

DEPARTMENT OF THE INTERIOR

BULLETIN

OF THE

UNITED STATES

GEOLOGICAL SURVEY

No. 181

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WASHINGTON

GOVERNMENT PRINTING OFFICE

1901

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UNITED STATES GEOLOGICAL SURVEY

CHARLES D. WALCOTT, DIRECTOR

RESULTS

OF

PRIMARY TRIANGULATION AND PRIMARY TRAVERSE

FISCAL YEAR 1900-'01

BY

H. M. WILSON, J. H. RENSHAWE, E. M. DOUGLAS, AND R. U. GOODE

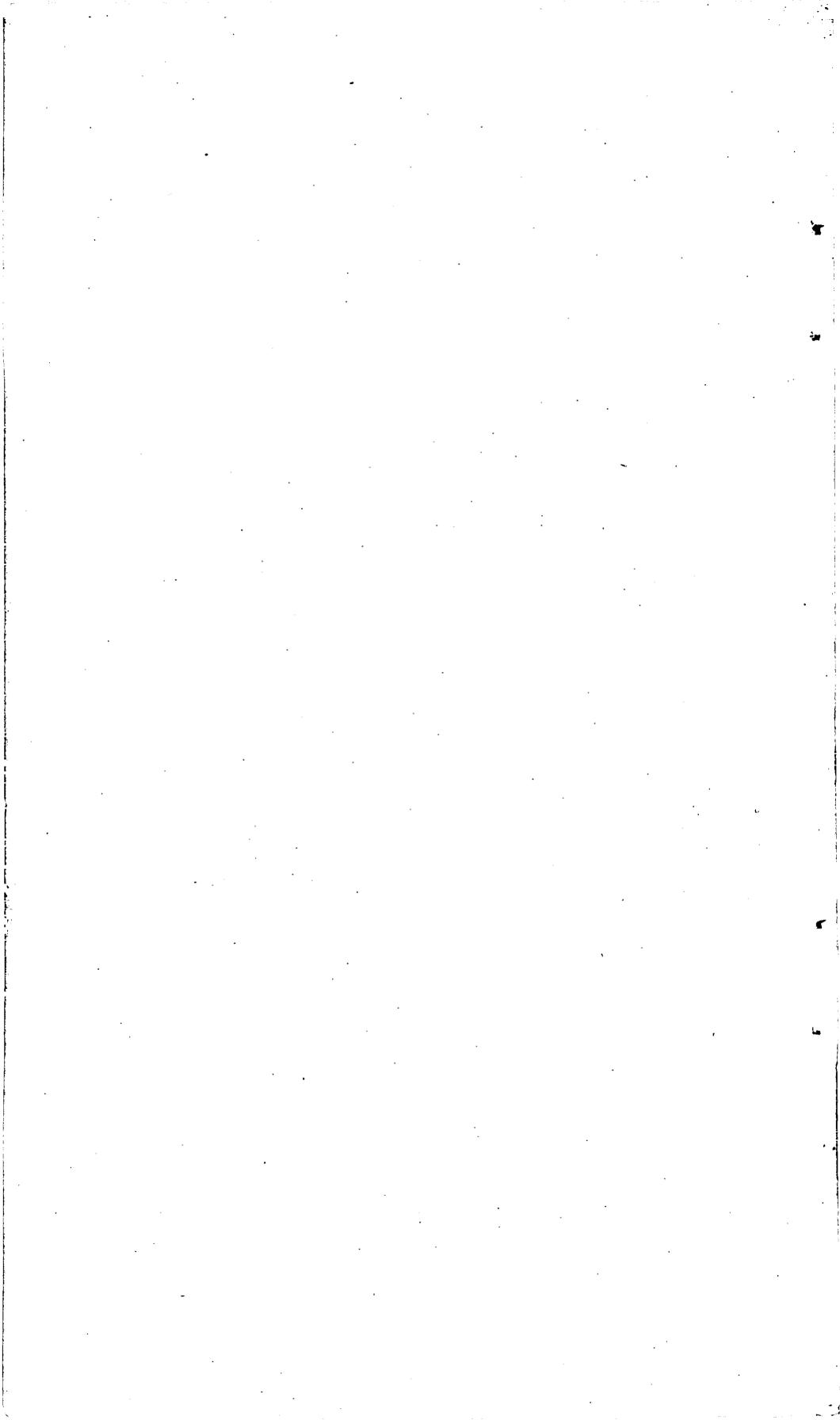


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ILLUSTRATION.

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LETTER OF TRANSMITTAL.

DEPARTMENT OF THE INTERIOR,
UNITED STATES GEOLOGICAL SURVEY,
Washington, D. C., June 10, 1901.

SIR: We have the honor to transmit herewith, in form for publication, the results of the primary triangulation and primary traverse executed by the United States Geological Survey during the fiscal year 1900-'01.

The results were computed by Messrs. A. H. Thompson, George T. Hawkins, C. F. Urquhart, H. L. Baldwin, jr., W. T. Griswold, R. H. Chapman, E. L. McNair, Sledge Tatum, Oscar Jones, and D. H. Baldwin, under the direction of Mr. S. S. Gannett, who likewise compiled them for publication.

Very respectfully,

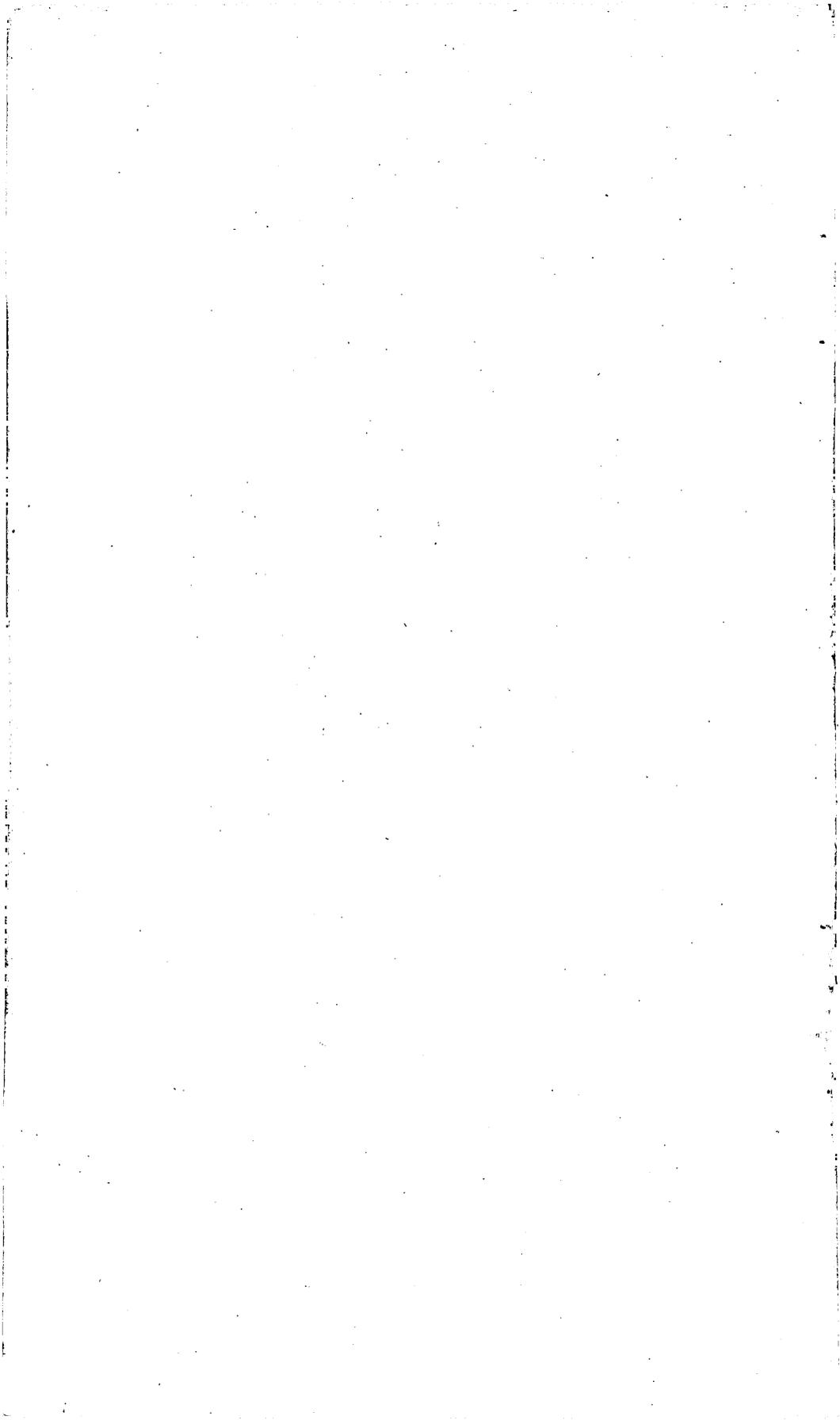
H. M. WILSON,
Geographer in charge of Atlantic section.

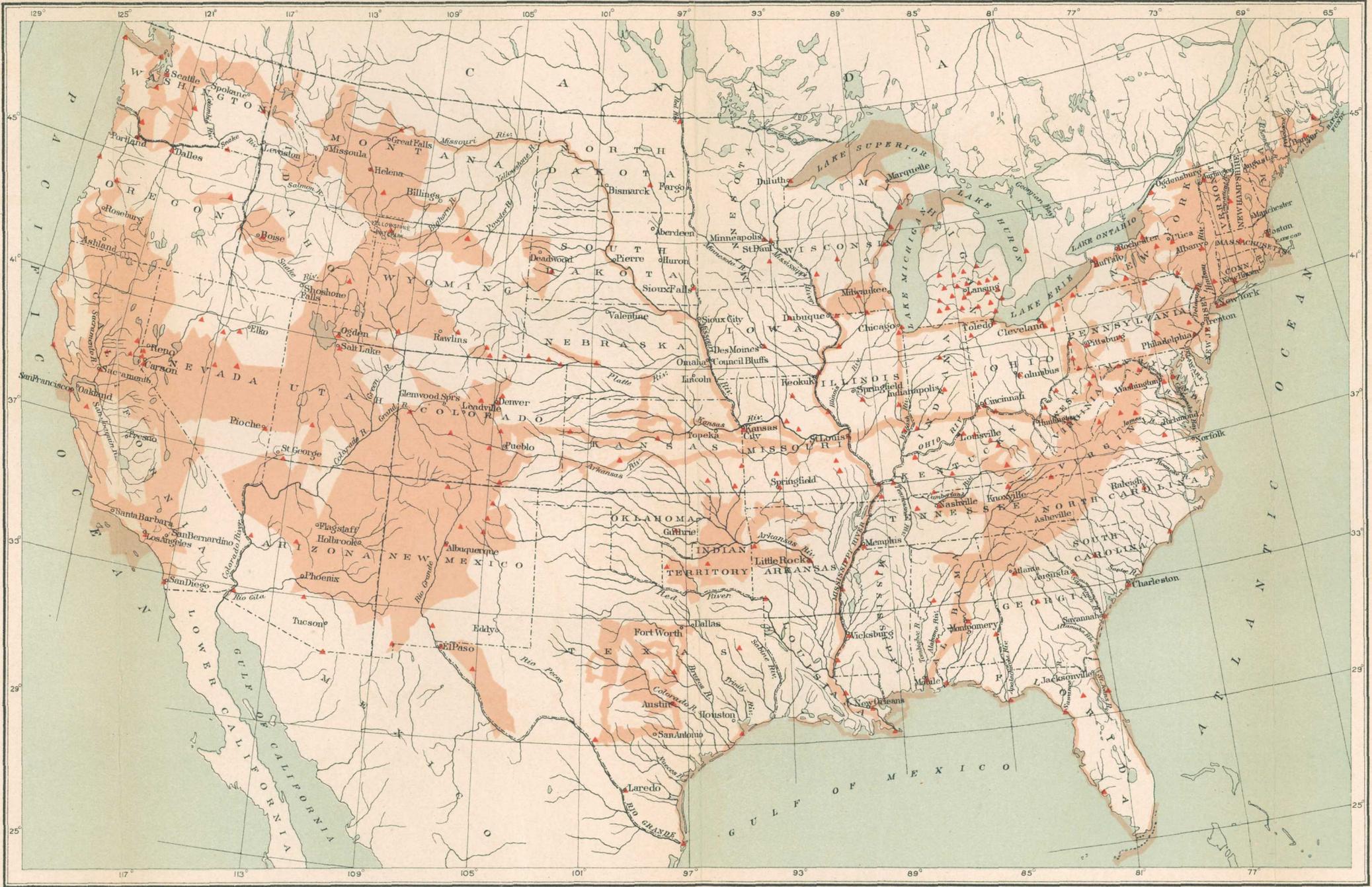
J. H. RENSHAWE,
Geographer in charge of Central section.

E. M. DOUGLAS,
Geographer in charge of Rocky Mountain section.

R. U. GOODE,
Geographer in charge of Pacific section.

Hon. CHARLES D. WALCOTT,
Director United States Geological Survey.





MAP SHOWING CONDITION OF ASTRONOMIC LOCATION AND PRIMARY TRIANGULATION to June 30, 1901.

0 100 200 300 400 500 600 MILES

A. Hoen & Co. Lith. Balto.

RESULTS OF PRIMARY TRIANGULATION AND PRIMARY TRAVERSE, FISCAL YEAR 1900-'01.

By H. M. WILSON, J. H. RENSHAWE, E. M. DOUGLAS, and R. U. GOODE.

SUMMARY.

Summary of published results, 1900-1901: Triangulation, primary traverse, meridian marks, and base lines.

Locality.	Triangulation stations.	Traverse stations.	Meridian marks.	Base lines.
ATLANTIC SECTION.				
Maine	11			
New York	80	73	8	
Pennsylvania	128	25	1	1
Maryland	3			
Delaware-Maryland		77		
West Virginia	15			
North Carolina		88		
South Carolina		122	5	
Ohio	19	110	3	
CENTRAL SECTION.				
Ohio		170	7	
Kentucky-Indiana		38	2	
Missouri		57		
Arkansas		22	1	
Missouri-Kansas		95	8	
Iowa		35		
ROCKY MOUNTAIN SECTION.				
South Dakota	12		1	
Montana	100			
Texas	13	29		
Utah-Wyoming	34			
PACIFIC SECTION.				
Idaho	5			
Washington	9			
California	34			
Alaska	13			
Total	476	941	36	1

ATLANTIC SECTION OF TOPOGRAPHY.

MAINE.

Triangulation Stations.

Triangulation of 1899 was extended northeastward from Charleston and Lowell stations during July and August, 1900, by Mr. S. S. Gannett, who occupied 7 stations and located 5 points controlling 3 fifteen-minute quadrangles.

CARROLL, PENOBSCOT COUNTY.

On a high ridge in Carroll Township, 1 mile southwest of Carroll post-office, on land owned by Fred Oliver, who lives 75 yards east of station. Timber 30 feet high on north end of ridge obstructs view from northwest round by north to southeast.

Station mark: A copper bolt cemented in upper surface of embedded boulder.

[Latitude $45^{\circ} 24' 23.50''$. Longitude $68^{\circ} 03' 14.84''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Almanac	23 59 53.9	203 58 12.1	3.8837120
Passadumkeag	37 47 47.5	217 34 52.7	4.5892082
Peasley	58 49 26.7	238 33 41.2	4.5300442
Knob	75 43 22.6	255 29 35.0	4.4161767
Woodville	103 27 24.3	283 08 40.6	4.5467760
North Woodville	119 35 31.8	299 18 47.6	4.5457384
Katahdin	129 38 22.4	309 01 23.0	4.9394592

ALMANAC, PENOBSCOT COUNTY.

On a high ridge in Lakeville Township, $1\frac{1}{2}$ miles south of South Springfield, on land owned by Philo Bearce. Small timber at east end.

Station mark: A granite post 30 by 8 by 8 inches, set 16 inches in ground, in the center of top of which is cemented a bronze triangulation tablet.

[Latitude $45^{\circ} 20' 36.07''$. Longitude $68^{\circ} 05' 37.77''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Passadumkeag	41 05 34.7	220 54 22.9	4.4977135
Peasley	67 47 20.8	247 33 17.5	4.4463959
Knob	91 25 10.6	271 13 06.6	4.3455954
Woodville	115 58 03.0	295 41 01.6	4.5396474
North Woodville	131 32 42.6	311 17 40.6	4.5643863
Carroll	203 58 12.1	23 59 53.9	3.8837121

PASSADUMKEAG, PENOBSCOT COUNTY.

Situated on the east end of Passadumkeag Mountain, the highest point in the town of Grand Falls.

Station mark: Tall spruce tree blazed on four sides.

[Latitude $45^{\circ} 07' 47.04''$. Longitude $68^{\circ} 21' 23.90''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Peaked	14 18 22.0	194 13 47.8	4. 5375904
Greenfield	50 16 23.2	230 12 13.3	4. 0014896
Peasley	158 13 15.5	338 10 24.8	4. 1502341
Carroll	217 34 52.7	37 47 47.5	4. 5892082
Almanac	220 54 22.9	41 05 34.7	4. 4977135

KNOB, PENOBSCOT COUNTY.

(Not occupied.)

A prominent timbered peak in the east-central portion of town of Lincoln.

Station mark: A tree on summit of peak.

[Latitude $45^{\circ} 20' 52.60''$. Longitude $68^{\circ} 22' 35.45''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Peasley	18 18 53.7	198 16 53.6	4. 0689899
Fish Hill	88 43 51.8	268 38 13.3	4. 0140397
Woodville	148 12 22.3	328 07 26.0	4. 2346552
Carroll	255 29 35.0	75 43 22.6	4. 4161767
Almanac	271 13 06.6	91 25 10.6	4. 3455954

PEASLEY, PENOBSCOT COUNTY.

On highest point of bare, grass-covered hill in the town of Burlington, east of Esculassis Pond.

Station mark: A bronze triangulation tablet cemented in solid granite, level with surface of ground.

[Latitude 45° 14' 52.10". Longitude 68° 25' 24.35".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Greenfield	7 09 42.6	187 08 23.0	4.2943006
Lowell	130 08 37.8	310 06 15.9	3.7554309
Fish Hill	148 36 13.3	328 32 36.2	4.1059741
Woodville	168 11 27.1	348 08 31.0	4.4194598
North Woodville	177 11 03.0	357 10 06.6	4.5431412
Knob	198 16 53.6	18 18 53.7	4.0689399
Carroll	238 33 41.2	58 49 26.8	4.5300442
Almanac	247 33 17.5	67 47 20.8	4.4463959
Passadumkeag	338 10 24.8	158 13 15.5	4.1502341

NORTH WOODVILLE, PENOBSCOT COUNTY.

(Not occupied.)

On a cultivated ridge in northern central portion of Woodville Plantation.

Station mark: A clump of bushes in a big pile of granite bowlders.

[Latitude 45° 33' 42.03". Longitude 68° 26' 43.47".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Woodville	21 44 32.7	201 42 33.2	3.9944700
Carroll	299 18 47.6	119 35 31.8	4.5457384
Almanac	311 17 40.6	131 32 42.6	4.5643863
Peasley	357 10 06.6	177 11 03.0	4.5431412

LOWELL, PENOBSCOT COUNTY.

Situated on the summit of the highest hill, in heavy timber, to the east of Cold Stream Pond in the northern part of the town of Lowell. Sight lines were cut to stations Charleston, Pine Tree, Woodville, Peasley, and Greenfield.

Station mark: A bronze triangulation tablet cemented in solid rock and marked "U. S. Geological Survey, Maine."

[Latitude 45° 16' 50.97". Longitude 68° 28' 44.06".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Charleston	66 00 13.7	245 37 20.2	4.6657619
Pine Tree	82 38 15.6	262 26 20.2	4.3452270
Woodville	177 18 08.3	357 17 34.3	4.3437360
Peasley	310 06 15.9	130 08 37.8	3.7554309
Greenfield	355 17 11.2	175 18 13.2	4.3671206

WOODVILLE, PENOBSCOT COUNTY.

On a cleared ridge in southwest corner of Woodville Plantation, on land owned by Jerry Glidden, who lives on southeast side of ridge; station on east side of a big pile of rocks on bare ledge. View obstructed by timber on northeast end of ridge.

Station mark: A granite post 18 by 11 by 11 inches, set 12 inches in the ground on solid ledge; in the center of top of post is cemented a bronze triangulation tablet.

[Latitude $45^{\circ} 28' 44.96''$. Longitude $68^{\circ} 29' 31.88''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Fish Hill.....	4 51 40.0	184 50 58.8	4.1724197
Charleston.....	45 16 07.4	224 53 45.6	4.7641319
Mattamiscontis.....	80 48 44.4	260 39 00.8	4.2547967
Katahdin.....	144 59 59.6	324 41 48.5	4.7597900
North Woodville.....	201 42 33.2	21 44 32.7	3.9944700
Carroll.....	283 03 40.6	103 27 24.3	4.5467760
Almanac.....	295 41 01.6	115 58 03.0	4.5396474
Knob.....	328 07 26.0	148 12 22.3	4.2346552
Passadumkeag.....	344 38 29.2	164 44 17.8	4.6049016
Peasley.....	348 08 31.0	168 11 37.1	4.4194598
Lowell.....	357 17 34.3	177 18 08.3	4.3487360

FISH HILL, PENOBSCOT COUNTY.

On a cleared hill one mile south of Lincoln Village in the town of Lincoln, overlooking all country, though view is limited southward to about 5 miles and eastward to about 6 miles.

Station mark: A granite post 30 by 7 by 7 inches set 28 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet.

[Latitude $45^{\circ} 20' 44.90''$. Longitude $68^{\circ} 30' 29.78''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Charleston.....	56 54 19.7	236 32 40.6	4.6789897
Mattamiscontis.....	125 55 04.5	305 46 04.2	4.3087467
Katahdin.....	152 51 44.8	332 34 12.4	4.8425063
Woodville.....	184 50 58.8	4 51 40.0	4.1724197
Knob.....	268 38 13.3	88 43 51.8	4.0140397
Peasley.....	328 32 36.2	148 36 13.3	4.1059741
Passadumkeag.....	333 34 27.2	153 40 59.7	4.4282994

MATTAMISCONTIS, PENOBSCOT COUNTY.

(Not occupied.)

A well-known prominent mountain, 10 miles (air line) northwest of Lincoln.

Station mark: A tall pine tree on highest point.

[Latitude $45^{\circ} 27' 11.05''$. Longitude $68^{\circ} 43' 08.55''$.]

To station—	Azimuth.	Back azimuth.	Log distance.
	° ' "	° ' "	Meters.
Charleston	31 35 31.0	211 22 49.8	4. 6503316
Woodville	260 39 00.8	80 48 44.4	4. 2547967
Fish Hill	305 46 04.2	125 55 04.5	4. 3087467

KATAHDIN, PISCATAQUIS COUNTY.

(Not occupied.)

The highest and best-known mountain in Maine.

Station mark: Sharp, rocky summit of mountain.

[Latitude $45^{\circ} 54' 08.01''$. Longitude $66^{\circ} 55' 02.15''$.]

To station—	Azimuth.	Back azimuth.	Log distance.
	° ' "	° ' "	Meters.
Charleston	5 04 30.3	185 00 15.2	4. 9463810
Carroll	309 01 23.0	129 38 22.4	4. 9394592
Woodville	324 41 48.5	144 59 59.6	4. 7597900
Fish Hill	332 34 12.4	152 51 44.8	4. 8425063

NEW YORK.

Triangulation Stations.

During the season of 1900 four parties were engaged on triangulation in New York under the general supervision of Mr. S. S. Gannett. In the central portion of the State a belt of triangulation was extended by Messrs. Griswold and McNair from Virgil-Warren eastward to Utsayantha-Otsego stations of the Gardiner State survey. In the southeastern portion of the State the work of the United States Coast and Geodetic Survey was extended northward by Mr. Oscar Jones from stations Bearfort, High Point, Hamburg, and High Torne, connecting with the work of Mr. McNair at stations Andes, Bramley, and Utsayantha.

During the summer months Mr. McNair was transferred to the Adirondack region, where he executed control for six 15' quadrangles

by triangulation based upon Blue-Vanderwhacker. Twelve stations were occupied and 6 points located by intersections. During September he ran a line of primary traverse from Ogdensburg light-house (located by the United States Lake Survey) to Churubusco and Owls Head (triangulation stations of the United States Geological Survey) with several spur lines, a total distance of 142 miles, furnishing control for five 15' quadrangles.

Mr. S. Tatum extended triangulation northward from Penn-Myer, occupying nine stations, and also occupied and located one station, Webb, from West and Morris, the total number of quadrangles controlled being four.

The net results of the season's work were the occupation of 70 triangulation stations and the running of 142 miles of primary traverse, controlling 44 quadrangles in portions of the counties of Orange, Sullivan, Ulster, Delaware, Otsego, Oneida, Madison, Chenango, Cortland, Broome, Herkimer, Essex, Hamilton, Franklin, Clinton, Lewis, and St. Lawrence. Meridian lines were established at Goshen, Delhi, Cooperstown, Utica, Hamilton, Norwich, Binghamton, and Malone.

AVERILL, CLINTON COUNTY.

On a high, cleared mountain about 3 miles southeast of Lyon Mountain station on Chateaugay Railway.

Station mark: A copper bolt set in solid rock and marked "Adirondack Survey—V. C. 33."

[Latitude 44° 41' 34.68". Longitude 73° 52' 52.72".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Moose Peak	14 27 33.2	194 22 22.9	4.5938655
Lookout	45 48 07.8	225 41 01.8	4.2709061
Debar	69 52 33.0	249 38 13.6	4.4582297
Owls Head (2)	104 23 30.2	284 11 44.7	4.3573875

MARCY, ESSEX COUNTY.

A high, bare mountain, the highest in the Adirondacks, in the western part of Keene Township. There is a good trail to the summit from Adirondack Lodge, 9 miles distant, and one from the Ausable Lakes, about the same distance.

Station mark: A copper bolt in solid rock, marked "Station No. 1 N. Y. S. Adirondack Mtn. Survey."

[Latitude 44° 06' 46.10". Longitude 73° 55' 26.99".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Vanderwhacker	30 08 51.4	210 01. 40. 7	4. 4401357
Blue	55 16 19.8	234 56 26. 4	4. 6690929
Seward	103 23 59.8	233 12 28. 2	4. 3557347
McIntyre	124 11 47. 0	304 09 09. 0	3. 7850100
Moose Peak	166 25 55. 8	346 22 34. 7	4. 4347725

M'INTYRE, ESSEX COUNTY.

(Not occupied.)

A very high, bald mountain in the southern part of North Elba Township.

Station mark: A bolt, probably of the New York State land survey.

[Latitude 44° 08' 37.04". Longitude 73° 59' 13.82".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters. -
Vanderwhacker	17 50 39. 0	197 46 05. 0	4. 4568900
Seward	96 05 50. 0	275 56 56. 0	4. 2336600
Ampersand	120 25 51. 0	300 16 49. 0	4. 3012800
Moose Peak	176 37 12. 0	356 36 30. 0	4. 3629900
Marcy	304 09 09. 0	124 11 47. 0	3. 7850100

MOOSE PEAK, ESSEX COUNTY.

On a high, cleared mountain in the northwestern part of Essex County on the north side of Lake Placid. There is a good trail from the Lake Placid side.

Station mark: A half-inch hole drilled in boulder.

[Latitude 44° 21' 03.06". Longitude 74° 00' 15.23".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Seward	36 26 49. 6	216 18 37. 6	4. 4210862
Ampersand	50 26 33. 0	230 48 13. 0	4. 3110300
McKenzie	54 34 31. 0	234 33 19. 5	3. 4435800
Morris	60 44 41. 0	240 24 56. 6	4. 6357242
St. Regis	104 00 49. 1	233 47' 08. 7	4. 4273682
Debar	148 30 49. 6	328 21 42. 8	4. 5178874
Lookout	171 46 17. 4	351 44 22. 7	4. 4023504
Averill	194 22 22. 9	14 27 33. 2	4. 5938655
Marcy	346 22 34. 7	166 25 55. 8	4. 4347725

LOOKOUT, FRANKLIN COUNTY.

A bare rocky mountain about 2 miles east of Loon Lake. Can be reached from Loon Lake House by trail in about $1\frac{1}{2}$ hours, or from Loon Lake station by road and trail in about same time.

Station mark: A bronze triangulation tablet cemented in solid rock and marked "U. S. Geological Survey, New York."

[Latitude $44^{\circ} 34' 32.80''$. Longitude $74^{\circ} 02' 59.05''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
St. Regis.....	50 18 59.7	230 07 12.4	4.4626659
Debar.....	102 50 04.4	282 42 51.5	4.1444627
Owls Head (2).....	154 56 52.4	334 52 13.9	4.3135926
Averill.....	225 41 01.8	45 48 07.8	4.2709061
Moose Peak.....	351 44 22.7	171 46 17.4	4.4023504
McKenzie.....	357 03 40.0	177 04 23.0	4.4255200

M'KENZIE, ESSEX COUNTY.

(Not occupied.)

A high cleared mountain in northwestern part of Essex County, about 3 miles northwest of Lake Placid.

Station mark: Probably a bolt of New York State land survey.

[Latitude $44^{\circ} 20' 10.91''$. Longitude $74^{\circ} 01' 57.39''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Seward.....	34 20 28	214 13 28	4.37558
Ampersand.....	50 21 12	230 14 03	4.24787
St. Regis.....	108 49 40	288 37 11	4.39856
Lookout.....	177 04 23	357 03 40	4.42552
Moose Peak.....	234 33 19	54 34 31	3.44358
Marcy.....	340 43 55	160 48 28	4.42010

OWLS HEAD (2), FRANKLIN COUNTY.

On a rocky point about one-half mile northeast of Owls Head station, on Mohawk and Malone Railway. Ridge is considerably higher to north. View cut off from north to east.

Station mark: A copper bolt leaded in rock, marked "U. S. G. S."

[Latitude 44° 44' 36.81". Longitude 74° 09' 35.30".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Debar	17 20 43.9	197 18 09.0	4.2121883
Averill	284 11 44.7	104 23 30.2	4.3573875
Lookout	334 52 13.9	154 56 52.4	4.3135926

HIGH TORNE, ROCKLAND COUNTY.

A station of the United States Coast and Geodetic Survey in Ramapo Township about 1 mile northeast from Ramapo station on the New York, Lake Erie and Western Railroad, on the summit of a prominent elevation known as High Torne, which falls off abruptly on the southeast end. Station is about 400 feet northeast from a large cliff. Land is owned by H. I. Pierson, of Ramapo.

Station mark: A three-fourths inch bolt cemented in solid rock.

[Latitude 41° 09' 05.30". Longitude 74° 09' 47.32".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Bald Hill	36 48 57.0	216 41 32.8	4.4214816
Bearfort	86 28 25.3	266 19 23.1	4.2845292
Sterling	152 57 22.4	332 54 23.9	4.1420525

SEWARD, FRANKLIN COUNTY.

In the southeastern part of Franklin County, on a high mountain 3 miles south of Ampersand Pond. It is covered with a dense growth of small balsam, but summit has been partly cleared. Best reached from cabin of Santa Clara Lumber Company on Ampersand Pond. Follow up Ward Brook on logging road, take second left-hand road, then keep to left to end of road, whence a blazed trail may be followed to summit.

Station mark: A copper bolt set in solid rock 2 feet below surface of ground.

