarter of quadrangle, 4° 40' W.; in northeast corner of quadrangle, 4° 30' W.

FREDERICKS HALL QUADRANGLE.

Geographic positions along highway from just east of Yanceyville to Dunreath and toward Mineral.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Road forks.....	37 54 51.8	77 59 14.4
Yanceyville (Vigor post office), in brick chimney of post office, north side of building, which is J. S. Lacy's store and house, 2.6 feet from northwest corner of chimney and 5.75 feet above ground; tablet stamped "Prim. Trav. Sta. No. 6 VA".....	37 56 07.3	77 58 49.0
Bridge over South Anna River, center.....	37 56 21.7	77 58 58.1
Junction of roads, 1.5 miles northwest of South Anna River bridge.....	37 57 29.5	77 59 38.0
Junction of roads, second-class road southwest and wood road northwest.....	37 58 18.5	77 59 54.2

Geographic positions along highways from Dunreath toward Mineral.

Stream crossing.....	37 59 33.9	77 59 46.8
Crossroads.....	37 59 43.3	77 58 57.7

Magnetic declination in northwest corner of quadrangle, 4° 30' W.

GLENORA QUADRANGLE.

Geographic positions along highways via Mineral and Stobbs from Dunreath to Shady Grove Church.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Crawford's house.....	38 00 24.9	77 58 53.1
Intersection of Mineral and Old Mountain (Richmond) roads.....	38 01 00.0	77 59 24.2
Crossroads.....	38 01 03.3	77 58 41.9
Milepost "Ft. M. 144"-Cin. 521".....	38 01 10.7	77 57 31.3
Second-class road crossing.....	38 01 29.7	77 56 51.7
Mineral road crossing.....	38 01 27.1	77 55 45.7
Mineral, in west face of southwest corner of concrete base of high-school building, 1 foot from corner and 2 feet above ground; tablet stamped "Prim. Trav. Sta. No. 7 VA".....	38 00 47.2	77 54 26.1
Mineral, 1 mile northeast of; road crossing.....	38 01 57.8	77 54 12.1
Bridge, center.....	38 02 45.8	77 53 37.7
Sulphur mine, opposite superintendent's office.....	38 03 43.3	77 52 57.6
Sulphur mine, about 1 mile north of superintendent's office, road southwest.....	38 04 32.4	77 52 55.7
Second-class road near schoolhouse.....	38 05 10.8	77 52 48.0
Road northeast.....	38 05 53.8	77 53 09.1
Bridge over North Anna River, on county road between Ware's crossroads and Stobbs post office, in east wing of north end concrete abutment on top surface, 2.5 feet from end and 1 foot from sides; tablet stamped "Prim. Trav. Sta. No. 8 VA".....	38 06 39.7	77 53 09.4
Road forks; road north 77° west to Rains's store and Louisa courthouse.....	38 07 18.2	77 52 27.8
Schoolhouse, point opposite.....	38 07 20.3	77 51 22.4
Bridge over North Fork of North Anna River, center of.....	38 07 40.5	77 51 02.6
Forks of road southwest to Belmont.....	38 08 40.9	77 50 28.3
Stobbs post office, forks of road.....	38 08 57.5	77 50 01.4
Bell's crossroads.....	38 09 29.5	77 49 26.9
Jones's store and post office, in chimney on north side of residence of G. W. Jones; tablet stamped "Prim. Trav. Sta. No. 9 VA".....	38 10 06.2	77 48 49.9
Jones's store, 0.8 mile northeast of; road northwest.....	38 10 39.1	77 48 11.8
Fork of road, upper signboard..... road northwest.....	38 11 26.2	77 47 53.1
Road northwest.....	38 11 28.8	77 46 41.4
Fork of road, opposite road southwest.....	38 11 27.9	77 45 25.0

Magnetic declination of west half of south border, 4° 40' W.; of southeast quarter of quadrangle, 4° 45' W.; of north border of quadrangle, 5° 10' W.

360 TRIANGULATION AND PRIMARY TRAVERSE FOR 1909 AND 1910.

MASSAPONAX QUADRANGLE.

Geographic positions along highway from point near Jones's store to Shady Grove Church and Parker.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Wood road southeast.....	38 11 58.4	77 44 43.7
Second-class road crossing.....	38 12 46.5	77 43 29.3
Shady Grove Church, in stone foundation at about middle of south (front) side, 8 inches above ground; tablet stamped "Prim. Trav. Sta. No. 10 VA".....	38 13 15.6	77 42 58.4
Intersection of Catharpin and Parker's station roads.....	38 13 21.3	77 43 51.4
Trail south.....	38 14 16.7	77 44 15.0
Road southwest to Foster's.....	38 15 01.7	77 44 35.1
Forks of road southeast.....	38 16 01.2	77 44 33.4

Magnetic declination of northeast corner of quadrangle, 4° 50' W.

CULPEPER QUADRANGLE.


Geographic positions along south border of quadrangle on Potomac, Fredericksburg & Piedmont R. R. from Parker to Unionville, thence along highway to Clark Mountain.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Parker, in concrete foundation of water tank of Potomac, Fredericksburg & Piedmont R. R., in central foundation pier, 16.5 feet from center of track and 9 feet from west end of pier, 0.75 foot from top and 0.67 foot north of center of tank; tablet stamped "Prim. Trav. Sta. No. 11 VA".....	38 16 23.0	77 45 24.8
Second-class road crossing.....	38 16 09.1	77 46 28.1
Road crossing.....	38 15 53.9	77 47 37.2
Farm road crossing.....	38 15 26.9	77 49 41.4
Road crossing.....	38 15 04.9	77 51 23.9
Between Tinder station (Mine Run post office) and Reynolds station (St. Just post office), about 1,545 feet east of Reynolds and 286 feet west of a secondary road crossing, on upper surface of concrete portal at north end of culvert of Potomac, Fredericksburg & Piedmont R. R., 30 feet north of center of track, 4 feet from west end and 4 feet from east end of portal, which is 1 foot wide; tablet stamped "Prim. Trav. Sta. No. 12 VA".....	38 15 04.2	77 51 55.6
Road crossing.....	38 15 40.7	77 53 13.5
Culvert, under fill.....	38 16 01.4	77 53 56.5
Overhead crossing.....	38 16 13.4	77 54 47.7
Lafayette station.....	38 16 24.7	77 55 43.3
Main road crossing.....	38 16 06.6	77 56 59.5
Unionville, 0.5 mile east of; 426 feet west of center of highway from point on plank road about 0.5 mile east of Unionville to Clark Mountain, in north end of east pier of concrete culvert, 100 feet east of milepost 29, 58 inches north of center of track; tablet stamped "Prim. Trav. Sta. No. 13 VA".....	38 15 55.6	77 57 34.6
Road east.....	38 16 50.1	77 58 02.4
Bridge, 42 feet north of second bridge.....	38 17 33.1	77 58 54.6

Magnetic declination of west half of south border of quadrangle, 4° 40' W.; of south-east quarter of quadrangle, 4° 45' W.; of northeast corner of quadrangle, 4° 30' W.

RAPIDAN QUADRANGLE.

Geographic positions in vicinity of Clark Mountain.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Forks of road in saddle east of Clark Mountain.....	38 18 31.0	78 00 01.5
Clark Mountain, 4 or 5 miles from Rapidan station on Southern Ry., near Rapidan River; station mark is large flat bottle filled with ashes and having in top below cork a description of station written on muslin. Above bottle is limestone post 7 inches square on top and 30 inches long, with deep diagonal lines north-south and east-west (true) with letters U. S. C. S. cut in deeply, thus: 	38 18 41.10	78 00 11.48
(Coast and Geodetic Survey triangulation station).....	38 18 41.10	78 00 11.48

Magnetic declination at southeast corner of quadrangle, 5° 30' W.

WASHINGTON.

PRIMARY TRAVERSE.

Mount Vernon 30', Seattle 30', and Wickersham 15' quadrangles.

SKAGIT AND SNOHOMISH COUNTIES.

The line, which starts at Cliff triangulation station, follows highways eastward to Fir, a station on the Great Northern Railway, thence southeast along railway to Marysville, northeast along highways to Getchell, along Northern Pacific Railway to Hartford, along highways to Everett, and along the Great Northern Railway to Marysville. Starting again at Hartford the line follows the Northern Pacific Railway to Granite Falls, thence along highways via Jorden and Arlington to Silvana, and from Arlington to McMurray, Sedro Woolley, and Burlington, closing at Fir. Checked spur lines were run from Arlington east to Cicero, from McMurray east about 8 miles, and from Sedro Woolley east via Lyman to the northeast corner of the Mount Vernon quadrangle.

The work was done in 1909 by C. A. Clunet, in cooperation with the State, and is based on Puget Sound datum.

MOUNT VERNON QUADRANGLE.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
Cliff triangulation station, on a wedge-shaped ledge about 30 feet high, on the north side of North Fork of Skagit River, about 100 to 150 meters west of wharf; cracks extend around the edge of ledge, giving it the appearance of a large boulder.....	48 21 47.36	122 28 05.21
Gate across road, at junction with county road, at bend.....	48 22 21.7	122 27 30.4
Forks.....	48 22 12.1	122 26 42.5
Bridge over North Fork of Skagit River, west side of; T road east.....	48 21 51.6	122 24 52.2
Forks just east of river.....	48 22 12.9	122 23 31.2
T road north-south.....	48 22 13.2	122 21 40.3
Forks at large cottonwood tree.....	48 21 21.4	122 21 36.8
Fir post office, T road southwest at, on west side of Skagit River, at ferry.....	48 20 29.4	122 21 03.3

Geographic positions along Great Northern Ry.

Fir, T road north and south at railway station.....	48 20 25.6	122 20 29.0
Railway crossing south of bridge over slough.....	48 19 18.2	122 20 33.8
Milltown, crossing opposite Milltown Trading Co.'s store.....	48 18 30.8	122 20 49.5
Milltown, 1 mile south of; crossing.....	48 17 38.7	122 21 12.6
Milltown, 2.5 miles southwest of; county road crossing.....	48 16 33.1	122 21 41.8
Stanwood, just south of station, crossing.....	48 14 32.2	122 20 52.7
Bridge 26, north end of.....	48 13 53.4	122 20 07.1
Siding, county road crossing.....	48 13 28.8	122 18 51.7
Sawmill, private road crossing.....	48 12 50.0	122 16 51.2
Railway bridge over county road.....	48 12 29.2	122 15 49.0
Silvana, just north of station; road crossing.....	48 12 00.9	122 15 03.1
Silvana, 1.5 miles southeast of; road crossing.....	48 11 17.7	122 14 06.3
Sawmill, 1,800 feet northwest of English station board, log road crossing.....	48 09 19.6	122 12 26.6
County road crossing.....	48 08 14.8	122 11 36.4
Stensens, county road crossing.....	48 07 23.0	122 10 56.9
Stensens, 2.25 miles southeast of; county road crossing.....	48 06 00.3	122 10 26.0
Cemetery, at north end of; county road crossing.....	48 04 36.3	122 10 28.0
Marysville, just south of station; crossing.....	48 03 10.5	122 10 41.5
Marysville, 50 feet south of southeast corner of station, 50 feet east of railway; iron post stamped "Prim. Trav. Sta. No. 4-WASH-ELEV. 16-TUL".....	48 03 11.2	122 10 40.6

MOUNT VERNON QUADRANGLE—Continued.

Geographic positions along highways.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Church, T road east at.....	48 03 40.6	122 09 37.6
Crossroads.....	48 03 52.5	122 08 20.8
C. H. Hayes's mail box at top of hill, road opposite.....	48 04 17.7	122 07 25.0

Geographic positions along the Northern Pacific Ry.

Getchell, road crossing Northern Pacific Ry. just north of station.....	48 04 19.6	122 06 00.7
Lake Cassady, switch block at signboard.....	48 03 17.4	122 05 19.9
Milepost "S. 48," private crossing 1,100 feet southeast of.....	48 02 06.3	122 04 29.4
Old Hartford, crossing.....	48 01 59.9	122 03 26.2
Hartford, 10 feet north of station, between tracks of Northern Pacific Ry. main line and Monte Cristo branch, iron post stamped "Prim. Trav. Sta. No. 5-1909-WASH-ELEV 232-TUL".....	48 01 23.7	122 03 09.9

Geographic positions along highways.

Forks at bridge near mill.....	48 00 54.2	122 03 44.7
C. B. Bayden's mail box, near boathouse.....	48 00 10.5	122 04 20.4

Geographic positions along Great Northern Ry.

Signal tower south of drawbridge, crossing.....	48 00 55.0	122 11 15.7
Private crossing.....	48 01 45.5	122 11 02.4

Geographic positions along Monte Cristo branch, Northern Pacific Ry.

Johnson, 0.8 mile southwest of; 1 mile northeast of Hartford, crossing.....	48 02 10.3	122 02 54.7
Lochsloy, 0.25 mile southwest of, crossing.....	48 03 07.6	122 01 50.2
Diffley, 0.5 mile northeast of, crossing.....	48 04 16.3	122 00 32.8
Granite Falls, west of station, crossing.....	48 05 02.0	121 58 31.3
Granite Falls, about 600 feet west of station, at southeast corner of county road, 15 feet south of railway; iron post stamped "Prim. Trav. Sta. No. 6-1909-WASH".....	48 05 01.8	121 58 30.5

Geographic positions along highways.

Iron bridge south of crossroads.....	48 05 41.4	121 58 13.7
Unpainted cabin overlooking river; road opposite.....	48 06 12.3	121 59 12.1
Skid road crossing.....	48 06 39.8	121 59 57.9
Skid road crossing at mail box 47.....	48 07 20.7	122 00 17.4
Fordon Shingle Co. mail box.....	48 08 30.5	122 01 16.2
Three mail boxes at top of hill, at skid road.....	48 08 53.0	122 02 09.6
Jorden, west side of Hans Lund's gate, 30 feet west of mail box, iron post stamped "Prim. Trav. Sta. No. 7-1909-WASH".....	48 08 55.5	122 02 31.5
Forks at three mail boxes.....	48 09 49.1	122 03 31.4
Forks at C. C. McCanley's mail box.....	48 10 54.8	122 04 36.4
Marysville & Arlington Tram Road crossing.....	48 11 51.8	122 05 25.4
Marysville & Arlington Tram Road Co.'s mail box at camp.....	48 12 17.9	122 05 48.4
T road south.....	48 12 30.9	122 06 55.4
Arlington, at northwest corner of Holler schoolhouse; iron post stamped "Prim. Trav. Sta. No. 8-1909-WASH-ELEV 104-TUL".....	48 12 05.4	122 07 22.9
Arlington, 700 feet north of station, railway crossing.....	48 11 42.0	122 07 33.0
Arlington, 1.5 miles southwest of; crossroads.....	48 11 18.5	122 08 56.9
Schoolhouse; crossroads.....	48 11 17.9	122 11 31.9
T road north.....	48 11 17.6	122 13 10.3
Silvana, about 70 feet south of southeast corner of railway station, 70 feet east of railway at corner of wire fence; iron post stamped "Prim. Trav. Sta. No. 3-1909-WASH".....	48 11 59.5	122 14 59.0

Magnetic declination near Fir triangulation station, 23° 54' E.; near south border of quadrangle, 24° 02' E.; between Granite Falls and Arlington, 24° 11' E.

Geographic positions along highways.

T road south to ferry, just north of bridge over slough.....	48 31 26.5	122 02 29.0
Forks of road at shack.....	48 30 31.3	122 01 35.2
North end of bridge over Day Creek.....	48 30 04.1	122 02 37.9
Forks of road at Mr. Swafford's unpainted house.....	48 29 13.9	122 02 16.5
Hemlock tree on west bank of Day Creek, blazed and marked "W. S. P. T.".....	48 28 42.0	122 01 48.9

Magnetic declination near northeast corner of Mount Vernon quadrangle, 24° 36' E.

MOUNT VERNON QUADRANGLE—Continued.

Geographic positions along Northern Pacific Ry.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Skid road crossing.....	48 13 04.6	122 06 36.3
Do.....	48 13 36.9	122 05 55.9
Private road crossing.....	48 14 18.8	122 04 40.7
Coopers, road crossing.....	48 14 50.0	122 03 26.8
Trafton, opposite signboard.....	48 15 10.0	122 02 41.8
Road crossing.....	48 15 16.0	122 02 28.6
Opposite milepost 7.....	48 16 00.2	122 00 45.7
Cicero, 0.25 miles west of, 300 feet west of railroad bridge over Stilaguamish River, 6 feet south of railroad track, in granite boulder; aluminum tablet stamped "Prim. Trav. Sta. No. 9-1909-WN".....	48 16 00.6	122 00 44.1
Milepost 62, switch block.....	48 13 20.0	122 08 20.3
Road crossing.....	48 13 49.3	122 08 51.4
Bryant, 400 feet south of station, county road crossing.....	48 14 20.3	122 09 24.9
Bryant, 300 feet south of station, opposite ear shop, 25 feet west of railroad; iron post stamped "Prim. Trav. Sta. No. 10-1909-WASH-Elev. 171 TUL".....	48 14 21.7	122 09 26.2
Pilchuck, opposite signboard and hotel.....	48 15 48.8	122 10 16.1
Milepost 67.....	48 17 01.5	122 11 29.5
Snohomish-Skagit county line.....	48 17 51.6	122 12 13.4
Lake Cavanaugh road crossing.....	48 18 39.4	122 12 58.4
McMurray, south of station, road crossing.....	48 18 47.6	122 13 41.4
McMurray, opposite window in station, 30 feet east of main track, on wire fence line at gate; iron post stamped "Prim. Trav. Sta. No. 11-1909-WASH".....	48 18 48.5	122 13 41.8
Road crossing.....	48 19 38.9	122 13 05.0
Sawmill, skid road crossing.....	48 20 53.7	122 12 05.5
Montborne, north of station, road crossing.....	48 22 50.6	122 13 14.9
County road crossing.....	48 23 35.7	122 13 58.0
Big Lake, 50 feet south of southeast end of station, 15 feet west of track, at north-east corner of white board fence around yard of Dayton Lumber Co. office; iron post stamped "Prim. Trav. Sta. No. 13-1909-WASH".....	48 24 03.3	122 14 16.1
County road crossing.....	48 25 11.4	122 15 02.8
Do.....	48 25 43.4	122 15 29.8
Clear Lake, south of station, road crossing.....	48 26 44.9	122 14 55.8
Clear Lake, 1,000 feet north of station, 20 feet east of track, 15 feet south of telephone pole opposite Mr. McDonald's house; iron post stamped "Prim. Trav. Sta. No. 14-1909-WASH-Elev. 44 TUL".....	48 27 35.0	122 13 57.5
Road crossing south of switch at quarry.....	48 27 48.3	122 13 59.0
County road crossing.....	48 28 36.9	122 14 14.1
Sedro-Woolley, crossing of Northern Pacific Ry. and Great Northern Ry.....	48 29 56.4	122 14 26.0
Sedro-Woolley, 95 feet north of Great Northern Ry. and 45 feet east of Northern Pacific Ry., in triangle made by the 2 railroads and a spur; iron post stamped "Prim. Trav. Sta. No. 15-1909-WASH-Elev. 50".....	48 30 22.6	122 14 19.0
County road crossing.....	48 30 23.7	122 14 18.0
Road crossing.....	48 29 50.7	122 15 54.6
Do.....	48 29 25.2	122 17 02.6
Burlington, 24 feet north of southeast corner of schoolhouse yard, at northeast corner of Farshavam and Regent avenues; iron post stamped "Prim. Trav. Sta. No. 16-1909-WASH".....	48 29 01.8	122 18 04.9
Burlington, water tank at north end of station; intersection of east and west and north and south tracks of Great Northern Ry.....	48 28 32.5	122 19 12.9
County road crossing.....	48 28 30.3	122 19 40.4
Skagit River, east of bridge over, county road crossing.....	48 27 26.0	122 19 26.9
County road crossing (elevation 30.5 feet).....	48 26 40.6	122 19 24.0
Mount Vernon, 150 feet southwest of station, 10 feet north of southeast corner of yard of Hotel Mount Vernon, on wire fence line; iron post stamped "Prim. Trav. Sta. No. 17-1909-WASH-Elev. 23".....	48 25 42.3	122 20 07.7
County road crossing.....	48 25 03.6	122 20 02.5
County road crossing at bridge.....	48 24 23.9	122 20 03.8
County road crossing.....	48 23 05.5	122 20 11.5
County road crossing.....	48 22 13.4	122 20 16.6
County road crossing; elevation 10.5 feet.....	48 21 21.5	122 20 21.8
Fir, 70 feet southwest of station, at southeast corner of crossroads, 3 feet east of telephone pole; iron post stamped "Prim. Trav. Sta. No. 1-1909-WASH-Elev. 5".....	48 20 25.3	122 20 28.8

Geographic positions along highways.

Tram road crossing.....	48 18 53.4	122 11 20.8
Tall cedar tree marked with fire notice, at sharp bend in road to south.....	48 19 12.7	122 10 46.7
Forks of road, at black snag marked with forest fire signs.....	48 19 19.4	122 09 42.7
Stump in triangle at T road north, blazed "P. T.".....	48 19 39.4	122 09 35.2
McMurray, 5 miles east of, on Lake Cavanaugh road at east side of gate into Mrs. Grandstrom's ranch; iron post stamped "Prim. Trav. Sta. No. 12-1909-WASH".....	48 19 36.8	122 08 45.8
Quarter corner between secs. 22 and 27.....	48 19 36.9	122 08 53.8
Gate across road.....	48 19 53.9	122 08 04.7
Large cedar tree on south side of road.....	48 20 16.5	122 07 13.7
West end of bridge at old cabin.....	48 20 38.3	122 06 05.6
Blazed cedar tree, marked "P. T.".....	48 20 33.4	122 05 44.2
Tall hemlock on south side of road.....	48 20 34.4	122 05 28.0

MOUNT VERNON QUADRANGLE—Continued.

Geographic positions along Great Northern Ry.

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
Hospital, south of; county road crossing.....	48	28	23.0	122	20	02.4
Road crossing.....	48	27	57.6	122	21	19.4
Avon, south of station, road crossing.....	48	27	28.5	122	22	47.5
Sawmill, county road crossing.....	48	26	54.4	122	25	21.4
County road crossing.....	48	26	48.1	122	26	12.6
Whitney station, west of; road crossing.....	48	26	53.1	122	28	10.2
Whitney, 40 feet southwest of station, 10 feet south of track, 3 feet east of sign-post; iron post stamped "Prim. Trav. Sta. No. 18-1909-WASH".....	48	26	53.1	122	28	10.7

Geographic positions along highways.

Schoolhouse, county crossroads.....	48	25	15.7	122	28	10.0
La Conner, 0.5 mile east of, at west end of bridge; road forks.....	48	23	44.4	122	28	30.1
Road forks.....	48	23	04.8	122	28	10.9
Gate to oatfield (line goes through gate).....	48	22	21.7	122	27	30.3
Sharp bend in road east, 150 feet west of bridge over slough.....	48	28	04.3	122	27	51.5
White house, road forks.....	48	28	51.8	122	28	28.7

Geographic positions along Great Northern Ry.

Private crossing.....	48	27	07.3	122	29	29.6
County road crossing.....	48	27	57.5	122	32	03.7
Summit Park, county road crossing at.....	48	27	43.6	122	33	30.3
County road crossing.....	48	28	16.9	122	33	59.4
Do.....	48	28	59.3	122	35	24.3
Road crossing.....	48	29	48.2	122	36	08.5
Mount Baker Hotel, road crossing.....	48	30	16.4	122	36	26.9
Anacortes, road crossing at box and lumber company plant.....	48	31	08.9	122	36	25.7
Anacortes, southeast end of station, directly under steel quadripod light signal; iron post stamped "Prim. Trav. Sta. No. 19-1909-WASH".....	48	31	18.0	122	36	37.8

Magnetic declination, McMurray to Lake Cavanaugh (near east central part of quadrangle), $23^{\circ} 49'$ E.; magnetic declination near northwest corner of quadrangle, $23^{\circ} 41'$ E.

WICKERSHAM 15' QUADRANGLE.

Geographic positions along the Great Northern Ry.

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
County road crossing.....	48	30	56.6	122	12	31.7
West end of bridge 33.....	48	31	23.8	122	11	26.5
Road crossing 50 feet west of switch.....	48	31	23.2	122	10	15.3
Road crossing.....	48	31	22.3	122	08	18.0
County road crossing, 60 feet west of switch block.....	48	31	25.2	122	05	11.9
Lyman, at northeast corner of road crossing, 69 feet north of main track, about 100 feet northwest of platform; iron post stamped "Prim. Trav. Sta. No. 21-1909-WASH".....	48	31	35.9	122	03	30.1
Road crossing.....	48	31	38.5	122	02	34.0
County road crossing, 30 feet west of bridge.....	48	31	36.4	122	01	34.1
County road crossing, just east of bridge 43.....	48	31	35.0	122	00	52.3
County road crossing, 240 feet west of bridge 45.....	48	31	33.1	121	59	57.1
Hamilton; road crossing west of station.....	48	31	31.9	121	59	19.1
Hamilton, 12 feet southeast of southwest corner of station; iron post stamped "Prim. Trav. Sta. No. 22-1909-WASH-Elev. 96".....	48	31	31.2	121	59	14.6

SEATTLE QUADRANGLE.**Geographic positions along highways.**

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
John Stick's mail box at forks of road.....	47	59	09.5	122	04	38.2
Glenwood, tram-road crossing.....	47	58	41.9	122	05	23.2
Sawmill, forks at; 60 feet northeast to 9 mail boxes.....	47	58	03.1	122	07	46.0
Everett, 2 miles east of; about 1,500 feet east of drawbridge over Snohomish River, crossroads.....	47	58	42.0	122	08	09.5
Everett, in northeast part of town, on bridge, where it turns at a right angle.....	47	58	41.9	122	10	17.6

Geographic position on Great Northern Ry.

Everett, 1.5 miles northeast of; switchblock under crossing.....	47	59	46.9	122	10	53.9
--	----	----	------	-----	----	------

Cedar Lake, Mount Rainier, Seattle 15' and 30', Sultan, and Tacoma quadrangles.

KING, KITTITAS, LEWIS, PIERCE, AND SNOHOMISH COUNTIES.

The following geographic positions were determined in 1910 by George T. Hawkins and O. C. Kintner. The line starts from Coast and Geodetic Survey triangulation station Courthouse Dome in Seattle, follows Columbia & Puget Sound Railroad to Henry, thence along Northern Pacific Railway to Tacoma, via Kanaskat and Palmer, and is tied to Coast and Geodetic Survey triangulation station Coos. Starting from a point on above line at Renton, the line follows highways and log railroads, via Barneston, and is tied to a point on the above line at Kanaskat. From Barneston, another line follows the Chicago, Milwaukee & Puget Sound Railway east across Cascade Mountain to a point where this railroad nearly touches the Northern Pacific Railway, connecting there with Snoqualmie triangulation station (U. S. Geological Survey); thence it follows the Northern Pacific Railway, and is tied to same point at Kanaskat as the first line. From a point on the first line at Boise, a line follows the trail up White River to a point near the southeast corner of the quadrangle, and is duplicated back to the starting point at Boise.

The State cooperated in the work.

TACOMA QUADRANGLE.

Renton, along Northern Pacific Ry., to Maple Valley, thence southeast to east border of quadrangle, west of Ravensdale.

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
Columbia & Puget R. R. track at crossing, near 6 mail boxes, on south side of hill	47	29	23.8	122	15	52.4
Black River Junction, crossing at west end of bridge.....	47	28	32.6	122	14	52.2
Earlington, crossing.....	47	28	32.3	122	13	26.2
Renton, crossing of Northern Pacific Ry. and Columbia & Puget Sound R. R.	47	28	43.2	122	12	25.5
Renton, second street crossing east of station.....	47	28	44.7	122	12	21.1
Hunter, crossing.....	47	28	19.4	122	09	51.8
Elliott station.....	47	27	58.5	122	08	19.7
Cedar Mountain, 300 feet southeast of, crossing.....	47	27	26.8	122	04	40.2
Iron bridge, 500 feet south of, crossing.....	47	26	20.0	122	03	56.8
Maple Valley, 200 feet east of station, crossing.....	47	24	25.1	122	02	16.1
Columbia & Puget Sound Ry. crossing of east transmission line.....	47	23	49.2	122	02	33.3
Overhead crossing.....	47	22	57.9	122	02	50.9
Wilderness station.....	47	22	53.4	122	02	37.3
Henry, Columbia & Puget Sound R. R. crossing over Northern Pacific Ry.....	47	20	52.3	122	01	07.4

TACOMA QUADRANGLE—Continued.

Buckley, along Northern Pacific Ry., to Tacoma, via Orting, Alderton, and Puyallup.

Stations.	Latitude.	Longitude.
Boise, 0.8 mile east of, opposite gate to new, unpainted house; State road survey nail in stump; elevation 739.22.....	47 10 31.7	122 00 08.5
Boise, 600 feet southwest of tall cupola, crossing.....	47 10 43.3	122 00 54.6
Buckley, south of, crossing.....	47 09 49.2	122 01 44.5
Bridge 40 feet above road.....	47 08 19.2	122 03 42.2
Milepost "Tac. 27, E. B. 101," south rail opposite.....	47 08 15.6	122 04 40.8
South Prairie, 50.7 feet east of northeast corner of station, 2.3 feet west of telegraph pole, 19.1 feet from center of track; iron post stamped "Prim. Trav. Sta. No. 5, 1910, WASH, 430 T".....	47 08 22.5	122 05 49.8
South Prairie, window in station.....	47 08 20.4	122 06 02.8
Brownfield, station sign and head block.....	47 07 54.8	122 07 28.2
Arlene, station board.....	47 06 50.6	122 08 06.2
Crocker station.....	47 05 37.5	122 09 23.2
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 198 T".....	47 05 47.3	122 12 04.8
Orting, east of station, crossing.....	47 05 54.2	122 12 15.5
Orting, 1 mile west of, crossing.....	47 06 20.0	122 12 57.9
Milepost 17, 0.25 mile west of, crossing.....	47 07 07.9	122 13 43.8
McMillen station.....	47 08 25.4	122 14 10.1
McMillen, 0.8 mile west of, crossing.....	47 09 05.2	122 14 03.0
Alderton, in southwest corner of garden, 150 feet east of water tank, 23 feet north of center of wagon road, 36.6 feet of center of track, 4.7 feet from south corner of east-west fence; iron post stamped "Prim. Trav. Sta. No. 7, 1910, WASH, 89 T".....	47 10 13.1	122 13 55.6
Alderton, 0.8 mile west of; crossing.....	47 10 52.4	122 14 07.7
Meeker Junction, crossing.....	47 11 18.8	122 16 05.1
Puyallup, corner of Stewart and Meridian streets, northeast corner of building of J. P. Stewart & Sons, in fifth row of bricks above corner stone; aluminum tablet stamped "Prim. Trav. Sta. No. 8, 1910, WASH, 49 T".....	47 11 36.6	122 17 35.2
Crossing 400 feet west of store, where street car line turns north.....	47 11 44.8	122 18 31.6
Crossing at store.....	47 12 05.6	122 20 29.2
Bridge over railway.....	47 14 21.1	122 23 46.4
Northern Pacific Ry., subway under Chicago, Milwaukee & Puget Sound Ry.....	47 14 29.4	122 24 13.4

Geographic positions along highways from north border of quadrangle to Renton, thence east along highways to point near northeast corner of quadrangle.

Sign "All kinds of cattle bought and sold".....	47 29 20.7	122 09 47.0
T road north at signboard "Seattle 18 miles, Snoqualmie 22½ miles".....	47 29 20.2	122 08 31.5
T road north at milepost "Seattle 19 miles, Bank of Issaquah 7 m.".....	47 29 19.2	122 07 17.2

Magnetic declination in northeast quarter of quadrangle, 22° 26' E.; in southeast quarter of quadrangle, 22° 25' E.

CEDAR LAKE QUADRANGLE.

Geographic positions along highways from point near Boise up White River to southeast corner of quadrangle and return.

Stations.	Latitude.	Longitude.
Boise, 1 mile east of; center of highway bridge over ravine, 100 feet northeast to white house.....	47 10 25.4	121 59 30.5
Boise, 2 miles east of; fork of road at abandoned sawmill site; southeast road leads down river to old sawmill.....	47 09 51.2	121 58 34.4
Boise, 2.5 miles east of; 3 corners at road north to Enumelaw, 5 feet east of center of triangle, 10 feet northwest of State road survey bench mark; blazed stump marked "808.48"; 30 feet northwest is blazed stump marked "U. S. G. S.".....	47 09 47.0	121 57 45.9
Center of small bridge over ravine, at fork of logging road; 30 feet north to large fir blazed on west side and marked "P. T. U. S. G. S".....	47 09 32.1	121 57 10.1
Gate in front of first house east of Mud Mountain schoolhouse.....	47 09 06.5	121 56 47.6
T. 19 N., R. 7 E., 335 feet south of corner of secs. 4, 5, 8, and 9, 10 feet north of blazed tree; State road survey blazed stump marked "B. M. 1350".....	47 09 15.2	121 55 48.9
T. 19 N., R. 7 E., corner of secs. 4, 5, 8, and 9.....	47 09 18.5	121 55 48.9
Boise, about 5 miles east of; in large boulder on north side of State road (easily seen from road), 15 feet north to old trail, 1,200 feet east to Critigen's cabin, 20 feet east to small fir tree blazed "B. M. U. S. G. S.," 40 feet south to alder tree blazed "B. M. U. S. G. S.;" aluminum tablet stamped "Prim. Trav. Sta. No. 18, 1910, WASH".....	47 09 18.3	121 55 23.0
Boise, about 5.5 miles east of; center of State road at trail to cabin, 300 feet southeast.....	47 09 19.6	121 55 08.4
Boise, about 7.8 miles east of; center of new State road, 5 feet southeast to hemlock tree about 3 inches in diameter marked "B. M. 25 and P. T. U. S. G. S.," 40 feet northwest to hemlock tree blazed "P. T. U. S. G. S".....	47 09 45.4	121 53 01.7

CEDAR LAKE QUADRANGLE—Continued.

Geographic positions along highways from point near Boise up White River to southeast corner of quadrangle and return—Continued.