[Latitude 44° 09' 35.25". Longitude 74° 12' 00.22".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Blue	26 54 00.0	206 45 36.3	4. 5535558
Morris	90 05 24.8	269 53 53.6	4. 3433268
St. Regis	159 28 26.7	339 22 59.9	4. 4704091
Ampersand	178 17 56.0	358 17 48.0	3. 9201400
McKenzie	214 13 28.0	34 20 28.0	4. 3755800
Moose Peak	216 18 37.6	36 26 49.6	4. 4210862
McIntyre	275 56 56.0	96 05 50.0	4. 2336600
Marcy	283 12 28.2	103 23 59.8	4. 3557847
Vanderwhacker	344 00 06.0	164 04 25.4	4. 4803631

AMPERSAND, FRANKLIN COUNTY.

(Not occupied.)

A bare rocky mountain in the southeastern corner of Franklin County, on the north side of Ampersand Pond. Can be easily reached from Ampersand Pond.

Station mark: Bolt, probably, of the New York State Land Survey.

[Latitude 44° 14' 04.68". Longitude 74° 12' 11.35".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Morris	69 11 42	249 00 18	4. 36771
Hayes	87 26 27	267 16 25	4. 28293
St. Regis	152 24 35	332 19 16	4. 33909
McKenzie	230 14 03	50 21 12	4. 24787
Moose Peak	230 48 13	50 26 33	4. 31103
McIntyre	300 16 49	120 25 51	4. 30128
Seward	358 17 48	178 17 56	3. 92014

DEBAR, FRANKLIN COUNTY.

A high cleared mountain in Duane Township, about 4 miles south of Duane post-office. Best reached from Debar Pond on northeast side of mountain. No trail.

Station mark: A bronze triangulation tablet cemented in solid rock and marked "U. S. Geological Survey, New York."

[Latitude 44° 36' 12.71". Longitude 74° 13' 15.66".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
St. Regis	21 52 12.9	201 47 37.7	4.3678052
Rice	45 07 15.0	225 01 52.0	4.1566600
Azure	72 48 18.5	252 36 30.5	4.3676167
Owls Head (2)	197 18 09.0	17 20 43.9	4.2121883
Averill	249 38 13.6	69 52 33.0	4.4582297
Lookout	282 42 51.5	102 50 04.4	4.1444627
Moose Peak	328 21 42.8	148 30 49.6	4.5178874
Duane M. E. Church	151 53 58.0	331 52 12.0	3.8487800

STERLING, ORANGE COUNTY.

Near the west side of a bushy ridge in Tuxedo Township, S. 67° W. 1½ miles from the southwest extremity of Lake Mombasha, on land owned by the Sterling Park Company.

Station mark: A copper bolt 1 inch in diameter wedged in boulder and ¾ inch above surface, stamped "U. S. G. S." Boulder 2 by 3 feet and 6 inches above ground.

Reference marks: Arrow cut near north end of boulder 3 by 4 feet and 4 inches above ground; azimuth 30°, distance 8.04 feet. Arrow cut in boulder 6 by 4 feet and 1 foot above ground; azimuth 70°, distance 13.70 feet. Arrow cut in boulder 5 by 3 feet and 1 foot above ground; azimuth 287°, distance 5.51 feet. Signal tree; azimuth 148°, distance 29.01 feet.

[Latitude 41° 15' 45.64". Longitude 74° 14' 18.21".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Bearfort	43 35 48.2	223 29 43.8	4.2720153
High Point	100 28 18.1	280 11 32.0	4.5570329
Eve	106 22 40.1	286 15 41.1	4.1875280
Houston	158 03 52.5	337 59 03.7	4.4333572
Sams Point	167 43 03.4	347 38 20.8	4.6666435
High Torne	332 54 23.9	152 57 22.4	4.1420525

DUANE, M. E. CHURCH, FRANKLIN COUNTY.

(Not occupied.)

Situated in Duane Township near Duane post-office.

Station mark: Center of church spire.

[Latitude 44° 39' 34.43". Longitude 74° 15' 46.59".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Azure	55 16 13	235 06 10	4.36259
Debar	331 52 12	151 53 58	3.84878

ST. REGIS, FRANKLIN COUNTY.

On a bare rocky mountain about 5 miles west of Lake Clear Junction, on Mohawk and Malone Railway. Can be reached in about three hours from Lake Clear Junction by driving to Upper St. Regis Lake, thence taking boat to head of lake, a short carry to Spectacle Pond, thence across the pond, thence a good trail to summit.

Station mark: An aluminum bolt set in solid rock and marked "N. Y. S. Land Survey V. Colvin Supt. No. 300."

[Latitude 44° 24' 31.27". Longitude 74° 19' 48.32".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Morris	22 50 21.0	202 44 15.1	4.4771258
Hayes	24 02 35.0	203 57 51.0	4.3452200
Azure	137 17 13.9	317 10 02.2	4.3022069
Rice	172 37 34.0	352 36 47.0	4.0651500
Debar	201 47 37.7	21 52 12.9	4.3678052
Lookout	230 07 12.4	50 18 59.7	4.4626659
Moose Peak	283 47 08.7	104 00 49.1	4.4273682
McKenzie	288 37 11.0	108 49 40.0	4.3985600
Ampersand	332 19 16.0	152 24 35.0	4.3390900
Seward	339 22 59.9	159 28 26.7	4.4704091

KEMPSHALL, HAMILTON COUNTY.

A heavily timbered mountain in the town of Long Lake, on the east side of Long Lake, 2 miles south of Island Hotel. Sight lines are cleared through timber to Blue, West, Nigger Head, Owls Head, Morris, St. Regis, and Ampersand. Theodolite elevated 20 feet on trunk of tree.

Station mark: Center of trunk of tree 2 feet in diameter cut off 20 feet from ground. Station number, 493.

Reference mark: A copper bolt set in a boulder 2½ feet in diameter embedded in the roots of trunk, bolt being 2 feet northwest of center of tree.

[Latitude 44° 01' 28.43". Longitude 74° 19' 48.97".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Blue	18 42 04.4	198 39 06.6	4.2512882
West	58 57 16.0	238 41 35.4	4.5481265
Morris	142 16 28.2	322 10 24.0	4.2789159

RICE, FRANKLIN COUNTY.

(Not occupied.)

On a partly cleared mountain about 3 miles east of Madawaska station, on the New York and Ottawa Railway. Can go in rowboat from station to foot of mountain.

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

[Latitude 44° 30' 44.56". Longitude 74° 20' 55.82".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Azure	104 50 29	284 44 03	4.09800
Debar	225 01 52	45 07 15	4.15666
St. Regis	352 36 47	172 37 34	4.06515

SAMS POINT, ULSTER COUNTY.

In Warwarsing Township, 6 miles from Ellenville, on the southern end of a rocky ridge locally known as Sams Point, and owned by Le Grand Bottsford, who lives under the bluff 400 yards south of station.

Station mark: A bronze triangulation tablet cemented in a large flat rock.

Reference marks: Arrow cut in flat rock; azimuth 1°, distance 38.43 feet. Arrow cut in flat rock; azimuth 297°, distance 51.97 feet. Arrow cut in flat rock; azimuth 190°, distance 14.22 feet.

[Latitude $41^{\circ} 40' 15.46''$. Longitude $74^{\circ} 21' 25.02''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Houston	0 39 23.5	180 39 16.9	4.3051921
High Point	33 19 35.9	213 07 28.5	4.6672128
Vernon	36 58 17.9	216 51 59.9	4.3415805
Roads	56 10 16.9	235 59 37.5	4.4292886
Wolf	66 48 34.2	246 39 29.6	4.3149145
Monticello	87 17 09.0	267 04 09.7	4.4338327
Walnut	110 49 25.5	290 32 56.2	4.5648950
South Hill	142 43 36.1	322 37 17.4	4.3358465
Denman	149 31 57.0	329 24 36.5	4.4778895
Graham	158 42 30.5	338 34 47.4	4.6430438
Slide	176 10 36.6	356 09 27.3	4.5627499
Sterling	347 38 20.8	167 43 03.4	4.6666435

HOUSTON, ORANGE COUNTY.

On a cleared hill in Walkill Township, one-half mile north of Scotchtown post-office, on land owned by Robert Houston. Harry Smith lives 300 yards south of station. A good view in all directions.

Station mark: A stone post 20 by 8 by 8 inches, set flush with the surface of ground, in center of top of which is cemented a bronze triangulation tablet.

Reference marks: Large stone pile in fence corner; azimuth 185° , distance 119.85 feet. Arrow cut in north end white rock 3 by 2 feet and 1 foot above ground; azimuth 340° , distance 164.73 feet. Arrow cut in north end of rock ledge 10 by 4 feet and 1 foot above ground; azimuth 23° , distance 242.22 feet. Stone wall; azimuth 90° , distance 60 feet.

[Latitude $41^{\circ} 29' 20.99''$. Longitude $74^{\circ} 21' 35.00''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Eve	12 29 31.5	192 27 20.4	4.3289821
High Point	53 37 03.5	233 25 04.0	4.4973076
Writer	73 27 08.3	253 18 36.1	4.2725795
Vernon	101 32 05.0	281 25 54.3	4.1219453
Sams Point	180 39 16.9	0 39 23.5	4.3051821
Sterling	337 59 03.7	158 03 52.5	4.4333572

SLIDE, ULSTER COUNTY.

On the highest peak in the Catskill Mountains, 5 miles south of Slide Mountain post-office, or J. W. Dutcher's house.

The nearest railroad station is Big Indian, on the Ulster and Delaware Railroad.

The top of the mountain is timbered. Theodolite set under center of a tower 25 feet high and lines of sight cut toward other stations.

Station mark: A copper bolt stamped "U. S. G. S." set in a conglomerate rock a little above surface of ground.

Reference marks: Six-inch spike driven in a balsam tree 12 inches in diameter, $2\frac{1}{2}$ feet above ground; azimuth 38° , distance 27.07 feet. Arrow cut in ledge in path around north side of tower; azimuth 244° , distance 32.65 feet. Arrow cut in ledge of rock, east outlook from mountain; azimuth 289° , distance 220.65 feet.

[Latitude $41^\circ 59' 57.11''$. Longitude $74^\circ 23' 10.87''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Walnut	53 42 07.4	233 26 44.2	4.5971647
Graham	108 23 15.3	288 16 41.6	4.1539652
Andes	130 32 52.6	310 18 47.4	4.5803074
Utsayantha	159 19 04.0	339 10 51.4	4.6765330
Sams Point	356 09 27.3	176 10 36.6	4.5627499
South Hill	29 03 59.8	208 58 49.8	4.3421254

BEARFORT, PASSAIC COUNTY, N. J.

A station of the United States Coast and Geodetic Survey on a high summit of Bearfort Mountain, about 2 miles southwesterly from road leading over mountain from Greenwood Lake to Vernon.

Station mark: A copper bolt three-fourths inch in diameter projecting about three-fourths inch above rock.

[Latitude $41^\circ 08' 26.09''$. Longitude $74^\circ 23' 31.35''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Hamburg	94 11 30.7	274 06 02.8	4.0664557
High Point	131 36 05.8	311 25 25.5	4.4802442
Eve	173 54 55.4	353 54 01.4	4.2549964
Sterling	223 29 43.8	43 35 48.2	4.2720153
High Torne	266 19 23.1	86 28 25.3	4.2845292
Bald Hill	350 10 07.9	170 11 44.9	4.3060559

EVE, ORANGE COUNTY.

On the western end of a partly cleared ridge in Warwick Township, $2\frac{1}{2}$ miles from Hudson. Station on the Lehigh and Hudson Railroad. Land owned by James Henry, who lives 400 yards north of station at foot of mountain.

Station mark: A copper bolt stamped "U. S. G. S." set in solid rock.

Reference marks: Arrow cut in ledge on top of ridge; azimuth 30° , distance 24.25 feet. Arrow cut in ledge on top of ridge; azimuth 194° , distance 39.55 feet. Arrow cut in flat stone, level with surface, and 70 feet below station; azimuth 320° , distance 81.68 feet.

[Latitude $41^\circ 18' 05.92''$. Longitude $74^\circ 24' 53.31''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
High Point	95 59 11.4	275 49 24.2	4.3181160
Writer	139 13 21.5	319 07 01.4	4.3105577
Vernon	160 21 29.5	340 17 30.6	4.3964954
Houston	192 27 20.4	12 29 31.5	4.3289821
Sterling.....	286 15 41.1	106 22 40.1	4.1875280
Bearfort	353 54 01.4	173 54 55.4	4.2549964

HAYES, FRANKLIN COUNTY.

A secondary station located by "three point method," about 1 mile northeast of Tupper Lake Village in an open field on a large bowlder 12 by 8 by 8 feet near hay barn and in the rear of a small log building. Land is owned by D. J. Hayes, liveryman, of Tupper Lake.

Station mark: A bronze triangulation tablet cemented in solid rock, marked "U. S. Geological Survey, New York."

[Latitude $41^\circ 13' 35.99''$. Longitude $74^\circ 26' 34.80''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
St. Regis	203 57 51.0	24 02 35.0	4.34522
Ampersand	267 16 25.0	87 26 27.5	4.28293
Morris.....	19 21 29.5	199 20 08.0	3.89649

MORRIS, FRANKLIN COUNTY.

A high bald mountain in south end of Waverly Township, 4 miles east of Big Tupper Lake and 6 miles south of Tupper Lake Village. Best reached by driving from Tupper Lake Village to Waukesha

Hotel, thence by logging road and obscure trail to summit of mountain.

Station mark: Aluminum bolt of New York State land survey set in solid rock, also copper bolt 1 inch in diameter set in solid rock and stamped "U. S. G. S." N. Y. 497", 9½ inches distant from State land survey bolt. Position computed is that of State land survey bolt.

[Latitude 44° 09' 36.18". Longitude 74° 28' 32.37".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
West	29 10 08.7	209 00 30.7	4.5811562,
Moody	160 28 14.0	340 27 37.0	3.5479300
Azure.....	177 15 07.4	357 14 03.2	4.6276584
Rice	194 25 56.0	14 31 17.0	4.6070600
Hayes.....	199 20 08.0	19 21 30.0	3.8964900
St. Regis	202 44 15.1	22 50 21.0	4.4771258
Moose Peak	240 24 56.6	60 44 41.0	4.6357242
Ampersand	249 00 18.0	69 11 42.0	4.3677100
Seward	269 53 53.6	90 05 24.8	4.3433268
Vanderwhacker	313 34 05.6	133 49 54.6	4.6238473
Blue	349 24 34.2	169 27 39.9	4.5114860
Kempshall	322 10 24.0	142 16 28.2	4.2789159

MOODY, FRANKLIN COUNTY.

(Not occupied.)

A low bare point on the east side of Big Tupper Lake in the southwest corner of Franklin County.

Station mark: A bolt of the New York State Land Survey.

[Latitude 44° 11' 23.01". Longitude 74° 29' 25.52".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
St. Regis	207 41 01	27 47 44	4.43917
Morris.....	340 27 37	160 28 14	3.54793

AZURE, FRANKLIN COUNTY.

On a cleared mountain locally known as Blue Mountain, about 4 miles southwest from Spring Cove Station on the New York and Ottawa Railway. A good trail from the Blue Mountain House to the summit.

Station mark: A bronze tablet cemented in solid rock marked "U. S. Geological Survey, New York."

[Latitude 44° 32' 28.19". Longitude 74° 30' 04.51".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Duane M. E. Church.....	235 06 10.5	55 16 13.0	4.3625900
Debar.....	252 36 30.5	72 48 18.5	4.3676167
Rice.....	284 44 03.0	104 50 29.0	4.0980000
St. Regis.....	317 10 02.2	137 17 13.9	4.3022069
Morris.....	357 14 03.2	177 15 07.4	4.6276584

SOUTH HILL, ULSTER COUNTY.

(Not occupied.)

In Warwasing Township, on a sharp, round, partially cleared hill, 2 miles north of Ulster Heights post-office, on land owned by Grant Sheely, who lives 500 yards south of station.

Station mark: The rock oak signal tree.

Reference marks: Arrow cut in bowlder 6 by 5 by 3 feet; azimuth 9°, distance 45 feet. Arrow cut in bowlder 4 by 3 by 2 feet; azimuth 201°, distance 60 feet. Arrow cut in bowlder 6 by 2 by 1 feet; azimuth 245°, distance 70 feet.

[Latitude 41° 49' 34.00". Longitude 74° 30' 53.68".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Walnut.....	78 42 43.0	258 32 31.2	4.3346119
Denman.....	166 10 19.4	346 09 17.6	3.9500513
Slide.....	208 58 49.8	29 03 59.8	4.3421254
Sams Point.....	322 37 17.4	142 43 36.1	4.3358465

VERNON, SULLIVAN COUNTY.

On a timbered ridge in Manakating Township, 2 miles west of New Vernon post-office.

Theodolite elevated 16 feet on stump of pine tree.

Station mark: Stump of pine tree.

Reference marks: Arrow cut in bowlder 3 by 3 by 3 feet; azimuth 247°, distance 55.95 feet. Signal tree; azimuth 152°, distance 17.88 feet. Cross (+) cut on east face of bowlder on edge 6 by 4 feet and 2 feet above ground; azimuth 144°, distance 41.18 feet. Arrow cut in south end of bowlder 4 by 5 by 3 feet; azimuth 122°, distance 54.30 feet.

[Latitude 41° 30' 46.44". Longitude 74° 30' 54.49'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
High Point.....	29 58 07.8	209 52 18.3	4.3909515
Writer.....	31 51 46.7	211 49 25.0	3.9735791
Roads.....	105 42 44.9	285 38 24.0	3.9765996
Wolf.....	148 21 23.3	328 18 37.4	4.0430398
Sams Point.....	216 51 59.9	36 58 17.9	4.3415805
Houston.....	281 25 54.3	101 32 05.0	4.1219453
Eve.....	340 17 30.6	160 21 29.5	4.3964954

HAMBURG, SUSSEX COUNTY, N. J.

A station of the United States Coast and Geodetic Survey, situated on the Hamburg Mountains in the town of Hardiston, about 3 miles S. 76° E. from the village of Hamburg, on the New York, Susquehanna and Western Railway, about one-half mile S. 38° W. from dam at outlet of Sand Pond. On land owned by the Franklin Iron Company.

Station mark: A copper bolt three-fourths inch in diameter and 4 inches long, set in solid rock with one-half inch projecting; letters "G. S. of N. J." cut in rock on southwest side of bolt.

[Latitude 41° 08' 53.40". Longitude 74° 31' 49.75'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
High Point.....	150 10 25.4	330 05 13.6	4.3448511
Bearfort.....	274 06 02.8	94 11 30.7	4.0664557
Bald Hill.....	323 57 21.7	144 04 26.1	4.4095860

DENMAN, SULLIVAN COUNTY.

(Not occupied.)

In Neversink Township, on a high timbered ridge known as Denman Mountain, 1¼ miles east of Clarysville post-office, on land owned by Leonard Moore, who lives one-half mile west of station.

Station mark: A copper bolt set in bowlder 10 by 10 by 8 feet on highest point of mountain, being the only bowlder on top.

Reference mark: Birch signal tree N. 68 E. 20.8 feet distant.

[Latitude 41° 54' 14.53". Longitude 74° 32' 26.14".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Walnut.....	55 55 20.6	235 46 10.1	4.3618317
Graham.....			4.1781101
Sams Point.....	329 24 36.5	149 31 57.0	4.4778895
South Hill.....	346 09 17.6	166 10 19.4	3.9500513

GRAHAM, ULSTER COUNTY.

On Graham Mountain, Hardenburg Township, 3 miles south of Seager post-office, and best reached from Arkville station, on the Ulster and Delaware Railroad. The highest point is very sharp and covered with low brush, most of which was cut down in 1900. Land owned by George J. Gould, of New York City.

Station mark: A copper bolt in flat boulder.

[Latitude 42° 02' 22.44". Longitude 74° 32' 58.99".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Walnut.....	33 12 47.2	213 03 57.9	4.5237748
Deyoe.....	90 19 47.4	270 09 54.3	4.3090438
Andes.....	142 39 02.3	322 31 31.2	4.4051606
Utsayantha.....	175 14 48.4	355 13 10.9	4.6026806
Slide.....	288 16 41.6	108 23 15.3	4.1539652
Sams Point.....	338 34 47.4	158 42 30.5	4.6430438

WRITER, ORANGE COUNTY.

On a brushy ridge in Mount Hope Township, 3 miles southwest of Otisville station, on the Erie Railway, on land owned by Mr. Writer, proprietor of the Writer House, Otisville. Tenant lives 400 yards east of station. The ridge is cleared on eastern side, giving a good view in all directions.

Station mark: A copper bolt 1 inch in diameter, stamped "U.S.G.S.," set in solid rock.

Reference marks: Inch hole drilled 1 inch deep in ledge; azimuth, 148°; distance, 29.90 feet. Inch hole drilled 1 inch deep in ledge; azimuth, 16°; distance, 30.31 feet. Inch hole drilled 1 inch deep in ledge, south end; azimuth, 230°; distance, 44.80 feet.

[Latitude 41° 26' 27.34". Longitude 74° 34' 28.46".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
High Point	28 45 25.1	208 41 57.3	4.1818277
Roads	158 28 59.5	338 27 00.6	4.0548316
Wolf	177 14 34.5	357 14 10.5	4.2408390
Vernon	211 49 25.0	31 51 46.7	3.9735791
Houston	253 18 36.1	73 27 08.3	4.2725795
Eve	319 07 01.4	139 13 21.5	4.3105577

WOLF, SULLIVAN COUNTY.

In Thompson Township, on a timbered ridge 1 mile northwest of Wolf Pond, on land owned by the Sullivan County Club. A good view can be had in all directions.

Theodolite elevated 18½ feet on stump of tree.

Station mark: A pine tree 12 inches in diameter 3 feet above ground, having a pile of stone 6 feet in diameter and 3 feet high piled about it.

Reference marks: Arrow cut in ledge, 3 by 2 feet, a very little above surface; azimuth, 235°; distance, 43.82 feet. Arrow cut in boulder 4 by 3 by 2 feet; azimuth, 341°; distance, 13.75 feet.

[Latitude 41° 35' 51.07". Longitude 74° 35' 04.62".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
High Point	11 53 48.5	191 50 44.3	4.4968098
Roads	25 55 18.2	205 53 43.1	3.8809053
Monticello	129 54 19.4	309 50 25.2	4.0268466
Walnut	143 56 28.8	323 49 05.3	4.4175630
Sams Point	246 39 29.6	66 48 34.2	4.3149145
Vernon	328 18 37.4	148 21 23.3	4.0430398
Writer	357 14 10.5	177 14 34.5	4.2408390

UTSAYANTHA, DELAWARE COUNTY.

A station of the New York State survey 1 mile (air line) southeast of Stamford.

Theodolite elevated 60 feet in an observatory 49.3 feet distant from station. True azimuth from station, 197° 25'.

Station mark: A copper bolt set in solid rock 18 inches below surface of ground, above which is a granite post 18 by 6 by 6 inches marked "N. Y. S. S. 27."

[Latitude 42° 23' 56.21". Longitude 74° 35' 24.12".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Andes	31 31 09.9	211 25 15.0	4.3641901
Bramley	59 06 48.4	238 57 34.9	4.3410478
Meredith	91 17 51.2	271 05 06.7	4.4138899
Hooker	134 05 00.6	313 53 52.2	4.4969308
Otsego	167 37 46.6	347 33 08.8	4.6390267
Slide	339 10 51.4	159 19 04.0	4.6765330
Graham	355 13 10.9	175 14 48.4	4.6026806
Telford	127 39 12.0	307 16 39.4	4.7595348

HIGH POINT, SUSSEX COUNTY, N. J.

A station of the United States Coast and Geodetic Survey, in Montague Township, 4 miles south of Port Jervis, on the highest land in the State.

Station mark: A copper bolt set in solid rock.

[Latitude 41° 19' 15.29". Longitude 74° 39' 42.86".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Walnut	170 11 05.9	350 06 48.2	4.7211823
Roads	187 27 33.4	7 29 02.6	4.3817799
Wolf	191 50 44.3	11 53 48.5	4.4968100
Writer	208 41 57.3	28 45 25.1	4.1818277
Vernon	209 52 18.3	29 58 07.8	4.3909515
Sams Point	213 07 28.5	33 19 35.9	4.6672128
Houston	233 25 04.0	53 37 03.5	4.4973076
Eve	275 49 24.2	95 59 11.4	4.3181160
Sterling	280 11 32.0	100 28 18.1	4.5570329
Bearfort	311 25 25.5	131 36 05.8	4.4802442
Hamburg	330 05 13.6	150 10 25.4	4.3448511

MONTICELLO, SULLIVAN COUNTY.

(Not occupied.)

Station mark: Standpipe at Monticello.

[Latitude 41° 39' 32.12". Longitude 74° 40' 57.31".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Sams Point	267 04 09.7	87 17 09.0	4.4338327
Wolf	309 50 25.2	129 54 19.4	4.0268466

OTSEGO, OTSEGO COUNTY.

A station of the United States Coast and Geodetic Survey and of the New York State survey, in Cherry Valley Township, on a high ridge 3 miles east from the village.

Station mark: A granite post, 48 by 6 by 6 inches, set 42 inches in the ground, marked "N. Y. S. S. 26."

[Latitude, 42° 46' 54.73". Longitude, 74° 42' 14.60".]

Station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Wart	72 05 40.2	251 52 56.0	4.4302101
Telford	78 19 18.7	258 01 19.8	4.5674238
Tassel Hill	109 41 58.7	289 16 58.2	4.7252676
Utsayantha	347 33 08.8	167 37 46.6	4.6390267

WEST MOUNTAIN, HAMILTON COUNTY.

A dome-topped mountain in the town of Long Lake, on the west side of Raquette Lake. Summit entirely cleared. Is best reached from Antlers Hotel, Raquette Lake, by small boat to trail near house of Mr. Blanchard on north side of Sucker-brook Bay, thence 4 miles to summit of mountain. Water within one-half mile of top.

Station mark: A copper bolt cemented in rock on highest point. Station number, 494.

[Latitude 43° 51' 35.87". Longitude 74° 42' 24.31".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Stillwater	90 33 18.8	270 19 42.3	4.4201784
Webb	133 53 48.4	313 45 37.6	4.3400136
Morris	209 00 30.7	29 10 08.7	4.5811562
Kempshall	238 41 35.4	58 57 16.0	4.5481265
Blue	266 38 52.0	86 51 33.8	4.3906718

ANDES, DELAWARE COUNTY.

On a prominent timbered mountain locally called Mount Pisgah, in town of Andes, and owned by Elliott Graham. Most of the timber was cut down in 1900, one birch tree being left for a signal.

Station mark: A bronze triangulation tablet cemented in a large flat boulder on highest point of mountain.

Reference mark: The birch signal tree; true azimuth, mark to tree, 110° 04' distance 57 feet.

[Latitude 42° 13' 16.81". Longitude 74° 44' 11.38".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Deyoe	13 43 09.3	193 40 46.2	4.3157762
Butternut	123 27 10.9	303 06 51.2	4.6953369
Bramley	141 24 30.8	321 21 12.8	4.0337993
Meredith	145 37 50.7	325 31 02.4	4.3904270
Utsayantha	211 25 15.0	31 31 09.9	4.3641901
Slide	310 18 47.4	130 32 52.6	4.5803074
Graham	322 31 31.2	142 39 02.3	4.4051606
Willis	87 13 22.4	266 48 12.8	4.7127779

WALNUT, SULLIVAN COUNTY.

On the highest point of Walnut Mountain, in Liberty Township, $1\frac{1}{4}$ miles southwest of Liberty and 500 feet north of the Walnut Mountain House. A good view can be had in all directions.

Theodolite elevated 36 feet.

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

Reference marks: Arrow cut in ledge east edge of ridge; azimuth 326°, distance 130.05 feet. Arrow cut in ledge west edge of ridge; azimuth 74°, distance 71.42 feet.

[Latitude 41° 47' 15.90". Longitude 74° 46' 11.34".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
White Lake	23 31 16.3	203 28 34.7	4.1481635
Knack	92 17 00.9	272 08 34.4	4.2445692
Maulik	125 49 19.9	305 41 52.5	4.2803796
Deyoe	175 37 19.6	355 36 17.2	4.4493156
Graham	213 03 57.9	33 12 47.2	4.5237748
Slide	233 26 44.2	53 42 07.4	4.5971647
Denman	235 46 10.1	55 55 20.6	4.3618317
South Hill	258 32 31.2	78 42 43.0	4.3346119
Sams Point	290 32 56.2	110 49 25.5	4.5648950
Wolf	323 49 05.3	143 56 28.8	4.4175630
High Point	350 06 48.2	170 11 05.9	4.7211823

DEYOE, DELAWARE COUNTY.

On a heavily timbered ridge, property of New York State, 2 miles northwest of Lewbeach post-office.

Best reached from Rockland, a station on the New York, Ontario and Western Railway. E. D. Deyoe lives 1 mile south of station.

Theodolite elevated 25 feet on stump of tree.

Station mark: Stump of maple tree, 18 inches in diameter, 25 feet high. Six lines were cut through timber to as many different stations.

[Latitude 42° 02' 25.29". Longitude 74° 47' 44.73".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Maulik	38 13 30.4	218 07 04.3	4.3326800
Starkweather	114 46 08.0	294 35 52.3	4.3661821
Bramley	176 16 54.6	356 16 00.3	4.4564693
Andes	193 40 46.2	13 43 09.3	4.3157762
Graham	270 09 54.3	90 19 47.4	4.3090438
Walnut	355 36 17.2	175 37 19.6	4.4493156

BRAMLEY, DELAWARE COUNTY.

On a high bare ridge in Delhi Township, 2½ miles south of Bloomville, on land owned by S. G. Bramley.

Station mark: A bronze triangulation tablet cemented in solid rock, 6 inches below surface of ground.

[Latitude 43° 17' 50.53". Longitude 74° 49' 05.72".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Starkweather	45 38 13.7	225 28 50.9	4.4299297
Loomis	76 02 60.0	255 47 35.1	4.5118611
Meredith	148 52 42.2	328 49 11.8	4.1403248
Utsayantha	238 57 34.9	59 06 48.4	4.3410478
Andes	321 21 12.8	141 24 30.8	4.0337993
Deyoe	356 16 00.3	176 16 54.6	4.4564693
Persons	113 30 42.9	293 21 14.0	4.3237562

WHITE LAKE, SULLIVAN COUNTY.

(Not occupied.)

In Bethel Township, on a timbered ridge at south end of White Lake, on land owned by N. Goldsmith, who lives 300 yards southeast of station. A wooden tower in field about 300 yards west of station gives a good view from N. 20° E. around by west to south.

Station mark: Center of hemlock tree 14 inches in diameter 3 feet above ground, having a mound of stones 5 feet in diameter and 3 feet high piled about it.

Reference marks: Arrow cut in north end of the only large boulder on hill; azimuth 23° , distance 279.60 feet. Arrow cut in boulder 16 by 3 by 2 feet; azimuth 157° , distance 82.75 feet.

[Latitude $41^\circ 40' 17.80''$. Longitude $74^\circ 50' 14.00''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Knack	188 40 50.0	318 35 05.6	4.2574751
Maulik	157 41 23.4	337 36 38.2	4.4149285
Walnut	203 28 34.7	23 31 16.3	4.1481635

HOOKER, OTSEGO COUNTY.

On a high, bare knob in Maryland Township, $3\frac{1}{2}$ miles west of Schenevus, on land owned by E. D. Hooker (post-office, Westville).