Stations.	Latitude.	Longitude.
T. 19 N., R. 7 E., quarter corner between secs. 2 and 11, in center of new State road, 1,630 feet east of west bank of Scatter Creek.....	47 09 48.3	121 52 01.8
Tree blazed "P. T. U. S. G. S.," about 500 feet east of point where old trail crosses new State road.....	47 09 52.0	121 51 33.0
Boise, about 10 miles east of; center of plank bridge over small stream, 80 feet east to fork of trail east to Greenwater and road 500 feet south to Kady's cabin.....	47 09 35.9	121 50 04.5
Log bridge over small stream, about 0.5 mile east of Kady's cabin.....	47 09 40.7	121 49 20.4
Kady's cabin, 1.3 miles east of; center of new State road, on steep slope where cut and fill will be made later; 50 feet northwest to fir blazed "P. T. U. S. G. S.," 80 feet north to hemlock blazed "P. T. U. S. G. S.".....	47 10 10.0	121 48 32.0
Kady's cabin, 2 miles east of; State road ford at Cash Creek.....	47 10 25.6	121 48 01.7
West end of bridge over Clay Creek.....	47 10 40.6	121 47 31.8
Kady's cabin, 2.8 miles east of; top of large boulder on bank of Clay Creek, 6 feet southeast to tree blazed on south side "P. T. U. S. G. S.," 80 feet south to bridge at junction of old trail and new State road; aluminum tablet stamped "Prim. Trav. Sta. No. 19, 1910, WASH".....	47 10 41.1	121 47 32.5
Kady's cabin, 3.5 miles east of, west bank of Cyclone Creek.....	47 10 32.2	121 46 39.4
Kady's cabin, 4.8 miles east of, point in old trail; 25 feet south to large fir blazed "P. T. U. S. G. S.," 100 feet southeast to large boulder projecting out into White River at foot of short steep slope.....	47 09 55.7	121 44 40.4
Twin Creeks, 1.2 miles east of, point in trail; 20 feet north to large spruce blazed "P. T. U. S. G. S.," 5 feet west to end of large log sawed off to clear trail.....	47 09 23.8	121 43 17.2
Junction of Greenwater and White rivers, 2.2 miles west of, point in trail; 5 feet to northwest to spruce 3 feet in diameter blazed "P. T. U. S. G. S.," 30 feet to large spruce 6 feet in diameter blazed "P. T. U. S. G. S.," 40 feet west to small creek.....	47 09 18.0	121 42 20.9
Junction of Greenwater and White rivers, 1.5 miles west of; 40 feet southeast to cottonwood tree blazed "P. T. U. S. G. S.," about 200 feet south to bank of White River.....	47 09 12.9	121 40 51.2
Junction of Greenwater and White rivers, about 300 feet west of; 15 feet above trail, 50 feet south to bank of White River, 300 feet southeast to Greenwater River bridge, 30 feet west to large fir blazed "U. S. G. S. B. M.," 2 feet west to small maple blazed "U. S. G. S. B. M." in face of rock cliff; aluminum tablet stamped "Prim. Trav. Sta. No. 20, 1910 WASH".....	47 09 36.5	121 39 32.0
T. 19 N., R. 9 E., corner of secs. 3, 4, 9, and 10, on bank of White River; 400 feet southeast from bridge across Greenwater River to blazed and marked tree in trail, 200 paces south to section corner.....	47 09 26.8	121 39 24.1
Greenwater River bridge, 1.25 miles southeast of; fork of trail north to Huckleberry Hill, 10 feet southwest to fir 1 foot in diameter blazed "P. T. U. S. G. S.," 30 feet north to pine 1 foot in diameter blazed "P. T. U. S. G. S.".....	47 09 07.2	121 38 03.1
T. 19 N., R. 9 E., corner of secs. 11, 12, 13, and 14, 15 feet northeast of Gold Hill trail, 1,000 feet northwest of forks of Gold Hill and Naches trails.....	47 08 33.5	121 36 52.8
Junction of Greenwater and White rivers, 2.5 miles southeast of; point 20 feet northeast of Gold Hill trail, 18 feet west to 2-foot pine blazed "P. T. U. S. G. S.," 35 feet southwest to 2-foot cedar blazed "P. T. U. S. G. S.".....	47 08 31.6	121 36 47.4
Junction of Greenwater and White rivers, 3 miles southeast of; forks of Gold Hill and Naches trails.....	47 08 28.9	121 36 44.4
Junction of Gold Hill and Naches trails, 1.5 miles southeast of, point in trail; 35 feet northeast to cedar 1 foot in diameter blazed "P. T. U. S. G. S.," 20 feet to fir blazed "P. T. U. S. G. S.," 30 feet south to bridge over ravine.....	47 07 18.9	121 36 30.0
Junction of Greenwater and White rivers, 5 miles southeast of; 0.8 mile north of Starkweather's cabin, point in trail, 25 feet west to hemlock blazed "P. T. U. S. G. S.," 40 feet east to hemlock blazed "P. T. U. S. G. S.".....	47 06 26.5	121 35 44.8
Starkweather's cabin, 1,000 feet south of; county road survey bench mark, "elevation 3,332.34 feet" (incorrect) blazed on small tree 5 feet east of trail near ruins of burned cabin.....	47 05 57.8	121 35 20.1
Junction of Greenwater and White rivers, 6.5 miles southeast of; 0.5 mile northwest of Tongren's cabin, 1,000 feet southeast of Knecht's cabin, 100 feet north of bed of Stony Creek, 35 feet west of Gold Hill trail; 10 feet north to cedar blazed "B. M. U. S. G. S.," 5 feet south to cedar blazed "B. M. U. S. G. S.," aluminum tablet stamped "Prim. Trav. Sta. No. 21, 1910, WASH".....	47 05 46.8	121 35 10.8
Tongren's cabin, 150 feet west of, point in trail; 130 feet south to small creek, 20 feet to fir blazed "P. T. U. S. G. S.," Warren's cabin can be seen through the trees about 500 feet west.....	47 05 20.5	121 34 57.2
T. 19 N., R. 10 E., center of sec. 31, which is 208 feet west of point in trail, 1,200 feet southeast of Tongren's cabin.....	47 05 04.6	121 34 59.1
Tongren's cabin, 1 mile southeast of, bridge over small creek, 100 feet west to bank of White River.....	47 04 42.2	121 34 56.0
The Dalles, 1 mile northwest of; center of small bridge over small creek, 50 feet west to bank of White River.....	47 04 11.5	121 34 40.2
Tongren's cabin, 2.5 miles southeast of, point in trail; 0.5 mile northwest of The Dalles, 100 feet southeast to foot of rock cliff which rises 200 feet above trail, 400 feet west to river, 20 feet east to cedar blazed "P. T. U. S. G. S.," 35 feet northwest to cedar blazed "P. T. U. S. G. S.".....	47 03 22.9	121 34 22.2
The Dalles, 0.8 mile southeast of; county road survey bench mark, elevation marked on tree "3,749.78," 60 feet north to fir blazed "P. T. U. S. G. S.," 30 feet northeast to fir blazed "P. T. U. S. G. S.".....	47 02 36.9	121 33 51.5
The Dalles, 2 miles southeast of, point in trail; 10 feet north to cedar blazed "P. T. U. S. G. S.," 15 feet east to fir blazed "P. T. U. S. G. S.".....	47 01 51.3	121 32 49.9
The Dalles, 2 miles southeast of; center of bridge over deep ravine, 300 feet west to bank of White River.....	47 01 36.7	121 32 25.1

CEDAR LAKE QUADRANGLE—Continued.

Geographic positions along highways from point near Boise up White River to southeast corner of quadrangle and return—Continued.

Stations.	Latitude.	Longitude.
Palmer Junction, about 90 meters west of Northern Pacific Ry. station, 2 meters south of line of telegraph poles, 9.2 meters south of nearest rail on Tacoma branch of Northern Pacific Ry.; chiseled square in top of granite post marked "U. S. B. M." (Coast and Geodetic Survey bench mark W).....	47 18 47.0	121 52 43.3
Kanaskat, near, about 50 meters east of milepost 211, in top of concrete abutment for approach at west end of Northern Pacific Ry. bridge over Green River, the tenth crossing over that stream; 0.17 meter from east side, 0.11 meter from south side of abutment, 1.5 meters south of nearest rail; copper bolt (Coast and Geodetic Survey bench mark V).....	47 18 51.3	121 53 02.3
The Dalles, 4 miles southeast of, point in trail, 10 feet to fir blazed "P. T. U. S. G. S." 35 feet north to cedar blazed "P. T. U. S. G. S.".....	47 01 02.7	121 31 47.1
The Dalles, 4.5 miles southeast of; center of bridge over Deer Creek.....	47 00 30.1	121 31 33.6

West border of quadrangle east along Northern Pacific Ry. via Ravensdale, Kanaskat, Eagle Gorge, and Lester to east border of quadrangle.

Ravensdale, west part of town; crossing.....	47 21 03.3	121 59 21.5
Ravensdale, 60 meters west of Northern Pacific Ry. station, 20 meters south of main track, 0.6 meter east of railway section house; bottom of square hole, marked "U. S. □ B. M." (Coast and Geodetic Survey bench mark).....	47 21 13.6	121 58 46.5
Byrd station.....	47 20 24.9	121 56 46.6
Crossing, 60 feet north of fire warnings.....	47 19 28.4	121 56 09.0
Kanaskat, west of, crossing.....	47 19 29.3	121 54 08.0
Kanaskat, telegraph window.....	47 19 21.4	121 53 47.5
Palmer Junction, telegraph window.....	47 18 47.7	121 52 39.7
Palmer Junction, 1 mile east of; sign "Palmer Junction 1 mile".....	47 18 37.8	121 51 24.0
Milepost 82.....	47 18 11.7	121 50 51.6
Bridge 211 over Green River, east end.....	47 17 51.2	121 50 06.6
Lemolo, 1 mile west of; sign "Lemolo 1 mile".....	47 17 33.1	121 49 02.9
Lemolo station, opposite telegraph window.....	47 16 57.9	121 47 39.8
Eagle Gorge, 0.8 kilometer west of; on south end of east concrete abutment of Northern Pacific Ry. bridge 209 over Green River, in top of abutment, 0.15 meter from its west edge and 1.55 meters from rail; copper bolt (Coast and Geodetic Survey bench mark Y).....	47 16 15.4	121 46 08.5
Eagle Gorge station, opposite telegraph window.....	47 15 58.0	121 45 42.7
Garibaldi, opposite station.....	47 15 40.2	121 44 47.3
Humphrey, 1 mile west of; sign "Humphrey 1 mile".....	47 14 47.0	121 43 29.5
Humphrey, opposite telegraph window.....	47 14 08.3	121 42 50.1
Humphrey (formerly Canton), 120 meters east of railway station, 2.5 meters east of tool house of Northern Pacific Ry., 5.8 meters from nearest rail; iron post stamped "Prim. Trav. Sta. No. 17, 1910, WASH, 1205 T" (Coast and Geodetic Survey bench mark and U. S. Geological Survey bench).....	47 14 06.0	121 42 46.1
Section post between railway sections 34 and 35.....	47 13 56.0	121 42 06.8
Humphrey, 1 mile east of; opposite sign "Humphrey 1 mile".....	47 13 52.0	121 41 34.4
Milepost E-B 71.....	47 13 46.4	121 40 13.3
Maywood station, opposite telegraph window.....	47 13 45.7	121 38 07.7
Maywood, about 0.3 kilometer east of station, in Northern Pacific Ry. section house yard, 0.6 meter east of section house, 16.7 meters north of nearest rail of main track; iron post stamped "Prim. Trav. Sta. No. 16, 1910, WASH, 1335 T" (Coast and Geodetic Survey and U. S. Geological Survey bench mark).....	47 13 44.6	121 37 50.6
Bridge 206 over Green River, east end.....	47 13 16.9	121 35 38.8
Hot Springs, 1 mile west of; sign "Hot Springs 1 mile".....	47 12 25.5	121 33 51.2
Hot Springs, 75 feet east of station, about 17 meters east of southeast corner of station, about 5½ meters north of center of main track of Northern Pacific Ry., about 1 meter east of first telegraph pole east of station; iron post stamped "Prim. Trav. Sta. No. 15, 1910, WASH".....	47 12 16.2	121 32 12.7
Lester, 0.5 mile west of, east end of steel bridge 201.....	47 12 23.6	121 30 42.5

North border of quadrangle south along Northern Pacific Ry. via Kerriston, Barneston, Palmer Junction, and Enumclaw to Buckley.

Kerriston, 2 miles north of; north end of trestle over deep ravine.....	47 28 41.8	121 51 39.8
Kerriston station, center of track opposite southwest corner of Northern Pacific Ry. ticket office.....	47 27 15.3	121 51 28.0
Kerriston, 1 mile south of; south end of siding.....	47 26 22.2	121 51 04.3
Milepost 13 (from Kanaskat).....	47 25 30.8	121 51 22.4
Milepost 12.....	47 25 15.4	121 51 52.9
Milepost 11.....	47 24 44.3	121 52 06.3
Hemlock, point opposite station signboard.....	47 23 49.7	121 51 19.8
Barneston, in front of schoolhouse.....	47 23 36.4	121 51 28.5
Milepost 5.....	47 23 04.6	121 52 13.2
Selleck's Mill, crane for taking mail, 250 feet east of old house.....	47 22 21.4	121 52 51.8
Kangley, point in front of station.....	47 21 42.1	121 53 03.6
Kangley, 0.25 mile south of station, crossing.....	47 21 27.0	121 53 00.4
Durham, crossing.....	47 20 22.1	121 53 25.1
Kanaskat, 0.5 mile north of; crossing.....	47 19 42.0	121 53 38.0
Palmer station.....	47 18 48.3	121 53 42.1

CEDAR LAKE QUADRANGLE—Continued.

North border of quadrangle south along Northern Pacific Ry. via Kerriston, Barneston, Palmer Junction, and Enumclaw to Buckley—Continued.

Stations.	Latitude.	Longitude.
Palmer, 96.4 feet west of southwest corner of station, 5 feet west of mail crane, 10.4 feet from center of track, 20 feet west of center of road crossing; iron post stamped "Prim. Trav. Sta. No. 2, 1910, WASH 882 T".....	47 18 47.8	121 53 43.7
Bayne, flag on hill.....	47 17 52.5	121 54 51.3
Bayne, crossing.....	47 17 54.7	121 54 36.4
Northern Pacific Ry., subway under Chicago, Milwaukee & Puget Sound Ry....	47 17 36.9	121 54 53.4
Cumberland, 40 feet south of, crossing.....	47 16 59.2	121 55 30.3
Cumberland, 0.5 mile south of, crossing.....	47 16 40.0	121 55 46.2
Milepost 39, crossing near.....	47 15 25.6	121 56 38.9
Veazy, crossing.....	47 14 51.1	121 57 14.1
Road to telegraph line crossing, 300 feet east to white house.....	47 13 43.7	121 57 59.8
East-west crossing, 600 feet east to gate across road.....	47 12 52.4	121 58 34.6
Enumclaw, 70 feet south of station, crossing.....	47 12 12.8	121 59 14.9
Enumclaw, 77.9 feet west of southwest corner of station, 3.1 feet east of mail crane, 31 feet west of center of line of Griffin Avenue; iron post stamped "742 T, Prim. Trav. Sta. No. 3, 1910, WASH".....	47 12 12.4	121 59 15.2

Barneston east along Chicago, Milwaukee & Puget Sound Ry. to east border of quadrangle.

Barneston, in northeast corner of Chicago, Milwaukee & St. Paul Ry. bridge over Taylor Creek, 300 feet southwest to trestle of Northern Pacific Ry., 2 feet southwest of post marked "F. F. 122," 50 feet southwest of telephone pole, 100 feet northwest of trestle, on which is a siding; aluminum tablet stamped "Prim. Trav. Sta. No. 9, 1910, WASH".....	47 23 29.1	121 51 07.5
Sign "Station 1 mile," 1 mile west of Iolanthé.....	47 24 01.6	121 50 19.7
Moncton, 1 mile west of; south end of steel railroad bridge over Cedar River; bridge marked "F. F. 120".....	47 24 52.6	121 47 42.5
Moncton, in front of telegraph window.....	47 25 30.4	121 46 41.7
Point where line between secs. 34 and 3, Tps. 22 and 23 N., R. 8 E., intersects Chicago, Milwaukee & St. Paul Ry., 603 feet northeast of door of resident engineer's office.....	47 25 39.8	121 46 22.0
Tps. 22 and 23 N., R. 8 E., quarter corner between secs. 3 and 34.....	47 25 39.8	121 46 09.5
Moncton, 1 mile east of; sign "Station 1 mile".....	47 25 57.5	121 45 40.4
Moncton, 1.5 miles east of; crossing.....	47 25 56.9	121 45 21.6
Ragnar, 1 mile west of; sign "Station 1 mile".....	47 26 15.9	121 44 18.6
Ragnar, main track opposite station sign.....	47 26 12.5	121 43 35.3
Ragnar, 1 mile east of; west end of high trestle marked "F. F. 116".....	47 26 18.6	121 42 50.2
Ragnar, 1.5 miles east of; opposite water tank.....	47 26 34.2	121 41 29.5
Garcia, 2.5 miles west of; west end of high trestle marked "F. F. 12" (steel bridge to be built in place of trestle).....	47 26 16.1	121 39 46.6
Garcia, 1 mile west of; sign "Station 1 mile".....	47 25 45.0	121 38 16.8
Garcia, opposite telegraph window.....	47 25 27.7	121 37 01.4
Garcia, 740 feet east of station, in solid rock in a cut, on north side of track, 2.5 feet above ground, 40 feet east of telegraph pole, 160 feet east of section house; aluminum tablet stamped "Prim. Trav. Sta. No. 10, 1910, WASH".....	47 25 27.6	121 36 50.7
Garcia, 1 mile east of; sign "Station 1 mile".....	47 25 12.3	121 35 49.7
Trestle "F. F. 98," west end (to be filled in).....	47 24 06.5	121 34 58.7
Bandera, 1.5 miles west of; west end of trestle F. F. 94.....	47 23 32.6	121 33 10.9
Bandera, opposite station sign.....	47 23 14.0	121 31 50.2
Trestle "F. F. 86," west end.....	47 23 21.8	121 30 09.2

Magnetic declination of northwest quarter of quadrangle, 23° 15' E.; of northeast quarter of quadrangle, 23° 06' E.; of southwest quarter of quadrangle, 23° 20' E.; of southeast quarter of quadrangle, 23° 13' E.

SULTAN QUADRANGLE.

Geographic positions in southwest corner of quadrangle, along Northern Pacific R. R. from west border of quadrangle east to Preston, thence along highways to south border of quadrangle.

Stations.	Latitude.	Longitude.
High Point, crossing near, 900 feet west of sign marked "High Point," 50 feet south of bridge over ditch.....	47 31 57.5	121 58 45.8
Milepost, "48 miles to Seattle".....	47 31 59.7	121 57 03.7
Preston, 250 feet southwest to schoolhouse, crossing.....	47 31 22.6	121 55 55.1
Preston, in front of telegraph window of station.....	47 31 24.8	121 55 46.8
Preston, 0.5 mile south of; east end of highway bridge over ravine, 100 feet south of old house.....	47 30 51.6	121 55 09.9
Lovegrew's Mills, 2 miles south of Preston, in front of schoolhouse, center of road.....	47 30 24.2	121 54 28.7
Point of switch near end of main branch of logging railroad.....	47 30 05.7	121 52 35.8

Magnetic declination at southwest corner of quadrangle, 23° 36' E.

SEATTLE 15' QUADRANGLE.

Geographic positions from Coast and Geodetic Survey triangulation station, Courthouse Dome, at Seattle, along Northern Pacific Ry. to south border of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Seattle, Courthouse Dome.....	47 36 12.8	122 19 26.0
Georgetown, near car barn, crossing.....	47 32 50.4	122 18 43.1
Camp, crossing.....	47 31 49.9	122 17 41.7

SEATTLE 30' QUADRANGLE.

Geographic positions along highways in southeast corner of quadrangle, thence along Northern Pacific Ry. from Issaquah east to border of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Three corners east of schoolhouse.....	47 30 11.0	122 07 09.9
Issaquah, in front of telegraph window at station.....	47 31 54.1	122 02 04.4
Issaquah station, south of, crossing.....	47 31 50.5	122 02 03.0
West end switch to coal bunkers.....	47 32 12.1	122 00 12.3

Magnetic declination of southeast corner of Seattle 30' quadrangle, 23° 25' E.

SNOQUALMIE QUADRANGLE.

Geographic positions along Chicago, Milwaukee & Puget Sound Ry. from west border of quadrangle northeast to United States Geological Survey triangulation station Snoqualmie, thence along the same railroad southeast to Northern Pacific Ry., thence west along Northern Pacific Ry. to west border of quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Rockdale, opposite telegraph window.....	47 23 41.9	121 26 57.9
Rockdale, in south face of concrete pier of water tank, 90 feet east of south end of station, 10 feet north of track; aluminum tablet stamped "Prim. Trav. Sta. No. 11, 1910, WASH".....	47 23 42.2	121 26 57.2
Rockdale, 1 mile east of; sign "Station 1 mile".....	47 24 24.8	121 26 19.9
Trestle "F. F. 64," east end.....	47 24 36.0	121 26 12.6
Snoqualmie, 250 feet east to trestle "F. F. 56," crossing.....	47 25 43.2	121 25 20.1
Laconia, opposite telegraph window.....	47 25 18.4	121 24 40.9
Keechelus, opposite north end of telegraph office.....	47 21 52.6	121 23 22.2
Keechelus, 2 miles south of; track opposite water tank.....	47 19 45.0	121 22 09.3
Whittier, 0.5 mile north of; crossing.....	47 18 01.5	121 19 32.9
Stampede tunnel, east portal.....	47 16 44.6	121 19 24.1
Stampede tunnel, west portal.....	47 16 02.6	121 21 32.8
Stampede, about 370 meters east of; at south side of west entrance to Stampede tunnel; in vertical surface of rock, about 3 meters south of nearest rail, about 1 meter above the level of the rails at that point; red metal disk (Coast and Geodetic Survey bench mark "E-1"), primary traverse station No. 12.....	47 16 01.3	121 21 35.6
Stampede, about 23 meters southwest of Northern Pacific Ry. station, about 3 meters north of edge of bluff forming north bank of Deer Creek, and about 15 meters south of main track; iron post stamped "Prim. Trav. Sta. No. 13, 1910, WASH" (U. S. Geological Survey bench mark No. 2776 T).....	47 15 51.4	121 21 45.0
Borup station, opposite telegraph window.....	47 15 15.0	121 22 31.4
Kennedy station, opposite telegraph window.....	47 14 02.2	121 25 14.8
Morgan's Mills, opposite sign.....	47 12 55.6	121 27 54.6
Lester station, opposite telegraph window.....	47 12 32.4	121 29 40.9
Lester, in southwest corner of roundhouse, about 1.5 meters above ground; tablet stamped "Prim. Trav. Sta. No. 14, 1910, WASH, 1614 T" (U. S. Geological Survey bench mark).....	47 12 33.0	121 29 41.7

Magnetic declination of northwest quarter of quadrangle, 22° 32' E.

MOUNT RAINIER QUADRANGLE.

Geographic positions continuing line in Cedar Lake quadrangle.

Stations.	Latitude.	Longitude.
Forks of Gold Hill and White River trails, 300 feet southwest to bridge over Silver Creek, 500 feet southeast to bridge over Silver Creek.....	° ' " 46 59 56.9	° ' " 121 31 25.8
Silver Creek, on bank, 1 mile to northeast corner of Rainier National Park, 1.5 miles to southeast corner of quadrangle, 100 feet west to Dr. J. L. Reese's cabin, 300 feet north to Gold Hill trail, 600 feet west to fork of Gold Hill and White River trails, 8 feet south to hemlock blazed "B. M. U. S. G. S.," 30 feet southwest to hemlock blazed "B. M. U. S. G. S.," 35 feet south to center of Silver Creek, 0.25 mile above junction of Goat and Silver creeks, at camping ground known as "Gold City," in face of rock ledge; aluminum tablet stamped "Prim. Trav. Sta. No. 22, 1910, WASH".....	46 59 54.0	121 31 14.2

WYOMING.

TRIANGULATION STATIONS.

Cheyenne quadrangle.

LARAMIE COUNTY.

The positions in the following list were determined by George T. Hawkins in 1910, and are based upon triangulation stations Terry and East Twin, the positions of which were determined by R. H. Chapman in 1902.

ARCHER, LARAMIE COUNTY, WYO. (Not occupied.)

About 8.5 miles nearly east of Cheyenne. The station is a windmill tower about 500 feet southeast of the station at Archer, the first station east of Cheyenne on Union Pacific Railroad.

Signal: Windmill tower.

Station mark: Well.

[Latitude 41° 09' 24.76". Longitude 104° 39' 46.97".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Terry.....	50 30 53	230 22 37	4.35852	14.186
Lodgepole.....	126 18 59	306 15 22	3.97950	5.927

BUNGALOW, LARAMIE COUNTY, WYO. (Not occupied.)

About 14 miles northwest of Cheyenne, along road via Fort Russell past rifle range, thence along telephone line to point 13 miles from Cheyenne, thence 1 mile west. The station is center of a small house, which was not finished when visited; therefore, location by land lines is not given.

Signal: Chimney.

Station mark: Center of house.

[Latitude 41° 16' 40.62". Longitude 104° 56' 41.78".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Leith.....	242 12 16	62 18 27	4.16981	9.187
P. O.	314 34 33	134 37 57	4.00414	6.273

CHEYENNE, LARAMIE COUNTY, WYO.

Center of capitol dome at Cheyenne.

[Latitude 41° 08' 25.32". Longitude 104° 49' 10.70".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Terry.....	19 18 12.97	199 16 07.80	4. 1290856	8. 304
East Twin.....	74 56 51.31	254 39 11.92	4. 5908242	24. 220
P. O.....	157 57 14.58	337 55 40.84	3. 9462993	5. 491
Lodgepole.....	216 03 38.51	36 06 12.44	3. 9663326	5. 750

EAST TWIN, LARAMIE COUNTY, WYO.

On easternmost and higher of two rocky peaks known as Twin Mountains, about 10 miles southeast of Sherman and 20 miles a little south of west from Cheyenne. Ascent of mountain may be readily made on horseback.

Station mark: Bronze tablet cemented in flat surface of solid rock.

[Latitude 41° 02' 54.04". Longitude 105° 16' 02.43".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Livermore.....	3 38 53.41	183 37 55.88	4. 5103976	20. 126
Gale.....	89 19 42.82	269 07 00.78	4. 4330476	16. 842
Crow.....	144 33 26.38	324 26 33.40	4. 4015676	15. 665
Ragged.....	171 35 00.39	351 31 58.06	4. 6421429	27. 258
P. O.....	241 37 24.86	61 53 31.38	4. 5899953	24. 174
Cheyenne.....	254 39 11.92	74 56 51.31	4. 5908242	24. 220
Terry.....	274 09 12.42	94 24 45.54	4. 5223308	20. 686
Pizen.....	326 37 20.99	146 50 14.06	4. 7028818	31. 350
Maxwell.....	344 14 46.23	164 16 53.35	4. 2230452	10. 385

LEITH, LARAMIE COUNTY, WYO.

Station is 17 miles northeast of Cheyenne, on land owned by Mr. Leith in sec. 20, T. 17, R. 66. It is a windmill about 50 feet south of Mr. Leith's house, 250 feet west of north-south fence, and about 2 miles north of "P. O." ranch house.

Signal: Windmill tower.

Station mark: Well.

[Latitude 41° 20' 23.72". Longitude 104° 47' 19.28".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
P. O.....	22 56 23	202 53 36	4. 18096	9. 426
Bungalow.....	62 18 27	242 12 16	4. 16981	9. 187
Lodgepole.....	349 00 33	169 01 54	4. 17484	9. 294

LODGEPOLE, LARAMIE COUNTY, WYO.

On divide between Lodgepole Creek and Crow Creek, about 8 miles northeast of Cheyenne, in SE. $\frac{1}{4}$ sec. 2, T. 14, R. 66. It is 1.8 miles east of the point where the road from Cheyenne to Warren's ranch crosses the divide on a flat ridge.

Signal: Sawed-lumber tripod.

Station mark: Tablet countersunk in top of a white stone 30 by 8 by 8 inches, set 28 inches in the ground.

[Latitude 41° 12' 27.76". Longitude 104° 45' 16.89".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Terry.....	26 09 44.30	206 05 05.28	4. 3518203	13. 969
Cheyenne.....	36 06 12.44	216 03 38.51	3. 9663326	5. 750
P. O.....	94 40 23.32	274 36 15.47	3. 9441348	5. 464
Leith.....	169 01 54	349 00 33	4. 17484	9. 294
Archer.....	306 15 22	126 18 59	3. 97950	5. 927

"P. O.," LARAMIE COUNTY, WYO.

In sec. 2, T. 14, R. 67, on land owned by Mrs. Kathryn Heenan, about 5.5 miles northwest of Cheyenne, on divide between Lodgepole and Crow creeks. It is about 0.3 mile north of Mrs. Heenan's house and 0.3 mile northwest of Mr. Hawkins's house. The station can be reached by wagon road to Mrs. Heenan's house, from which the route is through pasture to the signal.

Signal: Tripod of sawed lumber.

Station mark: Tablet countersunk in top of white stone 30 by 8 by 8 inches, set 28 inches in ground.

[Latitude 41° 12' 50.82". Longitude 104° 51' 33.08".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Terry.....	3 04 39.81	183 04 08.18	4.3206846	13.003
East Twin.....	61 53 31.38	241 37 24.86	4.5899953	24.174
Bungalow.....	134 37 57	314 34 33	4.00414	6.273
Leith.....	202 53 36	22 56 23	4.18096	9.426
Lodgepole.....	274 36 15.47	94 40 23.32	3.9441348	5.464
Archer.....	291 03 07	111 12 54	4.24672	10.967
South Windmill.....	319 19 14	139 26 02	4.34703	13.816
Cheyenne.....	337 55 40.84	157 57 14.58	3.9462993	5.491

SOUTH WINDMILL, LARAMIE COUNTY, WYO. (Not occupied.)

About 10 miles southeast of Cheyenne. The station is the second windmill south of Archer.

Signal: Windmill tower.

Permanent mark: Well.

[Latitude 41° 03' 43.74". Longitude 104° 41' 12.38".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Terry.....	75 37 50	255 30 31	4.20760	10.022
P. O.....	139 26 02	319 19 14	4.34703	13.816

TERRY, LARAMIE COUNTY, WYO.

On a conical bare hill, about 10 miles south of Cheyenne, about 2 miles northeast of the old "Terry Ranch" (now "Home Ranch" of Warren Live Stock Co.), and about 1.5 miles east of Cheyenne-Fort Collins road.

Station mark: Iron bench mark post set 3 feet in ground, surrounded by a small mound of rock.

[Latitude 41° 01' 33.44". Longitude 104° 52' 21.17".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Pizen.....	8 04 03.62	188 01 26.95	4.6030505	24.912
Maxwell.....	64 45 29.64	244 32 04.96	4.5018860	19.735
East Twin.....	94 24 45.54	274 09 12.42	4.5223308	20.686
P. O.....	183 04 08.18	3 04 39.81	4.3206846	13.003
Cheyenne.....	199 16 07.80	19 18 12.97	4.1290856	8.364
Lodgepole.....	206 05 05.28	26 09 44.30	4.3518203	13.969
Archer.....	230 22 37	50 30 53	4.35852	14.186
South Windmill.....	255 30 31	75 37 50	4.20760	10.022



INDEX.

A.	Page.
Aastad, Minn.....	165, 185
Aastad station, Minn.....	165
Aastad Church station, Minn.....	165
Aberdeen, Ohio.....	244, 252
Aberdeen Ferry, Ky.....	108
Abram station, Me.....	153
Adair County, Mo.....	205-216
Adams County, Ohio.....	234-262
Adams County, Pa.....	160-162
Adrian, Ill.....	74
Alamo, Tenn.....	307
Albany, Me.....	155
Albany, Oreg.....	285
Albany quadrangle, Oreg.....	281-288
Albemarle County, Va.....	357-360
Alberta station, Minn.....	165
Alcony, Ohio.....	257
Alderton, Wash.....	366
Alexis quadrangle, Ill.....	80
Allen County, Ohio.....	234-262
Allenfarm, Tex.....	321, 322
Alligator Bayou, La.....	140
Alsatia, La.....	134, 137
Alspaugh, Oreg.....	291
Alvordton quadrangle, Ohio.....	263
Amelia, Ohio.....	254
American Corners, Md.....	51
Anacortes, Wash.....	364
Anchor, W. Va.....	122
Anchor station, W. Va.....	122
Andalusia, Ill.....	83
Anderson, Ky.....	110
Anderson, Oreg.....	291
Androscoggin County, Me.....	153-158
Anna, Ohio.....	259
Anthony station, W. Va.....	122
Antwerp, Ohio.....	265, 269, 272
Archbold, Ohio.....	263
Archer, Wyo.....	371
Archer station, Minn.....	371
Argentine, Colo.....	40
Arline, Wash.....	366
Arlington, Wash.....	362
Ashby, Minn.....	165
Ashby quadrangle, Minn, traverse in.....	205
triangulation in.....	164-191
Ash Ridge, Ohio.....	250
Ashton Bridge quadrangle, La.....	131
Ashwood, Ohio.....	267
Ashwood quadrangle, La.....	142-143
Atherton quadrangle, La.....	134-135
Atlanta, Ill.....	92
Auerville, Ohio.....	241
Auglaize County, Ohio.....	234-262
Augusta, Ill.....	78
Augusta, Ky.....	253

	Page.
Augusta quadrangle, Ill.....	78
Aurelius, Mich.....	164
Aurora, Ind.....	276
Aurora, Mo.....	218, 219
Aurora special quadrangle, Mo.....	217-219
Austin, Ohio.....	238
Austin County, Tex.....	312-317, 317-325
Avon, Wash.....	364
Avon quadrangle, Ill.....	69-70
Axel, Minn.....	184
Azucema, La.....	145

B.

Bacons, Del.....	50, 51
Bainbridge, Ohio.....	237, 240, 241
Bainbridge quadrangle, Ohio.....	240-241
Bakers Crossroads, Tenn.....	294
Bald station, Cal.....	11
Bald station, Colo.....	39, 44
Bald station, Oreg.....	281
Bald Knob, W. Va.....	122, 129
Bald Knob quadrangle, W. Va.....	113-129
Bald Knob station, W. Va.....	122
Baldwin, Ohio.....	268, 269
Baldwin, D. H., work of.....	9, 229
Baldwin, H. L., jr., work of.....	39, 219
Ballina, La.....	149
Balmoral, La.....	143
Baltimore & Ohio R. R.....	267
Baltimore & Ohio Southwestern R. R.....	276
Bandera, Wash.....	369
Banner, Ill.....	65
Bannock County, Idaho.....	53-57
Bannon, T. M., work of.....	9, 342
Bantam, Ohio.....	252-254
Bardin station, Cal.....	29
Bardolph, Ill.....	71
Barnard, E. C., work of.....	9
Barnes, La.....	137
Barns Bridge, Tex.....	311
Barns Bridge quadrangle, Tex.....	310-311
Barneston, Wash.....	368, 369
Barnesville quadrangle, Minn.....	201
Barn station, Cal.....	11
Barrett, Minn.....	167, 173, 183
Barrett quadrangle, Minn.....	164-191
Barrow station, Oreg.....	282
Barry, Minn.....	166
Barry stations, Minn.....	106
Barton, Minn.....	170
Barton, Oreg.....	291, 292
Barton stations, Minn.....	166, 170
Bash, La.....	151-152
Basin station, Colo.....	44
Bastrop County, Tex.....	312-317
Bastrop quadrangle, Tex.....	313

	Page.		Page.
Batavia quadrangle, Ohio.....	254-255	Blufunk station, Oreg.....	282
Bath County, Ky.....	101-107	Blyton, Ill.....	69
Batson, Ohio.....	271, 272, 273	Bobo quadrangle, Ohio.....	264
Battle Lake, Minn.....	184, 192	Boden, Ill.....	80
Battle Lake quadrangle, Minn.....	192, 194	Boerner station, Minn.....	167
Baxter Bayou quadrangle, La.....	132-133	Boggy Tank, Tex.....	314
Bayne, Wash.....	369	Boise, Wash.....	366
Bayou Cocodrie, La.....	150	Bonanza quadrangle, Cal.....	29-34
Bayouville quadrangle, Ky.....	305	Bonham, Mo.....	219
Beams Mills, N. C.....	233	Bond station, Oreg.....	282
Bear Lake, Utah.....	352	Bone station, Mont.....	220
Bear Lake County, Idaho.....	53-57	Boone County, Iowa.....	95-98
Bear station, Me.....	153	Boone County, W. Va.....	113-129
Bearwallow, Va.....	121	Borgen station, Minn.....	167
Bearwallow station, Va.....	121	Boring, Oreg.....	291
Beauty Peak station, Cal.....	11	Borup, Wash.....	370
Beaver station, Ky.....	113	Boston, Ohio.....	254
Beaver station, Utah.....	342	Boundary station, Mont.....	220
Becker County, Minn.....	192-205	Bowersville, Ohio.....	248
Beckley, W. Va.....	124, 126	Bowling Green, Ky.....	111
Bee station, Cal.....	12	Box Elder station, Mont.....	221
Behle station, Minn.....	167	Boxlar station, Mont.....	221
Belfort, N. Y.....	230	Boynton station, Minn.....	168
Bell, Ohio.....	246	Bradford, Ohio.....	258
Bellbrook, Ohio.....	256	Bradford, Tenn.....	295
Bell County, Tex.....	333-342	Brandy Keg station, Ky.....	113
Bellefontaine quadrangle, Ohio.....	259	Brashear station, Ky.....	113
Bellfountain, Oreg.....	282, 283	Brazos River valley, traverse in... 317-325, 325-333	
Bell's crossroads, Va.....	359	Breathitt County, Ky.....	98-101
Bell station, Cal.....	12	Breckenridge, Colo.....	39
Bellwood, N. C.....	233	Breckenridge special quadrangle, Colo.....	39-43
Benton County, Oreg.....	281-288	Brenham quadrangle, Tex.....	316-317
Bentonville, Ohio.....	243	Brice, Minn.....	178
Berg, Cal.....	12	Brick station, Cal.....	13
Berg station, Cal.....	12	Bridgeport, Ill.....	67
Bernadotte, Ill.....	70	Bridgeport quadrangle, Ill.....	94
Berne quadrangle, Ohio.....	264	Bridgeville, Del.....	49, 51
Berrys Lick quadrangle, Ky.....	110	Brinkhaven quadrangle, Ohio.....	234
Berryville, Ohio.....	246	Brisbane station, Minn.....	167
Bertha, Ohio.....	236	Broad Creek, Del.....	50
Berwick, Mo.....	218	Brockton quadrangle, Mont.....	219-229
Bethel, Me.....	153	Brooklyn, Ill.....	78
Bethel quadrangle, Ohio.....	252-253	Brown County, Ohio.....	234-262
Biggs, Cal.....	13, 14, 17	Brownfield, Wash.....	366
Biggs quadrangle, Cal.....	11-29	Browning station, W. Va.....	123
Biggs station, Cal.....	13	Brownsburg, Ill.....	86
Big Lake, Wash.....	363	Brown station, Minn.....	168
Big Lick, Tenn.....	293	Brownstown, W. Va.....	125, 128
Big Spring, Md.....	162	Brownsville, Oreg.....	236
Bihlman station, Cal.....	13	Bruce's.....	298, 299
Billet, Ill.....	93	Brunet, La.....	131
Bingham County, Idaho.....	53-57	Bruin station, Utah.....	343
Birds quadrangle, Ill.....	94	Bryan, Ohio.....	269, 270
Bishoff station, Cal.....	30	Bryan quadrangle, Tex.....	324-325
Bissell, Oreg.....	290	Bryant, Wash.....	363
Bitner, Md.....	161	Bryant Pond quadrangle, Me.....	153-158
Black, W. Va.....	126	Bryants, Tex.....	340
Black River Junction, Wash.....	365	Buchanan, Ohio.....	238
Black station, Me.....	153	Buchanan County, Va.....	113-129
Black station, Nev.....	37	Buckfield, Me.....	155
Blades, Del.....	50	Buckfield quadrangle, Me.....	153-158
Blanchester quadrangle, Ohio.....	249	Buckhorn Landing, La.....	137
Bledsoe County, Tenn.....	293-294	Buckland, Ohio.....	261, 262
Blink Springs, Mont.....	223	Buckley, Wash.....	366
Blue Creek, Ohio.....	242	Buckrun, Ohio.....	246
Blue Cut, Ky.....	110	Buena Vista, Ohio.....	243