Station mark: A granite post 48 by 6 by 6 inches, set 42 inches in the ground, marked "N. Y. S. S. 409."

[Latitude $42^\circ 35' 43.00''$. Longitude $74^\circ 51' 53.44''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Meredith	8 49 50.2	188 48 12.6	4.3329191
Telford	119 50 46.5	299 39 21.7	4.4234765
Wart	134 54 35.7	314 48 24.9	4.2450464
Utsayantha	313 53 52.2	134 05 00.6	4.4969308

WEBB, HERKIMER COUNTY.

On high, timbered mountain, 3 miles southwest of Gull Lake and 1 mile east of Long Lake, on land owned by H. Seward Webb.

Can be reached by going to Bartlow Junction, on Mohawk and Malone Railroad, thence by private railroad to Waterkirks mill, thence by trail to Gull Lake, thence by Gull Lake and Long Pond trail to west boundary of Webb's reserve, thence south along line to summit of ridge (one-half mile), thence east about 700 feet to signal.

Theodolite elevated 30 feet.

Station mark: High stump of tree, which was used as support for theodolite.

[Latitude $43^\circ 59' 46.77''$. Longitude $74^\circ 54' 11.84''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Morris	241 55 11.4	62 13 02.3	4.5885043
West	313 45 37.6	133 53 48.4	4.3400136

MEREDITH, DELAWARE COUNTY.

On a high, bare knob about 2 miles southwest of East Meredith, in Meredith Township, on land belonging to Finley Gilchrist.

Station mark: A marble post, 28 by 6 by 6 inches, set 24 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet.

[Latitude $42^{\circ} 24' 13.69''$. Longitude $74^{\circ} 54' 17.93''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Willis	58 43 52.5	238 25 28.4	4.6437972
Starkweather	21 29 20.3	201 23 26.9	4.5177814
Loomis	51 04 52.6	230 52 57.0	4.4960309
Butternut	104 16 10.6	284 02 38.0	4.4531355
Telford	150 13 42.7	330 03 56.9	4.5987214
Hooker	188 48 12.6	8 49 50.2	4.3329191
Utsayantha	271 05 06.7	91 17 51.2	4.4138899
Andes	325 31 02.4	145 37 50.7	4.3904270
Bramley	328 49 11.8	148 52 42.2	4.1403248

MAULIK, SULLIVAN COUNTY.

On a partially cleared ridge in Freemont Township, 3 miles southwest of Rockland Village, on the New York, Ontario and Western Railway, on land owned by John Maulik, who lives one-fourth mile southwest of station.

Station mark: Center of maple tree, 2 feet in diameter, cut off for instrument support 28 feet above ground.

Reference marks: Arrow cut in large boulder; azimuth 322° , distance 7.86 feet. Arrow cut in ledge, south side of ridge; azimuth 81° , distance 75.77 feet. Arrow cut in flat boulder; azimuth 166° , distance 49.87 feet.

[Latitude $41^{\circ} 53' 17.14''$. Longitude $74^{\circ} 57' 22.07''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Knack	11 08 31.8	191 07 32.3	4.0280701
Deyoe	218 07 04.3	38 13 30.4	4.3326800
Walnut	305 41 52.5	125 49 19.9	4.2303796
White Lake	337 36 38.2	157 41 23.4	4.4149285

KNACK, SULLIVAN COUNTY.

In Delaware Township, on a partially-cleared ridge 2 miles west of the village of Jeffersonville, on land owned by Peter Knack, who lives 200 yards east of station.

Station mark: A bronze triangulation tablet cemented in solid rock 4 by 3 feet by 1 foot.

Reference marks: Arrow cut in rock 10 by 15 by 2 feet; azimuth 105° , distance 33 feet. Arrow cut in rock on east side of ridge; azimuth 47° , distance 75 feet. Arrow cut in rock very little above surface; azimuth 34° , distance 70 feet.

[Latitude $41^\circ 47' 37.88''$. Longitude $74^\circ 58' 51.35''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Maulik	191 07 32.3	11 08 31.8	4.0280701
Walnut	272 08 34.4	92 17 00.9	4.2445692
White Lake	318 35 05.6	138 40 50.0	4.2574751

WART, OTSEGO COUNTY.

On a bare knoll of cultivated land owned by T. T. Thompson, 5 miles west of Cooperstown, in Otsego Township. The station is in the southeast corner of field, about 8 feet from the fence.

Station mark: A stone post 36 by 6 by 6 inches set 28 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet.

[Latitude $42^\circ 42' 24.89''$. Longitude $75^\circ 01' 00.54''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Telford	94 08 39.9	274 03 25.5	4.0242858
Otsego	251 52 56.0	72 05 40.2	4.4302101
Hooker	314 48 24.9	134 54 35.7	4.2450464

STILLWATER, HERKIMER COUNTY.

On Stillwater Mountain, about 11 miles west of Beaver station, on Mohawk and Malone Railway; and 2 miles southwest of the stillwater in Beaver River.

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

[Latitude 43° 51' 42.44". Longitude 75° 02' 02.20'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Schwartz	45 18 33.0	225 03 29.5	4.5182215
Gum	56 42 33.8	236 23 57.4	4.6363342
Rock	71 51 40.6	169 37 16.7	4.4461049
Alder	121 24 06.2	301 19 41.7	3.9989646
Morris	233 19 38.8	53 42 55.4	4.7457777
West	270 19 42.3	90 33 18.8	4.4201784

STARKWEATHER, DELAWARE COUNTY.

On a partially cleared ridge in Walton Township, 6 miles southeast of Walton, on land owned by J. H. Starkweather, who lives one-half mile east of station.

Station mark: A bronze tablet cemented in bowlder 4 by 3 by 2 feet.

Reference marks: Arrow cut in ledge; azimuth 50°, distance 113.10 feet. Arrow cut in ledge; azimuth 110°, distance 75.17 feet. Arrow cut in ledge; azimuth 185°, distance 31.15 feet.

[Latitude 42° 07' 39.85". Longitude 75° 03' 03.35'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Rockrift	79 47 14.9	259 40 09.7	4.1704092
Loomis	131 36 04.7	311 30 03.7	4.2172014
Meredith	201 23 26.9	21 29 20.3	4.5177814
Bramley	225 28 50.9	45 38 13.7	4.4299297
Deyoe	294 35 52.3	114 46 08.0	4.3661821

PERSONS, DELAWARE COUNTY.

(Not occupied.)

On a round, bare knoll in Franklin Township, on land owned by A. R. Persons (Treadwell post-office).

Station mark: A bronze tablet cemented in solid rock 15 inches below surface of ground and covered with a small pile of flat stones.

[Latitude 42° 22' 22.15". Longitude 75° 03' 10.37'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Butternut	124 07 36.1	304 00 03.0	4.2681221
Meredith	254 10 13.3	74 16 12.3	4.1022924
Bramley	293 21 14.0	113 30 42.9	4.3237562

MYERS, ONEIDA COUNTY.

A low, partially cleared hill, 6 miles northeast of Forestport, locally known as "Myers Hill." The Herkimer-Oneida county line passes over the hill about 1,000 feet east of station.

Station mark: A copper bolt marked "U. S. G. S. N. Y. 487" set in solid rock.

[Latitude 43° 28' 39.82". Longitude 75° 06' 01.72'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Schuyler	2 07 08.5	182 06 29.1	4.5450250
Penn	49 54 30.9	229 47 55.8	4.2281188
Boonville	90 50 27.0	270 41 15.1	4.2559318
Gum	121 30 13.6	301 14 26.1	4.5579931
Schwartz	137 06 45.4	316 57 29.4	4.4242541

ALDER, HERKIMER COUNTY.

On Alder Creek Mountain, about 23 miles east of Lowville and 5 miles northeast of Number Four post-office. Can be reached by following Alder Creek trail northeast from Number Four post-office about 3 miles, thence east 2 miles to signal.

Station mark: A copper bolt cemented in solid rock.

[Latitude 43° 54' 30.68". Longitude 75° 08' 23.79".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Schwartz	27 39 52.0	207 32 12.2	4.5061884
Gum	43 37 18.7	223 23 05.7	4.6025889
Rock	52 18 27.6	232 09 09.7	4.3572002
Elmer	77 08 05.2	256 49 08.1	4.5752192
Stillwater	301 19 41.7	121 24 06.2	3.9989646

TELFORD, OTSEGO COUNTY.

On a knob, cleared on south end but heavily timbered on north end, in Burlington Township 6 miles east of Edmeston and 10 miles west of Cooperstown. The land is owned by S. W. Telford.

Station mark: A copper bolt set in solid rock 1 foot below surface of ground, above which is a red sandstone block 15 by 11 by 11 inches, in center of top of which is cemented a bronze triangulation tablet.

[Latitude 42° 42' 49.40". Longitude 75° 08' 44.06".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Butternut.....	15 42 04.0	195 38 15.2	4.4555214
Sherburne.....	69 22 27.2	249 10 52.8	4.3969063
Otsego.....	258 01 19.8	78 19 18.7	4.5674238
Wart.....	274 03 25.5	94 08 39.9	4.0242858
Hooker.....	299 39 21.7	119 50 46.5	4.4234765
Utsayantha.....	307 16 39.4	127 39 12.0	4.7595348
Meredith.....	330 03 56.9	150 13 42.7	4.5987214

LITCHFIELD, HERKIMER COUNTY.

In Litchfield Township, one-half mile north of Jerusalem Church, on a cultivated bare hill owned by H. Wheelock.

Station mark: A stone post 30 by 8 by 6 inches, set 28 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet.

[Latitude 42° 59' 05.65". Longitude 75° 08' 44.168".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Plainfield.....	10 03 22.7	190 01 40.3	4.2918608
Tassel.....	70 59 03.1	250 52 03.1	4.1696687
Schuyler.....	186 52 09.4	6 53 21.2	4.2975436

PLAINFIELD, OTSEGO COUNTY.

On a bald ridge owned by J. J. Roberts in town of Plainfield, 1½ miles south of Plainfield Center. Some timber still standing on western end of ridge.

Station mark: A blue stone post 36 by 6 by 6 inches, set 22 inches in the ground and resting on solid rock. In the center of top of post is cemented a bronze triangulation tablet.

[Latitude 42° 48' 40.79". Longitude 75° 11' 14.66".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Tassel.....	143 51 27.3	323 46 10.4	4.2530080
Litchfield.....	190 01 40.3	10 03 22.7	4.2918608

LOOMIS, DELAWARE COUNTY.

On a partially cleared ridge in Walton Township about 5 miles northwest of Walton and three-fourths of a mile north of Loomis post-office. Land owned by Mr. Allen, of Walton.

Station mark: A copper bolt set in boulder level with surface of ground.

Reference marks: Six-inch spike driven in center of blaze on lone wild cherry tree in field; azimuth 194° , distance 664.30 feet. Six-inch spike driven in blaze on oak tree 8 inches in diameter; azimuth 346° , distance 123.35 feet.

[Latitude $42^\circ 13' 34.33''$. Longitude $75^\circ 12' 01.02''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Rockrift	9 16 17.1	189 15 12.3	4.1384968
Willis	76 20 58.7	256 14 30.8	4.1345778
Meredith	230 52 57.0	51 04 52.6	4.4960309
Branley	255 47 35.1	76 02 60.0	4.5118611
Starkweather	311 30 03.7	131 36 04.7	4.2172014

ROCKRIFT, DELAWARE COUNTY.

(Not occupied.)

On a high timbered ridge in Walton Township.

Station mark: Hemlock signal tree, 2 feet in diameter, with two notches cut on north and south face, and a mound of stone 6 feet in diameter and 3 feet high piled around it.

Reference marks: Six-inch spike driven in center of blaze on maple tree; azimuth 35° , distance 41.93 feet. Six-inch spike driven in center of blaze on beech tree 10 inches diameter; azimuth 117° , distance 28.34 feet. Six-inch spike driven in center of blaze on rock-oak tree 16 inches diameter; azimuth 205° , distance 46.23 feet.

[Latitude $42^\circ 06' 14.29''$. Longitude $75^\circ 13' 37.48''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Willis	133 10 53.3	313 05 30.6	4.1799136
Loomis	189 15 12.3	9 16 17.1	4.1384968
Starkweather	259 40 09.7	79 47 14.9	4.1704092

BUTTERNUT, OTSEGO COUNTY.

On a cleared knob in Butternut Township, on land owned by Walter Wood and occupied by Mr. Foote.

Station mark: A marble post 36 by 6 by 6 inches, set 32 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet marked "New York 517."

[Latitude $42^{\circ} 27' 58.70''$. Longitude $75^{\circ} 14' 22.18''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Willis	18 30 41.8	198 25 48.0	4.4986447
Bobell	59 42 52.4	239 25 01.1	4.6251388
Whitcomb	81 29 42.1	261 18 39.1	4.3560978
Sherburne	140 03 35.8	319 55 51.7	4.3866556
Telford	195 38 15.2	15 42 04.0	4.4555214
Meredith	284 02 38.0	104 16 10.6	4.4531355
Andes	303 06 51.2	123 27 10.9	4.6953369

PENN, ONEIDA COUNTY.

A United States Coast and Geodetic Survey station, on a bare hill in Steuben Township, about 2 miles west of Steuben station.

Station mark: A granite post marked $\frac{U|S}{S|C}$, with four granite witness posts.

[Latitude $43^{\circ} 22' 46.56''$. Longitude $75^{\circ} 15' 36.36''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Gum	148 54 29.0	328 45 18.0	4.5407023
Boonville	155 21 42.2	335 19 05.8	4.0885049
Schwartz	170 16 34.5	350 13 54.7	4.4883160
Myers	229 47 55.8	49 54 30.9	4.2281188
West Canada	249 30 13.7	69 52 17.9	4.6642805
Fort Noble	264 17 01.0	84 34 59.0	4.5500200
Hamilton	266 52 46.9	87 29 36.5	4.8601480
West Creek	280 50 11.0	101 13 37.0	4.6719400
Schuyler	334 10 19.3	154 16 17.0	4.4284693

TASSEL, ONEIDA COUNTY.

A station of the United States Coast and Geodetic Survey and of the New York State survey, in Marshall Township, 5 miles east of Waterville,

Station mark: A granite post 48 by 6 by 6 inches, set 44 inches in the ground, and marked "N. Y. S. S. 29."

[Latitude 42° 56' 29.13". Longitude 75° 19' 00.48".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Schuyler	213 34 46.8	33 42 59.6	4.4692854
Litchfield	250 52 03.1	70 59 03.1	4.1696687
Plainfield	323 46 10.4	143 51 27.8	4.2530080

BOONVILLE, ONEIDA COUNTY.

A high cleared hill in Boonville Park.

Station mark: Flagstaff in park.

[Latitude 43° 28' 47.61". Longitude 75° 19' 23.79".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Myers	270 41 15.1	90 50 27.0	4.2559318
Penn	335 19 05.8	155 21 42.2	4.0885049

SCHWARTZ, LEWIS COUNTY.

On high ground one-half mile east of Schwartz schoolhouse in Greig Township.

Theodolite elevated 50 feet.

Station mark: A granite post in top of which is cemented a copper bolt.

[Latitude 43° 39' 09.63". Longitude 75° 19' 28.37".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Gum	87 15 20.8	267 08 48.6	4.1055027
Elmer	132 30 13.8	312 18 58.8	4.4710612
Rock	167 43 45.6	347 42 08.2	4.1709796
Alder	207 32 12.2	27 39 52.0	4.5061884
Stillwater	225 06 29.5	45 18 33.0	4.5182215
Myers	316 57 29.4	137 06 45.4	4.4242541
Penn	350 13 54.7	170 16 34.5	4.4883160

WILLIS, DELHI COUNTY.

On the summit of a bare flat ridge in the town of Masonville, 3 miles south of the village.

Station mark: A marble post, 16 by 7 by 7 inches, set 24 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet.

[Latitude $42^{\circ} 11' 49.65''$. Longitude $75^{\circ} 21' 38.42''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Bobell	107 59 21.4	287 46 26.2	4.4438558
Whitcomb	154 47 29.0	334 41 21.3	4.4669983
Butternut	198 25 48.0	18 30 41.8	4.4986447
Meredith	238 25 28.4	58 43 52.5	4.6437972
Loomis	256 14 30.8	76 20 58.7	4.1345778
Andes	266 48 12.8	87 13 22.4	4.7127779
Rockriff	313 05 30.6	133 10 53.3	4.1799136

ROCK, LEWIS COUNTY.

A high, rocky point in Watson Township, 8 miles east of Lowville, on land owned by George Venatti.

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

[Latitude $43^{\circ} 46' 58.98''$. Longitude $75^{\circ} 21' 49.26''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Gum	32 23 03.2	212 18 07.9	4.2524113
Elmer	106 24 11.0	286 14 32.9	4.2890136
Croghan	169 37 16.7	349 36 07.9	4.0906550
Alder	232 09 09.7	52 18 27.6	4.3572002
Stillwater	251 37 58.6	71 51 40.6	4.4461049
Schwartz	347 42 08.2	167 43 45.6	4.1709796

CROGHAN, LEWIS COUNTY.

Catholic church in the village of Croghan.

Station mark: Stone tower on church.

[Latitude $43^{\circ} 53' 31.64''$. Longitude $75^{\circ} 23' 28.71''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Gum			4.4501663
Elmer	68 01 58.6	247 53 28.7	4.2864777
Rock	349 36 07.9	169 37 16.7	4.0906550

SHERBURNE, CHENANGO COUNTY.

On a long bare hill owned by Nicholas Richards, in the extreme southeastern corner of the town of Sherburne.

Station mark: A bowlder 24 by 10 by 10 inches sunk 24 inches in the ground.

[Latitude 42° 38' 03.40". Longitude 75° 25' 48.51".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Whitcomb	17 03 37.4	197 00 17.2	4.3629384
Berry	66 23 09.5	246 12 35.3	4.3680101
Smyrna	109 43 51.3	289 34 43.9	4.2907616
Telford	249 10 52.8	69 22 27.2	4.3979063
Butternut	319 55 51.7	140 03 35.8	4.3866556

GUM, LEWIS COUNTY.

On a high, cleared point in Turin Township, about 4 miles northwest of Turin Village, on land owned by Thomas Evans, who lives 2,000 feet east of station.

Station mark: A stone post 48 by 8 by 8 inches, set flush with surface of ground; in the center of top is cemented a bronze triangulation tablet.

[Latitude 43° 38' 49.46". Longitude 75° 28' 56.60".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Rock	212 18 07.9	32 23 03.2	4.2524113
Alder	223 23 05.7	43 37 18.7	4.6025889
Stillwater	236 23 57.4	56 42 33.8	4.6363342
Schwartz	267 08 48.6	87 15 20.8	4.1055027
Myers	301 14 26.1	121 30 13.6	4.5579931
Penn	328 45 18.0	148 54 29.0	4.5407023

WHITCOMB, CHENANGO COUNTY.

On the south end of a hill in the town of Guilford and on the west side of north pond.

Station mark: A cut bluestone post 48 by 6 by 6 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet, marked "New York 518."

[Latitude 42° 26' 08.71". Longitude 75° 30' 44.55".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Bobell	37 45 58.1	217 39 09.0	4.3564016
Berry	130 56 19.9	310 49 06.8	4.2869704
Sherburne	197 00 17.2	17 03 37.4	4.3629384
Butternut	261 18 39.1	81 29 42.1	4.3560978
Willis	334 41 21.3	154 47 29.0	4.4669983

ELMER, LEWIS COUNTY.

Seven miles northwest of Lowville, in town of Harrisburg, 1 mile south of Harrisburg post-office, on land owned by E. P. Elmer.

Station mark: A marble post 48 by 8 by 8 inches, set flush with surface of ground, in center of top of which is cemented a bronze triangulation tablet.

[Latitude 43° 49' 56.12". Longitude 75° 35' 44.54".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Croghan	247 53 28.7	68 01 58.6	4.2486477
Alder	256 49 08.1	77 08 05.2	4.5752192
Rock	286 14 32.9	103 24 11.0	4.2890136
Schwartz	312 18 58.8	132 30 13.8	4.4710612

SMYRNA, CHENANGO COUNTY.

On the highest point of a bare hill in the town of Smyrna, 4 miles west of the village.

Station mark: A bluestone post 48 by 6 by 6 inches, set 30 inches in the ground (resting on solid rock), in the center of the top of which is cemented a bronze triangulation tablet.

[Latitude 42° 41' 36.32". Longitude 75° 39' 16.21".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Berry	10 29 21.3	190 27 53.7	4.2100681
Sherburne	289 34 43.9	109 43 51.3	4.2907616

BOBELL, CHENANGO COUNTY.

A station of the New York State survey, situated on the highest point of a bare hill, in the town of Coventry, 4 miles south and 1 mile east of the village.

Station mark: A granite post of the New York State survey marked "N. Y. S. S. 390."

[Latitude 42° 16' 26.18". Longitude 75° 40' 51.75".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Windsor	15 53 33.8	195 50 55.6	4.2956850
Maine	76 38 30.0	256 26 28.6	4.4029914
Virgil	122 53 27.9	302 34 53.6	4.6527993
Berry	178 33 16.1	358 32 53.2	4.4865173
Whitcomb	217 39 09.0	37 45 58.1	4.3564016
Willis	287 46 26.2	107 59 21.4	4.4438558
Butternut	239 25 01.1	59 42 52.4	4.6251388

BERRY, CHENANGO COUNTY.

A station of the New York State survey, on the town line between Pharsalia and McDonough, 1½ miles east of East Pharsalia.

Station mark: A granite post marked "N. Y. S. S. 381."

[Latitude 42° 32' 59.40". Longitude 75° 41' 25.64".]

To station—	Azimuth	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Virgil	80 25 34.2	260 07 19.8	4.5740224
Solon	109 51 50.1	289 39 49.6	4.4115321
Smyrna	190 27 53.7	10 29 21.3	4.2100681
Sherburne	246 12 35.3	66 23 09.5	4.3680101
Whitcomb	310 49 06.8	130 56 19.9	4.2869705
Bobell	358 32 53.2	178 33 16.1	4.4865173

WINDSOR, BROOME COUNTY.

A station of the New York State survey, situated on the highest part of a timbered hill, one-half mile north and 1 mile east of West Windsor.

Station mark: A broken granite post of the New York State survey.

[Latitude 42° 06' 10.26". Longitude 75° 44' 47.29".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Ely	97 31 41.6	277 24 41.3	4.1620909
Maine	124 22 43.3	304 13 21.2	4.3668694
Virgil	143 16 17.9	323 00 23.8	4.7334862
Bobell	195 50 55.6	15 53 33.8	4.2956850

M'DONOUGH, CHENANGO COUNTY.

A secondary station, on a comparatively low hill in McDonough Township, about 10 miles west of Oxford and one-half mile west of McDonough village, on land owned by George Jones. The view is partly cut off by timber and higher hills.

Station mark: A pole 6 inches in diameter set in ground and resting on a bowlder 18 inches under ground, on upper surface of which a triangle was cut.

Reference marks: Stone wall 266 feet east. Stone wall 204 feet west.

[Latitude 42° 29' 55.38". Longitude 75° 47' 13.87".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Berry.....	234 25 26.9	54 29 22.2	3.9898161
Bobell.....	340 40 10.4	160 44 28.0	4.4224870
Beadle.....	358 31 39.9	178 31 48.5	4.0396390

BEADLE, CHENANGO COUNTY.

On a bare hill in Smithville Township, 1½ miles northwest of Smithville Flats, on land belonging to H. C. Beadle.

Station mark: A bluestone post 30 by 7 by 7 inches set 30 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet.

[Latitude 42° 24' 00.40". Longitude 75° 47' 01.60".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
McDonough.....	178 31 48.5	358 31 39.9	4.0396390
Berry.....	204 44 20.5	24 48 07.4	4.2628410
Bobell.....	328 49 36.8	148 53 45.9	4.2141530

ELY, BROOME COUNTY.

An observation tower on the first hill northwest of the city of Binghamton.

Station mark: Center of observatory.

Reference mark: A granite post 48 by 6 by 6 inches set 42 inches in the ground, 35 feet south of observatory, and marked "N. Y. S. S. 417."

[Latitude 42° 07' 11.47". Longitude 75° 55' 14.10".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Maine.....	156 42 55.5	336 40 34.0	4.0872424
Windsor.....	277 24 41.3	97 31 41.6	4.1620909

BLOODY POND, CORTLAND COUNTY.

A secondary station in the northwest corner of the town of Willet, on the highest point of the hill to the northwest of Bloody Pond.

Station mark: A cut marble post, 30 by 6 by 6 inches, set 30 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet marked "New York 519."

[Latitude 42° 29' 21.22". Longitude 75° 57' 38.14".]

To station--	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Berry	253 02 15.6	73 13 12.8	4.3654326
Bobell	315 59 36.7	136 10 55.1	4.5210775

MAINE, BROOME COUNTY.

A station of the New York State survey on a bare hill in the eastern part of the town of Maine.

Station mark: A granite post, 48 by 6 by 6 inches, marked "N. Y. S. S. 398."

[Latitude 42° 13' 15.35". Longitude 75° 58' 44.81".]

To station--	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Virgil	156 19 15.5	336 12 44.6	4.5183599
Bobell	256 26 28.6	76 38 30.0	4.4029914
Windsor	304 13 21.2	124 22 43.3	4.3668693
Ely	336 40 34.0	156 42 55.5	4.0872424

VIRGIL, CORTLAND COUNTY.

A station of the New York State survey in Virgil township.

Station mark: A granite post, 48 by 6 by 6 inches, set 42 inches in the ground, marked "N. Y. S. S. 402."

[Latitude 42° 29' 34.07". Longitude 76° 08' 24.96".]

To station--	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Solon	219 59 02.5	40 05 17.6	4.2937235
Berry	260 07 19.8	80 25 34.2	4.5740224
Bobell	302 34 53.6	122 53 27.9	4.6527993
Maine	336 12 44.6	156 19 15.5	4.5183599
Warren	3 16 28.7	183 14 55.3	4.7478659

Primary Traverse.

*Geographic positions along Ogdensburg and Lake Champlain Railway from
Ogdensburg to Churubusco.*

Station.	Latitude.			Longitude.		
	°	'	"	°	'	"
Ogdensburg, light-house at (United States lake survey)	44	41	52.3	75	30	14.0
Milepost 114, road crossing 1,000 feet east of	44	42	52.4	75	25	06.0
Milepost 111, road crossing 425 feet west of	44	43	22.6	75	21	51.0
Lisbon station	44	43	38.4	75	19	09.6
Milepost 107, road crossing 205 feet east of	44	43	34.0	75	16	27.4
Milepost 105, road crossing 1,555 feet east of	44	43	41.7	75	14	06.3
Milepost 102, road crossing 250 feet west of	44	43	58.3	75	10	50.6
Madrid station, road crossing 285 feet west of	44	44	10.0	75	08	52.1
Trout Brook, road crossing 1,225 feet west of	44	44	07.4	75	06	18.5
Milepost 96, road crossing 1,540 feet east of	44	44	24.7	75	03	12.2
Norwood station, 4,200 feet west of: copper bolt set in south end of east abutment of bridge over Raquette River, 10½ feet south of center of track	44	44	54.9	75	00	22.2
Norwood station, 2,400 feet west of; copper bolt in ledge of rock in bank, 11.8 feet north of center of track and 74.5 feet from milepost 93	44	44	59.5	74	59	58.0
Norwood station, about one-fourth mile east of, Rome, Watertown and Ogdensburg Railway crossing.	44	45	08.2	74	59	08.6
Knapp station	44	46	01.2	74	56	10.2
Milepost 87, road crossing 860 feet west of	44	46	49.0	74	53	16.5
Milepost 85, road crossing 2,080 feet east of	44	47	16.4	74	50	12.8
Winthrop and Brasher station, 585 feet east of, west end of bridge over St. Regis River	44	47	39.1	74	47	09.0
Milepost 81, road crossing 2,750 feet east of	44	47	45.8	74	45	12.9
Milepost 79, road crossing 1,120 feet east of	44	47	58.2	74	43	09.8
Milepost 77, road crossing 960 feet east of	44	48	12.7	74	40	46.4
Milepost 75, road crossing 1,965 feet west of	44	48	25.4	74	39	01.7
Milepost 74, road crossing 2,070 feet east of	44	48	50.0	74	36	57.0
Moir station, road crossing 185 feet west of	44	49	31.8	74	33	24.3
Moir station, about 1,130 feet east of, in rocky pas- ture about 95 feet south of the center of railway track; a bronze triangulation tablet set in rock outcrop about 1 foot above surface of ground, 70.5 feet from corner of pasture	44	49	34.4	74	33	06.2
Moir station, about 2,100 feet east of, in rocky pasture about 79 feet south of center of railway track, a bronze triangulation tablet set in bowlder about 5 by 2 feet 6 inches above ground. (Tablets 972.65 feet apart)	44	49	37.1	74	32	53.2
Brushton station, road crossing, 245 feet east of	44	49	49.5	74	30	31.2

Geographic positions along Ogdensburg and Lake Champlain Railway from Ogdensburg to Churubusco—Continued.

Station.	Latitude.	Longitude.
	° ' "	° ' "
Milepost 65, road crossing 110 feet west of	44 50 26.3	74 26 58.6
Bangor station, road crossing 100 feet west of	44 51 05.9	74 24 09.9
Milepost 60, road crossing 620 feet west of	44 51 31.4	74 21 34.8
Milepost 58, overhead road crossing 1,580 feet east of ..	44 51 39.9	74 18 44.6
Malone station, center of	44 50 58.5	74 17 33.8
Malone Junction, crossing of Ogdensburg and Lake Champlain Railway, and Mohawk and Malone Railway	44 51 30.4	74 16 30.0
Malone, Franklin County fair grounds, south meridian monument	44 50 50.4	74 16 38.3
Malone, Franklin County fair grounds, north meridian monument	44 51 00.2	74 16 38.3
Milepost 53, road crossing 2,230 feet west of	44 52 38.6	74 14 42.9
Milepost 51, road crossing 1,160 feet east of	44 53 55.8	74 12 09.0
Burke station, opposite center of	44 54 10.4	74 10 09.8
Milepost 46, road crossing 1,390 feet east of	44 55 12.4	74 06 21.1
Milepost 44, road crossing 1,920 feet west of	44 55 25.8	74 04 44.8
Milepost 43, road crossing 1,150 feet east of	44 55 44.1	74 02 51.9
Milepost 40, road crossing 890 feet west of	44 56 21.0	73 59 48.7
Milepost 39, road crossing 2,695 feet east of	44 56 57.5	73 57 57.5
Churubusco triangulation station, cross on tower of St. Philominus Catholic Church	44 57 15.63	73 55 55.03

Geographic positions along the Adirondack and St. Lawrence Railway (New York Central) from Malone to the International Boundary Line.

Station.	Latitude.	Longitude.
	° ' "	° ' "
Milepost 63, center of bridge over stream 990 feet north of	44 53 24.4	74 17 08.5
Constable station, road crossing 155 feet north of	44 56 00.3	74 17 04.1
Milepost 58, road crossing 2,070 feet north of	44 57 18.5	74 15 21.8
Milepost 56, road crossing 1,060 feet south of	44 58 30.0	74 14 59.3
Iron boundary post No. 728	44 59 43.4	74 15 02.2

Geographic positions along Mohawk and Malone Railway (New York Central) from Malone south to Owls Head Station.

Station.	Latitude.	Longitude.
	° ' "	° ' "
Milepost 2, road crossing 580 feet south of	44 49 24.4	74 15 29.6
Whippleville flag station	44 48 22.6	74 14 39.9
Milepost No. 6	44 46 27.0	74 13 24.6
Chasm Falls flag station, road crossing 675 feet south of	44 45 37.3	74 12 09.6
Owls Head station, road crossing about three-fourths mile north of	44 44 33.2	74 10 32.9
Owls Head triangulation station	44 44 36.81	74 09 35.30

Geographic positions along Rome, Watertown and Ogdensburg Railway from Norwood to Massena Springs.

Station.	Latitude.	Longitude.
	° ' "	° ' "
Milepost 288, road crossing 860 feet south of	44 46 15.8	74 57 33.4
Milepost 290, road crossing 1,640 feet south of	44 47 48.2	74 56 58.0
Plum Brook flag station, road crossing at	44 49 50.8	74 55 19.7
Milepost 294, road crossing 1,540 feet north of	44 51 24.2	74 55 07.5
Milepost 296, road crossing 2,140 feet north of	44 53 06.2	74 54 12.3
Massena Springs station, road crossing 350 feet south of	44 54 53.1	74 53 15.9

Geographic positions along Grand Trunk Railway from Massena Springs to Bombay.

Station.	Latitude.	Longitude.
	° ' "	° ' "
Milepost 94, center of bridge, 330 feet east of	44 55 22.9	74 50 44.1
Milepost 92, road crossing 2,480 feet east of	44 55 34.6	74 47 56.0
Milepost 90, road crossing 1,090 feet east of	44 55 38.7	74 45 48.9
Helena station, New York and Ottawa Railway crossing	44 55 27.1	74 43 01.5
Milepost 85, road crossing 2,045 feet west of	44 55 35.9	74 40 31.5
Milepost 83, road crossing 1,670 feet west of	44 55 44.1	74 38 00.5
Milepost 82, road crossing 245 feet west of	44 55 50.8	74 36 27.9
Bombay station, north west corner of	44 56 19.2	74 34 19.0
Bombay, church steeple	44 56 22.7	74 33 56.2

Geographic positions along New York and Ottawa Railway from Helena to Moira.

Station.	Latitude.	Longitude.
	° ' "	° ' "
Ironton flag station, road crossing 380 feet north of . . .	44 53 55.9	74 41 06.8
Milepost 62, road crossing 4,125 feet north of	44 53 14.3	74 39 43.2
Milepost 57, road crossing 370 feet north of	44 51 12.9	74 36 14.5
Milepost 56, road crossing one-half mile south of	44 50 15.0	74 34 56.3

Meridian Marks.

BINGHAMTON, BROOME COUNTY.

Location of station: In court-house grounds, Binghamton.

Station mark: A granite post 48 by 8 by 8 inches, set 48 inches in the ground, in the center of top of which is cemented a bronze meridian tablet.

Distant mark: North of station 295.5 feet. A granite post 48 by 8 by 8 inches, set 48 inches in the ground, in center of top of which is cemented a bronze triangulation tablet.

COOPERSTOWN, OTSEGO COUNTY.

Location of station: In the grounds of the Otsego County court-house, on west side of main building.

Station mark: A marble post 38 by 8 by 6½ inches, set 34 inches in the ground, in the center of top of which is cemented a bronze meridian tablet.

Distant mark: North of station 336 feet. A marble post 38 by 8 by 6½ inches, set 34 inches in the ground. In the center of top is cemented a bronze meridian tablet.

Local referee: E. A. Potter.

DELHI, DELAWARE COUNTY.

Location of station: On grounds of the Delaware County Agricultural Society at Delhi.

Station mark: A marble post 36 by 8 by 8 inches, set 32 inches in the ground, in center of top of which is cemented a bronze meridian tablet.

Distant mark: North of station 491.3 feet. A marble post 26 by 11 by 5 inches, set 23 inches in the ground, and resting on a marble block 8 inches thick. In center of top is cemented a bronze meridian tablet.

GOSHEN, ORANGE COUNTY.

Location of station: In the grounds of the Presbyterian Church of Goshen.

Station mark: A blue sandstone post 36 by 8 by 8 inches, set flush with surface of ground, with a bronze meridian tablet in center of top.

Distant mark: A blue sandstone post 36 by 8 by 8 inches, 357.2 feet north of station mark, set flush with surface of ground. In center of top is a bronze meridian tablet.

HAMILTON, MADISON COUNTY.

Location of station: On Hamilton College campus.

Station mark: A marble post 34 by 6 by 6 inches, set in a concrete column 48 by 24 by 24 inches. In center of top of post is cemented a bronze meridian tablet.

Distant mark: North of station 665.7 feet. True azimuth, $180^{\circ} 00' 09''$. A marble post 34 by 6 by 6 inches, set in a concrete column 48 by 24 by 24 inches. In center of top of post is cemented a bronze meridian tablet.

MALONE, FRANKLIN COUNTY.

Location of station: On the grounds of the Franklin County Agricultural Association.

Station mark: A marble post 36 by 6 by 6 inches, set 30 inches in the ground, in the center of top of which is cemented a bronze meridian tablet. Post is 2 feet north of fence on inside of race track.

Distant mark: North of station mark 990 feet. A marble post 36 by 6 by 6 inches, set 33 inches in the ground, in the center of top of which is cemented a bronze meridian tablet. Post is $2\frac{1}{2}$ feet south of inside edge of race track and 1 foot south of railing along inside edge of race track.

NORWICH, CHENANGO COUNTY.

Location of station: In City Park, eastward from court-house.

Station mark: A stone post 48 by 12 by 12 inches, with top dressed round, 8 inches in diameter, and set 48 inches in the ground. In the center of top is cemented a copper bolt 4 inches long and 1 inch in diameter.

Distant mark: North of station 185 feet. A stone post 48 by 12 by 12 inches, top dressed round to 8 inches in diameter, set 48 inches in the ground, in the center of top of which is leaded a bronze meridian tablet.

UTICA, ONEIDA COUNTY.

Location of station: On the Oneida-Herkimer county line, which is also the city of Utica boundary line (Turner street), at intersection of West Shore track and Bleeker street.

Station mark: A stone post 48 by 10 by 10 inches, dressed with round top, and set 46 inches in the ground. In the center of top is cemented a bronze meridian tablet on which is stamped "N. $34^{\circ} 07' 52''$ E." true.

Distant mark: North $34^{\circ} 07' 52''$, east (true) of station one-third mile. A county line monument 48 by 12 by 12 inches, set 36 inches in the ground. On south side of Broad street east of Turner street.

DELAWARE-MARYLAND.

Primary Traverse.

Seventy-seven geographic positions were determined in the Delaware-Maryland peninsula by primary traverse by George T. Hawkins, topographer, in April and May, 1900. The traverse starts at Hartly triangulation station of the United States Coast and Geodetic Survey and follows the Philadelphia, Wilmington and Baltimore Railroad to Easton, thence along the Baltimore, Chesapeake and Atlantic Railroad to Berlin, thence northward along the former road to Lewes, Del., connecting with the light-house at Cape Henlopen, a triangulation station of the United States Coast and Geodetic Survey.

A line also runs along the New York, Philadelphia and Norfolk Railroad from Salisbury to Crisfield, connecting with the light-house at the latter place located by the United States Coast and Geodetic Survey. A spur line runs along the Philadelphia, Wilmington and Baltimore Railroad southward from Berlin to Franklin City, Virginia.

Geographic positions along the Philadelphia, Wilmington and Baltimore Railroad.

Stations.	Latitude.	Longitude.
DELAWARE.		
Hartly triangulation station, United States Coast and Geodetic Survey.....	39 10 48.86	75 40 17.8
Hartly railroad station	39 09 59.9	75 42 37.8
Slaughter station	39 09 30.5	75 42 57.7
Maryland-Delaware State line crossing	39 06 50.9	75 44 44.5
MARYLAND.		
Marydel station	39 06 45.3	75 44 47.3
Henderson station	39 04 31.2	75 45 56.1
Goldsboro station	39 02 07.4	75 47 09.8
Road crossing at milepost 22	39 00 08.3	75 48 10.8
Greensboro station	38 58 39.0	75 49 01.9
Ridgely station	38 56 50.1	75 53 10.7
Queen Anne station	38 55 13.6	75 57 21.7
Cordova	38 52 32.0	75 59 45.3
Chapel station	38 50 25.9	76 01 31.0
Road crossing at station	38 48 37.8	76 03 01.6
Easton, Philadelphia, Wilmington and Baltimore Railroad station	38 46 33.4	76 04 07.4
Easton, crossing of railroads southeast of	38 45 59.8	76 04 08.2

Geographic positions along the Baltimore, Chesapeake and Atlantic Railroad.

Stations.	Latitude.	Longitude.
MARYLAND,		
	° ' "	° ' "
Turner station	38 44 44.5	76 00 38.5
Bethlehem station	38 44 40.5	75 56 47.4
Preston station	38 42 36.8	75 54 42.0
Ellwood	38 41 11.9	75 53 16.2
Hurlock	38 38 09.1	75 51 42.2
Hurlock, crossing of railways at	38 38 08.3	75 51 42.0
Ennals station, crossing at	38 36 02.6	75 50 49.7
Rhodesdale station	38 34 38.1	75 50 14.1
Reedsgrove station	38 32 01.1	75 49 39.4
Vienna station	38 29 06.8	75 49 22.5
Mardela Springs station	38 27 45.7	75 45 27.6
Crossing 1,500 feet west of station	38 26 33.6	75 43 40.0
Hebron station	38 25 08.9	75 41 22.7
Rockawalking station	38 24 04.8	75 39 38.8
Road crossing 500 feet east of station	38 22 57.1	75 37 50.9
Salisbury, Baltimore, Chesapeake and Atlantic station	38 22 21.4	75 35 47.6
Road crossing at station	38 22 41.8	75 33 17.2
Parsonsbury station	38 23 16.7	75 28 04.4
Pittsville station	38 23 43.4	75 24 48.2
Road crossing at station	38 23 43.1	75 22 05.4
Willards station	38 23 43.0	75 20 59.2
Whaleysville station	38 23 42.2	75 18 08.4
St. Martin station	38 22 23.1	75 14 55.4
Berlin, crossing of railways at	38 19 42.2	75 13 18.4

Geographic positions along the Philadelphia, Wilmington and Baltimore Railway.

Stations.	Latitude.	Longitude.
MARYLAND.		
	° ' "	° ' "
Road crossing at station north of Berlin	38 22 21.5	75 12 46.1
Showell station	38 23 58.2	75 12 57.4
Bishop station	38 25 40.6	75 13 18.5
Maryland-Delaware State line near Selbyville	38 27 04.7	75 13 39.4
DELAWARE.		
Selbyville station	38 27 27.8	75 13 41.9
Frankford station	38 31 03.3	75 14 11.3
Dagsboro station	38 32 50.3	75 14 57.8
Millsboro station	38 35 17.9	75 17 33.3
Stockley station	38 38 28.7	75 20 26.7
Georgetown, south end of Y	38 41 20.2	75 22 42.3
Road crossing at west end of siding	38 42 07.3	75 20 37.8
Broadkill station	38 43 15.0	75 17 05.5
Cool Spring station (Harbeson post-office)	38 43 56.6	75 14 54.9
Nassau station	38 45 06.7	75 11 14.3
Lewes station	38 46 02.8	75 08 29.4
Cape Henlopen light-house, United States Coast and Geodetic Survey triangulation station	38 46 41.7	75 05 02.9

Geographic positions along the Philadelphia, Wilmington and Baltimore Railroad between Berlin, Md., and Franklin City, Va.

Stations.	Latitude.	Longitude.
MARYLAND.		
	° ' "	° ' "
Ironshire station	38 17 38.8	75 15 06.4
Crossing 470 feet north of head block	38 16 13.3	75 16 27.3
Newark station	38 15 06.6	75 17 33.1
Wesley station	38 12 35.3	75 20 43.9
Snow Hill station	38 10 38.7	75 23 06.9
Scarboro station	38 08 00.3	75 23 43.3
Girdletree station	38 05 42.7	75 24 09.9
Hursley station	38 03 18.1	75 24 40.9
Maryland-Virginia State line	38 00 51.6	75 23 20.7
VIRGINIA.		
Franklin City station	38 00 24.1	75 22 58.4

Geographic positions along the New York, Philadelphia and Norfolk Railroad between Salisbury and Crisfield, Md.

Stations.	Latitude.	Longitude.
MARYLAND.		
	° ' "	° ' "
Maryland-Delaware State line at Delmar.....	38 27 22.5	75 34 42.7
Salisbury, crossing at north end of siding 3 miles north of.....	38 24 26.6	75 35 02.7
Fruitland station.....	38 19 18.2	75 37 10.3
Eden station.....	38 16 53.9	75 39 00.5
Loretto station.....	38 14 52.1	75 40 33.4
Princess Anne station.....	38 12 01.9	75 41 26.7
Kings Creek, junction of railways.....	38 09 53.8	75 41 20.6
Kings Creek station (Peninsula Junction post-office)...	38 09 50.8	75 41 20.6
Westover station.....	38 07 31.5	75 42 20.5
Kingston station.....	38 04 27.9	75 43 40.9
Marion station.....	38 02 20.6	75 46 19.0
Hopewell station.....	38 00 28.8	75 49 07.0
Crossing 170 feet east of switch block.....	37 59 21.2	75 50 48.6
Crisfield light-house, United States Coast and Geo- detic Survey triangulation station.....	37 57 59.5	75 52 39.75

PENNSYLVANIA.

Primary Traverse.

Primary traverse for the control of the Westchester 15-minute quadrangle in March, 1901.

The following geographic positions were determined by Mr. Sledge Tatum, topographer, by primary traverse which begins at Granogue, Del., a triangulation station of the United States Coast and Geodetic Survey, and runs north to Chadds Ford, Pa., on the Wilmington and Northern Railroad; thence north via highways to Cheyney station, on Westchester Railroad; thence north on same railroad to Greenhill station; thence west via highways to Whiteland station, on Pennsylvania Railroad; thence west on Pennsylvania Railroad to Thorndale; thence south via highways, touching Embreeville and Unionville to Kennett Square, Pa., on Philadelphia, Wilmington and Baltimore Railroad; thence east to Chadds Ford.

Geographic positions along Wilmington and Northern Railroad.

Station.	Latitude.	Longitude.
	° ' "	° ' "
Granogue triangulation station	39 49 47.5	75 34 50.8
Delaware-Pennsylvania State line	39 50 18.4	75 35 07.4
Cossart station	39 50 48.1	75 35 46.0
Brookfield station	39 51 11.8	75 35 48.4
Chadds Ford Junction	39 52 08.0	75 35 46.4

Geographic positions along Westchester Railroad.

Station.	Latitude.	Longitude.
	° ' "	° ' "
Cheyney station	39 55 44.2	75 31 23.6
Westtown station	39 55 55.6	75 32 58.6
Westchester, northwest end car shed	39 57 41.3	75 36 03.0
Fern Hill station	39 58 44.4	75 35 29.4
Green Hill station	39 59 42.3	75 36 04.8

Geographic positions along Pennsylvania Railroad.

Station.	Latitude.	Longitude.
	° ' "	° ' "
Whiteland, road crossing at	40 01 09.3	75 37 22.9
Bradford Hill station	40 00 22.1	75 39 46.2
Woodbine station, road crossing at	40 00 18.4	75 41 10.7
Downingtown, road crossing 600 feet west of	40 00 10.5	75 42 08.0
Gallaghersville station	39 59 50.3	75 44 08.4
Thorndale, road crossing at	39 59 38.5	75 45 21.0

Geographic positions along highways from Thorndale to Kennett Square.

Station.	Latitude.	Longitude.
	° ' "	° ' "
Embreeville station	39 55 48.9	75 44 05.4
Unionville, crossing of streets	39 53 43.2	75 44 05.7

Geographic positions along Philadelphia, Wilmington and Baltimore Railroad.

Station.	Latitude.			Longitude.		
	°	'	"	°	'	"
Kennett Square station	39	50	32.2	75	42	34.4
Rosedale station	39	50	51.4	75	39	46.8
Fairville	39	51	11.2	75	38	32.4
Chadds Ford Junction	39	52	08.0	75	35	46.4
Brandywine Summit station	39	52	26.2	75	32	41.5
Concordville, crossing 600 feet west of	39	52	38.5	75	30	50.4
Markham station	39	53	26.8	75	30	22.2

Triangulation Stations.

The descriptions and positions published herewith, resulting from the field work of 1899 and 1900, executed under the supervision of Mr. S. S. Gannett, topographer, in Franklin, Fulton, Bedford, Blair, Huntingdon, and Cambria counties, were established by Mr. Sledge Tatum, topographer, in 1899, and by Mr. A. H. Thompson, geographer, in 1900.

Stations in the southwestern portion of the State in Fayette, Greene, Washington, Westmoreland, Allegheny, Beaver, Indiana, Armstrong, and Clarion counties, result from the work of Messrs. A. H. Thompson, geographer; S. S. Gannett, Sledge Tatum, topographers; D. H. Baldwin and W. R. Harper, assistant topographers, and E. L. McNair, field assistant. All positions are based upon Maryland Heights and Sugarloaf stations of the United States Coast and Geodetic Survey, and on "United States Standard Datum." Distances were checked by a base line, measured by Mr. S. S. Gannett, on the main line of the Pennsylvania railroad passing through Hillside, Westmoreland County, and check azimuths were observed at three primary stations, namely, Krepp, Dawson, and Hillside North Base.

Triangulation for control of the Carlisle and Gettysburg sheets was extended westward from Round Top and Pulpit Rock of the United States Coast and Geodetic Survey by Mr. S. S. Gannett in August and September, 1900.

ROUND TOP, YORK COUNTY.

A station of the United States Coast and Geodetic Survey in Warrington Township, 8 miles east of Dillsburg. The summit is timbered and can be reached by trail from the house of Harrison Nesbit, 1 mile distant.

Theodolite elevated 30 feet.

Station mark: A sandstone post 18 by 6 by 6 inches, set 15 inches in the ground and resting on a flat rock having cross lines cut on its upper surface.

[Latitude 40° 06' 13.24". Longitude 76° 55' 34.14".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Pulpit Rock.....	3 56 07.80	183 55 16.94	4.4378302
Fickle Hill.....	73 21 43.73	253 13 17.53	4.2889163

PULPIT ROCK.

On county line between York and Adams counties.

A station of the United States Coast and Geodetic Survey, 5 miles by road north of Hanover and about 3 miles east of Abbotstown. The station is on a rocky backbone of the heavily timbered summit of the Pigeon Hills.

Theodolite elevated 35 feet.

Station mark: A stone post 20 by 6 by 6 inches, set 18 inches in the ground and resting on a flat rock.

[Latitude 39° 51' 26.77". Longitude 76° 56' 53.27".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Gettysburg, Round Top.....	72 30 33.80	252 19 22.35	4.4175998
Fickle Hill.....	142 24 17.92	322 16 43.84	4.4388914
Round Top.....	183 55 16.94	3 56 07.80	4.4378302

FICKLE HILL, ADAMS COUNTY.

On a partly cleared flat ridge near the northern extremity of the county, 2 miles north of Latimer post-office. The station is 30 feet northeast of outcropping ledge on highest part of ridge on land owned by W. A. Bream.

Theodolite elevated 30 feet.

Station mark: A stone post 36 by 10 by 10 inches, set 30 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 03' 11.94". Longitude 77° 08' 40.37".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Gettysburg, Round Top.....	15 19 22.10	195 15 43.03	4.4876976
Round Top.....	253 13 17.53	73 21 43.73	4.2889163
Pulpit Rock.....	322 16 43.84	142 24 17.92	4.4388914

GETTYSBURG, ROUND TOP, ADAMS COUNTY.²

The noted round knob, 3 miles south of Gettysburg.

Theodolite mounted on upper floor of the iron observation tower, about 70 feet above ground.

Station mark: Center of stone foundation of tower.

[Latitude 39° 47' 10.54". Longitude 77° 14' 21.74'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Fickle Hill	195 15 43.03	15 19 22.10	4.4876976
Pulpit Rock	252 19 22.35	73 30 33.80	4.4175998

ALTO, FRANKLIN COUNTY.

(Not occupied.)

About 9½ miles southeast of Chambersburg and 1 mile east of Mont Alto, on mountain locally known by that name.

Signal: A wooden observation tower in Mont Alto Park.

[Latitude 39° 50' 04.06". Longitude 77° 32' 08.72'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Fairview	62 06 34.6	241 49 55.8	4.6246864
Parnell	108 11 53.4	287 59 23.8	4.4687745
Chambersburg	136 56 56.7	316 52 07.6	4.1954468

CHAMBERSBURG, FRANKLIN COUNTY.

The balcony of the clock tower on the county court-house at Chambersburg was occupied and the angles reduced to center of tower.

Station mark: Center of clock tower.

[Latitude 39° 56' 15.41". Longitude 77° 39' 39.62'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Parnell	82 25 31.4	262 17 45.3	4.2405209
Quirauk	334 33 43.9	154 39 25.8	4.4715130
Alto	316 52 07.6	136 56 56.7	4.1954468

PARNELL, FRANKLIN COUNTY.

On mountain locally known by same name, about 9 miles west of Chambersburg and 3 miles east of Fort London.

Theodolite elevated 24 feet on stump of a tree; sight lines cut through timber to other stations.

Station mark: A bronze tablet marked "U. S. Geological Survey—Pennsylvania," cemented in solid rock.

[Latitude 39° 55' 00.42". Longitude 77° 51' 45.82".]

To station--	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Fairview	17 36 22.3	197 32 15.8	4.4822860
Cove	4 49 11.6	224 41 37.6	4.3790001
Pike	88 0 15.8	268 03 34.2	3.9142524
Chambersburg	262 1 45.3	82 25 31.4	4.2405209
Alto	287 59 25.8	108 11 53.4	4.4687745
Quirauk	309 04 53.8	129 18 20.6	4.5874493
Martin	340 38 14.6	160 42 52.2	4.4941249

PIKE, ON LINE BETWEEN FRANKLIN AND FULTON COUNTIES.

About 5 miles air-line distance northwest of Mercersburg and 3 miles east of McConnellsburg, on Cove Mountain, 1,000 feet south of Chambersburg and Bedford pike.

Theodolite elevated 16 feet on stump of tree; sight lines cut through timber to other stations.

Station mark: A copper bolt cemented in solid rock.

[Latitude 39° 54' 51.55". Longitude 77° 57' 31.23".]

To station--	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Cove	27 21 16.2	207 17 23.4	4.2746459
Ray	68 27 08.0	248 13 43.0	4.5068009
Smith	123 53 29.4	303 46 16.2	4.2849006
Parnell	268 03 34.2	88 07 15.8	3.9142524

COVE, ON LINE BETWEEN FRANKLIN AND FULTON COUNTIES.

On mountain known by that name, about 4 miles north of Pennsylvania-Maryland State line, and 2 miles east of Hancock and McConnellsburg road, on highest point of mountain.

Theodolite elevated 14 feet on stump of tree, with sight lines cut through timber to other stations.

Station mark: A bronze tablet marked "U. S. Geological Survey, Pennsylvania" cemented in solid rock.

[Latitude 39° 45' 49.37". Longitude 78° 03' 34.56'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Ray	102 58 51.6	282 49 20.4	4.3382797
Smith	164 57 17.7	344 53 58.2	4.4537546
Pike	207 17 23.4	27 21 16.2	4.2746459
Parnell	224 41 37.6	44 49 11.6	4.3790001
Fairview	327 08 38.8	147 12 05.6	4.1528312

SMITH, FULTON COUNTY.

On land owned by George Smith, of Sideling Hill, about 2 miles west of Saluvia and one-half mile south of Chambersburg and Bedford pike. Sight lines were cut through timber to other stations.

Station mark: A stone post, 48 by 10 by 10 inches, set flush with surface of ground, in the center of top which is cemented a bronze tablet marked "U. S. Geological Survey, Pennsylvania."

[Latitude 40° 00' 39.42". Longitude 78° 08' 45.70'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Ray	31 30 03.8	211 23 50.7	4.4228184
Everett	80 33 28.2	260 22 54.7	4.3749415
Government	109 19 39.0	289 13 32.6	4.1555140
Tussey	142 16 53.0	322 09 26.6	4.4280288
Pike	303 46 16.2	123 53 29.4	4.2849006
Cove	344 53 58.2	164 57 17.7	4.4537546

HICKS, BLAIR, AND HUNTINGDON COUNTIES.

Situated on the crest of Tussey Mountain, about one-half mile north of point at which the Williamsburg and Marklesburg pike crosses the mountain.

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

[Latitude 40° 25' 19.33". Longitude 78° 10' 05.10'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Beavertown	29 39 23.5	209 37 46.2	3.8550653
Point View	143 14 11.6	323 11 37.3	3.9709241

TERRACE (2), HUNTINGDON COUNTY.

(Not occupied.)

Situated on a high ridge known locally as Terrace Mountain, about 1 mile south of the Entriken bridge over the Juniata River and one-fourth mile south of the Entriken and Trough Creek road.

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

[Latitude 40° 17' 49.66". Longitude 78° 10' 14.31".]

To station--	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Lytle	86 55 39.6	266 52 10.0	3.8846175
Beavertown	156 29 07.8	336 27 36.6	3.9210568

BEAVERTOWN, ON LINE BETWEEN BLAIR AND HUNTINGDON COUNTIES.

On the crest of Tussey Mountain, about three-fourths mile south of point where the Beavertown and Marklesburg pike crosses the summit. Outlook good in all directions where trees are cut, except along the axis of the mountain.

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

[Latitude 40° 21' 57.51". Longitude 78° 12' 35.31".]

To station--	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Lytle	28 13 34.4	208 11 35.9	3.9612280
Rattlesnake	61 01 14.4	240 52 11.6	4.3552251
Duncan	83 05 00.4	262 59 21.0	4.0955332
Point View	171 27 30.0	351 26 33.3	4.1420604
Hicks	209 37 46.2	29 39 23.5	3.8550653
Terrace (2)	336 27 36.6	156 29 07.8	3.9210568

POINT VIEW, BLAIR COUNTY.

Situated about 3 miles west of Williamsburg and one-half mile north of Point View railroad station, on the southern end of a high rocky ridge on the north bank of the Frankstown Branch of the Juniata River. Outlook good to southeast, southwest, and northwest.

Station mark: A bronze triangulation tablet cemented in solid rock, above which was piled a cairn of rocks 5 feet high.

[Latitude 40° 29' 22.17". Longitude 78° 14' 02.78".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Lytle	5 55 28.3	185 54 26.3	4.3402766
Hicks	323 11 37.3	143 14 11.6	3.9709241
Beavertown	351 26 33.3	171 27 30.0	4.1420604

LYTLE, BLAIR, AND HUNTINGDON COUNTIES.

Situated on a high, rocky, timbered ridge on Tussey Mountain, about one-half mile south of point at which the Martinsburg and Cove Creek pike crosses the mountain. Outlook good where trees have been cut away except directly along the axis of mountain.

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

[Latitude 40° 17' 36.21". Longitude 78° 15' 38.44".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Rattlesnake	79 17 50.6	259 10 46.7	4.1977839
Duncan	129 09 18.8	309 05 38.2	4.0161348
Point View	185 54 26.3	5 55 28.3	4.3402766
Beavertown	208 11 35.9	28 13 34.4	3.9612280
Terrace (2)	266 52 10.0	86 55 39.6	3.8846175

GOVERNMENT, BEDFORD COUNTY.

On public land, on timbered mountain about 7 miles northeast of Everett and 3 miles east of Tatesville, and one-half mile north of "Horseshoe" bend in Juniata River.

Station mark: Lone hickory signal tree.

[Latitude 40° 03' 12.55". Longitude 78° 18' 15.24".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Ray	0 35 52.3	180 35 44.6	4.4363099
Everett	48 48 27.0	228 43 59.5	4.1180018
Dunning	125 25 37.3	305 21 47.6	4.0157449
Tussey	169 55 55.6	349 54 36.0	4.2230180
Smith	289 13 32.6	109 19 39.0	4.1555140

RAY, ON LINE BETWEEN FULTON AND BEDFORD COUNTIES.

On Ray Mountain, about 5 miles north of Pennsylvania-Maryland State line, and 2 miles west of Amaranth, Pa., on high knob in cleared field.

Station mark: A stone post, 42 by 8 by 8 inches, set flush with surface of ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey-Pennsylvania."

[Latitude 39° 48' 27.13". Longitude 78° 18' 27.22".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Everett	152 48 22.5	332 44 03.3	4. 3219063
Government	180 35 44.6	0 35 52.3	4. 4363099
Smith	211 23 50.7	31 30 03.8	4. 4228184
Pike	248 13 43.0	68 27 08.0	4. 5068009
Cove	282 49 20.4	102 58 51.6	4. 3332797

TUSSEY, BEDFORD COUNTY.

On mountain locally known by that name about 4 miles northeast of Loysburg, on high point of ridge, in scrubby timber, with lines of sight cut out to other stations.

Station mark: A bronze tablet marked "U. S. Geological Survey-Pennsylvania" cemented in solid rock.

[Latitude 40° 12' 06.01". Longitude 78° 20' 18.76".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters..</i>
Dunning	27 52 15.0	207 49 44.6	4. 0724843
Rattlesnake	129 14 31.7	309 10 29.2	4. 0539373
Hartman	170 12 18.8	350 10 39.2	4. 3294423
Duncan	175 06 22.4	355 05 43.2	4. 2251748
Smith	322 09 26.6	142 16 53.0	4. 4280288
Government	349 54 36.0	169 55 55.6	4. 2230180

BRUSH MOUNTAIN, BLAIR COUNTY.

Situated about 5 miles nearly north from Hollidaysburg on the highest part of the southern end of Brush Mountain. Sight lines cut through timber toward other stations.

Station mark: A bronze triangulation tablet cemented in a large rock and buried in the ground, above which is a pile of rocks 5 feet high.

[Latitude 40° 29' 11.34". Longitude 78° 21' 08.93".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Rattlesnake	17 29 43.6	197 26 12.9	4.4076197
Hartman	13 02 33.5	193 01 26.1	4.0360067
Foot of Plane Eight	62 43 14.7	242 37 01.0	4.1841092
Tunnel Hill	88 07 39.0	268 00 09.1	4.2130517
Wopsononock	140 20 48.0	320 17 22.4	4.0670251

DUNCAN, BLAIR COUNTY.

Situated 3 miles northeast of Martinsburg on the highest summit of Locke or Loop Mountain. The summit is flat and long lines of sight were cut toward other stations.

Station mark: A rough stone 3 feet long set flush with surface of ground with a bronze triangulation tablet cemented in its top.

[Latitude 40° 21' 08.53". Longitude 78° 21' 19.47".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Dunning	8 32 57.6	188 31 06.2	4.4391035
Rattlesnake	38 04 55.3	218 01 31.7	4.0811989
Hartman	152 56 07.1	332 54 27.5	3.6845025
Lytle	309 05 38.2	129 09 18.8	4.0161348
Tussey	355 05 43.2	175 06 22.4	4.2251748
Beavertown	262 59 21.0	83 05 00.4	4.0955332

HARTMAN, BLAIR COUNTY.

Situated on that part of Locke or Loop Mountain locally known as Hartmans Lookout. It is just north of Dry Gap and about 3 miles east of Hollidaysburg. Outlook good in all directions except north-east.