	Page.		Page.
Buflin, Tex.....	325-326	Cavett, Ohio.....	273
Buhard, Tex.....	309	Cazadero, Oreg.....	290, 291
Bullis station, Minn.....	169	Cazadero quadrangle, Oreg.....	289-292
Bullitts Bayou Landing, La.....	147	Cecil, Ohio.....	272
Bungalow station, Wyo.....	371	Cedar Creek, Colo.....	42
Burgess, Tex.....	340	Cedar Creek quadrangle, Del.....	48
Burksville, Ill.....	87	Cedardale, Oreg.....	290
Burleson County, Tex.....	317-325, 333-342	Cedar Grove, Ky.....	108
Burlington, Wash.....	363	Cedar Hill, Colo.....	46
Burning Rock station, W. Va.....	123	Cedar Lake quadrangle, Wash.....	366-369
Burnside, Ill.....	74	Cedar Mountain, Wash.....	365
Burn station, Mont.....	221	Cedarville, Ohio.....	249
Butler County, Ky.....	107-112	Cedron, Ohio.....	253
Butler County, Ohio.....	275-281	Celina, Ohio.....	265
Butler quadrangle, Ohio.....	265	Celina quadrangle, Ohio.....	265-266
Butte City, Cal.....	14, 15, 20, 21	Centerville quadrangle, Mo.....	215-216
Butte City quadrangle, Cal.....	11-29	Chain Bridge, D. C.....	52
Butte County, Cal.....	11-29	Chalone station, Cal.....	30
Butte Creek Poplar station, Cal.....	13	Champaign County, Ohio.....	234-262
Butte Creek quadrangle, Cal.....	11-29	Chapman, R. H., work of.....	371
Bybel quadrangle, Va.....	358	Charlotte quadrangle, Mich.....	163
Byrd, Wash.....	368	Charlottesville, Va.....	357
Byron, Ohio.....	249	Chase Lake, N. Y.....	229
C.		Chelle station, Mont.....	222
Cabin station, Cal.....	14	Cherryville, N. C.....	233
Cable, Ill.....	83	Chesapeake & Ohio Ry.....	357-358
Cades, Tenn.....	306	Chester County, Md.....	47-51
Cades quadrangle, Tenn.....	305-306	Chestnut Camp station, W. Va.....	123
Cairn station, Mont.....	221	Chewsville, Md.....	162
Caledonia, Va.....	358	Chéyenne, Wyo.....	372-373
California, cooperation of.....	11, 29	Cheyenne quadrangle, Wyo.....	371-373
triangulation in.....	11-37	Cheyenne station, Wyo.....	372
Calvert, Tex.....	337	Chicago, Milwaukee & Puget Sound Ry.....	369, 370
Calvert Junction, Tex.....	325, 337	Chicken Ranch station, Cal.....	14
Cambridge, Iowa.....	95	Chico, Cal.....	14, 16, 17
Camp, Ohio.....	237	Chico stations, Cal.....	14
Camp, Wash.....	370	Chillicothe quadrangle, Ohio.....	239
Campbell quadrangle, Minn.....	202	Chilo, Ohio.....	253
Campbellhill quadrangle, Ill.....	85	Chimney station, Wyo.....	375
Camp station, Oreg.....	283	Chism station, Cal.....	15
Canada station, Ky.....	114	Chokio quadrangle, Minn.....	164-191
Caneyville, Ky.....	112	Chualar, Cal.....	30
Canton, Ill.....	66	Chualar station, Cal.....	31
Canton quadrangle, Ill.....	66-68	Churchill, Md.....	161
Carbon County, Utah.....	342-352	Church No. 5 station, Oreg.....	283
Caribou station, Idaho.....	53	Church station, Minn.....	170
Caribou station, Me.....	154	Churchton, Tenn.....	298
Carlisle, Ky.....	102	Cicero, Wash.....	363
Carlisle, Minn.....	202	Cincinnati Northern Ry.....	265, 271, 273
Carmel, Ohio.....	241	Cinder station, Ky.....	99
Caroline County, Md.....	47-51	Circleville, Ohio.....	239
Carroll County, Md.....	160-162	Circleville quadrangle, Ohio.....	239
Carroll County, Tenn.....	295-308	Clackamas County, Oreg.....	289-294
Carr station, Ky.....	98	Clark County, Ill.....	57-63
Carter County, Ky.....	101-107	Clark County, Nev.....	35-38
Carthage, N. Y.....	232	Clark Mountain, Va.....	360
Carthage quadrangle, Ill.....	74-75	Clarks, Oreg.....	289
Carthage quadrangle, Mo.....	216-219	Clarkson, Mo.....	219
Carthage quadrangle, N. Y.....	232	Clark station, Cal.....	35
Carysbrook, Va.....	358	Clark station, Minn.....	170
Carysville, Ohio.....	257	Clarksville, Ohio.....	249, 256
Castle Rock station, Colo.....	41	Clay County, Ill.....	57-63
Cat Springs, Tex.....	314	Clay County, Minn.....	192-205
Cat station, Utah.....	343	Claysville, Tenn.....	294
Cave Hill, Ky.....	109	Clayton, La.....	148, 149
		Clayton, Ohio.....	243

	Page.		Page.
Defiance, Ohio.....	267	Eagle Gorge, Wash.....	368
Defiance County, Ohio.....	262-275	Earlington, Wash.....	365
Defiance Junction, Ohio.....	267	East Carroll Parish, La.....	129-152
Defiance quadrangle, Ohio.....	267	East Cincinnati quadrangle, Ohio.....	254
Delaware, traverse in.....	47-51	East Land, La.....	135
Delaware, Minn.....	175	East Livermore, Me.....	155
Delmar, Tex.....	309	East Monroe, Ohio.....	240, 247
Delphos, Ohio.....	268	East Twin station, Wyo.....	372
Delphos quadrangle, Ohio.....	267-268	Eaton, Tenn.....	306
Delta, La.....	141	Eaton County, Mich.....	162-164
Delta, Ohio.....	275	Eaton Rapids, Mich.....	164
Deltabridge, La.....	146	Eckmansville, Ohio.....	245
Deltabridge quadrangle, La.....	145-146	Edgefield, Ohio.....	248
Delta Point quadrangle, La.....	141	Edgemont, Md.....	162
Democrat station, Colo.....	39	Edgerton, Ohio.....	265, 269
Denmark, Ill.....	85	Edgington, Ill.....	81
Dennis, Ohio.....	236	Edina quadrangle, Mo.....	208-209
Dent, Minn.....	198	Edon quadrangle, Ohio.....	268
Denton quadrangle, Md.....	51	Effingham County, Ill.....	57-63
Denton station, Minn.....	172	Ekley station, Minn.....	173
Des Moines quadrangle, Iowa.....	98	Elbow Lake, Minn.....	173, 183
Desona, La.....	133	Elbow Lake stations, Minn.....	173-174
Dewitt County, Ill.....	90-92	Eldorado, Minn.....	174
De Witt quadrangle, Mich.....	164	Elgin, Ohio.....	267
Diamond Springs, Ky.....	110	Elizabeth, Minn.....	204
Diamond station, Cal.....	17	Elizabethtown, Ind.....	276
Dickard quadrangle, La.....	146	Elkhart, Ill.....	90
Dickenson County, Va.....	113-129	Elkhorn City, Ky.....	120
Dickey, Colo.....	41	Elk Lake, Minn.....	167
Dick station, Ky.....	115	Elk Lick station, Ky.....	102
Diffley, Wash.....	362	Elk station, Va.....	121
Dill, Ohio.....	237, 250	Ellerton, Md.....	161
Dillsboro, Ind.....	276	Elliott, Wash.....	365
Dimondale, Mich.....	163	Ellis, J. R., work of.....	9,
Dingess, W. Va.....	127	52, 84, 86, 90, 95, 162, 216, 234, 262-263, 275	
District of Columbia, traverse in.....	52	Ellisville, Ill.....	69
Dixfield, Me.....	156	Elmira quadrangle, Oreg.....	281-288
Doggett station, Ky.....	102	Eloise, Tex.....	326, 327
Donnelly station, Minn.....	173	Elrod, Ind.....	267
Dooley station, Ky.....	102	Elsey quadrangle, Mo.....	216-219
Dora, N. C.....	233	Elwood, Oreg.....	290
Dora quadrangle, Minn.....	197	Emerald, Ohio.....	245, 246
Dorchester County, Md.....	47-51	Emery County, Utah.....	342-352
Douglas, E. M., work of.....	9, 164	Emmitsburg quadrangle, Md.....	162
Douglas County, Minn.....	164-191, 192-205	Englewood, La.....	139
Dover, Oreg.....	291	Enix station, Ky.....	103
Downs, Tex.....	331	Enoka, La.....	137
Dresden, Tenn.....	303	Enumclaw, Wash.....	369
Dresden quadrangle, Tenn.....	303	Era quadrangle, Ohio.....	239
Dry Station, Mont.....	223	Erdahl, Minn.....	178
Dubuou station, Utah.....	344	Erhard, Minn.....	195, 201, 203
Dukedom, Tenn.....	303	Escape station, Mont.....	223
Duncans Mills, Ill.....	64	Esquon, Cal.....	17
Dunkinsville, Ohio.....	242	Esquon station, Cal.....	17
Dunreath, Va.....	358	Estacada, Oreg.....	291
Durango, Colo.....	44	Eugene, Oreg.....	285, 287
Durham, Cal.....	17	Eugene quadrangle, Oreg.....	281-288
Durham, Wash.....	368	Eugene station, Oreg.....	283
Dusty, Oreg.....	282	Everett, Wash.....	365
Dyer, Tenn.....	296	Everglade, Minn.....	183
Dyer County, Tenn.....	295-308	Ewing, Ky.....	105
Dyersburg quadrangle, Tenn.....	299	Ewing quadrangle, Ky.....	101-107
E.		F.	
Eade station, Cal.....	31	Fairview, Ill.....	67
Eagle, Ohio.....	252	Fairview, Ohio.....	246
Eagle Creek, Oreg.....	291, 292	Fairview station, Md.....	158

	Page.	G.	Page.
Falls County, Tex.	325-333	Gadsden, Tenn.	305, 307
Falls of Rough quadrangle, Ky.	108	Galesburg quadrangle, Ill.	68
Fallston, N. C.	233	Gannett, S. S., work of	9
Fandon, Ill.	77	Garcia, Wash.	369
Faraday, Oreg.	291	Garden City, Utah.	355
Farmersville quadrangle, Tex.	312	Gardner, Tenn.	302
Farmington, Ill.	67	Garfield, Ohio.	235
Farnan station, Cal.	18	Garibaldi, Wash.	368
Fayette County, Ohio.	234-262	Garland, Tex.	309, 310
Fayette County, Tex.	312-317	Garrison quadrangle, Ohio.	236
Fayette County, W. Va.	113-129	Gaston County, N. C.	232-233
Fayetteville, Tex.	314	Gay Hill quadrangle, Tex.	321
Feesburg, Ohio.	251, 252, 253	George, Oreg.	290, 291
Felt station, Minn.	174	George station, Minn.	175
Fergus Falls, Minn.	174-175, 205	Georgetown, Colo.	39, 40
Fergus Falls quadrangle, Minn., traverse in.	203-204	Georgetown, Del.	17, 48
triangulation in	164-191	Georgetown, D. C.	52
Fergus Falls stations, Minn.	174, 175	Georgetown, Idaho.	53, 54, 55
Ferriday, La.	148, 150, 152	Georgetown, Ohio.	251
Ferriday quadrangle, La.	148-149	Georgetown, Wash.	370
Fiechter station, Oreg.	284	Georgetown quadrangle, Colo.	39-43
Fincastle, Ohio.	245	Georgetown quadrangle, Ohio.	250-252
Fir, Wash.	361, 363	Gerdine, T. G., work of.	9
Fir station, Oreg.	284	Germania, Mo.	209
Firwood, Oreg.	291	Getchell, Wash.	362
Fisher, Tex.	309	Gibbs, Tenn.	300, 302
Fisher's Mills, Oreg.	292	Gibson, La.	147
Flag station, Ky.	115	Gibson, Tenn.	300, 305
Flatonia quadrangle, Tex.	313	Gibson County, Tenn.	295-308
Fleming County, Ky.	101-107	Gibson station, Colo.	39
Flemingsburg, Ky.	104, 105	Gibson Wells, Tenn.	307
Flemingsburg quadrangle, Ky.	101-107	Gila, Ill.	61
Fletcher, Ohio.	258	Gilbert quadrangle, Va.-W. Va.	113-129
Floyd, La.	136	Gilsizer Slough quadrangle, Cal.	11-29
Floyd County, Ky.	113-129	Glacier station, Colo.	40
Floyd quadrangle, La.	136	Glasford quadrangle, Ill.	65
Fluvanna County, Va.	357-360	Glass, Tenn.	300, 301
Ford station, Utah.	344	Glass quadrangle, La.	142
Fort Jennings, Ohio.	268	Glendale, Mo.	210
Fort Peck Indian Reservation, Mont.	219-229	Gleniste, Ohio.	254
Fort Recovery, Ohio.	280	Glen Karn, Ohio.	279
Fossil quadrangle, Wyo.-Utah.	352-356	Glenmore quadrangle, Ky.	110
Fountain, Ill.	89	Glenn County, Cal.	11-29
Foxhome, Minn.	202	Glenora quadrangle, Va.	359
Frammar, Minn.	168	Glenray, Ohio.	235
Frankford, Del.	48, 49	Glen Springs, Ky.	102
Franklin, La.	143	Glenwood, Mo.	209, 210
Franklin County, Mo.	153-158	Glenwood, Wash.	365
Franklin County, Pa.	160-162	Globe, Mo.	218
Franklin Furnace, Ohio.	236	Goldman, La.	145
Frazier station, Ky.	116	Gold Spring, Ill.	91
Frederick County, Md.	160-162	Gonzales, Cal.	31
Fredericks Hall quadrangle, Va.	359	Gonzales quadrangle, Cal.	9-34
Freistatt, Mo.	219	Gonzales station, Cal.	31
French Crossing quadrangle, Cal.	11-29	Goochland County, Va.	357-360
Friedland, Ky.	111	Good Hope quadrangle, Ill.	72-73
Friendship, Ohio.	236	Goodluck, Tenn.	296
Friendship, Tenn.	308	Goodrich Landing, La.	134
Frogmore, La.	149, 150	Goodspeed station, Cal.	18
Frogmore quadrangle, La.	150	Gord station, Minn.	175
Fruitland, Tenn.	305	Graball, Tex.	318-319, 320
Fulton, Ky.	301, 304	Grand Ledge, Mich.	164
Fulton County, Ill.	63-79	Granite Falls, Wash.	362
Fulton County, Ohio.	262-275	Grant County, Minn.	164-191, 192-205
Fults, Ill.	86	Grant station, Cal.	18

	Page.
Graves County, Ky.....	295-308
Graves station, Utah.....	344
Gravette, Tenn.....	296
Graveyard station, W. Va.....	124
Grayson County, Ky.....	107-112
Gray station, Colo.....	40
Graysville, Mo.....	211
Great Falls, Md.....	52
Great Northern Ry.....	361, 362, 364, 365
Gregory station, Ky.....	103
Greencastle, Mo.....	214
Greencastle Ferry, Ky.....	109, 110
Green City quadrangle, Mo.....	210-213
Greene County, Ohio.....	234-262
Greenerton, Pa.....	160
Greenfield, Ohio.....	240
Greenfield, Tenn.....	295
Greenfield quadrangle, Mo.....	216-219
Greenfield quadrangle, Ohio.....	240
Greenhill, Tenn.....	308
Green station, Cal.....	19
Greenup, Ill.....	58, 59
Greenup quadrangle, Ohio.....	236
Greenville quadrangle, Ohio-Ind.....	281
Greenwood, Me.....	153
Gresham, Oreg.....	291, 293
Grey Head station, Utah.....	345
Gridley, Cal.....	19
Gridley quadrangle, Cal.....	11-29
Gridley station, Cal.....	19
Grimes County, Tex.....	317-325
Grimes quadrangle, Cal.....	11-29
Grindal station, Colo.....	40
Grizzard, Tenn.....	296, 305
Grover Hill, Ohio.....	266, 267, 273
Grover station, Me.....	155
Grundy quadrangle, Ky.-Va.-W. Va.....	113-129
Guinea, Ohio.....	254
Gulf, Colorado & Santa Fe Ry.....	310, 342
Gulley station, Ky.....	104
Gum Ridge quadrangle, La.....	147
Gunther station, Minn.....	176
Gurley, Tex.....	330, 331
Guyot station, Colo.....	40

H.