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

[Latitude 40° 23' 28.18". Longitude 78° 22' 52.88".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Rattlesnake	20 45 13.1	200 42 49.8	4.1689721
Foot of Plane Eight	107 49 10.7	287 44 04.6	4.0678265
Wopsononock	165 39 47.0	345 37 29.0	4.3052551
Altoona	176 59 36.4	356 59 14.0	4.1888990
Brush Mountain	193 01 26.1	13 02 33.5	4.0360067
Duncan	332 54 27.5	152 56 07.1	3.6845025
Tussey	350 10 39.2	170 12 18.8	4.3294423

ALTOONA, BLAIR COUNTY.

An astronomic station of the United States Coast and Geodetic Survey situated on a low hill about one-eighth mile east of Juniata Station on the Pittsburg, Johnstown, Ebensburg and Eastern Railway, on land owned by the Pennsylvania Railroad Company, within the city limits of Altoona.

Station mark: A block of sandstone 5 feet long, 34 inches wide, and 20 inches thick, standing 30 inches above ground and resting on a concrete bed 16 inches thick. In the top is a copper bolt $3\frac{1}{2}$ inches long and 1 inch in diameter.

[Latitude $40^{\circ} 31' 47.24''$. Longitude $78^{\circ} 23' 23.88''$.]

DUNNING, BEDFORD COUNTY.

On mountain locally known by that name, about 10 miles north of Mount Dallas and 4 miles south of New Enterprise, on timbered land owned by William Over.

Station mark: A bronze tablet, marked "U. S. Geological Survey—Pennsylvania," cemented in solid rock.

[Latitude $40^{\circ} 00' 27.28''$. Longitude $78^{\circ} 24' 11.99''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Rattlesnake	169 14 46.9	349 13 15.1	4.2553913
Duncan	188 31 06.2	8 32 57.6	4.4391035
Tussey	207 49 44.6	27 52 15.0	4.0724843
Government	305 21 47.6	125 25 37.3	4.0157449
Everett	5 29 26.9	185 28 48.7	4.1679624

EVERETT, BEDFORD COUNTY.

On high summit of Tussey Mountain, about 3 miles south of Everett.

Station mark: A bronze tablet, marked "U. S. Geological Survey—Pennsylvania," cemented in solid rock.

[Latitude $39^{\circ} 58' 32.14''$. Longitude $78^{\circ} 25' 11.35''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Dunning	185 28 48.7	5 29 26.9	4.1679624
Government	228 43 59.5	48 48 27.0	4.1180018
Smith	260 22 54.7	80 33 28.2	4.3749415
Ray	332 44 03.3	152 48 22.5	4.3219063

WOPSONONOCK, BLAIR COUNTY.

Situated about 5 miles west of north of Altoona on the end of a salient of the Allegheny Mountains, reached by a railroad from Juniata.

Station mark: Center of a building known as the Pavilion or Look-out. No permanent mark.

[Latitude 40° 34' 02.48". Longitude 78° 26' 25.47".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Rattlesnake	0 21 11.3	180 21 05.7	4.5233043
Foot of Plane Eight	20 56 00.5	200 53 12.0	4.2335884
Tunnel Hill	42 56 53.4	222 52 53.8	4.1144504
Ebensburg	69 03 56.0	248 52 50.5	4.4120416
Carrolltown	99 51 29.9	279 41 00.9	4.3631044
Brush Mountain	320 17 22.4	140 20 48.0	4.0670251
Hartman	345 37 29.0	165 39 47.0	4.8052551

RATTLESNAKE, ON LINE BETWEEN BEDFORD AND BLAIR COUNTIES.

On high rocky point on Dunning Mountain, about one-half mile east of Claysburg and 2 miles south of Ore Hill; one-half mile south of road from Ore Hill to Claysburg.

Station mark: A bronze tablet, marked "U. S. Geological Survey—Pennsylvania," cemented in solid-rock.

[Latitude 40° 16' 00.75". Longitude 78° 26' 34.17".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Foot of Plane Eight	161 12 12.7	341 09 30.3	4.2636520
Wopsononock	180 21 05.7	360 21 11.3	4.5233043
Brush Mountain	197 26 12.9	17 29 43.6	4.4076197
Hartman	200 42 49.8	20 45 13.1	4.1689721
Duncan	218 01 31.7	38 04 55.3	4.0811989
Beavertown	240 52 11.6	61 01 14.4	4.3552251
Lytle	259 10 46.7	79 17 50.6	4.1977839
Tussey	309 10 29.2	129 14 31.7	4.0589373
Dunning	349 13 15.1	169 14 46.9	4.2553913

FOOT OF PLANE EIGHT, BLAIR COUNTY.

Situated about 8 miles south of west from Hollidaysburg, on the north end of a wooded mountain locally known as "Foot of 8." Outlook to west not good.

Station mark: A bronze triangulation tablet set in foot of signal tree.

[Latitude $40^{\circ} 25' 23.90''$. Longitude $78^{\circ} 30' 44.98''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Tunnel Hill	156 54 52.0	336 53 36.1	3.8467742
Wopsononock	200 53 12.0	20 56 00.5	4.2335884
Brush Mountain	242 37 01.0	62 43 14.7	4.1841092
Hartman	287 44 04.6	107 49 10.7	4.0678265
Rattlesnake	341 09 30.3	161 12 12.7	4.2636520

TUNNEL HILL, CAMBRIA COUNTY.

Situated on the highest point of Tunnel Hill, in Tunnel Hill Borough, $\frac{1}{2}$ mile from Gallitzen railroad station.

Station mark: A stone post 40 by 6 by 6 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet.

[Latitude $40^{\circ} 28' 53.46''$. Longitude $78^{\circ} 32' 41.96''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Ebensburg	91 03 21.1	270 56 20.7	4.1834198
Thomas Ridge	111 12 17.8	291 03 58.1	4.2881836
Carrolltown	134 07 14.1	314 00 50.3	4.2863416
Wopsononock	222 52 53.8	42 56 58.4	4.1144504
Brush Mountain	268 00 09.1	88 07 39.0	4.2130517
Foot of Plane Eight	336 53 36.1	156 54 52.0	3.8467742

CARROLLTOWN, CAMBRIA COUNTY.

(Not occupied.)

Spire of Catholic Church in Carrolltown.

Station mark: Center of spire.

[Latitude $40^{\circ} 36' 09.43''$. Longitude $78^{\circ} 42' 32.31''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Ebensburg	5 50 15.6	185 49 38.4	4.1222362
Wopsononock	279 41 00.9	99 51 29.9	4.3631044
Tunnel Hill	314 00 50.3	134 07 14.1	4.2863416

EBENSBURG, CAMBRIA COUNTY.

Center of cupola of court-house in Ebensburg.

Station mark: Center of cupola.

[Latitude 40° 29' 02.07". Longitude 78° 43' 29.55".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Thomas Ridge	156 58 16.9	336 56 57.9	3.8644861
Carrolltown	185 49 38.4	5 50 15.6	4.1222362
Wopsononock	248 52 50.5	69 03 56.0	4.4120416
Tunnel Hill	270 56 20.7	91 03 21.1	4.1834198

M'COY, INDIANA COUNTY.

About 1 mile southeast of Taylorville post-office, on a bare round-top hill owned by James McCoy.

Station mark: A stone post 42 by 6 by 6 inches, set 38 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 41' 59.77". Longitude 78° 58' 08.22".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Strong	32 54 04.0	212 50 44.6	4.1223126
Coleman	68 46 47.2	248 38 22.5	4.2905687
Kunkle	92 39 25.9	272 30 14.2	4.2983645
Rowland	129 59 46.3	309 51 01.2	4.3907798
Palmer	176 52 15.4	356 51 59.4	4.0225275
Nolo	357 23 52.1	177 24 09.6	4.1440697

PALMER, INDIANA COUNTY.

About 2½ miles south of Rochester Mills post-office, in Grant Township, on a very high partly cleared ridge, on land owned by Mr. Palmer.

Station mark: A stone post 36 by 6 by 6 inches, set 33 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

Reference marks: Stones set 1 foot below surface of ground with cross on top, in line with stations Rowland and McCoy; distant 10 feet from station.

[Latitude 40° 47' 40.71". Longitude 78° 58' 32.74".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Kunkle	63 32 19.9	243 23 23.7	4.3331827
Rowland	106 08 44.8	286 00 15.2	4.2790843
McCoy	356 51 59.4	176 52 15.4	4.0225275

NOLO, INDIANA COUNTY.

About one-fourth mile north of Nolo post-office, on land owned by Mr. McCaffery, on high ground, but not the highest point.

Station mark: A stone post 42 by 6 by 6 inches, set 38 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

Reference marks: Stones set 1 foot below surface of ground with cross on top, and set on line with Evans and McCoy; distant 10 feet from station.

[Latitude 40° 34' 28.50". Longitude 78° 57' 41.33".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Evans	87 28 07.9	267 23 18.4	4.0203741
Warner	99 44 21.0	279 34 16.2	4.3458154
Strong	109 37 38.4	289 34 01.7	3.9198276
McCoy	177 24 09.6	357 23 52.1	4.1440697

STRONG, INDIANA COUNTY.

In Cherry Hill Township, about 2 miles southwest of Greenville village, on the highest hill in the immediate vicinity, on land owned by H. B. Strong. There is a lone tree on the southwest part of hill.

Station mark: A stone post 36 by 6 by 6 inches, set 32 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 35' 58.92". Longitude 79° 03' 14.39".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Warner	93 50 53.6	273 44 25.4	4.1478120
Coleman	110 12 12.0	290 07 07.2	4.0691774
Kunkle	133 32 00.8	313 26 09.2	4.2424222
McCoy	212 50 44.6	32 54 04.0	4.1223126
Nolo	289 34 01.7	109 37 38.4	3.9198276

EVANS, INDIANA COUNTY.

In Brush Valley Township, on land owned by John Evans, on highest part of hill cleared of timber with the exception of two small chestnut trees.

Station mark: A stone post 36 by 8 by 8 inches, set 33 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 34' 13.27". Longitude 79° 05' 06.43".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Widow	26 48 12.1	206 45 05.2	4.1773173
Watt	101 41 54.2	281 34 19.5	4.2248181
Warner	110 13 57.3	290 08 42.1	4.0841382
Indiana Normal School Cupola	129 57 46.9	309 54 54.2	3.9106425
Coleman	131 06 21.9	311 02 30.0	4.0457724
Nolo	267 23 18.4	87 28 07.9	4.0203741

INDIANA NORMAL SCHOOL, INDIANA COUNTY.

(Not occupied.)

Station mark: Cupola of Normal School Building.

[Latitude 40° 37' 02.69". Longitude 79° 09' 31.86".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Warner	78 37 54.9	258 35 32.4	3.7203033
Evans	309 54 54.2	129 57 46.9	3.9106425

WIDOW, INDIANA COUNTY.

In Black Lick Township, about 6 miles east of Blairsville, on the Blairsville and Ebensburg pike. It is on a bare hill about 20 rods south of the road, on land owned by the heirs of J. W. Thompson.

Station mark: A stone post 48 by 6 by 6 inches, set 44 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 26' 57.89". Longitude 79° 09' 54.27".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Jellison	69 46 07.1	249 39 35.6	4.1810596
Kelly	93 39 09.9	273 35 33.0	3.8972129
Tabernacle	113 29 15.9	293 21 31.4	4.2639820
Watt	150 07 07.1	330 02 40.0	4.2877768
Warner	165 18 07.7	345 15 60.0	4.2604466
Evans	206 45 05.2	26 48 12.1	4.1773173

COLEMAN, INDIANA COUNTY.

In White Township, about 2 miles west of Indiana, on land owned by D. Coleman.

Station mark: A stone post 42 by 6 by 6 inches, set 38 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

Reference marks: Stone sunk 2 feet below the surface of ground in direction of Kunkle station; distant 10.2 feet to cross on stone. Stone sunk 18 inches below surface of ground in direction of Warner station; distant 12.3 feet to cross on stone.

[Latitude 40° 38' 09.95". Longitude 79° 11' 02.71".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Warner	44 04 52.9	224 03 29.4	3.6365727
Watt	64 05 54.9	244 02 11.8	3.9520747
Broadview	122 32 38.9	302 28 27.8	4.0307069
Kunkle	168 08 51.4	348 08 04.9	3.9115917
McCoy	248 38 22.5	68 46 47.2	4.2905687
Strong	290 07 07.2	110 12 12.0	4.0691774
Evans	311 02 30.0	131 06 21.9	4.0457724

ROWLAND, INDIANA COUNTY.

On a high hill on land owned by W. S. Rowland. About 4 miles north of Plumville, in North Mahoning Township, and near the line between North and South Mahoning Townships.

Station mark: A stone post 40 by 6 by 6 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 30° 50' 31.39". Longitude 79° 11' 32.36".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Kunkle	3 45 50.3	183 45 23.0	4.1737351
Graham	67 20 45.1	247 12 03.4	4.3072670
Clever	117 12 06.0	297 06 56.5	4.0951985
Palmer	286 00 15.2	106 08 44.8	4.2790843
McCoy	309 51 01.2	129 59 46.3	4.3907798

KUNKLE, INDIANA COUNTY.

On land owned by Philip Kunkle; about 3 miles north of Creekside post-office, near western end of a high ridge having scattering trees on the eastern end.

Station mark: A stone post 42 by 6 by 6 inches, set 36 inches in the ground on solid rock, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 42' 28.78". Longitude 79° 12' 14.09".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Warner	6 51 34.4	186 50 57.4	4.0482704
Broadview	73 17 40.3	253 14 15.6	3.8862700
Graham	111 43 17.4	291 35 03.6	4.2810749
Rowland	183 45 23.0	3 45 50.3	4.1737351
Palmer	243 23 23.7	63 32 19.9	4.3331827
McCoy	272 30 14.2	92 39 25.9	4.2983645
Strong	313 26 09.2	133 32 00.8	4.2424222
Coleman	348 08 04.9	168 08 51.4	3.9115917

M'NAUGHTON, CLARION COUNTY.

On a bare, round knob, about 2½ miles southeast of Fisher post-office, in Mill Creek Township, on land belonging to David McNaughton.

Station mark: A sandstone post 36 by 9 by 9 inches, set 32 inches in the ground, 6 feet north of an east and west fence line, and in the center of top of post is cemented a bronze tablet, marked "U. S. Geological Survey—Pennsylvania."

Reference marks: A chestnut tree 8 inches diameter, S. 84° W., 59½ feet distant. A chestnut tree 8 inches diameter, S. 13° 30' E., 28½ feet distant. A chestnut tree 8 inches diameter, S. 35° 30' W., 51 feet distant (magnetic bearings).

[Latitude 41° 14' 47.47". Longitude 79° 13' 01.19'']

To station—	Azimuth.	Back azimuth.	Log. distance
	° ' "	° ' "	<i>Meters.</i>
Clever	12 54 49.4	192 50 37.0	4.6047255
Myers	49 18 40.4	229 08 24.6	4.4594577
Groce	76 19 09.7	256 10 22.7	4.2827486
Beels	91 26 38.6	271 09 39.4	4.5563276
Weaver	118 24 03.6	298 15 38.3	4.3062598

WARNER, INDIANA COUNTY.

About 3 miles southwest of Indiana, in White Township, on the highest part of a bare, round-top hill, on land owned by Mr. Warner.

Station mark: A stone post 40 by 6 by 6 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 36' 29.07". Longitude 79° 13' 10.50'']

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Tabernacle	49 50 22.8	229 44 45.4	4.2036595
Watt	80 57 13.6	260 54 54.0	3.7080738
Broadview	145 47 32.6	325 44 45.1	4.0310144
Kunkle	186 50 57.4	6 51 34.4	4.0482704
Coleman	224 03 29.4	44 04 52.9	3.6365727
Indiana Normal School cupola	258 35 32.4	78 37 54.9	3.7203038
Strong	273 44 25.4	93 50 53.6	4.1478120
Nolo	279 34 16.2	99 44 21.0	4.3458154
Evans	290 08 42.1	110 13 57.3	4.0841382
Widow	345 15 60.0	165 18 07.7	4.2604466

HILLSIDE, NORTH BASE, WESTMORELAND COUNTY.

On prolongation of Hillside tangent of Pennsylvania Railroad, in field owned by John Bridges, about one-third mile south of Gray railroad station.

Theodolite elevated 15 feet.

Station mark: A sandstone post 40 by 8 by 8 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

Reference marks: Iron bench-mark post set at right angles to tangent, on fence line, 7.56 feet distant from center of station mark. Iron bench-mark post eastward from station and at right angles to tangent, 31.2 feet distant from center of station mark.

[Latitude 40° 23' 27.97". Longitude 79° 14' 32.56'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
South Base	36 34 11.5	216 33 08.0	3.5894711
Jellison	99 01 21.3	278 57 50.4	3.8904408
Kelly (observed azimuth)	169 17 18.1	349 16 41.8	3.8511056

KELLY, INDIANA COUNTY.

About 1½ miles north of Blairsville, in a cultivated field owned by James Kelly, 6 feet north of fence running east and west. A few small scattering trees near summit of hill.

Station mark: A stone post 40 by 8 by 8 inches, set 37 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 27' 14.06". Longitude 79° 15' 28.54'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Jellison	47 49 30.9	227 46 36.1	3.9331709
Marshall	92 25 17.0	272 19 08.7	4.1357354
Tabernacle	127 10 55.2	307 06 47.7	4.0516686
Widow	273 35 33.0	93 39 09.9	3.8972129
Hillside, North base	349 16 41.8	169 17 18.1	3.8511056

HILLSIDE, SOUTH BASE, WESTMORELAND COUNTY.

On a level railroad dump in field owned by George Piper, three-fourths mile southward from Hillside railroad station, 16 feet westward from fence.

Theodolite elevated 25 feet.

Station mark: A sandstone post 40 by 8 by 8 inches, set 37 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

Reference marks: Iron bench-mark post set at right angles to tangent near fence, 14.97 feet from center of station mark. Iron bench-mark post eastward from railroad track, just inside of fence on bank, 109.17 feet from center of station mark.

[Latitude 40° 21' 46.78". Longitude 79° 16' 10.68'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Jellison	128 58 47.4	308 56 20.1	3.8385728
Hillside, North base	216 33 08.0	36 34 11.5	3.5894711

WATT, INDIANA COUNTY.

About 1 mile southwest of Tannery post-office and $1\frac{1}{4}$ miles northeast of Parkwood post-office, on the highest point of the western one of two hills about the same height and 1 mile apart. The land is owned by Thomas Watt.

Station mark: A stone post 42 by 8 by 8 inches, set 39 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude $40^{\circ} 36' 02.99''$. Longitude $79^{\circ} 16' 45.32''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Jellison	11 37 51.5	191 35 46.3	4.3528660
Tabernacle	36 59 57.4	216 56 39.4	4.0758263
Hood	74 32 44.3	254 28 24.0	3.9896421
Broadview	174 05 29.2	354 05 01.4	3.9883854
Coleman	244 02 11.8	64 05 54.9	3.9520747
Warner	260 54 54.0	80 57 13.6	3.7080738
Evans	281 34 19.5	101 41 54.2	4.2248181
Widow	330 02 40.0	150 07 07.1	4.2877768

BROADVIEW, INDIANA COUNTY.

About $3\frac{1}{2}$ miles north of Shelocta and a few rods east of the Armstrong-Indiana County line, on a high, bare hill, with some timber on the southwest slope. The land is owned by John Russell.

Station mark: A stone post 42 by 8 by 8 inches, set 38 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude $40^{\circ} 41' 16.95''$. Longitude $79^{\circ} 17' 28.00''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Tabernacle	17 47 44.1	197 44 53.7	4.3044854
Graham	131 45 43.1	311 40 54.2	4.1436489
Clever	173 07 19.6	353 06 02.8	4.3608128
Kunkle	253 14 15.6	73 17 40.3	3.8862700
Coleman	302 28 27.8	122 32 38.9	4.0307069
Warner	325 44 45.1	145 47 32.6	4.0310144
Watt	354 05 01.4	174 05 29.2	3.9883854

CLEVER, ARMSTRONG COUNTY.

On a high, cultivated ridge, with scattering dead trees, in Wayne Township, about 1 mile west of Belknap and 1 mile east of Snydersville (Muff post-office). The land belongs to G. H. Clever, of Belknap.

Station mark: A sandstone post 39 by 8 by 8 inches, set 27 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

Reference marks: Live chestnut tree, magnetic bearing S., 84° E., $45\frac{1}{2}$ feet distant. Dead chestnut tree, N. 4° E., 121 feet distant. Fence on line between properties of G. H. Clever and Jeremiah Bowser bears due south, 3 feet distant.

[Latitude $40^{\circ} 53' 35.63''$. Longitude $79^{\circ} 19' 25.41''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Graham	29 26 30.0	209 22 57.3	4.1909592
Leister	65 59 54.4	245 48 30.3	4.4288814
Templeton	93 16 57.6	273 06 31.1	4.3508735
Reynolds	120 59 58.2	300 50 42.0	4.3643865
McCall	130 01 44.6	309 51 31.4	4.4550873
Myers	147 47 30.2	327 41 28.6	4.3829142
McNaughton	192 50 37.0	12 54 49.4	4.6047255
Rowland	297 06 56.5	117 12 06.0	4.0951985
Broadview	353 06 02.8	173 07 19.6	4.3608128

JELLISON, WESTMORELAND COUNTY.

On a bare sharp hill near Salem Church, 5 miles southwest of Blairsville. Land is owned by Mr. Jellison, who lives on the north side of hill.

Station mark: A sandstone post 36 by 8 by 8 inches, set 30 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude $40^{\circ} 24' 07.35''$. Longitude $79^{\circ} 19' 57.99''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Harmon	48 24 46.9	228 20 39.6	4.0811381
Marshall	130 53 22.4	310 50 01.2	3.9852846
Tabernacle	168 10 21.9	348 09 09.5	4.1083487
Watt	191 35 46.3	11 37 51.5	4.3528660
Kelly	227 46 36.1	47 49 30.9	3.9331709
Widow	249 39 35.6	69 46 07.1	4.1810596
Hillside, North base	278 57 50.4	99 01 21.3	3.8904408
Hillside, South base	308 56 20.1	128 58 47.4	3.8385728

TABERNACLE, INDIANA COUNTY.

About one-half mile east of Clarksburg post-office and about 6 miles by road north of Saltsburg, on the highest part of a bare cultivated round-top hill owned by the heirs of S. W. Coleman.

Station mark: A stone post 40 by 6 by 6 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 30' 54.57". Longitude 79° 21' 49.71".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Marshall	36 51 54.3	216 49 45.4	3.8917275
Hood	161 56 25.3	341 55 23.0	3.8611613
Broadview	197 44 53.7	17 47 44.1	4.3044854
Watt	216 56 39.4	36 59 57.4	4.0758263
Warner	229 44 45.4	49 50 22.8	4.2036595
Widow	293 21 31.4	113 29 15.9	4.2639820
Kelly	307 06 47.7	127 10 55.2	4.0516686
Jellison	348 09 09.5	168 10 21.9	4.1083487

LUCINDA CATHOLIC CHURCH, CLARION COUNTY.

(Not occupied.)

Station mark: Spire of church near Lucinda station, on Pittsburg and Western Railway.

[Latitude 41° 18' 41.71". Longitude 79° 21' 58.24".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Myers	19 40 05.2	199 35 42.8	4.4416060
Beels	74 49 35.5	254 38 29.9	4.3862458
McNaughton	299 59 02.7	120 04 57.4	4.1594736

CLARION COURT-HOUSE, CLARION COUNTY.

(Not occupied.)

Station mark: Center of tower.

[Latitude 41° 12' 55.22". Longitude 79° 23' 11.60".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Myers	26 19 26.3	206 15 52.3	4.2335056
Beels	101 12 14.0	281 01 57.4	4.3464047

HOOD, INDIANA COUNTY.

In Conemaugh Township, about 1 mile north of Elders Ridge post-office, on the highest point of a bare round-top hill owned by Calvin Hood.

Station mark: A stone post 28 by 8 by 8 inches, set 24 inches in the ground, resting on solid rock; in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 34' 38.44". Longitude 79° 23' 25.45".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Marshall	10 26 05.9	190 24 59.2	4.1258931
Steel	47 52 51.9	227 47 34.0	4.1913671
Hilty	64 10 05.2	244 04 31.3	4.1281149
Watt	254 28 24.0	74 32 44.2	3.9896421
Tabernacle.....	341 55 23.0	161 56 25.3	3.8611613

GRAHAM, ARMSTRONG COUNTY.

About 1 mile east of Blanket Hill post-office, on a bare ridge of cultivated land owned by the Graham heirs and rented by W. A. Blose.

Station mark: A sandstone post 36 by 8 by 8 inches, set 32 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

Reference marks: Chestnut tree 24 inches diameter, magnetic bearing S. 23° W., distant 415 feet. Dead chestnut tree 18 inches diameter, S. 86° W., distant 257 feet.

[Latitude 40° 46' 17.28". Longitude 79° 24' 50.74".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Shrader	73 49 24.6	253 39 11.0	4.3613318
Leister	98 40 56.3	278 33 05.5	4.2328320
Miller	120 00 41.6	299 55 18.5	4.1263694
Templeton	135 00 42.7	314 53 49.7	4.3203059
Reynolds	154 18 20.5	334 12 37.9	4.4504542
Clever	209 22 57.3	29 26 30.0	4.1909592
Rowland	247 12 03.4	67 20 45.1	4.3072670
Kunkle	291 35 03.6	111 43 17.4	4.2810749
Broadview	311 40 54.2	131 45 43.1	4.1436489

MARSHALL, WESTMORELAND COUNTY.

In Loyalhanna Township, about $3\frac{1}{2}$ miles southwest of Saltsburg, on the highest part of a bare flat hill which is the southwestern one of three near together. The land is owned by Mrs. William Marshall.

Station mark: A stone post 42 by 8 by 8 inches, set 38 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude $40^{\circ} 27' 32.39''$. Longitude $79^{\circ} 25' 08.15''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Harmon	6 44 30.8	186 43 44.3	4. 1592792
Steel.....	106 37 25.0	286 33 14.0	3. 9778350
Hilty	126 59 37.0	306 55 10.2	4. 0830968
Hood	190 24 59.2	10 26 05.9	4. 1258931
Tabernacle.....	216 49 53.2	36 52 02.1	3. 8917275
Kelly	272 19 08.7	92 25 17.0	4. 1357354
Jellison	310 50 01.2	130 53 22.4	3. 9852846

WEAVER, CLARION COUNTY.

About 1 mile south of Fryburg, in Washington Township, on a bare knob of cultivated land owned by J. G. Weaver, of Marble post-office.

Station mark: A sandstone post, 36 by 12 by 12 inches, set 32 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

Reference marks: Chestnut tree 12 inches diameter, magnetic bearing S. 63° W., 274 feet distant. Chestnut tree 22 inches diameter, N. 56° E., 238 feet distant. Oak tree 18 inches diameter, S. 55° E., 226 feet distant.

[Latitude $41^{\circ} 19' 53.86''$. Longitude $79^{\circ} 25' 46.92''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
McCall	22 57 16.7	202 51 12.0	4. 5204177
Myers.....	7 56 41.2	187 54 49.3	4. 4577631
Beels	64 14 20.7	244 05 45.9	4. 3046552
McNaughton.....	298 15 38.3	118 24 03.6	4. 3062598

HARMON, WESTMORELAND COUNTY.

In Unity Township about 3 miles north of west of Latrobe, on a high ridge known locally as Dry Ridge. The ridge is flat on top and the station is near center of cleared field.

Station mark: A stone post 42 by 8 by 8 inches, set 38 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 19' 47.78". Longitude 79° 26' 19.91".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Stroble	46 04 32.3	226 02 15.5	3.8409840
Marshall	186 43 44.3	6 44 30.8	4.1592792
Jellison	228 20 39.6	48 24 46.9	4.0811381
Kepple	110 05 16.9	289 59 32.2	4.1262722

GROCE, CLARION COUNTY.

About 2 $\frac{3}{4}$ miles air-line distance west of Clarion court-house, in Paint Township, on a low, uncultivated knob having a fringe of trees and bushes along a north and south fence running over the hill. The land belongs to John Groce, of Clarion.

Station mark: A sandstone post 42 by 8 by 8 inches, set 34 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

Reference marks: Wild cherry tree on fence line, magnetic bearing S. 75° E., 75 feet distant. Wild apple tree N. 55° W., 97 feet distant.

[Latitude 41° 12' 19.69." Longitude 79° 26' 20.87."]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Myers	12 33 09.4	192 31 40.0	4.1643794
Beels	107 15 39.5	287 07 27.7	4.2598866
McNaughton	256 10 22.7	76 19 09.7	4.2327486

MYERS, CLARION COUNTY.

About 3 miles southeast of Sligo, in Toby Township, and near the main road between Clarion and East Brady, and about halfway between the two places, on a bare knob of cultivated land belonging to V. R. Myers, of Sligo.

Station mark: A sandstone post 36 by 8 by 8 inches, set 30 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

Reference marks: Chestnut tree, magnetic bearing S. 65° E., 303 feet distant. Chestnut tree S. 55° W., 115 feet distant. Chestnut tree N. 84° W., 203 feet distant.

[Latitude 41° 04' 37.67". Longitude 79° 28' 36.80".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Reynolds	39 10 40.8	219 07 25.6	4.0414047
McCall	76 45 26.6	256 41 14.5	3.9639954
Beels	144 07 19.6	324 00 37.9	4.3845964
Weaver	187 54 49.3	7 56 41.2	4.4577631
Groce	192 31 40.0	12 33 09.4	4.1643794
Lucinda Catholic church	199 35 42.8	19 40 05.2	4.4416060
Clarion court-house	206 15 52.3	26 19 26.3	4.2335056
McNaughton	229 08 24.6	49 18 40.4	4.4594577
Clever	327 41 28.6	147 47 30.2	4.3829142

MELLON, FAYETTE COUNTY.

About 2 miles north of Markleysburg and 600 feet north of Mellon's store, on hill covered with timber. Theodolite raised 18 feet on stump of tree and lines of sight cut out to other stations.

Station mark: A stone post 36 by 12 by 12 inches, set flush with surface of ground, in the center of top of which is cemented a copper bolt.

[Latitude 39° 44' 43.18". Longitude 79° 29' 23.30".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Piney Swamp	5 29 47.3	185 28 53.8	4.3198719
Kelley	25 02 17.6	204 59 31.0	4.1674360
Wymp	82 07 39.3	261 57 14.8	4.3709214
Pondfield	102 56 31.1	282 48 22.5	4.2706993
Accident	308 24 44.6	128 32 14.0	4.3308574

STROBLE, WESTMORELAND COUNTY.

About 4 miles southeast of Greensburg, on a cleared ridge having timber on its western end; there is a higher summit 1 mile to eastward. The land is owned by John Stroble.

Station mark: A stone post 40 by 8 by 8 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 17' 11.77". Longitude 79° 29' 51.34".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Aitman	95 57 53.1	275 53 01.1	4.0302815
Kepple	141 08 28.0	321 05 00.3	4.0817032
Harmon	226 02 15.5	46 04 32.3	3.8409840

STEEL, WESTMORELAND COUNTY.

About 4 miles west of Saltsburg, on the southern part of summit of high, bare hill in Bell Township, on land owned by John Steel.

Station mark: A stone post 40 by 8 by 8 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 29' 00.34". Longitude 79° 31' 34.73".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Kepple	22 23 34.0	202 21 12.9	4.1295269
Rose	52 15 25.4	232 08 55.2	4.2538871
Clearview	70 04 30.7	249 59 21.5	4.0770516
Bush Hill	125 41 21.6	305 39 26.9	3.7093968
Hilty	172 52 01.3	352 51 45.5	3.6629986
Hood	227 47 34.0	47 52 51.9	4.1913671
Marshall	286 33 14.0	106 37 25.0	3.9778350

HILTY, WESTMORELAND COUNTY.

In Bell Township, about 1½ miles north of Perrysville post-office, on the eastern part of a bare knob, and about 3 feet lower than the highest part of the hill, on land owned by S. McCauley.

Station mark: A stone post 40 by 8 by 8 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet marked "U. S. Geological Survey—Pennsylvania."

Reference marks: Witness stones are set in the ground 63 feet north and 6.18 feet south of mark. A small wild apple tree is 79.3 feet northeast of mark.

[Latitude 40° 31' 28.40". Longitude 79° 31' 59.01".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Bush Hill	66 14 30.4	246 12 51.4	3.5933120
Hood	244 04 31.3	64 10 05.2	4.1281149
Marshall	306 55 10.2	126 59 37.0	4.0830968
Steel	352 51 45.5	172 52 01.3	3.6629986

MILLER, ARMSTRONG COUNTY.

In East Franklin Township, about 2 miles northwest of Kittanning, on a flat, cultivated hill owned by James Miller. It is 100 yards west of his brick house.

Station mark: A stone post 36 by 8 by 8 inches, set 34 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 49' 53.90". Longitude 79° 33' 05.12'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Leister.....	52 11 10.0	232 08 42.0	3.8272558
Templeton.....	158 21 39.5	338 20 09.8	3.9397410
Graham.....	299 55 18.5	120 00 41.6	4.1263694

REYNOLDS, CLARION COUNTY.

On a round bare knob about 4½ miles northeast of East Brady, on road to Rimersburg. The land belongs to the heirs of Alex. Reynolds, of Kittanning, and is occupied by George Leonard.

Station mark: A sandstone post 36 by 10 by 10 inches, set 33 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

Reference marks: Chestnut tree with broken top, magnetic bearing S. 58° W., 98 feet distant. Wild cherry tree, 4 inches diameter, N. 73° W., 51 feet distant.

[Latitude 42° 00' 01.14". Longitude 79° 33' 34.13'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Templeton.....	13 22 43.0	193 21 32.2	4.0389218
McCall.....	162 33 17.7	342 32 21.0	3.8277738
Myers.....	219 07 25.6	39 10 40.8	4.0414047
Clever.....	300 50 42.0	120 59 58.2	4.3643865
Graham.....	334 12 37.9	154 18 20.5	4.4504542

OVERTON, WESTMORELAND COUNTY.

About 15 feet northeast of a summit of hill 2 miles northeast of Scottdale and one-fourth mile west of the Painter coke ovens, on land owned by the McClure Coke Company.

Station mark: A stone post 36 by 8 by 8 inches, set 30 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 06' 07.38". Longitude 79° 33' 48.87".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Moore.....	57 24 28.2	237 22 19.4	3.7500275
Alverton.....	149 48 14.2	329 47 05.4	3.7013389

BUSH HILL, WESTMORELAND COUNTY.

In Washington Township, about 4 miles south of Apollo, on a bare hill owned by the heirs of Isaac Bush.

Signal: A lone apple tree on highest point of hill.

Station mark: A stone post 40 by 8 by 8 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 30' 37.17". Longitude 79° 34' 31.41".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Clearview.....	45 00 25.5	224 57 11.0	3.9994467
Hilty.....	246 12 51.4	66 14 30.4	3.5933120
Steel.....	305 39 26.9	125 41 21.6	3.7093968

M'CALL, CLARION COUNTY.

On a bare flat knob about 1½ miles north of Bela post-office, 8 feet north of an east and west fence. The land belongs to William T. McCall.

Station mark: A sandstone post 36 by 8 by 8 inches, set 32 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

Reference marks: Chestnut tree 18 inches diameter, magnetic bearing N. 85° W., 185 feet distant. Chestnut tree 18 inches diameter S. 81° E.

[Latitude 41° 03' 29.14". Longitude 79° 35' 00.49".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Beels.....	166 21 52.1	346 19 23.0	4.3497924
Weaver.....	202 51 12.0	22 57 16.7	4.5204177
Myers.....	256 41 14.5	76 45 26.6	3.9639954
Clever.....	309 51 31.4	130 01 44.6	4.4550873
Reynolds.....	342 32 21.0	163 33 17.7	3.8277738

KEPPLE, WESTMORELAND COUNTY.

On a ridge timbered on its northern end, 4 miles north of Jeannette and 8 miles northwest of Greensburg. The land is owned by Michael Kepple, who lives at foot of ridge on southeast side.

Station mark: A stone post 30 by 8 by 8 inches, set 26 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 22' 16.36". Longitude 79° 35' 12.32".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Altman	20 24 19.7	200 22 55.2	3. 9465750
Rose	99 13 02.3	279 08 53.6	3. 9625866
Clearview	143 58 12.5	323 55 24.7	4. 0157222
Steel	202 21 12.9	22 23 34.0	4. 1295269
Stroble	321 05 00.3	141 08 28.0	4. 0817032
Harmon	289 59 32.2	110 05 16.9	4. 1262722

TEMPLETON, ARMSTRONG COUNTY.

About 1½ miles north of Middlesex (Cowansville post-office), in Sugar Creek Township, on a bare ridge with timber on the northwest side. The land is owned by Widow Templeton.

Station mark: A sandstone post 42 by 8 by 8 inches, set 30 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

Reference mark: A wild cherry tree, 7 inches in diameter, magnetic bearing N. 8° W., 164 feet distant.

[Latitude 40° 54' 16.17". Longitude 79° 35' 22.26".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Leister	9 43 23.3	189 42 25.0	4. 0930300
Shrader	18 52 03.4	198 48 43.8	4. 3503890
Reynolds	193 21 32.2	13 22 43.0	4. 0389218
Clever	273 06 31.1	93 16 57.6	4. 3508735
Graham	314 53 49.7	135 00 42.7	4. 3203059
Miller	338 20 09.8	158 21 39.5	3. 9397410

ALVERTON, WESTMORELAND COUNTY.

On the summit of the hill on which is located the Alverton cemetery, about 30 feet west of the westerly fence line of cemetery.

Station mark: A stone post 36 by 8 by 8 inches, set 30 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 08' 28.25". Longitude 79° 35' 35.68'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Moore	16 39 38.6	196 38 38.6	3.8863993
Regantown	81 52 06.7	261 49 08.7	3.8197812
Overton	329 47 05.4	149 48 14.2	3.7013389

LEISTER, ARMSTRONG COUNTY.

Six miles southwest of Kittanning, in North Buffalo Township, on a round knob, cleared on southeast side and timbered on northwest side. The land belongs to Sarah Jane Grey, of McHaddon.

Station mark: A sandstone post 40 by 8 by 8 inches, set 35 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

Reference mark: Oak tree 18 inches diameter, magnetic bearing N. 30° W., 77½ feet distant.

[Latitude 40° 47' 40.31". Longitude 79° 36' 51.50'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Shrader	29 48 10.1	209 45 46.8	4.0155564
Templeton	189 42 25.0	9 43 23.3	4.0930300
Miller	232 08 42.0	52 11 10.0	3.8272558
Clever	245 48 30.3	65 59 54.4	4.4288814
Graham	278 33 05.5	98 40 56.3	4.2328320

MOORE, FAYETTE COUNTY.

On a hill locally known as Moore's Hill, 2 miles southwest of Scottdale, on the road between Scottdale and Dawson, on land owned by the H. C. Frick Coke Company.

Station mark: A stone post 36 by 8 by 8 inches, set 30 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 04' 29.12". Longitude 79° 37' 08.83'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Secrest	111 37 13.2	291 34 24.3	3.8251290
Regantown	146 04 20.5	326 02 22.6	3.8899346
Alverton	196 38 38.6	16 39 38.6	3.8863993
Overton	237 22 19.4	57 24 28.2	3.7500275

ALTMAN, WESTMORELAND COUNTY.

About 5 miles southwest of Greensburg and 1 mile south of Old Grapeville, on a flat, cleared hill with fringe of timber on the northern side, on land owned by John C. Altman.

Station mark: A stone post 44 by 8 by 8 inches, set 42 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 17' 47.65". Longitude 79° 37' 22.85".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Shepler	45 51 12.3	225 43 46.0	4.3579395
Wiley	77 41 14.4	257 35 46.5	4.0885127
Rose	148 30 09.7	328 27 25.6	4.0584376
Kepple	200 22 55.2	20 24 19.7	3.9465750
Stroble	275 53 01.1	95 57 53.1	4.0302815

DUNBAR, FAYETTE COUNTY.

On a bald summit of Chestnut Ridge, one-fourth mile east of State Orphan School and about 5 miles by wagon road southeast of Uniontown.

Station mark: A stone post 42 by 8 by 8 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 39° 53' 15.11". Longitude 79° 38' 38.67".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Keener	97 12 12.7	277 03 28.5	4.2915497
Work	170 44 31.3	350 43 35.0	4.1119491

BEELS, ON LINE BETWEEN CLARION AND VENANGO COUNTIES.

About 3 miles north of Salem, in Salem Township, on a bare, round knob with timber on the north side. On an east and west line fence, which is also the county line between Clarion and Venango counties. The land south of fence is owned by J. H. Beels, of Lamartine.

Station mark: A stone post 36 by 8 by 8 inches, set 30 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

Reference marks: A chestnut tree along road fence, magnetic bearing S. 34° W., 188 feet distant. A county-line monument and corner N. 87° W., 115 feet distant.

[Latitude $41^{\circ} 15' 14.00''$. Longitude $79^{\circ} 39' 47.07''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Weaver	244 05 45.9	64 14 20.7	4.3046552
Lucinda Catholic Church	254 38 29.9	74 49 35.5	4.3862458
McNaughton	271 09 39.4	91 26 38.6	4.5563276
Clarion court-house	281 01 57.4	101 12 14.0	4.3464047
Groce	287 07 27.7	107 15 39.5	4.2598866
Myers	324 00 37.9	144 07 19.6	4.3845964
McCall	346 19 23.0	166 21 52.1	4.3497924

CLEARVIEW, WESTMORELAND COUNTY.

In Franklin Township, about 4 miles north of Export, on high, bare, round knob owned by Joseph Cline.

Station mark: A stone post 40 by 8 by 8 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet marked "U. S. Geological Survey—Pennsylvania."

Reference marks: A stone 8.1 feet north; stone 7.3 feet south; stone 8.5 feet west; stone 74 feet east.

[Latitude $40^{\circ} 26' 48.14''$. Longitude $79^{\circ} 39' 31.12''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Rose	23 06 19.4	203 04 58.3	3.8762981
Bush Hill	224 57 11.0	45 00 25.5	3.9994467
Steel	249 59 21.5	70 04 30.7	4.0770516
Kepple	323 55 24.7	143 58 12.5	4.0157222

WORK, FAYETTE COUNTY.

On land owned by John Work, about 5 miles west of Connellsville and 9 miles north of Uniontown. A row of locust trees crosses top of hill along a north and south fence.

Station mark: A stone post 36 by 8 by 8 inches, set 30 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

Reference mark: A nail driven at foot of locust tree $25\frac{1}{2}$ feet distant, magnetic bearing of which is N. 30° E.

[Latitude 40° 00' 09.20". Longitude 79° 40' 06.44".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Keener	59 13 04.4	239 05 15.9	4.3047205
Krepp	98 17 22.0	278 08 09.5	4.3136372
Dunbar	350 43 35.0	170 44 31.3	4.1119491

REGANTOWN, WESTMORELAND COUNTY.

On the summit of a hill in a cleared field, 100 feet east of a tree, one-half mile south of the State road and about 2 miles west of Regantown; about one-fourth mile northeast of a blacksmith shop on the road from Coal Hollow to the State road.

Station mark: A stone post 36 by 8 by 8 inches, set 30 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 07' 57.87". Longitude 79° 40' 11.80".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Secrest	25 18 26.5	205 17 35.4	3.6434487
Prospect	49 23 39.4	229 19 04.1	4.1254124
Shepler	100 33 11.2	280 27 34.5	4.0994919
Wiley	152 50 42.4	332 47 04.2	4.2430375
Alverton	261 49 08.7	81 52 06.7	3.8197812
Moore	326 02 22.6	146 04 20.5	3.8899346

SHRADER, ARMSTRONG COUNTY.

(Not occupied.)

On a bare ridge in South Buffalo Township, 3 miles northeast of Freeport, on land owned by A. C. Shrader, of Freeport.

Station mark: A sandstone post 40 by 8 by 8 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 42' 48.68". Longitude 79° 40' 30.96".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Templeton	198 48 43.8	18 52 03.4	4.3503890
Leister	209 45 46.8	29 48 10.1	4.0155564
Graham	253 39 11.0	73 49 24.6	4.3613318

SECRET, WESTMORELAND COUNTY.

In the center of a cultivated field on a high summit of a long wooded ridge, locally known as Fort Hill, on land owned by W. M. Secrest, who lives about one-half mile northeast of station and about $2\frac{1}{2}$ miles east of Layton post-office.

Station mark: A stone post 36 by 8 by 8 inches, set 30 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude $40^{\circ} 05' 48.90''$. Longitude $79^{\circ} 41' 31.20''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Prospect	60 16 23.6	240 12 39.4	3.9778269
Shepler	120 55 03.8	300 50 18.4	4.0870265
Regantown	205 17 35.4	25 18 26.5	3.6434487
Moore	291 34 24.3	111 37 13.2	3.8251290

ROSE, WESTMORELAND COUNTY.

About 4 miles north of Irwin on a cleared ridge owned by the Rose heirs.

Station mark: A stone post 40 by 8 by 8 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude $40^{\circ} 23' 03.83''$. Longitude $79^{\circ} 41' 36.25''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Wiley	25 50 13.1	205 47 29.0	4.1382508
Terrace	76 55 47.1	256 51 00.8	4.0297096
Clearview	203 04 58.3	23 06 19.4	3.8762981
Steel	232 08 55.2	52 15 25.4	4.2538871
Kepple	279 08 53.6	99 13 02.3	3.9625866
Altman	338 27 25.6	148 30 10.0	4.0584376

PONDFIELD, FAYETTE COUNTY.

On a high timbered summit of Chestnut ridge, about 4 miles air-line distance south of Fairchance and one-half mile north of Robert Rankin's house. Theodolite was elevated 25 feet and lines of sight were cut through timber toward other stations.

Station mark: A stone post 36 by 12 by 12 inches, set flush with the surface of the ground, in the center of top of which is cemented a copper bolt; 3 feet south of stump.

[Latitude 39° 46' 57.92". Longitude 79° 42' 07.17".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Wymp	34 25 25.2	214 23 09.0	3.9532404
Mellon	282 48 22.5	102 56 31.1	4.2706993
Kelley	325 31 36.8	145 36 58.1	4.3261837

WILEY, WESTMORELAND COUNTY.

About 5 miles north of West Newton and 6 miles southwest of Irwin, on a high ridge on farm belonging to Emily G. Wiley, of Yohoghany, whose house is about one-fourth mile south of signal.

Station mark: A stone post 36 by 8 by 8 inches, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 16' 22.57". Longitude 79° 45' 49.85".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Shepler	18 11 18.3	198 09 19.3	4.1452190
Pollock	81 58 45.1	261 51 28.0	4.2080156
Calhoun	127 11 22.2	307 05 05.5	4.2365716
Terrace	155 55 00.9	335 52 58.9	4.0373270
Rose	205 47 29.0	25 50 13.1	4.1382508
Altman	257 35 46.5	77 41 14.4	4.0885127
Regantown	332 47 04.2	152 50 42.4	4.2430375

PROSPECT, FAYETTE COUNTY.

About 1½ miles southeast of Redstone and 7 miles northeast of Brownsville, on a flat, bald hill having a large apple tree on summit. The land is owned by the heirs of Thomas Murphy and is occupied by J. C. Murphy, of Redstone.

Station mark: A stone post, 40 by 8 by 8 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 03' 15.98". Longitude 79° 47' 19.34".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Keener	23 38 12.3	203 35 01.7	4.2448865
Krepp	74 26 58.4	254 22 24.1	4.0209121
Shepler	168 27 48.5	348 26 47.5	4.0497613
Regantown	229 19 04.1	49 23 39.4	4.1254124
Secrest	240 12 39.4	60 16 23.6	3.9778260

SHEPLER, WESTMORELAND COUNTY.

About 4 miles southeast of Belle Vernon and 5 miles east of Charleoi, on a high cultivated hill owned by John Shepler.

Station mark: A sandstone post, 32 by 8 by 8 inches, set 30 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 09' 12.22". Longitude 79° 48' 54.10".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Krepp	29 39 60.0	209 36 26.4	4.2009908
Hillsboro	71 44 42.6	251 34 48.6	4.3616006
Pollock	133 26 08.4	313 20 50.8	4.2046201
Wiley	198 09 19.3	18 11 18.3	4.1452190
Altman	225 43 46.0	45 51 12.3	4.3579395
Regantown	280 27 34.5	100 33 11.2	4.0994919
Secrest	300 50 18.4	120 55 03.8	4.0870265
Prospect	348 26 47.5	168 27 48.5	4.0497613

TERRACE, ALLEGHENY COUNTY.

About 2 miles east of McKeesport, on a high hill known as Fairview Terrace and owned by Alex. Faucett, of McKeesport.

Station mark: A sandstone post, 36 by 8 by 8 inches, set 30 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 21' 45.09". Longitude 79° 48' 58.31".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Pollock	43 22 06.7	223 16 51.1	4.2251518
Calhoun	92 52 45.7	272 48 30.7	3.9684989
Rose	256 51 00.8	76 55 47.1	4.0297096
Wiley	335 52 58.9	155 55 00.9	4.0373270

KEENER, FAYETTE COUNTY.

About 8 miles west of Uniontown, 1½ miles north of McClellandtown, and 23.3 feet west of a lone locust tree on a bare knob owned by Ben Keener, who lives 300 yards south of station.

Station mark: A stone post, 40 by 8 by 8 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

Reference mark: A stone post, 36 by 12 by 12 inches, set 34 inches in the ground, in the center of top of which is cemented an aluminum bolt; azimuth from station 275° , 27'; distance, 20 feet.

[Latitude $39^{\circ} 54' 33.86''$. Longitude $79^{\circ} 52' 16.00''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Fast	10 45 03.1	190 44 15.0	3.9804006
Turkey	51 08 33.2	281 04 02.8	4.1097964
Jefferson	93 07 26.3	273 01 04.2	4.1512351
Hillsboro	139 22 16.0	319 14 33.3	4.4181154
Krepp	166 57 58.6	346 56 35.3	4.1346730
Prospect	203 35 01.7	23 38 12.3	4.2448865
Work	239 05 15.9	59 13 04.4	4.3047205
Dunbar	277 03 28.5	97 12 12.7	4.2915497

FAST, FAYETTE COUNTY.

About 2 miles southeast of Masontown, on road to Smithfield, 8 feet north of an east and west fence on land owned by Mr. Fast, who lives about 300 yards south of station.

Station mark: A stone post, 36 by 10 by 10 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude $39^{\circ} 49' 29.36''$. Longitude $79^{\circ} 53' 30.97''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
St. Clair	10 01 47.4	190 00 37.0	4.1777734
Morley	47 17 02.2	227 11 58.5	4.1871165
Turkey	99 01 56.6	278 58 14.5	3.9215699
Jefferson	129 24 42.4	309 19 08.7	4.2041975
Keener	190 44 15.0	10 45 03.1	3.9804006

KREPP, WASHINGTON COUNTY.

About $1\frac{1}{2}$ miles northwest of Brownsville, on a prominent and well-known bald knob owned by James Nickson.

Station mark: A sandstone post, 40 by 8 by 8 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 01' 44.55". Longitude 79° 54' 25.69'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Jefferson	41 28 31.9	221 23 32.6	4.2228714
Hillsboro	115 13 26.6	295 07 06.8	4.1890430
Shepler	209 36 26.4	29 39 60.0	4.2009908
Prospect	254 22 24.1	74 26 58.4	4.0209121
Work	278 08 09.5	98 17 22.0	4.3136372
Keener	346 56 35.3	166 57 58.6	4.1346730
Turkey	18 00 10.1	197 57 02.7	4.3515150

CALHOUN, ALLEGHENY COUNTY.

About 2½ miles west of McKeesport and ½ mile south of Calhoun Park, on farm of W. F. Miller.

Station mark: A stone post 36 by 8 by 8 inches, set 30 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 22' 00.05". Longitude 79° 55' 32.00'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Pollock	9 58 00.0	189 56 59.0	4.1096654
Shannon	84 27 17.4	264 23 27.5	3.9250637
Terrace	272 48 30.7	92 52 45.7	3.9684989
Wiley	307 05 05.5	127 11 22.2	4.2365716
Union U. P. Church	114 14 59.9	294 06 16.4	4.3196701
Greentree	150 34 16.3	330 30 36.5	4.2107475

POLLOCK, WASHINGTON COUNTY.

On Pollock's Hill, about 2 miles west of West Elizabeth, on road to Finleyville, 400 feet west of a rough board shanty on highest point of bare hill, owned by Mr. McClure.

Station mark: A sandstone post 40 by 8 by 8 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 15' 08.99". Longitude 79° 57' 06.26'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Hillsboro	29 10 08.6	209 05 31.5	4.3197152
Shannon	152 35 31.9	332 32 43.3	4.1259131
Calhoun	189 56 59.0	9 58 00.0	4.1096654
Terrace	223 16 51.1	43 22 06.7	4.2251518
Wiley	261 51 28.0	81 58 45.1	4.2080156
Shepler	313 20 50.8	133 26 08.4	4.2046201
Mount Wheeler	61 30 40.4	241 19 25.7	4.4496631
Canonsburg	87 29 40.3	267 20 47.3	4.2904183

TURKEY, GREENE COUNTY.

About 1 mile north of Sigsbee and 4 miles south of Carmichaels, on Turkey Knob, in a cultivated field owned by Leroy Hartley.

Station mark: A stone post 42 by 10 by 10 inches set flush with surface of ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 39° 50' 11.72". Longitude 79° 59' 17.69'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Morley	14 32 17.4	194 30 55.5	4.0842057
Jefferson	154 58 31.5	334 56 40.0	3.9895121
Krepp	197 57 02.7	18 00 10.1	4.3515150
Keener	231 04 02.8	51 08 33.2	4.1097964
Fast	278 58 14.5	99 01 56.6	3.9215699
St. Clair	340 43 59.6	160 46 31.0	4.2327348

ALLEGHENY OLD OBSERVATORY, ALLEGHENY COUNTY.

On a hill near the center of the city of Allegheny.

Station mark: The center of dome.

[Latitude 40° 27' 42.17". Longitude 80° 00' 44.09'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Allegheny New Observatory	161 31 39	341 31 18	3.33774
Greentree	170 00 46	350 00 29	3.56204

GREENTREE, ALLEGHENY COUNTY.

On the highest point of Greentree Hill, in extreme northwest part of city of Allegheny, on land belonging to the city. Summit of hill is covered with locust bushes 15 to 18 feet in height.

Theodolite elevated 25 feet.

Station mark: A sandstone post 38 by 8 by 8 inches, set 34 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 29' 38.64". Longitude 80° 01' 10.95".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Shannon.....	1 26 42.8	181 26 32.4	4.1751665
Union U. P. Church.....	63 10 18.2	243 05 13.9	4.0926886
Dickson.....	90 57 02.2	270 46 45.3	4.3497228
Weir.....	129 06 28.3	309 00 30.5	4.2222366
Calhoun.....	330 30 36.5	150 34 16.3	4.2107476

ALLEGHENY NEW OBSERVATORY, ALLEGHENY COUNTY.

On the summit of a hill in Riverview Park, Allegheny.

Station mark: The center of main dome (in process of construction, 1900).

[Latitude 40° 28' 57.26". Longitude 80° 01' 16.94".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Union U. P. Church.....	68 25 57	248 20 57	4.06917
Greentree.....	186 18 06	6 18 10	3.10864
Allegheny Old Observatory.....	341 31 18	161 31 39	3.38774

MORLEY, GREENE COUNTY.

On a flat bald ridge owned by D. W. Morley, 1 mile southeast of Bald Hill and one-half mile north of Pennsylvania-West Virginia State line. There are a few trees under brow of hill on east side.

Station mark: A stone post 42 by 12 by 12 inches, set flush with the surface of the ground, in the center of top of which is cemented a copper bolt.

[Latitude 39° 43' 50.65". Longitude 80° 01' 25.65".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Turkey	194 30 55.5	14 32 17.4	4.0842057
Fast	227 11 58.5	47 17 02.2	4.1871165
Wymp	274 03 51.4	94 13 55.6	4.3536192
St. Clair	296 44 41.3	116 48 34.2	3.9880410
Reed	304 53 01.7	125 00 48.8	4.3278602
Waters	357 07 59.2	177 08 22.3	4.2373975

SHANNON, ALLEGHENY COUNTY.

About 1 mile south of Castle Shannon post-office, on a high, cultivated knob on which is one tree about 30 feet northeast of signal.

Station mark: A sandstone post 34 by 7 by 7 inches, sunk 33 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 21' 33.53". Longitude 80° 01' 26.95".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Calhoun	264 23 27.5	84 27 17.4	3.9250637
Pollock	332 32 43.3	152 35 31.9	4.1259131
Canonsburg	46 20 22.0	226 14 17.1	4.2656474
Hickman	83 01 46.0	262 57 02.4	4.0175377
McDonald	90 53 55.8	270 46 02.6	4.2365717
Union U. P. Church	131 18 26.2	311 13 32.8	4.1524041
Greentree	181 26 32.4	1 26 42.8	4.1751665

JEFFERSON, GREENE COUNTY.

About 1 mile southeast of Jefferson, on a high bald knob owned by Lawrence Kraft.

Station mark: A stone post 36 by 8 by 8 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 39° 54' 58.46". Longitude 80° 02' 11.35".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Hillsboro.....	171 14 13.9	351 12 54.0	4.2860956
Krepp.....	221 23 32.6	41 28 31.9	4.2228713
Keener.....	273 01 04.2	93 07 26.3	4.1512351
Fast.....	309 19 08.7	129 24 42.4	4.2041975
Turkey.....	334 56 40.0	154 58 31.5	3.9895121
Hughes.....	104 02 35.8	283 56 38.3	4.1344974
Union.....	115 15 13.2	295 07 32.4	4.2747311

HILLSBORO, WASHINGTON COUNTY.

In a rocky pasture, about 1,000 feet north of Hillsboro church, about half way between Brownsville and Washington, along the National pike, on land owned by Mrs. E. S. Tonebaugh, who lives at crossing about 1,500 feet southeast of station.

Station mark: A stone post 30 by 8 by 8 inches, set 30 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 05' 17.67". Longitude 80° 04' 15.81".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Pollock.....	209 05 31.5	29 10 08.6	4.3197152
Shepler.....	251 34 48.6	71 44 42.6	4.3616006
Krepp.....	295 07 06.8	115 13 26.6	4.1890430
Jefferson.....	351 12 54.0	171 14 13.9	4.2860956
Keener.....	319 14 33.3	139 22 16.0	4.4181154
Hughes.....	33 02 20.9	212 51 42.6	4.2751190
Union.....	51 48 48.2	231 42 26.5	4.2531028
Mount Wheeler.....	108 08 43.9	288 02 07.1	4.1859700
Canonsburg.....	151 42 44.5	331 38 29.5	4.2949237

MORRIS, GREENE COUNTY.

On land owned by Henry Morris, 5 miles southeast of Waynesburg, 3 miles east of Randolph Church; in cleared field 600 feet north of ridge road and one-fourth mile west of Mr. Morris's house.

Station mark: A marble post 48 by 8 by 8 inches, set 46 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 39° 52' 02.67". Longitude 80° 06' 47.91".]

To station—	Azimuth.	Back Azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Shriver	69 27 10.8	249 24 58.1	3.7205630
Hughes	142 37 23.6	322 34 23.6	4.0408635
Jefferson	230 25 41.6	50 28 38.8	3.9301943

HICKMAN, ALLEGHENY COUNTY.

On a bald hill in South Fayette Township, 2½ miles southwest of Bridgeville, on land belonging to William Hickman, who lives on south side of hill.

Station mark: A sandstone post 30 by 12 by 12 inches, set 28 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 20' 52.33". Longitude 80° 08' 44.87".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Canonsburg	14 35 39.2	194 34 17.5	4.0737263
McDonald	102 26 54.8	282 23 45.3	3.8495728
Union U. P. Church	178 07 14.0	358 07 04.4	4.0271348
Shannon	262 57 02.4	83 01 46.0	4.0175377

UNION U. P. CHURCH, ALLEGHENY COUNTY.

A new brick church with a square tower on its northeast corner, situated on a hill 1 mile west of Remington, on the Steubenville pike.

Station mark: Center of tower.

[Latitude 40° 26' 37.25". Longitude 80° 08' 59.69".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
McDonald	35 43 45.7	215 40 45.6	4.0503035
Dickson	117 40 04.8	297 34 52.5	4.1070426
Weir	173 11 33.3	353 10 40.1	4.2101067
Greentree	243 05 13.9	63 10 18.2	4.0926886
Calhoun	294 06 16.4	114 14 59.9	4.3196701
Shannon	311 13 32.8	131 18 26.2	4.1524041
Hickman	358 07 04.4	178 07 14.0	4.0271348

SHRIVER, GREENE COUNTY.

On a bald hill 2 miles west of Randolph Church and 4 miles south of Waynesburg, on land owned by William Shriver.

Station mark: A marble post 48 by 8 by 8 inches, set 46 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 39° 51' 02.82." Longitude 80° 10' 14.90".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Call.....	89 04 36.7	268 59 33.8	4.0507482
Hughes.....	170 36 15.8	350 35 28.6	4.0296854
Morris.....	249 24 58.1	69 27 10.8	3.7205630

WEIR, ALLEGHENY COUNTY.

On a hill in Sewickley Township, about 3 miles north of Sewickley depot and 3 miles southeast of Economy; northwest of point of road called the "Three mile post," at the head of Turkey Run, on land owned by James F. Weir; 10 feet south of an east and west fence.

Station mark: A sandstone post 40 by 8 by 8 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 35' 19.45". Longitude 80° 10' 21.45".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Dickson.....	42 46 12.4	222 41 52.7	4.1415223
Bunker Hill.....	110 53 26.0	290 47 55.1	4.1068604
Big Knob.....	170 47 47.7	350 46 41.6	4.1726934
Greentree.....	309 00 30.5	129 06 28.3	4.2222866
Union U. P. Church.....	353 10 40.1	173 11 33.3	4.2101067

CANONSBURG, WASHINGTON COUNTY.

In North Strabone Township, in a cultivated field at summit of high knob, 1 mile S. 15° E. of Canonsburg and in view of the town, on land owned by Mr. James Hanna, who lives on east side of hill, at a road fork.

Station mark: A sandstone post 31 by 7 by 7 inches, sunk 31 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 14' 40.51". Longitude 80° 10' 51.20".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Mount Wheeler	22 31 03.0	202 23 40.8	4.1345757
Claysville	50 18 45.5	230 10 19.6	4.3826975
Garrett	78 04 35.4	257 59 04.1	4.0933003
McDonald	163 11 12.3	343 09 24.7	4.1326119
Hickman	194 34 17.5	14 35 39.2	4.0737263
Shannon	226 14 17.1	46 20 22.0	4.2656474
Pollock	267 20 47.3	87 29 40.3	4.2904183
Hillsboro	331 38 29.5	151 42 44.5	4.2949237

HUGHES, GREENE COUNTY.