Hagerstown, Md.....	159, 161
Hagerstown quadrangle, Md.-Pa., traverse in.....	160-162
Hagerstown quadrangle, Md., triangulation in.....	158-160
Hagerstown stations, Md.....	159
Haley, Oreg.....	291
Halls Corners quadrangle, Ohio.....	268-269
Halsey, Oreg.....	285
Halsey quadrangle, Oreg.....	281-288
Halsey station, Oreg.....	285
Halstead, Tex.....	314
Halstead quadrangle, Tex.....	313-314
Hamenway, Oreg.....	284
Hamenway station, Oreg.....	285
Hamerstown, Ohio.....	252
Hamilton, Cal.....	19
Hamilton, Ill.....	79, 98
Hamilton, Wash.....	364

	Page.
Hamilton County, Ohio.....	275-281
Hamilton station, Cal.....	19
Hamlet, Ohio.....	254
Hamlin station, Idaho.....	54
Hancock, Ill.....	73
Hancock, Minn.....	176
Hancock County, Ill.....	63-79
Hancock station, Minn.....	176
Hanging Rock, Ohio.....	236
Hanley station, Cal.....	31
Harbeson, Del.....	48
Hardintown, Ind.....	276
Hardinville quadrangle, Ill.....	94
Harkey Corners, Cal.....	28
Harlan, Ky.....	116
Harlan County, Ky.....	113-129
Harlan station, Ky.....	116
Harmon, Ohio.....	237
Harmon, Tex.....	317
Harpers, Ohio.....	240
Harris, Ky.....	102
Harris, Tenn.....	302
Harris Creek, Tex.....	332
Harrison, Ohio.....	276-277
Harrison County, Ind.....	275-281
Harrison quadrangle, Ohio-Ind.....	277
Harrison station, Va.....	121
Harrisonville, Ill.....	89
Harrington, Tex.....	322
Harrington quadrangle, Md.-Del.....	51
Harrington station, Idaho.....	54
Harshasville, Ohio.....	244-245
Hartford, Me.....	153
Hartford, Mo.....	207
Hartford, Wash.....	362
Hartsburg, Ill.....	90, 91
Hart station, Nev.....	37
Harveysburg, Ohio.....	249, 256
Harwood, Ohio.....	250
Havana, Ill.....	64
Havana quadrangle, Ill.....	64-65
Haverhill, Ohio.....	236
Haviland, Ohio.....	271
Hawkins, G. T., work of.....	9, 47, 98, 158, 160, 205, 216, 232, 262-263, 365, 371
Hazard, Ky.....	99, 100, 114, 117
Hazard quadrangle, Ky.....	113, 129
Hearne & Brazos Valley R. R.....	335
Hearne quadrangle, Tex.....	334-339
Heller station, Minn.....	176
Hemlock, Wash.....	368
Hempstead, Tex.....	317
Henning, Minn.....	199
Henning quadrangle, Minn.....	199
Henry, Idaho.....	54
Henry, Wash.....	365
Henry County, Ohio.....	262-275
Henry station, Cal.....	32
Henry station, Idaho.....	54
Hensley station, W. Va.....	124
Herbert, Tenn.....	294
Herkimer County, N. Y.....	229-232
Herman, Minn.....	169
Herman quadrangle, Minn.....	164-191
Herman station, Minn.....	177

	Page.
Herron, W. H., work of.....	9
Hesperus quadrangle, Colo.....	43-47
Hiawatha, Utah.....	345, 350
Hiawatha station, Utah.....	345
Hickman, Ky.....	304-305
Hickman County, Ky.....	295-308
Hickman quadrangle, Ky.-Tenn.....	304
Hicks, Ohio.....	256
Hicksville, Ohio.....	265, 270
Hidalgo, Ill.....	59
Hidalgo Falls, Tex.....	322
Hindman, Ky.....	119
Higginsport, Ohio.....	251
Highbank, Tex.....	327
Highland County, Ohio.....	234-262
High Point, Wash.....	369
Hilger station, Ky.....	104
Hillsboro, Ohio.....	246
Hillsboro quadrangle, Ohio.....	246-247
Hillsgrove, Ill.....	76
Hinsdale County, Colo.....	41-43
Hinton, Ohio.....	266
Hippo.....	118
Hodges Landing, La.....	142
Hogan, Oreg.....	291
Hogler, Ohio.....	248
Holden quadrangle, W. Va.....	113-129
Hole station, Mont.....	223
Hollandsburg, Ohio.....	279
Hollister quadrangle, Cal.....	29-34
Hollyville, Del.....	48, 49
Holmes City, Minn.....	177
Holmes station, Minn.....	177
Holmhead, Va.....	358
Honcut quadrangle, Cal.....	11-29
Hopetown, Ohio.....	239
Hopkinsville, Ohio.....	256
Horner, Ohio.....	250
Horsebranch quadrangle, Ky.....	111-112
Horsefly station, Colo.....	42
Hotchkiss quadrangle, Colo.....	41-43
Hot Springs, Wash.....	368
House station, Cal.....	19
Housley, Tex.....	309
Houston & Texas Central R. R.....	317, 320
Howth special quadrangle, Tex.....	318-319
Hughes station, Ky.....	104
Humbold, Ohio.....	240
Humboldt, Tenn.....	305, 306
Humphrey, Wash.....	368
Hunter, Wash.....	365
Hunts Corners, Me.....	155
Hurricane station, Ky.....	116
Hutchinson station, Me.....	155
Hyden, Ky.....	119
I.	
Jaeger, W. Va.....	124
Jaeger quadrangle, Va.-W. Va.....	113-129
Idaho, triangulation in.....	53-57
Idlewild, Tenn.....	295
Idlewild quadrangle, Tenn.....	295-296
Ignacio quadrangle, Colo.....	43-47
Illinois, cooperation of.....	57, 63, 79, 84, 86, 90, 93
traverse in.....	57-94
Illinois Central R. R.....	91, 295, 299, 300, 301-302, 306
Independence station, Colo.....	41

	Page.
Indiana, traverse in.....	92-94, 275-281
Indian Head station, Utah.....	345
Indian station, W. Va.....	135
Inez quadrangle, Ky.....	113-129
Ingham, Mich.....	163
Ingham County, Mich.....	162-164
International & Great Northern R. R.....	324,
	325-326, 327, 328, 336-337
Inyo County, Cal.....	35-38
Iowa, cooperation of.....	95
traverse in.....	95-98
Iron station, Cal.....	20
Issaquah, Wash.....	370
Ivanpah quadrangle, Cal.-Nev.....	35-38
Ivanpah station, Cal.....	37
Ivy, Ill.....	87
Ivy station, Ky.....	117
Ivy station, W. Va.....	125

J.

Jackson, Ky.....	99, 100
Jackson, Wash.....	362
Jackson County, Ohio.....	234-262
Jackson quadrangle, Ohio.....	235
Jacksonville, Ohio.....	242
Jacks station, Minn.....	178
James Peak quadrangle, Colo.....	39-43
Jamestown, Ohio.....	248
Jasper, Ohio.....	248
Jasper County, Ill.....	57-63
Jasper County, Mo.....	216-219
Jasper Mills, Ohio.....	248
Jefferson, Ohio.....	248
Jesup, Ohio.....	246
Johnson County, Ky.....	113-129
Johnson's Grove, Tenn.....	307
Johnson station, Minn.....	178
Jones, Tex.....	328
Jones, Oscar, work of.....	9, 113, 293
Jones's Bridge, Tex.....	325
Jones's Bridge quadrangle, Tex.....	323-324
Jonesville quadrangle, Ky.-Va.....	113-129
Jordan, Ky.....	304
Jorden, Wash.....	362
Junction City, Oreg.....	282, 283

K.

Kanaskat, Wash.....	368
Kanawha County, W. Va.....	113-129
Kangley, Wash.....	368
Kaufman County, Tex.....	308-312
Keechelus, Wash.....	370
Keefers quadrangle, Cal.....	11-29
Keithsburg quadrangle, Ill.....	82
Kelloggs Landing quadrangle, La.....	142
Kelso, Cal.....	35, 37
Kelso, Oreg.....	291
Kelso station, Cal.....	35
Kemps Bend, La.....	147
Kendall, C. B., work of.....	9, 47,
	57, 63, 79, 92, 107, 129, 192, 205, 232, 295
Kennebec County, Me.....	153-158
Kennedy, Wash.....	370
Kenney quadrangle, Ill.....	92
Kensington, Minn.....	177
Kent, Cal.....	20
Kent County, Del.....	47-51

	Page.
Kenton, Tenn.....	298
Kent station, Cal.....	20
Kentucky, cooperation of.....	98, 103, 113
traverse in.....	107-112, 295-308
triangulation in.....	98-107, 113-120
Keokuk, Iowa.....	98
Keokuk quadrangle, Ill.....	79
Keokuk quadrangle, Iowa.....	98
Kerriston, Wash.....	368
Keswick, Va.....	357
Kilbourne, La.....	131
Kimmswick quadrangle, Ill.....	89
Kinderhook, La.....	140
King, Ia.....	141, 142
King City, Cal.....	30, 32
King City station, Cal.....	32
King County, Wash.....	365-371
Kingston station, Cal.....	35
Kintner, O. C., work of.....	9, 239, 365
Kirby station, Ky.....	105
Kirk quadrangle, Ky.....	108
Kirkville, Mo.....	205, 212
Kirkville quadrangle, Mo.....	205-203
Kirtley, Tex.....	316
Kittitas County, Wash.....	365-371
Knott County, Ky.....	98-101, 113-129
Knox County, Ind.....	92-94
Knox County, Mo.....	205-216
Knox County, Ohio.....	234
Knox station, Oreg.....	285
Koppang station, Minn.....	178
Kossuth, Ohio.....	262
Kyune, Utah.....	342, 345
Kyune station, Utah.....	345

L.

Laclede, La.....	140
Laconia, Wash.....	370
La Conner, Wash.....	364
Ladd, Ohio.....	237
Lafayette, Va.....	360
La Grange, Tex.....	313-314
La Harpe quadrangle, Ill.....	73
Lake Bruin, La.....	143, 145
Lake Bruin quadrangle, La.....	144
Lake Cassidy, Wash.....	362
Lake City, Colo.....	43
Lake Fork, Ill.....	91
Lake One, La.....	139
Lake Providence, La.....	133, 134
Lake Providence quadrangle, La.....	133-134
Lake Shore & Michigan Southern Ry.....	263, 267
Lake station, Minn.....	178
Laketown, Utah.....	354
Lakeview, Ill.....	88
Lakeview station, Utah.....	352
Lamarque, La.....	149
Lamarque quadrangle, La.....	149
Lambert station, W. Va.....	126
Lamoka, Tex.....	332
Lancaster, Mo.....	209
Lane County, Oreg.....	281-288
Lanes Ferry, La.....	131, 132
Langdon station, Ky.....	99
Lansing, Mich.....	163
Lansing quadrangle, Mich.....	163

La Plata County, Colo.....	43-47
Laramie County, Wyo.....	371-373
L'Argent, La.....	145, 148
Larson, L. M., work of.....	9
Latham, Ohio.....	238, 241
Latham, Tenn.....	303
Laurel, Del.....	50
Lawrence, Minn.....	187
Lawrenceburg, Ind.....	276
Lawrenceburg Junction, Ind.....	276
Lawrenceburg quadrangle, Ohio-Ind.....	276
Lawrence County, Ill.....	92-94
Lawrence County, Ky.....	113-129
Lawrence County, Mo.....	216-219
Lawrence County, Ohio.....	234-262
Lawrenceville, Ill.....	93
Laynesville quadrangle, Ky.....	113-129
Leadville quadrangle, Colo.....	39-43
Leastalk, Cal.....	35, 36, 37
Lebanon, La.....	130
Lebanon, Oreg.....	286
Lebanon quadrangle, Ohio.....	255-256
Lee, Ky.....	112
Lee County, Iowa.....	98
Leeds Center, Me.....	156
Leeds Junction, Me.....	156
Leeds station, Me.....	156
Leeper station, Cal.....	20
Leitersburg, Md.....	161
Leith station, Wyo.....	372
Lemolo, Wash.....	368
Lents, Oreg.....	292
Leo, Ohio.....	235
Leopold, L. S., work of.....	9
Lerado, Ohio.....	255
Leslie County, Ky.....	98-101, 113-129
Lester, Wash.....	368, 370
Letcher County, Ky.....	113-129
Levanna, Ohio.....	251
Levee station, Cal.....	21
Lewisburg, Ky.....	110, 111
Lewis County, Ill.....	101-107
Lewis County, N. Y.....	229-232
Lewis County, Wash.....	365-371
Lewisville, Tex.....	317
Liberty quadrangle, Ohio-Ind.....	278
Lick, Ky.....	110
Lien, Minn.....	183
Lima quadrangle, Ohio.....	261
Limbs, Tenn.....	302
Limestone station, Utah.....	353
Lincoln, Ill.....	90
Lincoln County, N. C.....	232-233
Lincoln quadrangle, Ill.....	90
Lincolnton, N. C.....	232
Lincolnton quadrangle, N. C.....	232-233
Linn County, Mo.....	205-216
Linn County, Oreg.....	281-288
Linsley station, Minn.....	179
Little Muddy quadrangle, Ky.....	108-109
Livermore, Me.....	156
Livermore Falls, Mo.....	155
Livermore quadrangle, Me.....	153-158
Live Oak, Cal.....	13
Livonia, Mo.....	210
Lochsloy, Wash.....	362

	Page.		Page.
Locust Grove, Ohio.....	241, 242	McGregor, Tex.....	332
Locust Ridge, La.....	145	McKinley, C. P., work of.....	113-129
Locust Ridge, Ohio.....	251	McKinney quadrangle, Tex.....	312
Lodgepole station, Wyo.....	372	McKnight station, Cal.....	21
Loehr Barn station, Minn.....	179	McLean County, Ill.....	90-92
Loehr stations, Minn.....	179, 180	McLean quadrangle, Ill.....	92
Logan, Minn.....	168, 170	McLennan County, Tex.....	325-333
Logan, Mo.....	219	McMaugh, F. J., work of.....	9, 313, 317, 325, 333
Logan, Oreg.....	292	McMillen, Wash.....	366
Logan, W. Va.....	127	McMillen, P. W., work of.....	308, 333
Logan County, Ill.....	90-92	McMurray, Wash.....	363
Logan County, Ky.....	107-112	McNair, E. L., work of.....	9, 47, 101, 113, 295, 308, 317, 325, 333
Logan County, Ohio.....	234-262	Macomb quadrangle, Ill.....	72
Logan Peak station, Utah.....	353	Macon, Ohio.....	245
Logan quadrangle, W. Va.....	113-129	Macon County, Ill.....	90-92
Logansport, Ky.....	112	Macon County, Mo.....	205-216
Logue station, Minn.....	180	Madison County, Iowa.....	95-98
Lomax quadrangle, Ill.....	74	Madison County, Tenn.....	295-308
London Mills, Ill.....	68, 69	Madison Parish, La.....	129-152
Lone Elevator station, Minn.....	180	Madonnaville, Ill.....	87
Lone Pine Hill station, Oreg.....	285	Madrid, Iowa.....	96
Lone Tree station, Minn.....	180	Madrid quadrangle, Iowa.....	96-97
Long, Ky.....	110	Maestown, Ill.....	86
Long Pond, N. Y.....	231	Maine, cooperation of.....	153
Long Spur station, Ky.....	117	triangulation in.....	153-158
Lookout station, Colo.....	44	Malesus quadrangle, Tenn.....	306
Lookout station, Md.....	159	Manchester, Ohio.....	244
Loramic, Ohio.....	260	Mancos, Colo.....	45
Loramie quadrangle, Ohio.....	260	Mancos station, Colo.....	45
Lost station, Ky.....	117	Manford, Ky.....	112
Lost station, Mont.....	224	Manilo quadrangle, Ill.....	66
Louisa County, Va.....	357-360	Mansford, La.....	138
Louisiana, cooperation of.....	130	Maple, Ohio.....	252
traverse in.....	129-152	Maple Valley, Wash.....	365
Louisville & Nashville R. R.....	110, 305	Mapleville, Md.....	162
Love, Ky.....	112	Maplewood, Ohio.....	259, 260
Lovegrew's Mills, Wash.....	309	Maquon, Ill.....	68
Loveland, Ohio.....	256	Maquon quadrangle, Ill.....	68
Lovett, Ohio.....	241	Marathon, Ohio.....	250, 254, 255
Lowmansville, Ky.....	118	Marcuse, Cal.....	21
Lowville quadrangle, N. Y.....	229-230	Marcuse station, Cal.....	25
Lucasville, Ohio.....	235, 237	Maria Stein, Ohio.....	260
Lucerna, La.....	152	Marietta, Ill.....	69
Lucket, La.....	145	Marion County, Oreg.....	281-288
Lums, La.....	138	Marionville, Mo.....	219
Lunde, S. G., work of.....	9	Mark Center quadrangle, Ohio.....	269-270
Lyman, Wash.....	364	Marlin, Tex.....	328, 329
Lynchburg, Ohio.....	250	Marlin quadrangle, Tex.....	325-330
Lyndon, Ohio.....	240	Marshall, Ohio.....	241, 246
Lynn quadrangle, Ohio-Ind.....	279-280	Marshall, R. B., work of.....	9
Lynx, Ohio.....	242	Marshes quadrangle, W. Va.....	113-129
M.		Martin, Tenn.....	301, 302
Mabee, Ohio.....	235	Martin County, Ky.....	113-129
Mable quadrangle, La.....	147-148	Martin quadrangle, Tenn.-Ky.....	301-302
McAnna, Tenn.....	301	Martin station, Md.....	159
McCanney, Minn.....	180	Martinstown, Mo.....	211, 213
McCanney station, Minn.....	181	Marvin, Tex.....	337
McCollough station, Nev.....	38	Maryland, cooperation of.....	158, 160
McConnell, Tenn.....	302	traverse in.....	47-52, 160-162
McDonough County, Ill.....	63-79	triangulation in.....	158-160
McDowell, Tex.....	315	Marysville, Cal.....	22, 29
McDowell County, W. Va.....	113-129	Marysville, Wash.....	361
McGaw, Ohio.....	236	Marysville Butte quadrangle, Cal.....	11-29
McGill, Ohio.....	268	Marysville Butte station, Cal.....	21
McGoldricks Ford, Mo.....	210	Marysville Church station, Cal.....	22