On a hill covered with an orchard of small peach trees, about 4 miles north of Waynesburg, owned by the Hughes estate.

Station mark: A marble post, 36 by 8 by 8 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 39° 56' 45.33". Longitude 80° 11' 28.53".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Call	41 26 18.6	221 22 02.6	4.1564204
Union	141 03 49.6	321 02 06.5	3.7827879
Hillsboro	212 57 42.6	33 02 20.9	4.2751190
Jefferson	283 56 38.3	104 02 35.8	4.1344974
Morris	322 34 23.6	142 37 23.6	4.0403635
Shriver	350 35 28.6	170 36 15.8	4.0296854

BIG KNOB, BEAVER COUNTY.

Near the north end of summit and about 40 feet south of an east and west rail fence, on a prominent, partly timbered hill known locally as the "Big Knob," in Sewickley Township, on land owned by Joseph Powell, who lives at south end of knob; 4 miles northeast of Freedom, 6 miles east of Rochester, and 7½ miles east of Beaver court-house.

Theodolite elevated 30 feet.

Station mark: A sandstone post, 36 by 8 by 8 inches, set 34 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 43' 15.73". Longitude 80° 12' 02.87".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Bunker Hill.....	43 20 47.5	223 16 22.2	4.1441156
Dawson.....	83 55 01.0	263 47 05.7	4.2355940
Gilliland.....	109 42 02.6	289 35 24.5	4.1816755
Walker.....	143 47 07.7	323 43 30.5	4.1204228
Weir.....	350 46 41.6	170 47 47.7	4.1726934

M'DONALD, WASHINGTON COUNTY.

In a pasture at the highest point of a hill $\frac{1}{2}$ mile south of McDonald, on land owned by Mr. William F. Wood, who lives on the southeast side of hill.

Station mark: A sandstone post 31 by 7 by 7 inches, set 55 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet marked "U. S. Geological Survey—Pennsylvania."

Reference marks: A large black-oak line tree at the north boundary fence, 275 feet distant. A large white-oak line tree at the west boundary fence, 303 feet distant.

[Latitude 40° 21' 41.66". Longitude 89° 13' 37.56".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Garrett.....	27 46 53.9	207 43 09.8	4.2450948
Dickson.....	162 21 09.3	342 18 57.4	4.1985263
Union U. P. Church.....	215 40 45.6	35 43 45.7	4.0503035
Shannon.....	270 46 02.6	90 53 55.8	4.2365717
Hickman.....	282 23 45.3	102 26 54.8	3.8495728
Canonsburg.....	343 09 24.7	163 11 12.3	4.1326119

UNION, GREENE COUNTY.

In a pasture on a prominent hill 9 miles north-northwest from Waynesburg and $1\frac{1}{2}$ miles east of West Union.

Station mark: A sandstone post 48 by 8 by 8 inches, set 48 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 39° 59' 18.24". Longitude 80° 14' 19.16".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Call.....	20 07 40.7	200 05 07.7	4.1355279
Bristoria.....	51 46 11.3	231 40 06.0	4.2357775
Time.....	73 20 36.0	253 14 48.2	4.1275671
Wheeler.....	178 04 16.4	358 04 01.9	4.2002916
Hillsboro.....	231 42 26.5	51 48 48.2	4.2531028
Jefferson.....	295 07 32.4	115 15 13.2	4.2747311
Hughes.....	321 02 06.5	141 03 49.6	3.7927879

WHEELER, WASHINGTON COUNTY.

On a sparsely timbered hill, 3 miles south of Washington, on land of William Courson, who lives at north base of hill.

Station mark: A marble post 38 by 6 by 6 inches, set 34 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 07' 52.16". Longitude 80° 14' 31.71".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Claysville.....	78 01 54.2	257 55 51.0	4.1350995
Garrett.....	145 24 29.4	325 21 20.7	4.0856664
Canonsburg.....	202 28 40.8	22 31 03.0	4.1345757
Pollock.....	241 19 25.7	61 30 40.4	4.4496631
Hillsboro.....	288 02 07.1	108 08 43.9	4.1859700
Union.....	358 04 01.9	178 04 16.4	4.2002916

DICKSON, ALLEGHENY COUNTY.

On a hill in Findlay Township, 1 mile northeast of Clinton, on land owned by Prof. James Dickson.

Station mark: A sandstone post 40 by 8 by 8 inches, set 36 inches in the ground, in center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 29' 49.59". Longitude 80° 17' 00.90'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
McCleary	135 46 56.7	315 41 54.9	4.1945450
Bunker Hill	170 08 04.4	350 06 53.6	4.1745591
Weir	222 41 52.7	42 46 12.4	4.1415223
Greentree	270 46 45.3	90 57 02.2	4.3497228
Union U. P. Church	297 34 52.5	117 40 04.8	4.1070426
McDonald	342 18 57.4	162 21 09.3	4.1985263

WALKER, BEAVER COUNTY.

On a flat, cultivated ridge in North Sewickley Township, 5 miles northeast of Beaver Falls, on land owned by Robert L. Walker.

Station mark: A sandstone post 40 by 8 by 8 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude, 40° 49' 00.74". Longitude, 80° 17' 35.52'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Gilliland	49 37 03.5	229 34 02.4	3.9313049
Jordan	111 54 15.1	291 5. 25.0	3.8175600
Big Knob	323 43 30.5	143 47 07.7	4.1204228

CALL, GREENE COUNTY.

On a cleared hill about 3 miles southwest of Rogersville, on land owned by Robert Call.

Station mark: A marble post 48 by 8 by 8 inches, set 48 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude, 39° 50' 56.68". Longitude, 80° 18' 07.61'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Oak	56 45 12.3	236 41 05.3	4.0403119
Bristoria	121 29 33.0	301 26 01.1	3.9642757
Time	148 14 24.8	328 11 10.5	4.1355279
Union	200 05 07.7	20 07 40.7	4.2167757
Hughes	221 22 02.6	41 26 18.6	4.1564204
Shriver	268 59 33.8	89 04 36.7	4.0507482

BUNKER HILL, BEAVER COUNTY.

On the highest point of a cleared hill in Moon Township, one-half mile south of Shaffer post-office and 6 miles south of Beaver; 200 yards south of Bunker Hill schoolhouse, on land owned by the Misses Good.

Station mark: A sandstone post 36 by 6 by 6 inches, set 34 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 37' 47.00". Longitude 80° 18' 49.87".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
McCleary	67 11 43.7	247 07 52.4	3.9571732
Dawson	137 42 41.4	317 39 11.8	4.0500887
Big Knob	223 16 22.2	43 20 47.5	4.1441156
Weir	290 47 55.1	110 53 26.0	4.1068604
Dickson	350 06 53.6	170 08 04.4	4.1745591

GARRETT, WASHINGTON COUNTY.

In a cleared field owned by J. C. Garrett, 3 miles east of Buffalo Village and 5 miles northwest of Washington on the hill road to Hickory.

Station mark: A marble post 38 by 6 by 6 inches, set 35 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet marked "U. S. Geological Survey—Pennsylvania."

Reference marks: Wire fence, west 113 feet. Large walnut tree N. 34° 30' W., 433 feet.

[Latitude 40° 13' 17.16". Longitude 80° 19' 24.18".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Claysville	26 32 31.5	206 29 36.5	4.1577265
West Liberty	79 22 34.7	259 11 49.0	4.3816589
West Middleton	103 12 36.6	233 07 53.7	4.0266996
McDonald	207 43 09.8	27 46 53.9	4.2450948
Canonsburg	257 59 04.1	78 04 35.4	4.0933003
Mount Wheeler	325 21 20.7	145 24 29.4	4.0856664

JORDAN, BEAVER COUNTY.

On a cultivated ridge in Big Beaver Township, on land owned by Sam Marshall, who lives on northwest side of ridge, 75 yards from station.

Station mark: A sandstone post 40 by 7 by 7 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 50' 20.12". Longitude 80° 21' 55.70".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Gilliland	2 52 26.6	182 52 15.4	3. 9026731
Walker	291 51 25.0	111 54 15.1	3. 8175600

GILLILAND, BEAVER COUNTY.

On a cleared hill 4 miles west of Beaver Falls, on land owned by Sarah J. Gilliland.

Theodolite elevated 33 feet.

Station mark: A sandstone post 42 by 7 by 7 inches, set 38 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 46' 01.35". Longitude 80° 22' 12.78".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Dawson	21 51 14.9	201 49 57.4	3. 8743981
Jordan	182 52 15.4	2 52 26.6	3. 9026731
Walker	229 34 02.4	49 37 03.5	3. 9313049
Big Knob	289 35 24.5	109 42 02.6	4. 1816755

TIME, GREENE COUNTY.

In a pasture owned by the Miller estate, on a cleared knob 2½ miles north of Graysville and 1 mile west of Time post-office.

Station mark: A marble post 48 by 8 by 8 inches, set 48 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 39° 57' 13.23". Longitude 80° 23' 10.56".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Bristoria	5 30 19.2	185 30 01.5	3. 8348950
Rock Lick	51 55 51.4	231 50 19.0	4. 1943297
Wilsons Knob	111 17 45.4	291 10 43.8	4. 2228433
Union	253 14 48.2	73 20 36.0	4. 1275671
Call	328 11 10.5	148 14 24.8	4. 1355279

BRISTORIA, GREENE COUNTY.

On a dome-shaped hill 2 miles north of Bristoria and 14 miles west of Waynesburg, in a pasture owned by the Isenminger estate, about 500 feet north of a public road.

Station mark: A marble post 48 by 8 by 8 inches, set 48 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 39° 53' 32.55". Longitude 80° 23' 38.18'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Oak.....	6 54 26.4	186 53 51.1	4.0377279
Rock Lick.....	76 18 21.5	256 13 07.0	4.0791963
Wilson Knob.....	130 48 17.3	310 41 33.7	4.2943973
Time.....	185 30 01.5	5 30 19.2	3.8348950
Union.....	231 40 06.0	51 46 11.3	4.2357775
Call.....	301 26 01.1	121 29 33.0	3.9642757

CLAYSVILLE, WASHINGTON COUNTY.

On a cone-shaped hill 1 mile south of Claysville, on cultivated land belonging to Mr. J. Mosier.

Station mark: A marble post 38 by 6 by 6 inches, set 34 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet marked "U. S. Geological Survey—Pennsylvania."

Reference marks: Double chestnut tree, south, 72 feet. Apple tree, east, 80 feet.

[Latitude 40° 06' 20.01". Longitude 80° 23' 55.46'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
West Liberty.....	115 59 25.6	295 51 35.6	4.2830742
Independence.....	143 11 59.2	323 06 27.6	4.3069361
West Middleton.....	165 32 56.6	345 31 09.1	4.1933776
Garrett.....	206 29 36.5	26 32 31.5	4.1577265
Canonsburg.....	230 10 19.6	50 18 45.5	4.3826975
Mount Wheeler.....	257 55 51.0	78 01 54.2	4.1350995

DAWSON, BEAVER COUNTY.

Seventy yards west of a brick schoolhouse, on a cleared knob in western part of Brighton Township, 5 miles west of Beaver; near forks of road and on land owned by G. W. Dawson, of Beaver.

Station mark: A sandstone post 38 by 7 by 7 inches, set 34 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 42' 16.02". Longitude 80° 24' 11.53".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
McCleary	3 49 22.4	183 49 00.5	4.0733912
Gilliland	201 49 57.4	21 51 14.9	3.8743981
Big Knob	263 47 05.7	83 55 01.0	4.2355940
Bunker Hill	317 39 11.8	137 42 41.5	4.0500887

OAK, GREENE COUNTY.

On a high cleared hill 1 mile south of Centennial Church, 3 miles south of Higley, and 6 miles south of Bristoria, on land owned by Dr. S. T. Williams.

Station mark: The lone signal tree on highest point of hill.

[Latitude 39° 47' 41.45". Longitude 80° 24' 33.31".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Rock Lick	127 39 19.7	307 34 40.8	4.1163332
Bristoria	186 53 51.1	6 54 26.4	4.0377279
Call	236 41 05.3	56 45 12.3	4.0403119

M'CLEARY, BEAVER COUNTY.

On a hill in Raccoon Township 1 mile southwest of McCleary post-office, on land owned by A. L. Moore. Summit of hill has a few trees on its western side.

Station mark: A sandstone post 38 by 8 by 8 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude 40° 35' 52.99". Longitude 80° 24' 45.11".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Dawson	183 49 00.5	3 49 22.4	4.0733912
Bunker Hill	247 07 52.4	67 11 43.7	3.9571732
Dickson	315 41 54.9	135 46 56.7	4.1945450

CROSS CREEK, WASHINGTON COUNTY.

On pasture land belonging to Mr. Hugh Lee, one-fourth mile southwest of Cross Creek Village. The north side of the hill is timbered. The property is leased by Mr. B. S. Stiffler.

Station mark: A marble post 38 by 6 by 6 inches, set 34 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet marked "U. S. Geological Survey—Pennsylvania."

Reference marks: Fence, north, 85.5 feet. Chisel mark on rock outcrop, east, 76.2 feet.

[Latitude $40^{\circ} 19' 22.50''$. Longitude $80^{\circ} 25' 08.80''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
West Middleton.....	14 00 35.4	193 59 35.1	3.9598141
Independence.....	52 47 51.5	232 43 06.7	4.1163188

WEST MIDDLETON, WASHINGTON COUNTY.

On the highest point of a partly cleared hill 1 mile west of West Middleton on the road to Wellsburg, W. Va., and on land owned by Robert D. Craig, who lives due north of station.

Station mark: A marble post 38 by 6 by 6 inches, set 34 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet marked "U. S. Geological Survey—Pennsylvania."

[Latitude $40^{\circ} 14' 35.72''$. Longitude $80^{\circ} 26' 42.16''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
West Liberty.....	62 37 50.9	242 31 47.8	4.1755802
Independence.....	96 31 51.9	276 28 07.6	3.9168898
Cross Creek.....	193 59 35.1	14 00 35.4	3.9398141
Garrett.....	283 07 53.7	103 12 36.7	4.0266996
Claysville.....	345 31 09.1	165 32 56.6	4.1983776

SMITH FERRY, BEAVER COUNTY.

An astronomic station of the United States Coast and Geodetic Survey, situated on the north bank of the Ohio River in front of the hotel at Smith Ferry.

[Latitude 40° 38' 48.07". Longitude 80° 30' 05.06'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Graveyard	1 00 27.20	181 00 26.70	3.0124143
Island	59 02 52.20	239 01 44.40	3.4552858

Meridian Marks.

WASHINGTON, WASHINGTON COUNTY.

Location of station: A few feet north of sidewalk, on the south side of and near the southwest corner of the campus of Washington and Jefferson College.

Station mark: A sandstone post 48 by 12 by 12 inches, set about 40 inches in the ground, in the center of top of which is cemented a bronze meridian tablet.

Distant mark: North of station 482 feet; a sandstone post about 48 by 12 by 12 inches, set about 36 inches in the ground, in the center of top of which is cemented a bronze meridian tablet.

MARYLAND.

Triangulation Stations.

Three primary stations were established in 1899 in Garrett and Washington counties by Mr. Sledge Tatum, in conjunction with the extension of the work into West Virginia and Pennsylvania.

ROMAN NOSE, GARRETT COUNTY.

On a long ridge of same name, 5 miles air-line distance northeast of Oakland, on a narrow backbone about 30 feet lower than flat summit one-half mile southwest. Theodolite elevated 16 feet on stump of tree, and lines of sight cut through timber to other signals.

Station mark: Stump of tree.

[Latitude 39° 28' 47.90". Longitude 79° 22' 1".59'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Piney Swamp	125 30 37.5	305 25 13.3	4.1744346
Accident	202 20 36.5	22 23 33.6	4.2416865
High Rock	253 00 44.3	73 11 12.9	4.3921308

QUIRAUK.

On line between Frederick and Washington counties, about 2 miles south of Penmar, Pa., and about 2 miles southeast of Blue Mountain,

Maryland. On highest point of mountain locally known by same name.

Theodolite elevated on an iron observation tower 84 feet.

Station mark: A bronze tablet marked "U. S. Geological Survey—Pennsylvania," countersunk in a dressed stone 4 feet long and 10 inches square, set flush with top of ground under center of tower.

[Latitude 39° 41' 47.92". Longitude 77° 30' 45.72".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Lookout	19 48 57.1	199 44 32.5	4.4668329
Martin	75 49 48.7	255 41 01.2	4.3078569
Fairview	83 35 53.1	263 18 22.7	4.5962555
Parnell	129 18 20.6	309 04 53.8	4.5874493
Chambersburg	154 39 25.8	334 33 43.9	4.4715180

MARTIN, WASHINGTON COUNTY.

About one-half mile northwest of Hagerstown and 1,000 feet north of National pike, on high ground, in cleared field owned by Nicholas Martin.

Station mark: A copper bolt cemented in solid rock, under center of signal.

[Latitude 39° 39' 05.84". Longitude 77° 44' 31.97".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Fairview	91 32 00.1	271 23 17.5	4.2907580
Quirauk	255 41 01.2	75 49 48.7	4.3078568
Lookout	336 28 18.0	156 32 39.7	4.3911174
Parnell	160 42 52.2	340 38 14.6	4.4941249

WEST VIRGINIA.

Triangulation Stations.

In conjunction with the extension of primary triangulation into Pennsylvania in 1899, Mr. Sledge Tatum, topographer, established six stations in Preston and Monongalia counties, and during the season of 1900 Mr. W. T. Griswold, topographer, established nine stations in Marshall, Ohio, Brooke, and Hancock counties, while engaged in the extension of triangulation from Greene County, Pa., into eastern Ohio.

PINEY SWAMP, PRESTON COUNTY.

About 1 mile northwest of Cranesville, on Piney Swamp Knob.

Station mark: A stone post 36 by 12 by 12 inches, set flush with surface of ground, in center of top of which is cemented a copper bolt.

[Latitude 39° 33' 29.03". Longitude 79° 30' 47.10".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Reed	104 54 36.5	284 42 51.1	4.4365044
Wymp	129 32 53.4	309 23 23.6	4.4407570
Kelley	150 30 10.5	330 28 17.6	3.9334630
Mellon	185 28 53.8	5 29 47.3	4.3198719
Accident	248 16 13.1	68 24 40.0	4.3057954
Roman Nose	305 25 13.3	125 30 37.5	4.1744346

KELLEY, PRESTON COUNTY.

On a bald knob locally known by same name, about 6 miles south of Brandonville, Pa., and 8 miles north of Cranesville, W. Va.

Station mark: A copper bolt cemented in a stone post 36 by 12 by 12 inches, set flush with surface of ground.

[Latitude 39° 37' 31.13". Longitude 79° 33' 44.23".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Wymp	120 36 35.7	300 28 58.6	4.2970427
Pondfield	145 36 58.1	325 31 36.8	4.3261837
Mellon	204 59 31.0	25 02 17.6	4.1674360
Piney Swamp	330 28 17.6	150 30 10.5	3.9334630

WYMP GAP, MONONGALIA COUNTY.

On high summit 1 mile southwest of Wymp Gap, in Chestnut Ridge, about 9 miles air-line distance northeast of Morgantown, W. Va., and 16 miles south of Uniontown, Pa.

Station mark: A stone post 36 by 12 by 12 inches, set flush with surface of ground, in the center of top of which is cemented a copper bolt.

[Latitude 39° 42' 57.71". Longitude 79° 45' 40.28".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Reed	25 47 12.2	205 44 55.7	4.0688994
Waters	54 18 28.5	234 08 48.4	4.4268308
St. Clair	78 48 54.2	258 42 43.2	4.1494319
Morley	94 13 55.6	274 03 51.4	4.3536430
Pondfield	214 23 09.0	34 25 25.3	3.9532404
Mellon	261 57 14.8	82 07 39.3	4.3709214
Kelley	300 28 58.6	120 36 35.7	4.2970427
Piney Swamp	309 23 23.6	129 32 53.4	4.4407570

REED, MONONGALIA COUNTY.

On a high summit of Chestnut Ridge, in a clear field, about 9 miles southeast of Morgantown and 1 mile west of Cheat River, on land owned by James Reed.

Station mark: A copper bolt cemented in solid rock.

[Latitude 39° 37' 15.52". Longitude 79° 49' 14.01".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Waters.....	73 05 08.2	252 57 44.9	4.2392948
Morley.....	125 00 48.8	304 53 01.7	4.3278602
St. Clair.....	131 45 51.4	311 41 57.2	4.0691343
Wymp.....	205 44 55.7	25 47 12.2	4.0688994
Kelley.....	268 40 25.8	88 50 18.7	4.3459915
Piney Swamp.....	284 42 51.1	104 54 36.5	4.4365044

ST. CLAIR, MONONGALIA COUNTY.

In a pasture on a bald hill owned by Mr. E. H. St. Clair, about 4 miles northeast of Morgantown and 1½ miles south of Stewarttown.

Station mark: A bronze tablet countersunk and cemented in a dressed stone, 42 by 12 by 12 inches, set flush with surface of ground.

[Latitude 39° 41' 28.58". Longitude 79° 55' 21.04".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Waters.....	31 21 02.2	211 17 32.7	4.1780100
Morley.....	116 48 34.2	296 44 41.3	3.9880410
Turkey.....	160 46 31.0	340 43 59.6	4.2327348
Fast.....	190 00 37.0	10 01 47.4	4.1777734
Wymp.....	258 42 43.2	78 48 54.2	4.1494319
Reed.....	311 41 57.2	131 45 51.4	4.0691343

WATERS, MONONGALIA COUNTY.

On a cleared knob owned by Mr. J. S. Waters, about 7 miles southwest of Morgantown, and 1½ miles north of Little Falls.

Station mark: A stone post 36 by 12 inches, set flush with surface of ground, in the center of the top of which is cemented a copper bolt.

[Latitude 39° 34' 31.27". Longitude 80° 00' 49.45".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Morley.....	177 08 22.3	357 07 59.2	4.2373975
St. Clair.....	211 17 32.7	31 21 02.2	4.1780100
Wymp.....	234 08 48.4	54 18 28.5	4.4268307
Reed.....	252 57 44.9	73 05 08.2	4.2392948

WILSONS KNOB, MARSHALL COUNTY.

Situated in Sand Hill district, on the farm of Mr. G. H. Wilson, near the line fence between the lands of Mr. Wilson and Mr. Howard, where fence crosses summit of hill. The Moundsville and Washington pike passes over north side of hill.

Station mark: A cut marble post 48 by 6 by 6 inches, set 40 inches in the ground, in center of top of which is cemented a bronze triangulation tablet.

[Latitude 40° 00' 29.42". Longitude 80° 34' 06.77".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Time.....	291 10 43.8	111 17 45.4	4.2228433
Bristoria.....	310 41 33.7	130 48 17.3	4.2943973
Rocklick.....	348 12 04.9	168 13 33.5	4.2053434

ROCKLICK, MARSHALL COUNTY.

Situated on a bare hill one-half mile south of the town of Rocklick, W. Va. A county road passes on north side of hill.

Station mark: A cut marble post 48 by 6 by 6 inches, set 36 inches in the ground, in center of top of which is cemented a bronze triangulation tablet.

[Latitude 39° 52' 00.15". Longitude 80° 31' 48.73".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Wilson's Knob.....	168 13 33.5	348 12 04.9	4.2053434
Time.....	231 50 19.0	51 55 51.4	4.1943297
Bristoria.....	256 13 07.0	76 18 21.5	4.0791962
Oak.....	307 34 40.8	127 39 19.7	4.1163332

WEST ALEXANDER, OHIO COUNTY.

(Secondary station.)

Situated on a hill 1 mile west of the town of West Alexander, Pa.

Station mark: A cut marble post 40 by 6 by 6 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet.

Reference marks: A maple tree 2 feet in diameter bears N. 85° 56' W., distance 72.1 feet; a butternut tree 10 inches in diameter bears S. 52° 25' E., distance 15 feet.

[Latitude 40° 05' 48.62". Longitude 80° 31' 41.59'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Wilsons Knob	19 15 19.31	199 13 46.06	4. 0179782
Sherrard	50 30 02.08	230 23 48.15	4. 2521001

INDEPENDENCE, BROOKE COUNTY.

Situated 2 miles southwest of the village of Independence, Pa., on a grassy hill on land owned by Mr. Gest. There is a small bunch of locust trees on south side of hill; also a short line of locust trees on east side, near summit.

Station mark: A cut marble post 40 by 6 by 6 inches, sunk 30 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet.

[Latitude 40° 15' 06.03". Longitude 80° 32' 29.32'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
West Liberty	33 01 42.51	212 59 23.54	3. 9704718
Mount Pleasant	58 27 33.56	238 17 59.54	4. 3938130
New Alexander	106 07 03.27	286 01 22.01	4. 1133566

ALLISON, HANCOCK COUNTY.

Situated 3 miles south of the village of East Liverpool, on a cleared hill on land owned by Mr. Allison.

Station mark: A cut marble post 48 by 6 by 6 inches, sunk 36 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet.

[Latitude 40° 35' 42.41". Longitude 80° 34' 01.89".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Elders	89 54 31.77	269 43 49.10	4.3659427
Hammond	133 48 37.93	313 44 30.76	4.0918031
Cow Pasture	209 41 34.97	29 43 00.50	3.7946464

WEST LIBERTY, OHIO COUNTY.

Situated one-half mile north of the village of West Liberty, on the highest point of a bare hill. A county road passes along east side of hill.

Station mark: A cut marble post 48 by 6 by 6 inches, set 40 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet.

[Latitude 40° 10' 52.03". Longitude 80° 36' 04.55".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Sherrard	20 00 34.66	199 57 09.72	4.3437009
Mount Pleasant	72 16 23.96	252 09 09.19	4.2241846
New Alexander	147 07 42.89	327 04 20.90	4.1338984
Independence	212 59 23.54	33 01 42.51	3.9704718

CLINTON, OHIO COUNTY.

(Secondary station, not occupied.)

Lone tree at intersection of fences on highest point of hill near Clinton post-office.

[Latitude 40° 07' 13.93". Longitude 80° 39' 05.59".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Sherrard	13 04 52.84	193 03 24.54	4.1578221
Myers	44 17 52.96	224 11 47.70	4.2850889
Wilsons Knob	330 21 55.03	150 25 05.10	4.1567300

SHERRARD, MARSHALL COUNTY.

Situated 1 mile west of the village of Sherrard on a small hill in a cleared field on the farm of Mr. Joseph Koty, at the intersection of the Boggs Run and Benwood roads.

Station mark: A cut marble post, 48 by 6 by 6 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet.

[Latitude 39° 59' 39.70". Longitude 80° 41' 22.81".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Riggs Knob	19 21 27.57	199 18 53.15	4.2370223
Myers	91 09 22.42	271 04 45.82	4.0090858
Centennial	124 04 47.46	304 01 30.34	3.9432300
Mount Pleasant	151 39 31.51	331 35 42.42	4.2492017
Clinton	193 03 24.54	13 04 52.84	4.1578221
Liberty	199 57 09.72	20 00 34.66	4.3437009
West Alexander	230 23 48.15	50 30 02.08	4.2521000
Wilson's Knob	261 30 28.43	81 35 08.88	4.0196571
Rock Lick	316 02 51.78	136 09 00.37	4.2936870

RIGGS KNOB, MARSHALL COUNTY.

Situated 6 miles south of the town of Moundsville on the highest point of a cone-shaped hill locally known as Riggs Knob.

Station mark: A lone locust tree, 18 inches in diameter. Center of tree where first limb leaves trunk.

[Latitude 39° 50' 51.66". Longitude 80° 45' 23.44".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Beallsville	89 53 56.89	269 45 19.11	4.2835700
Myers	164 43 47.81	344 41 46.06	4.2327314
Sherrard	199 18 53.15	19 21 27.57	4.2370223
Wilson's Knob	221 59 08.76	42 06 23.22	4.3302400
Rock Lick	263 41 30.14	83 50 12.37	4.2897152

OHIO.

Triangulation Stations.

The following triangulation stations in eastern Ohio were established by Mr. W. T. Griswold during the field season of 1900, and result from the extension of the work in Maryland, Pennsylvania, and West Virginia, from Maryland Heights and Sugarloaf, stations of the Coast and Geodetic Survey, the positions given being on the United States standard datum.

EAST LIVERPOOL, COLUMBIANA COUNTY.

(Not occupied.)

Memorial chapel in the cemetery at East Liverpool.

Station mark: Cap on monument of soldier.

[Latitude $40^{\circ} 38' 15.62''$. Longitude $80^{\circ} 34' 24.10''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Hammond	114 30 16.57	294 26 23.76	3.96492
Allison	353 41 30.73	173 41 45.23	3.67712

HAMMOND, COLUMBIANA COUNTY.

Situated 2 miles east of the village of Glasgow, on the highest point of a knob known locally as "Hammonds Knob."

Station mark: A cut marble post 40 by 6 by 6 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet, marked "U. S. Geological Survey, Ohio."

[Latitude $40^{\circ} 40' 19.50''$. Longitude $80^{\circ} 40' 21.46''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Wintersville	9 29 54.97	189 27 36.41	4.4836287
Elders	58 57 24.93	238 50 48.93	4.2224370
Kensington	103 44 59.61	283 84 21.24	4.3739205
East Liverpool	294 26 23.76	114 30 16.57	3.9649200
Allison	313 44 30.76	133 48 37.93	4.0918031

NEW ALEXANDER, JEFFERSON COUNTY.

Situated 1 mile southwest of the village of New Alexander, in a cleared field on west side of county road, a quarter mile beyond point at which it leaves the New Alexander and Bloomingdale pike.

Station mark: A cut marble post 24 by 6 by 6 inches, sunk 2 feet below surface of the ground, in center of top of which is cemented a bronze triangulation tablet.

Reference marks: Large tree, true bearing N. $53^{\circ} 20'$ E., distant 272 feet. Small tree, true bearing S. $1^{\circ} 36'$ W., distant 131 feet. Old stump in field, true bearing N. $68^{\circ} 36'$ W., distant 14.7 feet.

[Latitude 40° 17' 02.55". Longitude 80° 41' 17.28".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Mount Pleasant.....	27 21 07.51	207 17 14.17	4.2700856
Hopedale.....	110 23 39.92	290 17 09.61	4.1817202
Wintersville.....	164 08 12.73	344 06 30.92	4.1325490
Independence.....	286 01 22.01	106 07 03.27	4.1133566
West Liberty.....	327 04 20.90	147 07 42.89	4.1338982

WINTERSVILLE, JEFFERSON COUNTY.

Situated 2 miles northwest of the village of Wintersville, on a cone-shaped hill on land owned by Mr. Mays. The Wintersville and New Richmond pike passes over east side of hill.

Station mark: A cut marble post 40 by 6 by 6 inches, sunk 36 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet, marked "U. S. Geological Survey, Ohio."

[Latitude 40° 24' 05.70". Longitude 80° 43' 54.56".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Hopedale.....	53 36 19.99	233 31 31.07	4.1166735
Jefferson.....	94 42 21.10	274 33 35.99	4.2824762
Elders.....	156 33 37.87	336 29 21.35	4.3682786
Hammond.....	189 27 36.41	9 29 54.97	4.4836287
New Alexander.....	344 06 30.92	164 08 12.73	4.1325490

CENTENNIAL, BELMONT COUNTY.