	Page.		Page.
Mason City quadrangle, Ill.	91	Missouri, Kansas & Texas Ry	309-310,
Mason County, Ill.	101-107		312, 313-315, 341
Mass, Ky.	110	Mixersville, Ind.	277
Massaponax quadrangle, Va.	360	Moats, Ohio.	270
Massie, Va.	357	Mobile & Ohio R. R.	296, 299, 305
Matewan, W. Va.	128	Modoc, Ill.	87
Matewan quadrangle, Ky.-W. Va.	113-129	Moe, Minn.	176
Mattoon quadrangle, Ill.	62	Moffatt, Tenn.	300
Maury City, Tenn.	308	Mohawk, Ohio.	234
Maury City quadrangle, Tenn.	306-308	Moline, Ill.	81, 82
Maxey station, Ky.	105	Montborne, Wash.	363
Mayfield quadrangle, Ky.-Tenn.	303	Moncton, Wash.	369
Mayhill, Ohio.	246, 247	Monett, Mo.	218
Maysville, Ky.	101	Monett quadrangle, Mo.	216-219
Maysville quadrangle, Ohio.	252	Monroe, Ohio.	239
Maywood, Wash.	368	Monroe, Oreg.	286, 288
Meeker Junction, Wash.	366	Monroe City, Ill.	89
Melbern, Ohio.	269	Monroe County, Ill.	86-89
Melvin, Ohio.	249	Monroe quadrangle, Oreg.	281-288
Menard County, Ill.	90-92	Monroe station, Oreg.	286
Menefee station, Colo.	45	Montana, triangulation in.	219-229
Mercer County, Ill.	79-84	Montavilla, Oreg.	292, 293
Mercer County, Ohio.	234-262, 262-275, 275-281	Monterey, Ohio.	254
Meridian, Cal.	11, 13, 19	Monterey County, Cal.	29-34
Meridian quadrangle, Cal.	11-29	Montezuma, Colo.	40, 41
Mers station, Ky.	105	Montezuma, Ohio.	261
Merwin, Ohio.	254	Montezuma County, Colo.	43-47
Mesa Verde Park special quadrangle, Colo.	43-47	Montgomery County, Ohio.	234-262
Mesquite, Tex.	311	Montgomery Ferry, La.	135, 136
Metz, Cal.	31, 33	Montpelier, Idaho.	55
Metz station, Cal.	33	Montpelier quadrangle, Idaho-Wyo.-Utah.	352-356
Miami County, Ohio.	234-262	Montpelier quadrangle, Ohio.	271
Michigan, cooperation of.	163	Montrose, Colo.	43
traverse in.	162-164	Montrose County, Colo.	41-43
Middlepoint, Ohio.	267	Montrose quadrangle, Colo.	41-43
Midway, Ohio.	267	Moonshine quadrangle, Ill.	62-63
Milam County, Tex.	317-325, 325-333, 333-342	Moor, D. F. C., work of.	39
Milan, Tenn.	305	Moore's Hill quadrangle, Ind.	276
Milan quadrangle, Ill.	82-83	Moose Hill station, Me.	155
Milk River quadrangle, Mont.	219-229	Morehead, Ky.	106
Miller, La.	137	Morehead station, Ky.	106
Millerton, Utah.	345	Morfield station, Colo.	45
Millerton station, Utah.	346	Morgan's Mills, Wash.	370
Millican special quadrangle, Tex.	322	Morgan station, Mont.	224
Millikens Bend, La.	137	Morgantown, Ky.	108, 109
Millikens Bend quadrangle.	137	Morgantown, Ohio.	238
Millikin, La.	130	Morlah, Tenn.	300
Millikin quadrangle, La.	130-131	Morning View quadrangle, Ohio.	254
Millsboro, Del.	48	Morris, Minn.	170, 176, 179, 181
Millstadt, Ill.	88	Morris, Oreg.	291
Milltown, Wash.	361	Morris quadrangle, Minn.	164-191
Milton, Del.	48	Morris station, Minn.	181
Mineral, Va.	359	Morrow, Ohio.	256
Mine Run, Va.	360	Morrow, Oreg.	291
Mingo County, W. Va.	113-129	Morville, La.	151
Minier quadrangle, Ill.	91	Moscow, Ohio.	253
Minnesota, cooperation of.	165, 192	Mossy, W. Va.	126
traverse in.	192-205	Moulton quadrangle, Mo.	209-210
triangulation in.	164-191	Moulton station, Cal.	23
Minnie Grove, Ky.	108, 112	Moultrie County, Ill.	57-63
Minorea, La.	152	Mounds, La.	140, 141
Minster, Ohio.	260	Mounds, Utah.	345
Miranda, Ky.	102	Mounds quadrangle, La.	140, 141
Missouri, cooperation of.	205-216	Mounds station, Utah.	346
traverse in.	205-219	Mountaindale, Md.	162

	Page.		Page.
Mount Etna, Md.....	162	Nicholas, Tex.....	335
Mount Holly, Ohio.....	254	Nicholas County, Ky.....	101-107
Mount Orab, Ohio.....	250	Nipton, Cal.....	35
Mount Powell quadrangle, Colo.....	39-43	Nolan, W. Va.....	123
Mount Pulaski, Ill.....	90, 91	Nopah station, Cal.....	36
Mount Rainier quadrangle, Wash.....	371	Norcross, Minn.....	180, 182
Mount Sterling quadrangle, Ohio.....	239	Norcross station, Minn.....	182
Mount Toro station, Cal.....	33	Nord, Cal.....	23
Mount Vernon, Mo.....	217, 219	Nord quadrangle, Cal.....	11-29
Mount Vernon, Wash.....	363	Nord station, Cal.....	23
Mount Vernon quadrangle, Wash.....	361-364	Norland station, Me.....	156
Mowrystown, Ohio.....	245	Norris, Ill.....	66, 67
Mudville, Tex.....	335	North Butte station, Cal.....	23
Mulberry, Ohio.....	254	North Carolina, traverse in.....	232-233
Mullens quadrangle, W. Va.....	113-129	Northern Pacific Ry.....	362, 363, 365-366, 368-369, 370
Multnomah County, Oreg.....	281-288	North Liberty, Ohio.....	245
Mumford, Tex.....	335	North Newry, Me.....	156
Murphy, Tex.....	310, 312	Northtown, Ohio.....	250
Musselman, Ohio.....	238	North Turner, Me.....	153
Myersville, Md.....	161	Norwood, Tex.....	331
Myrtle station, Utah.....	346	Novinger, Mo.....	206
N.		Nugget, Utah.....	355, 356
Nailor station, Ky.....	100	Nugget station, Wyo.....	355
Narita, Ill.....	92	Number Four, N. Y.....	230
Nashua, Mont.....	224	Number Four quadrangle, N. Y.....	230-231
Nashua station, Mont.....	224	Number Three station, Idaho.....	57
Nashville, Chattanooga & St. Louis Ry.....	300-302	O.	
Natchez quadrangle, La.....	152	Oakdale, Ill.....	85
Ned, Ky.....	99, 100	Oak Grove, Del.....	50
Nelson, Cal.....	13, 23	Oak Grove, La.....	132
Nelson station, Cal.....	33	Oak Grove, Tenn.....	293
Nelson station, Ky.....	118	Oak Hill, Ohio.....	235
Nelson station, Minn.....	182	Oak Hill quadrangle, Ohio.....	235
Nevada, triangulation in.....	35-38	Oak station, Cal.....	24
Neville, Ohio.....	253	Oasis station, Cal.....	24
New Amsterdam, Ohio.....	236	O'Banions Corners, Cal.....	24
New Athens quadrangle, Ill.....	87	O'Banion station, Cal.....	24
Newbern, Tenn.....	298, 299	Obion, Tenn.....	299, 300
New Burlington, Ohio.....	248	Obion County, Tenn.....	295-308
Newellton, La.....	143	Oceana, W. Va.....	123
Newellton quadrangle, La.....	143-144	Octa quadrangle, Ohio.....	247
Newellville, Tenn.....	298	Ohio, traverse in.....	234-281
Newfain, Ohio.....	241	Ohio City, Ohio.....	273
New Gasper, Ky.....	109	Ohio County, Ky.....	107-112
New Hanover, Ill.....	88	Olaton, Ky.....	108
New Harmony, Ohio.....	255	Olcott station, Nev.....	38
New Hope, Tex.....	309	Old Hartford, Wash.....	362
New Knoxville, Ohio.....	261	Old Washington, Tex.....	319, 320
Newmarket, Ohio.....	246	Olinda, Tex.....	335
New Martinsburg, Ohio.....	240	Olive Hill, Ky.....	104
New Mexico, triangulation in.....	43-47	Omaha, Mo.....	216
New Palestine, Ohio.....	257	Only station, Mont.....	224
New Paris, Ohio.....	279	Orange County, Va.....	357-360
New Richmond, Ohio.....	254	Orange station, Mont.....	225
Newton, Ill.....	60	Oregon, cooperation of.....	281
Newton, Tenn.....	294	traverse in.....	289-293
Newton County, Mo.....	216-219	triangulation in.....	281-288
Newton quadrangle, Ill.....	60	Oregon City quadrangle, Oreg.....	292
New Ulm, Tex.....	314	Orion quadrangle, Ill.....	83-84
New York, cooperation of.....	229	Oroville, Cal.....	27
traverse in.....	229-232	Orphans Home, Tex.....	309
New York Mills quadrangle, Minn.....	198	Orting, Wash.....	366
New York station, Cal.....	36	Oscar, Minn.....	182
Ney, Ohio.....	270	Oscar station, Minn.....	182
Niantic quadrangle, Ill.....	92	Ostrom quadrangle, Cal.....	11-29

	Page.		Page.
Otter Tail County, Minn.....	164-191, 192-205	Pike, Ohio.....	262
Otway, Ohio.....	236, 237	Pike County, Ky.....	113-129
Otway quadrangle, Ohio.....	236-237	Pike County, Ohio.....	234-262
Ouray, Colo.....	42	Piketon quadrangle, Ohio.....	237-238
Ouray County, Colo.....	41-43	Pikop station, Minn.....	183
Owensville, Ohio.....	237	Pilchuck, Wash.....	363
Owingsville, Ky.....	101	Pilot station (2), W. Va.....	126
Oxford, Ohio.....	278	Finalito station, Cal.....	33
Oxford County, Me.....	153-158	Pinckneyville quadrangle, Ill.....	85
P.		Pine station, Ky.....	100
Paint station, W. Va.....	126	Pink, Ohio.....	236, 242
Palermo, Cal.....	17	Pinon, Colo.....	44
Palermo quadrangle, Cal.....	11-29	Pinon station, Colo.....	46
Palisade station, Cal.....	36	Pioneer, Ohio.....	271
Palmblad, Oreg.....	291	Piqua, Ohio.....	257
Palmer, Wash.....	368-369	Pisgah station, Me.....	156
Palmer Junction, Wash.....	368	Pittbridge, Tex.....	323, 325, 334
Palmyra, Va.....	358	Pittsville quadrangle, Del.....	51
Panola, La.....	148	Plano, Ohio.....	290
Paraiso Springs quadrangle, Cal.....	29-34	Pleasant Hill, Tenn.....	294
Parallel station, Mont.....	225	Plum, Tex.....	313
Parham Mill, Tenn.....	293	Pocahontas, Va.....	121
Paris, Me.....	156	Pocahontas special quadrangle, Va. W. Va. 113-129	
Parkdale, Minn.....	182	Poe, Ill.....	86, 87
Parkdale Church station, Minn.....	182	Point Isabel, Ohio.....	252, 253
Parker, Va.....	360	Point Pleasant, Ohio.....	253
Park station, Colo.....	46	Polaris station, Mont.....	225
Parrot station, Colo.....	24	Pole station, Cal.....	34
Parrott, Ohio.....	248	Polk, Iowa.....	96
Patmos Head Station, Utah.....	347	Polk, Tenn.....	300
Patmos Logical Station, Utah.....	347	Polk County, Iowa.....	95-98
Patterson's Corners, Ohio.....	249	Polk County, Oreg.....	281-288
Paulding, Ohio.....	272	Pomme de Terre, Minn.....	175
Paulding County, Ohio.....	262-275	Pondrun, Ohio.....	236
Paulding quadrangle, Ohio.....	271-273	Poorfork, Ky.....	117
Payne, Ohio.....	272	Poplar, Mont.....	222, 226
Pecania, La.....	148	Poplar quadrangle, Mont.....	219-229
Peck station, Minn.....	183	Portland quadrangle, Ohio-Ind.....	280-281
Peebles quadrangle, Ohio.....	241-242	Portland quadrangle, Oreg.....	292
Pelican Lake, Minn.....	186	Poplar station, Cal.....	25
Pelican Rapids quadrangle, Minn.....	200-201	Poplar station, Minn.....	183
Pendleton, Tex.....	342	Poplar station, Mont.....	226
Pennington, Cal.....	24	Porcupine station, Mont.....	226
Pennington quadrangle, Cal.....	11-29	Porter station, Ky.....	118
Pennsylvania, cooperation of.....	160	Portland Ry., Light & Power Co.....	291
traverse in.....	160-162	Portsmouth, Ohio.....	236
Pennsylvania R. R.....	50, 234	Port Sullivan, Tex.....	336
Pennville, Mo.....	212	Post, Ky.....	112
Pepper Box, Del.....	51	P. O. station, Wyo.....	373
Pepperton, Minn.....	168, 176, 179	Potatoe station, Ky.....	100
Percy, Ill.....	85	Pottersville, Mich.....	163
Perham quadrangle, Minn.....	198	Prairie, Ky.....	120
Perrintown, Ohio.....	254	Prairie Du Rocher, Ill.....	86-87
Perry County, Ky.....	98-101, 113-129	Preble County, Ohio.....	275-281
Perry quadrangle, Iowa.....	97	Preston, Oreg.....	291
Peru, Me.....	156	Preston, Wash.....	309
Petersen, Tex.....	336	Preuss station, Idaho.....	55
Peterson station, Oreg.....	286	Price, Utah.....	344, 348, 349
Petersville, Ky.....	102, 107	Price stations, Utah.....	348
Philomath, Oreg.....	284	Pricetown, Ohio.....	250
Phipps station, W. Va.....	126	Primms, Tex.....	313
Pickaway County, Ohio.....	234-262	Purdyville, Ohio.....	235
Pierce, Tenn.....	302	Pure Air, Mo.....	213
Pierce City, Mo.....	218	Putnam County, Mo.....	205-216
Pierce County, Wash.....	365-371	Putnam County, Ohio.....	262-275
Pierson station, Utah.....	347	Puyallup, Wash.....	366
		Puzzle station, Me.....	156

Q.	Page.		Page.
Quadrangle IX, La.....	139-140	Road station, Utah.....	349
Quadrangle X, La.....	136	Roberts, A. C., work of.....	9
Quadrangle XVI, La.....	143	Robertson County, Tex.....	325-333, 333-342
Quebec, La.....	139	Robertson station, Minn.....	184
Quebec quadrangle, La.....	139	Rockaway, Va.....	358
Queen City, Mo.....	208	Rockdale, Wash.....	370
Queen City quadrangle, Mo.....	206-208	Rock Island, Ill.....	81
Quicksand station, Ky.....	118	Rock Island County Ill.....	79-84
Quimby, La.....	142, 143	Rock station, Minn.....	134
Quincy, Ohio.....	257, 259	Rock station, Wyo.....	356
Quinn, Mo.....	218	Rockwall, Tex.....	311-312
Quinnimont, W. Va.....	125	Rockwall County, Tex.....	308-312
		Rockwall quadrangle, Tex.....	311-312
R.		Rockwood, Oreg.....	293
Racetown, Ohio.....	237	Rocky station, Cal.....	37
Ragnar, Wash.....	369	Rodbourn, Ky.....	106
Rainbow station, Mont.....	226	Rohrersville, Md.....	159
Raleigh County, W. Va.....	113-129	Rome, Ohio.....	243
Randolph, Utah.....	353-354	Roosevelt, La.....	137
Randolph County, Ill.....	86-89	Rose Hill, Ill.....	59
Randolph quadrangle, Wyo.-Utah.....	352-356	Rose Hill Landing, La.....	137
Randolph station, Utah.....	353	Rose Hill quadrangle, Ill.....	58-60
Rapidan quadrangle, Va.....	360	Roselms, Ohio.....	266
Rarden, Ohio.....	237	Rosemoor, Ohio.....	248
Rattlesnake station, W. Va.....	127	Ross County, Ohio.....	234-262
Rattle station, Utah.....	348	Rothsay, Minn.....	201
Ravensdale, Wash.....	368	Rothsay quadrangle, Minn.....	201-202
Ready, Ky.....	112	Rowan County, Ky.....	101-107
Rectorville, Ky.....	101	Rowlett, Tex.....	310
Rectorville quadrangle, Ohio.....	243-244	Roxabell, Ohio.....	238
Redden, Del.....	48	Roxabell quadrangle, Ohio.....	238
Redland, Oreg.....	289	Royder, Tex.....	324
Red Lion, Ohio.....	255	Rugby, Va.....	357
Red Spot station, Utah.....	354	Rumford Falls, Me.....	156
Red station, Wyo.....	356	Runyon station, W. Va.....	127
Reeds, Mo.....	217	Rural, Ohio.....	253
Rehoboth quadrangle, Del.....	49	Rushville quadrangle, Ill.....	78
Renault, Ill.....	86	Russell, Mo.....	217
Renault quadrangle, Ill.....	86-87	Russellville, Ohio.....	245, 251
Rendsville, Minn.....	181, 185	Russellville quadrangle, Ky.....	111
Renton, Wash.....	365	Rutherford, Tenn.....	296
Reservoir station, Mont.....	227		
Reta, Tex.....	334	S.	
Return station, Mont.....	227	Sabattus station, Me.....	157
Rex station, Utah.....	354	Sabina quadrangle, Ohio.....	247
Reynolds, Ill.....	82	Saddle station, Oreg.....	286
Reynoldsville, Ky.....	101	Sailor Springs quadrangle, Ill.....	62
Richardsville, Ky.....	110	St. Clair County, Ill.....	86-89
Rich County, Utah.....	352-356	St. David, Ill.....	65, 66
Richelieu, Ky.....	109, 111	St. Francisville, Ill.....	93
Richland, Ohio.....	249	St. Henry quadrangle, Ohio.....	261
Richland County, Ill.....	57-63	St. Johns Landing, La.....	148
Richmond quadrangle, Ohio-Ind.....	279	St. Joseph, La.....	144, 146
Richville, Minn.....	198	St. Louis, Iron Mountain & Southern Ry.....	87, 88, 89, 130, 133, 134-135, 137, 138, 140, 143, 145, 146, 147, 148, 150, 152
Ringgold, Md.....	161	St. Louis quadrangle, Ill.....	89
Rio Nel, Tex.....	327, 328	St. Louis Southwestern Ry.....	312
Ripley, Ohio.....	251, 252	St. Louis Southwestern Ry. of Texas.....	332
Ripley County, Ind.....	275-281	St. Louis & San Francisco R. R.....	218
Ritchie, Tex.....	332	St. Marys, Ohio.....	261
Ritchey, Mo.....	218	St. Paris, Ohio.....	257
Ritchey quadrangle, Mo.....	216-219	St. Paris quadrangle, Ohio.....	257
Ritters, Ohio.....	275	Salem, Minn.....	186
Rivermill, Oreg.....	291	Salem, Ohio.....	250
Riverside, Oreg.....	291	Salinas, Cal.....	30
Rives, Tenn.....	299		
Rives quadrangle, Tenn.....	299-301		

	Page.		Page.
Salinas quadrangle, Cal.....	29-34	Sidney, Mo.....	213
Salisbury quadrangle, Del.....	51	Sidney, Ohio.....	257
Salmons quadrangle, Ky.....	111	Sidney quadrangle, Ohio.....	259-260
Saltair, Ohio.....	252	Sidonia, Tenn.....	296
Salter, Tex.....	325	Siefer, Oreg.....	291
San Antonio & Aransas Pass Ry.....	331, 332	Signal Hill station, Colo.....	42
San Benito quadrangle, Cal.....	29-34	Silvana, Wash.....	361, 362
San Bernardino County, Cal.....	35-38	Sinking Springs, Ohio.....	241
Sanders, Cal.....	25	Skagit County, Wash.....	361-365
Sanders station, Cal.....	25	Skelton, Ill.....	90, 92
Sandpit, Tex.....	321-322	Slater quadrangle, Iowa.....	95-96
Sandpit special quadrangle, Tex.....	321-322	Smithfield, Ill.....	71
Sand station, Ky.....	106	Smith station, Cal.....	26
Sandy, Cal.....	35	Smithton, Ill.....	87
Sandy, Oreg.....	291	Smithville, Del.....	49, 51
San Felipe, Tex.....	315	Smithville, Tex.....	313
Sangamon County, Ill.....	90-92	Smolar station, Mont.....	227
San Juan County, N. Mex.....	43-47	Snake Corners, Ohio.....	240
Santa Fe, Ohio.....	259	Sneffels station, Colo.....	42
Sarcoie, Mo.....	218	Snohomish County, Wash.....	361-365, 365-371
Sardinia, Ohio.....	250, 252	Snoqualmie, Wash.....	370
Sardinia quadrangle, Ohio.....	250	Snoqualmie quadrangle, Wash.....	370
Schmidt station, Idaho.....	55	Snowhill, Ohio.....	247
School station, Minn.....	184	Soda Springs, Idaho.....	56
Schumm, Ohio.....	273	Soda Springs quadrangle, Idaho-Wyo.....	53-57
Schuyler County, Ill.....	63-79	Soda station, Idaho.....	56
Schuyler County, Mo.....	205-216	Soldier station, Utah.....	350
Scioto County, Ohio.....	234-262	Soldier Summit, Utah.....	350, 351
Scioto quadrangle, Ohio.....	235	Soledad, Cal.....	34
Scipio, Ind.....	277	Soledad station, Cal.....	34
Scotland County, Mo.....	205-216	Somerset, La.....	143
Scott, Minn.....	166, 179	Songo Pond quadrangle, Me.....	153-158
Scott, Ohio.....	273	Soo station, Minn.....	185
Scottsville quadrangle, Va.....	357-358	South Argentine station, Colo.....	41
Seaboard Air Line Ry.....	233	South Bantam, Ohio.....	252
Seaford, Del.....	49-50	South Bosque, Tex.....	332
Seaford quadrangle, Del.....	49-50	South Prairie, Wash.....	366
Sealy, Tex.....	315	South Rock Island, Ill.....	83
Sealy quadrangle, Tex.....	314-316	Spadoni station, Cal.....	34
Searle station, Minn.....	185	Spann, Ohio.....	254
Seattle, Wash.....	370	Sparta, Ill.....	84
Seattle quadrangle, Wash.....	365, 370	Sparta quadrangle, Ill.....	84-85
Seavies station, Oreg.....	287	Sparta quadrangle, Tenn.....	294
Sedro-Wooley, Wash.....	363	South station, Oreg.....	287
Seitz, R. C., work of.....	9, 101, 113	South Twin station, Utah.....	354
Selleck's Mill, Wash.....	368	South Windmill station, Wyo.....	373
Serpent Mound, Ohio.....	241	Speckled station, Me.....	157
Setter station, Minn.....	185	Spencer station, Oreg.....	289
Seville, Ill.....	70, 71	Spencerville, Mich.....	104
Shadwell, Va.....	357	Spencerville quadrangle, Ohio.....	262
Sharon, Tenn.....	295, 301	Sperry, Mo.....	208
Shaya station, Utah.....	349	Sperryville, N. Y.....	229
Shedds, Oreg.....	285, 287	Spotsylvania County, Va.....	357-360
Shedds station, Oreg.....	287	Springfield quadrangle, Ohio.....	249
Shelburn, La.....	130, 131, 134	Springport quadrangle, Mich.....	164
Shelby County, Ohio.....	234-262	Spring station, Cal.....	26
Shelby quadrangle, N. C.....	233	Spring Valley, Ohio.....	248-249, 256
Sheldahl, Iowa.....	95, 96	Springwater, Oreg.....	290
Sherburne, Ky.....	102	Squier station, Minn.....	186
Sherman, Wyo.....	372	Stacy station, Ky.....	107
Shibleys Point, Mo.....	211	Staff station, Minn.....	186
Shiner station, Utah.....	349	Stahl, Mo.....	211
Shiprock quadrangle, Colo.....	43-47	Stamboul, La.....	137
Shiprock station, N. Mex.....	47	Stamboul quadrangle, La.....	137
Short Creek, Ky.....	108	Stampede, Wash.....	370
Shumate station, W. Va.....	128	Standifer station, Ky.....	119

	Page.		Page.
Standing Stone quadrangle, Tenn.....	294	Tanglewood, La.....	147
Stanford station, Cal.....	36	Tar Killer Ford, Tenn.....	294
Stanwood, Wash.....	361	Tate, Ohio.....	252
Station marks, description of.....	9-10	Tatsie, Tex.....	335
plate showing.....	10	Tatumville, Tenn.....	297
Staunton, Ohio.....	247	Taylor quadrangle, Tex.....	339-341
Steelville, Ill.....	85	Taylor station, W. Va.....	128
Stene stations, Minn.....	186	Taylorville, Ohio.....	246
Stensens, Wash.....	361	Tazewell County, Ill.....	90-92
Stepstone quadrangle, Ky.....	101-107	Tazewell County, Va.....	113-129
Stevens County, Minn.....	164-191	Tehama County, Cal.....	11-29
Stevenson stations, Minn.....	187	Temple, Tenn.....	299
Stickney station, Minn.....	187	Temple, Tex.....	342
Stillwater, N. Y.....	231	Temple quadrangle, Tex.....	330-332, 342
Stobbs, Va.....	359	Tennile station, Ky.....	100
Stockley quadrangle, Del.....	47-48	Tennessee, traverse in.....	293-308
Stokes, Tenn.....	308	Tensas Parish, La.....	129-152
Stone, Oreg.....	289	Terry station, Wyo.....	373
Stone City, Tex.....	325, 334, 335	Teutopolis quadrangle, Ill.....	61
Stone Lick, Ohio.....	254	Texas, cooperation of.....	308, 313, 317, 325, 333
Story County, Iowa.....	95-98	traverse in.....	308-342
Stotts City, Mo.....	217	Texas Mill, N. Y.....	230-232
Stratton station, Ky.....	119	Texas & Pacific Ry.....	309
Strawberry station, Utah.....	350	The Bend, Ohio.....	267, 270
Streaked station, Me.....	157	The Dalles, Wash.....	367-368
Stout, Ohio.....	243	Thomastown, La.....	137, 141
Stringtown, Ohio.....	240	Thousand Stick station, Ky.....	119
Stryker, Ohio.....	263	Three Point No. 2 station, Minn.....	187
Stubbs, N. C.....	233	Three Point No. 3 station, Minn.....	188
Stump station, Idaho.....	56	Three Point No. 5 station, Minn.....	188
Sugarloaf station, Ky.....	107	Three Point No. 12 station, Minn.....	188
Sugar Loaf (2) station, Cal.....	27	Three Point No. 13 station, Minn.....	188
Sullivan County, Mo.....	205-216	Three Point No. 14 station, Minn.....	188
Sulphur station, Idaho.....	56	Three Point No. 15 station, Minn.....	189
Sultan quadrangle, Wash.....	369	Three Point No. 17 station, Minn.....	189
Summit County, Colo.....	39-43	Three Point No. 23 station, Minn.....	189
Summit Park, Wash.....	364	Three Point No. 26 station, Minn.....	189
Sunnyside, Ill.....	67	Tiger Butte station, Mont.....	228
Sunnyside, Tex.....	316	Threlkel, Ky.....	110
Sunnyside, Utah.....	343, 347, 350	Tilghman, Md.....	161
Sunnyside station, Utah.....	350	Timber Butte station, Oreg.....	288
Sussex County, Del.....	47-51	Tilton, Ky.....	103
Sutter, Cal.....	27	Tinder, Va.....	360
Sutter County, Cal.....	11-29	Tipple station, Utah.....	350
Sutter quadrangle, Cal.....	11-29	Tipton, Ohio.....	271
Sutter station, Cal.....	27	Tiptonville quadrangle, Tenn.....	301
Sutton, Frank, work of.....	9	Tisdale Weir quadrangle, Cal.....	11-29
Swan City, Colo.....	40	Toledo quadrangle, Ill.....	61
Swan Creek station, Utah.....	355	Tousey, Ky.....	108
Swan Lake, Minn.....	191	Tracy, Tex.....	341
Swan station, Colo.....	41	Trafton, Wash.....	363
Sycamore, La.....	150	Tranquility, Ohio.....	244
Sycamore, Oreg.....	289	Transylvania, La.....	134-135
Sycamore Landing quadrangle, La.....	150-152	Traverse County, Minn.....	192-205
Syp station, Mont.....	228	Traynor station, Cal.....	27
T.		Trebeins, Ohio.....	248
Table Mount station, Colo.....	43	Trenton, Tenn.....	305
Table Rock station, W. Va.....	128	Trimble, Tenn.....	298-299
Tacoma quadrangle, Wash.....	365-366	Trimble quadrangle, Tenn.....	297-299
Taconey, La.....	152	Trinity River basin, Tex., traverse in.....	308-312
Talla Bena, La.....	137, 138	Troublesome quadrangle, Ky.....	98-101
Tallulah, La.....	137, 138	Troutdale quadrangle, Oreg.....	293
Tallulah quadrangle, La.....	138-139	Troy, Ohio.....	257
Tampico, Ind.....	279	Troy quadrangle, Ohio.....	257-258
Tana, Ohio.....	265	Tucker, Utah.....	351
		Tucker station, Utah.....	351

	Page.		Page.
Tule station, Cal.....	28	Walnut station, Ky.....	119
Turley quadrangle, Colo.....	43-47	Wamsley, Ohio.....	242
Turtle Lake, La.....	150	Warfield quadrangle, Ky.-W. Va.....	113-129
Tweedy, F., work of.....	9	Warnock, Ill.....	89
U.		Warren County, Iowa.....	95-98
Uinta County, Wyo.....	53-57, 352-356	Warren County, Ky.....	107-112
Uncompahgre station, Colo.....	43	Warren County, Ohio.....	234-262
Underwood, Minn.....	196	Warsaw Junction, Ohio.....	234
Underwood quadrangle, Minn.....	194-197	Waseoto station, Ky.....	120
Union City, Ohio-Ind.....	280	Washboard station, Utah.....	351
Union City, Tenn.....	299, 300	Washington, Ohio.....	252
Unionville, Mo.....	212, 215	Washington, cooperation of.....	361, 365
Unionville, Va.....	360	traverse in.....	361-371
Unionville quadrangle, Mo.....	214-215	Washington County, Md., traverse in.....	160-162
U. S. Lake Survey, work of.....	57	triangulation in.....	158-160
Unity, Ohio.....	242, 244	Washington County, Tex.....	317-325
Upper Beeler Landing, La.....	147	Washington quadrangle, D. C.-Md.....	52
Urness, Minn.....	187	Washington special quadrangle, Tex.....	319-320
Urness quadrangle, Minn.....	164-191	Waterloo, Ill.....	88
Urquhart, C. F., work of.....	9, 11, 29, 43, 352	Waterloo, Ohio.....	239
Utah, triangulation in.....	342-355	Waterloo quadrangle, Ill.....	87-88
Utah County, Utah.....	342-352	Waterproof, La.....	145
Utica, Ohio.....	255	Waterproof quadrangle, La.....	145
Utopia, Ohio.....	253	Water Valley quadrangle, Ky.-Tenn.....	304
V.		Wauseon, Ohio.....	275
Valley Crossing, Ill.....	88	Wauseon quadrangle, Ohio.....	274-275
Valley Junction, Tex.....	335, 336, 338	Waverly, Ohio.....	238
Valmeyer, Ill.....	89	Wayan quadrangle, Idaho-Wyo.....	53-57
Van Buren County, Tenn.....	293-294	Wayne, Ohio.....	255
Vanceburg quadrangle, Ohio.....	243	Waynesville, Ohio.....	255
Van Wert, Ohio.....	273	Waynesville quadrangle, Ohio.....	256
Van Wert County, Ohio.....	234-262, 262-275	Weakley County, Tenn.....	295-308
Van Wert quadrangle, Ohio.....	273-274	Webster, Ill.....	75
Veazy, Wash.....	369	Welch, W. Va.....	125
Vermont quadrangle, Ill.....	70-71	Welch quadrangle, Ky.-Va.-W. Va.....	113-129
Verona, Mo.....	218	Wellborn, Tex.....	324
Vicksburg, Shreveport & Pacific Ry.....	138, 141	Wellington, Utah.....	344, 351
Vidalia, La.....	152	Wellington station, Utah.....	351
Vigor, Va.....	359	Wellston, Ohio.....	235
Vina, Cal.....	11, 26, 28	Wellsville, Ill.....	85
Vina station, Cal.....	28	Wendell, Minn.....	189-190, 203
Vincennes, Ind.....	94	Wendell quadrangle, Minn.....	164-191
Vincennes quadrangle, Ill.-Ind.....	93-94	Wendell stations, Minn.....	189-190
Vining, Minn.....	193	Wendt's Ferry, Tex.....	315-316
Viola, Oreg.....	289	West Bethel, Me.....	154
Virginia, cooperation of.....	357	West Carroll Parish, La.....	129-152
traverse in.....	356-360	West Chalmers, Ill.....	77
triangulation in.....	107-121	West Chimney station, Cal.....	28
W.		Westcott station, Cal.....	28
Wabash, R. R.....	267	Western, Minn.....	182, 190-191
Waco, N. C.....	233	Western stations, Minn.....	190, 191
Waco, Tex.....	332, 333	West Florence, Ohio.....	278
Waco quadrangle, Tex.....	332-333	West Havana, Ill.....	64
Waddill quadrangle, La.....	135	West Paris, Me.....	154
Wait station, Mont.....	228	West Point, Oreg.....	283
Wakefield, Ohio.....	237	West Point, Tex.....	313
Wales, Me.....	156	West Union, Ohio.....	244
Walhonding Run, Ohio.....	234	West Union quadrangle, Ohio.....	244-245
Waller, Ohio.....	237, 239	West Virginia, cooperation of.....	113
Waller County, Tex.....	312-317, 317-325	triangulation in.....	107-129
Walnut Bayou, La.....	137	Wheaton quadrangle, Minn.....	164-191
Walnut Gap, W. Va.....	129	White, Utah.....	347, 352
Walnut Gap station, W. Va.....	129	White County, Tenn.....	293-294
		Whiteoak, Ohio.....	250
		White Rock station, Mon.....	228
		Whitesburg, Ky.....	120

	Page.		Page.
Whitesburg quadrangle, Ky.-Va.....	113-129	Woodall station, Idaho.....	57
White station, Utah.....	352	Woodland Mills, Tenn.....	300
White Tank station, Oreg.....	288	Woodville, Ohio.....	255
White Tower station, Oreg.....	288	Workman station, W. Va.....	129
Whitman, J. M., work of.....	9	Worthington, Mo.....	207
Whitney, Wash.....	364	Wrightsville, Ohio.....	243
Whittier, Wash.....	370	Wylie, Tex.....	312
Wickersham quadrangle, Wash.....	364	Wyoming, triangulation in..	53-57, 352-355, 371-373
Wicomico County, Md.....	47-51	Wyoming County, W. Va.....	113-129
Wilderness, Wash.....	365		
Wiley station, Cal.....	34		X.
Wilkin County, Minn.....	192-205	Xenia, Ohio.....	248
Willard station, Ky.....	120	Xenia quadrangle, Ohio.....	248-249
Williams County, Ohio.....	262-275		
Williamsburg, Idaho.....	56		Y.
Williamsburg, Ohio.....	255	Yale, Ill.....	58
Williamson quadrangle, Ky.-W. Va.....	113-129	Yale, Ohio.....	255
Williamsport, Ohio.....	239	Yanceyville, Va.....	359
Williamsport quadrangle, Md.....	158-160	Yankeetown, Ohio.....	237, 239
Williamsport station, Md.....	160	Yates City, Ill.....	68
Willow Hill, Ill.....	60	Yeaman, Ky.....	108
Willow station, Cal.....	29	Yellow station, Cal.....	29
Willow station, Utah.....	352	Yorkville, Tenn.....	298
Willshire, Ohio.....	264	Young, Gilbert, work of.....	41
Wilsons Point quadrangle, La.....	130	Young's crossing, Tenn.....	306
Windmill No. 3 station, Oreg.....	288	Yuba City, Cal.....	29
Windy station, Mont.....	228	Yuba City quadrangle, Cal.....	11-29
Winigan quadrangle, Mo.....	213	Yuba County, Cal.....	11-29
Winkle, Ill.....	85	Yuba Tank station, Cal.....	29
Winter station, Minn.....	191		
Winthrop, Me.....	156		Z.
Withamsville, Ohio.....	254	Zenith, W. Va.....	126
Wold's Barn station, Minn.....	191	Zion, Va.....	357, 358
Wolfcave, Ohio.....	264	Zircon station, Me.....	158
Wolf Point quadrangle, Mont.....	219-229	Zuck, Ohio.....	234