(Secondary station.)

Situated 2½ miles northwest of the city of Bellaire, on land owned by William Nichol.

Station mark: A lone pine tree on highest point of hill.

[Latitude 40° 02' 19.01". Longitude 80° 46' 29.36".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Myers.....	31 55 36.99	211 54 17.38	3.7445933
Sherrard.....	304 01 30.34	124 04 47.46	3.9432353

MOUNT PLEASANT, BELMONT COUNTY.

Situated near Morningview post-office, on the north end of a bare hill on the west side of the Wheeling and Mount Pleasant pike, on land owned by Mr. Goff.

Station mark: A cut marble post 40 by 6 by 6 inches, set 30 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet marked "U. S. Geological Survey, Ohio."

[Latitude 40° 08' 06.07". Longitude 80° 47' 18.73".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Myers	6 32 00.56	186 31 12.65	4.1908702
Galloway	48 45 10.24	228 38 05.78	4.3180322
St. Clairsville	58 03 07.29	237 58 45.00	4.0555471
Clarks Hill	77 26 58.01	257 20 13.51	4.1827579
Cadiz court-house	130 39 47.88	210 31 40.34	4.3715300
Cadiz	133 05 59.66	312 57 37.85	4.4004381
Hopedale	165 20 26.93	345 17 50.68	4.3534510
New Alexander	207 17 14.17	27 21 07.51	4.2700856
Independence	238 17 59.54	58 27 33.56	4.3938130
West Liberty	252 09 09.19	72 16 23.96	4.2241846
Sherrard	331 35 42.42	151 39 31.51	4.2492017

MYERS, BELMONT COUNTY.

Situated 4 miles southwest of the city of Bellaire, on a cleared knob on land owned by Mr. P. B. Myers.

Station mark: A cut marble post 48 by 6 by 6 inches, set 40 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet marked "U. S. Geological Survey, Ohio."

[Latitude 39° 59' 46.16". Longitude 80° 48' 33.17".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Beallsville	41 39 03.80	221 32 26.97	4.3447990
Jacobsburg	68 34 01.77	248 31 07.18	3.8405264
Galloway	96 59 49.03	276 53 33.03	4.1453970
Mount Pleasant	186 31 12.65	6 32 00.56	4.1908702
Centennial	211 54 17.38	31 55 36.99	3.7445900
Clinton	224 11 47.70	44 17 52.97	4.2850900
Sherrard	271 04 45.82	91 09 22.42	4.0090858
Riggs Knob	344 41 46.06	164 43 47.81	4.2327314

ELDERS, JEFFERSON COUNTY.

Situated one-half mile south of the village of Monroeville, on land owned by Mr. Elder.

Station mark: A cut marble post 48 by 6 by 6 inches, sunk 40 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet marked "U. S. Geological Survey, Ohio."

[Latitude 40° 35' 40.04". Longitude 80° 50' 29.55".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Jefferson	26 13 45.61	206 09 16.01	4.3452306
Carrollton	82 57 51.91	262 50 29.70	4.2070630
Kensington	148 30 40.69	328 26 39.02	4.2218375
Hammond	238 50 48.93	58 57 24.93	4.2224370
Allison	269 43 49.10	89 54 31.77	4.3659427
Wintersville	336 29 21.40	156 33 37.87	4.3682786

HOPEDALE, JEFFERSON COUNTY.

Situated 2 miles west of Bloomingdale, on the north side of the Bloomingdale and Hopedale pike, on the highest point of hill in cleared field belonging to S. N. Beall.

Station mark: A cut marble post 24 by 4 by 4 inches, sunk 24 inches under surface of ground, "U. S. G. S." marked on top of post.

[Latitude 40° 19' 53.80". Longitude 80° 51' 20.65".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Cadiz Court-House	61 46 20.94	241 40 48.88	4.1388232
Cadiz	69 46 06.04	249 40 19.70	4.1295800
Jefferson	137 22 06.82	317 18 11.04	4.1028039
Wintersville	233 31 31.07	53 36 19.99	4.1166735
New Alexander	290 17 09.61	110 23 39.92	4.1817202
Mount Pleasant	345 17 50.68	165 20 26.93	4.3534510

JACOBSBURG, BELMONT COUNTY.

Situated on the top of Mr. Robert McKelvey's house. Signal was placed on roof within railing. The center comes at edge of second layer of tin from south railing and in center of cupola east and west.

[Latitude 39° 58' 24.01". Longitude 80° 53' 04.87".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Beallsville	30 28 36.52	210 24 54.13	4.2108474
Galloway	119 38 37.92	299 35 16.63	3.9318086
Myers	248 31 07.18	68 34 01.77	3.8405264

ST. CLAIRSVILLE COURT-HOUSE, BELMONT COUNTY.

(Not occupied.)

Station mark: Center of cupola on court-house.

[Latitude 40° 04' 50.90". Longitude 80° 54' 05.72".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Mount Pleasant	237 58 45.00	58 03 07.29	4.0555471
Sherrard	297 53 05.27	118 01 16.04	4.8112543

KENSINGTON, CARROLL COUNTY.

Situated 1 mile south of Kensington on the highest point of a wooded hill. A county road passes over the south side of the hill.

Theodolite elevated 60 feet.

Station mark: A cut marble post 48 by 6 by 6 inches, sunk 36 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet marked "U. S. Geological Survey, Ohio."

[Latitude 40° 43' 20.61". Longitude 80° 56' 40.47".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Carrollton	24 09 27.05	204 06 05.89	4.2491471
Hammond	283 34 21.24	103 44 59.61	4.3739205
Elders	328 26 39.02	148 30 40.69	4.2218375

JEFFERSON, HARRISON COUNTY.

Situated on a bare hill one-fourth mile northwest of the town of Jefferson, between the forks of the New Philadelphia and the Carrollton roads, on land owned by Samuel Meed.

Station mark: A cut marble post 42 by 6 by 6 inches, sunk 36 inches in the ground, in center of top of which is cemented a bronze triangulation tablet marked "U. S. Geological Survey, Ohio."

[Latitude 40° 24' 55.88". Longitude 80° 57' 24.63".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Cadiz	16 08 19.68	196 06 28.74	4.1631951
Carrollton	160 48 24.64	340 45 32.78	4.2772402
Elders	206 09 16.01	26 13 45.61	4.3452306
Wintersville	274 33 35.99	94 42 21.10	4.2824762
Hopedale	317 18 11.04	137 22 06.82	4.1028039

CLARKS HILL, BELMONT COUNTY.

Situated 1 mile east of Bannock station, south of the Cleveland, Lorain and Wheeling Railway, on the summit of a hill owned by the heirs of Mr. Samuel Clark.

Station mark: A cut marble post 6 by 6 inches on top and extending to 6 by 12 inches at bottom. It is 24 inches long, sunk 25 inches in the ground, and set in cement. In the center of the top is cemented a bronze triangulation tablet marked "U. S. Geological Survey, Ohio."

[Latitude 40° 06' 18.28". Longitude 80° 57' 46.47".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Gallaway	4 07 10.89	184 06 50.55	4.0183311
Cadiz	170 13 03.93	350 11 27.43	4.3177623
Mount Pleasant	257 20 13.51	77 26 58.01	4.1327579

GALLAWAY, BELMONT COUNTY.

Situated 4 miles southeast of Belmont and 2 miles south of Lewis Mills, on the summit of a bare hill owned by Mr. Gallaway.

Station mark: A cut marble post 40 by 6 by 6 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet marked "U. S. Geological Survey, Ohio."

[Latitude 40° 00' 40.95". Longitude 80° 58' 18.07".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Beallsville	9 29 55.83	182 29 34.33	4.2612655
Clarks Hill	184 06 50.55	4 07 10.89	4.0183311
Mount Pleasant	228 38 05.78	48 45 10.24	4.3150322
Myers	276 53 33.03	96 59 49.03	4.1453970
Jacobsburg	299 35 16.63	119 38 37.92	3.9318086

BEALLSVILLE, MONROE COUNTY.

Situated 3 miles east of the town of Beallsville, on the highest point of a bare hill on the farm of the Gale brothers.

Station mark: A cut marble post 48 by 6 by 6 inches, set 40 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet marked "U. S. Geological Survey, Ohio."

[Latitude $39^{\circ} 50' 49.78''$. Longitude $80^{\circ} 58' 51.54''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Gallaway	182 29 34.33	2 29 55.83	4.2612655
Jacobsburg	210 24 53.13	30 28 36.52	4.2108474
Myers	221 32 26.97	41 39 03.80	4.3447990
Riggs Knob.....	269 45 19.11	89 53 56.89	4.2835700

CADIZ COURT-HOUSE, HARRISON COUNTY.

(Not occupied.)

Station mark: Center of cupola on court-house.

[Latitude $40^{\circ} 16' 22.39''$. Longitude $80^{\circ} 59' 54.02''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Hopedale	241 40 48.88	61 46 20.94	4.1388232
Mount Pleasant	310 31 40.34	130 39 47.88	4.3715307

CADIZ, HARRISON COUNTY.

Situated $1\frac{1}{2}$ miles north of the town of Cadiz, on a hill locally known as "the Sand Lot," on land owned by Louis Rider, at forks of road to Hanover and Rumley.

Theodolite elevated 52 feet.

Station mark: A cut marble post 48 by 6 by 6 inches, sunk 36 inches in ground, in center of top of which is cemented a bronze triangulation tablet marked "U. S. Geological Survey, Ohio."

[Latitude $40^{\circ} 17' 22.36''$. Longitude $81^{\circ} 00' 15.98''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Jefferson	196 06 28.74	16 03 19.68	4.1631951
Hopedale	249 40 19.70	69 46 03.04	4.1295800
Mount Pleasant	312 57 37.85	133 05 59.66	4.4004381
Clarks Hill.....	350 11 27.43	170 13 03.92	4.3177623

CARROLLTON, CARROLL COUNTY.

Situated $2\frac{1}{2}$ miles east of the town of Carrollton, on the Scroggsfield road, on land owned by Mr. Campbell.

Station mark: A cut marble post 40 by 6 by 6 inches, set 30 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet marked "U. S. Geological Survey, Ohio."

[Latitude $40^{\circ} 34' 35.51''$. Longitude $81^{\circ} 01' 49.27''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Kensington	204 06 05.89	24 09 27.05	4.2491471
Elders	262 50 29.70	82 57 51.91	4.2070630
Jefferson	340 45 32.78	160 48 24.64	4.2772402

Primary Traverse.

One hundred and ten geographic positions in northeastern Ohio were determined by primary traverse during October, November, and December, 1900, by Mr. E. L. McNair, and based upon three stations of the United States Lake Survey—Claridon, Warrensville, and Grafton.

Circuits were completed as follows: I. Southward from Warrensville triangulation station to Hudson; thence to Ravenna; thence by highways northward to Claridon triangulation station. II. Southward from Hudson, located by first traverse, to Akron; westward to Sterling; thence northward to Grafton triangulation station. III. Westward from Sterling to the eighty-second meridian; thence southward to Wooster, eastward to Canton; thence northward, closing on Akron. A spur line was run from Wooster southwestward 4 miles to Millbrook. IV. Southward from Ravenna to Bayard, thence westward to Canton. V. Eastward from Bayard to Kensington triangulation station, which was located through a series of triangles 270 miles in axial length, based upon Maryland Heights, Sugar Loaf stations, and on United States standard datum of the Coast and Geodetic Survey.

The position of Kensington triangulation station, as computed through the traverse from the lake survey stations compared with that computed through the triangulation upon the United States standard datum, shows a discrepancy of 23 feet in latitude and 15 feet in longitude, the latter giving a location north and west of the former. As this is a connection between two entirely different systems of triangulation the discrepancy is very small and is partly attributable to station error and partly to errors in the traverse lines and triangulation. This error was distributed in the traverse line between Bayard and Kensington.

Geographic positions between Warrensville triangulation station, United States Lake Survey, and Bedford, via highways.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Warrensville triangulation station.....	41 28 39.24	81 30 12.88
Randall station, Erie Rwy., about one-fourth mile west of, road crossing near post-office.....	41 25 42.6	81 32 12.0
Bedford station, Cleveland and Pittsburg Rwy.....	41 23 24.1	81 32 09.8

Geographic positions along Cleveland and Pittsburg Railway, between Bedford and Kensington.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Macedonia station.....	41 18 48.3	81 30 37.3
Hudson, Western Reserve Academy Observatory.....	41 15 37.6	81 26 14.9
Portage and Summit, county line.....	41 12 45.3	81 23 33.2
Earlville station.....	41 11 21.0	81 20 42.8
Erie Rwy. crossing.....	41 10 18.4	81 18 40.7
Ravenna, Main street crossing.....	41 09 28.0	81 14 52.5
Ravenna, Pittsburg and Western Rwy. crossing.....	41 08 56.4	81 14 44.6
Rootstown station, road crossing 150 feet north of.....	41 06 18.4	81 12 52.7
Road crossing 15 feet south of milepost 45.....	41 04 38.2	81 11 40.5
Road crossing 655 feet north of milepost 48.....	41 02 21.2	81 10 20.6
Atwater station road crossing 295 feet south of.....	41 01 25.4	81 09 50.8
Portage and Stark counties, road crossing on county line.....	40 59 17.4	81 08 41.2
Road crossing 1,695 feet south of milepost 55.....	40 56 27.5	81 06 57.0
Alliance, Alliance and Northern Rwy. crossing.....	40 55 33.0	81 06 04.4
Alliance, Pittsburg, Fort Wayne and Chicago crossing.....	40 55 18.6	81 05 45.0
Alliance station.....	40 55 17.1	81 05 43.2
Stark and Mahoning counties, road crossing on county line.....	40 54 44.1	81 05 13.8
Road crossing 1,070 feet north of milepost 61.....	40 52 20.4	81 04 08.3
Homeworth station, road crossing 55 feet south of.....	40 50 14.8	81 04 04.4
Moultrie station, road crossing 255 feet south of.....	40 47 47.8	81 04 14.3
Bayard station.....	40 45 02.7	81 03 58.4
East Rochester station, road crossing 700 feet east of.....	40 44 41.8	81 02 06.3
Hanover-West township line.....	40 44 00.5	80 58 32.2
Kensington station, road crossing 150 feet west of.....	40 44 05.3	80 57 23.3
Kensington triangulation station.....	40 43 20.6	80 56 40.5

Geographic positions along Cleveland, Akron and Columbus Railway, Hudson to Akron.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Flag station, road crossing at, 1,770 feet south of milepost 3	41 11 52.4	81 27 53.8
Road crossing 1,370 feet north of milepost 6	41 09 50.3	81 28 10.8
Cuyahoga Falls station	41 08 06.9	81 28 52.0
Road crossing 1,925 feet south of milepost 10	41 06 08.1	81 29 23.0
Cleveland, Terminal and Valley Rwy. crossing, stone arch	41 05 08.5	81 29 24.3
Akron, Union station	41 04 58.7	81 30 34.8
Akron, court-house grounds, south meridian mark	41 04 44.3	81 31 05.0
Akron, court-house grounds, north meridian mark	41 04 47.8	81 31 05.0

Geographic positions along Erie Railway, Akron to Burbank.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Akron, Erie station, 2 $\frac{1}{4}$ miles west of, old canal crossing	41 02 46.1	81 32 35.7
Road crossing (Baltimore and Ohio Rwy.), 2,200 feet southwest of milepost 18	41 01 56.4	81 34 52.1
Barberton station	41 01 13.2	81 36 36.5
Sherman station	41 00 50.4	81 40 05.0
Wadsworth station	41 01 02.7	81 43 46.6
Road crossing one-half mile west of milepost 217	40 59 46.5	81 44 55.5
Rittman station	40 58 06.4	81 46 55.2
Sterling; Cleveland, Lorain and Wheeling crossing	40 58 10.9	81 50 52.7
Creston station	40 58 56.6	81 53 33.2
Road crossing 370 feet east of water tank	40 59 22.8	81 57 30.2
Burbank station	40 59 24.2	81 59 50.1
Baltimore and Ohio crossing (Lodi and Wooster branch)	40 59 19.4	82 01 33.7

Geographic positions along Cleveland, Lorain and Wheeling Railway, from Sterling to Grafton triangulation station (United States Lake Survey).

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Sterling, Erie Rwy. crossing	40 58 10.9	81 44 55.5
Seville station	41 00 30.5	81 51 50.5
Road crossing 2,340 feet south of milepost 39	41 02 39.8	81 53 04.0
Flag station 400 feet south of milepost 37	41 04 37.6	81 53 39.8
Road crossing 250 feet north of milepost 34	41 07 16.1	81 53 03.3
Medina station	41 08 18.8	81 52 24.3
Road crossing 2,150 feet south of milepost 29	41 10 01.9	81 55 13.2
Lester station	41 10 48.2	81 56 31.5
Erhart station	41 11 55.2	81 58 21.1
Grafton triangulation station (United States Lake Survey)	41 12 44.21	81 59 37.85

Geographic positions along Lodi and Wooster branch of Baltimore and Ohio Railroad, from Erie crossing to Wooster.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Erie crossing	40 59 19.4	82 01 33.7
Road crossing at flag station	40 57 08.3	82 01 27.7
Armstrong flag station	40 54 42.0	82 00 34.0
Overton flag station	40 51 51.0	82 00 32.3
Road crossing 600 feet south of water tank	40 48 38.1	81 58 51.0
Wooster fair grounds, south meridian mark	40 47 50.3	81 57 03.5
Wooster fair grounds, north meridian mark	40 47 55.6	81 57 03.5
Wooster station, Baltimore and Ohio R. R.	40 47 43.6	81 56 55.1

Geographic positions along Pittsburg, Fort Wayne and Chicago Railway, from Millbrook to Orrville.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Bridge 121, northwest corner of, copper bolt in bridge abutment	40 43 59.9	81 58 24.6
Road crossing 100 feet east of bridge 121	40 44 00.7	81 58 23.8
Overhead road crossing	40 44 51.8	81 57 41.4
Baltimore and Ohio overhead crossing	40 46 32.6	81 56 47.7
Wooster station	40 47 57.0	81 55 54.8
Stone arch culvert 1,040 feet north of milepost 132	40 49 09.8	81 53 19.6
Smithville station	40 50 25.5	81 51 40.9
Road crossing about one-third mile east of water tank	40 49 46.0	81 48 35.0
Orrville, Pittsburg, Fort Wayne and Chicago and Cleveland, Akron and Columbus Rwy	40 50 22.1	81 46 05.8

Geographic positions along Wheeling and Lake Erie Railway, between Orrville and Massillon.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Burton City station	40 50 36.5	81 42 12.1
Dalton station	40 48 02.0	81 41 15.2
Pocock mine junction	40 48 20.7	81 38 43.9
Sippo station, road crossing 325 feet west of	40 48 56.4	81 36 05.9
Sherwood flag station, road crossing at	40 48 19.8	81 33 17.9
Massillon, crossing of Wheeling and Lake Erie and Cleveland, Lorain and Wheeling Rwys	40 47 43.5	81 31 47.3

Geographic positions along Pittsburg, Fort Wayne and Chicago Railway, between Massillon and Canton.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Massillon, East street crossing	40 47 32.4	81 31 01.2
Road crossing 2,150 feet east of milepost 107	40 47 11.6	81 27 57.6
Road crossing 700 feet west of milepost 104	40 46 54.1	81 25 11.8
Canton, Pittsburg, Fort Wayne and Chicago Rwy. and Cleveland Terminal and Valley Rwy. crossing.	40 47 24.2	81 23 02.1

Geographic positions along the Cleveland Terminal and Valley Railway, between Canton and Akron.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Canton station	40 48 01.5	81 23 16.1
Road crossing 1,525 feet south of milepost 54	40 51 16.8	81 24 49.2
New Berlin station, road crossing 65 feet north of	40 52 54.0	81 25 32.3
Greentown station, road crossing 245 feet north of	40 55 42.5	81 25 10.8
Myersville station, road crossing 215 feet north of	40 58 34.0	81 25 36.7
Road crossing 280 feet north of milepost 44	40 59 41.9	81 26 44.5
Krumroy station, road crossing 225 feet south of	41 00 55.3	81 28 42.8
Overhead road crossing 425 feet south of milepost 39	41 03 07.2	81 28 37.0

Geographic positions along Wheeling and Lake Erie Railway, between Canton and Minerva.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Canton, crossing of Pittsburg, Fort Wayne and Chicago Rwy	40 47 43.3	81 22 07.3
Road crossing 1,826 feet west of milepost 63	40 46 26.4	81 19 17.9
Osnaburg station road crossing, 425 feet east of	40 47 03.7	81 16 59.6
Road crossing 1,650 feet east of milepost 67	40 45 58.0	81 14 51.9
Robertsville station, road crossing 90 feet west of	40 45 38.9	81 11 21.6
Road crossing 180 feet south of milepost 73	40 44 54.2	81 09 24.0
Road crossing 450 feet south of milepost 75	40 43 09.5	81 09 11.8
Minerva, crossing of Cleveland and Pittsburg Rwy. (new Philadelphia branch) along Cleveland and Pittsburg Rwy	40 43 31.5	81 06 26.2
Minerva station, Cleveland and Pittsburg Rwy., road crossing, about 2,200 feet northeast of	40 43 40.3	81 06 09.9

Geographic positions along highway from Ravenna northward to Claridon triangulation station (United States Lake Survey).

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Shalersville, 2½ miles south of, 4 corners	41 12 07.4	81 14 47.1
Shalersville, intersection of roads at	41 14 19.8	81 13 53.6
Mantua station, Erie Railway crossing near	41 16 52.8	81 13 28.8
Mantua post-office, road intersection at	41 18 37.3	81 13 19.2
Julia post-office, county line between Portage and Geauga County	41 20 50.8	81 13 27.3
Auburn, road intersection at store	41 23 14.0	81 13 00.2
South Newbury post-office, 2,000 feet south of, and ½ mile south of creamery, electric railway crossing	41 25 58.4	81 12 32.9
Burton, 2¼ miles southeast of, 4 corners	41 26 59.7	81 10 53.4
Burton, street intersection, north side of park	41 28 21.4	81 08 43.9
Burton, about 1½ miles north of, 4 corners	41 29 49.5	81 08 43.8
Claridon triangulation station (U. S. Lake Survey)	41 30 39.61	81 07 06.27

Meridian Marks.

CANTON, STARK COUNTY, OHIO.

Location of station: On the Stark County fair grounds at Canton.

Station mark: A marble post 40 by 6 by 8 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze meridian tablet. It is 25 feet north of inside fence at south end of race track.

Reference mark: Center of judges' stand, 390.6 feet distant; true azimuth, $148^{\circ} 01' 30''$.

Distant mark: A marble post 40 by 6 by 8 inches, set 36 inches in the ground, in the center of top of which is a bronze meridian tablet. It is 765 feet north of the station mark and 283 feet south of inside fence at north end of race track.

Center of judges' stand, $480\frac{1}{2}$ feet distant; true azimuth, $25^{\circ} 30' 00''$.

Resident referee: Mr. John S. Hoover, county surveyor.

ST. CLAIRSVILLE, BELMONT COUNTY, OHIO.

Location of station: Within the Belmont County Agricultural Society fair grounds.

Station mark: A sandstone post 40 by 12 by 20 inches set 40 inches in the ground, in the center of top of which is cemented a bronze meridian tablet.

Distant mark: North of station 400 feet, a sandstone post 72 by 12 by 20 inches set 40 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet.

WOOSTER, WAYNE COUNTY, OHIO.

Location of station: On the Wayne County fair grounds.

Station mark: A marble post 36 by 6 by 9 inches set 34 inches in the ground, in the center of top of which is cemented a bronze meridian tablet.

Reference marks: Center of judges' stand, 129 feet distant; true azimuth, $181^{\circ} 31'$; tree, 426 feet distant; azimuth, $104^{\circ} 00'$.

Distant mark: 539.4 feet north of station mark, 40 feet from inside edge of race track, a marble post 36 by 6 by 9 inches set 34 inches in the ground, in the center of top of which is cemented a bronze meridian tablet.

Reference marks: Center of judges' stand, 413 feet distant; true azimuth, $356^{\circ} 25'$; tree, 601 feet distant; azimuth, $43^{\circ} 25'$.

Resident referee: County surveyor.

NORTH CAROLINA.

Primary Traverse.

The following geographic positions were determined by primary railroad traverse by Mr. Oscar Jones, assistant topographer, in September and October, 1900. The line begins at the Episcopal Church spire at Newbern (located by the United States Coast and Geodetic Survey), and follows the Atlantic and North Carolina Railroad to Goldsboro; thence along the Atlantic Coast Line Railroad via Rocky-mount and Parmele to Washington, connecting with Cedar Grove tri-

angulation station of the United States Coast and Geodetic Survey. A spur line was run from Parmele to Plymouth.

Geographic positions along Atlantic and North Carolina Railroad between Newbern and Goldsboro.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Newbern, Episcopal Church spire, United States Coast and Geodetic Survey	35 06 25.04	77 02 21.98
Newbern, national pipe crossing	35 07 01.0	77 02 47.7
Road crossing 1,470 feet east of milepost 40	35 07 45.9	77 05 44.1
Clark post-office and sawmill, road crossing at	35 08 44.8	77 09 35.5
Tuscarora station	35 09 34.1	77 12 49.5
Road crossing 2,190 feet east of milepost 51	35 10 34.1	77 16 46.0
Coar Creek station	35 11 11.7	77 19 14.3
Road crossing 2,306 feet east of milepost 56	35 11 50.8	77 21 48.8
Road crossing 1,140 feet west of milepost 58	35 12 31.5	77 24 30.1
Dover station	35 12 57.5	77 26 12.9
Road crossing 1,470 feet west of milepost 64	35 14 00.9	77 30 40.4
Neuse River bridge, east end of	35 14 36.5	77 33 27.0
Kinston, crossing of Atlantic Coast Line Rwy	35 15 31.5	77 34 27.1
Kinston station	35 15 51.4	77 34 53.7
Road crossing 1,480 feet west of milepost 72	35 16 15.8	77 38 12.4
Falling Creek station	35 16 34.8	77 41 22.6
Road crossing 285 feet east of milepost 78	35 17 08.6	77 44 05.8
Lagrange station	35 18 25.7	77 47 17.3
Beston station	35 20 37.0	77 50 49.7
Road crossing 1,080 feet west of milepost 88	35 21 38.6	77 52 59.4
Road crossing 160 feet west of milepost 91	35 22 47.0	77 55 59.6
Goldsboro, junction with Atlantic Coast Line Rwy	35 23 27.9	77 59 34.8
Goldsboro, north meridian mark	35 22 53.4	77 59 37.2
Goldsboro, south meridian mark	35 22 51.7	77 59 37.2

Geographic positions along Atlantic Coast Line Railway, between Goldsboro and Rockymount.

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
Road crossing 160 feet north of milepost 87.....	35	25	30.0	77	58	58.8
Road crossing 360 feet south of milepost 90.....	35	28	02.3	77	58	58.2
Pikeville station.....	35	29	52.6	77	58	57.7
Water tank 580 feet north of milepost 93.....	35	30	50.5	77	58	57.4
Road crossing 180 feet north of milepost 94.....	35	31	38.2	77	58	56.4
Fremont station.....	35	32	41.8	77	58	25.8
Road crossing 1,510 feet south of milepost 99.....	35	35	24.6	77	57	01.5
Blackcreek station.....	35	38	14.2	77	55	56.5
Contentnea station, junction main line.....	35	40	42.8	77	55	51.0
Wilson station.....	35	43	21.9	77	54	24.5
Road crossing 860 feet north of milepost 110.....	35	44	47.9	77	53	37.7
Road crossing 20 feet south of milepost 113.....	35	47	03.2	77	52	24.6
Elm City station.....	35	48	21.4	77	51	42.4
Road crossing 1,090 feet south of milepost 116.....	35	49	17.1	77	51	11.8
Sharpsburg.....	35	52	01.0	77	49	43.8
Road crossing 1,790 feet south of milepost 121.....	35	53	10.9	77	49	08.4
South Rockymount, main line junction.....	35	55	51.7	77	48	02.5
Rockymount station.....	35	56	18.5	77	47	51.7

Geographic positions along Atlantic Coast Line Railway, Rockymount east to Plymouth.

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
Road crossing 15 feet east of milepost 3.....	35	55	29.1	77	44	58.0
Road crossing 1,495 feet east of milepost 5.....	35	55	16.8	77	42	30.6
Kinsboro station.....	35	55	05.6	77	40	14.0
Hartsboro station.....	35	54	58.3	77	38	44.8.
Road crossing 696 feet west of milepost 12.....	35	54	42.6	77	35	31.8
Tarboro, main-line junction.....	35	54	28.9	77	32	47.2
Tarboro station.....	35	54	28.6	77	32	33.0
Tar River bridge, west end.....	35	53	35.2	77	32	07.2
Mildred station.....	35	50	53.8	77	29	29.4
Conetoe station.....	35	48	56.5	77	27	19.7
Road crossing 340 feet west of milepost 25.....	35	48	03.7	77	25	15.7
Bethel station.....	35	48	28.7	77	22	31.7
Parmele, railroad crossing at.....	35	48	58.4	77	18	50.8
Robersonville station.....	35	49	27.5	77	15	10.9
Everetts station.....	35	50	05.6	77	10	23.1
Williamston, junction of spur track to station.....	35	50	57.1	77	03	51.6
Williamston, road crossing at.....	35	50	48.0	77	03	35.2

Geographic positions along Atlantic Coast Line Railway, Rockymount east to Plymouth—Continued.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Water tank 760 feet west of milepost 48	35 49 18.1	77 02 40.6
Road crossing 990 feet east of milepost 51	35 48 35.8	76 59 14.6
Jamesville, tram road crossing 1 mile west of	35 48 38.6	76 54 41.1
Jamesville station	35 48 21.0	76 53 48.7
Road crossing 510 feet east of milepost 60	35 48 46.6	76 49 40.5
Road crossing 2,610 feet east of milepost 63	35 50 38.0	76 47 25.8
Plymouth, tram road crossing west of	35 51 08.8	76 45 45.0
Plymouth station	35 52 10.0	76 44 52.4
Plymouth, river front, first cross street	35 52 07.2	76 44 54.8
Plymouth, river front, last cross street	35 51 59.0	76 45 14.6
Plymouth, north meridian mark	35 51 41.9	76 45 14.1
Plymouth, south meridian mark	35 51 38.1	76 45 14.1

Geographic positions along the Atlantic Coast Line Railway from Washington to Parmele.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Cedar Grove triangulation station, United States Coast and Geodetic Survey	35 31 52.6	77 02 11.0
Washington station	35 32 43.2	77 03 27.2
Wharton station	35 35 48.9	77 07 19.2
Pactolus station	35 37 41.4	77 13 02.5
Whichard, tramroad crossing east of	35 41 43.3	77 15 13.5
Whichard station	35 41 49.3	77 15 16.6
Williams station	35 45 28.5	77 17 15.1

Geographic positions along Atlantic Coast Line Railway from Parmele to Kinston.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Grindool station	35 45 57.0	77 19 57.2
Sawmill, road crossing at	35 41 18.3	77 21 17.2
House station	35 39 15.5	77 21 52.6
Greenville station	35 36 25.2	77 22 48.5
Parksville station	35 33 40.1	77 23 20.8
Winterville station	35 31 44.2	77 24 07.0
Ayder station	35 28 20.4	77 24 58.0
Flag station 1,300 feet north of milepost 72	35 24 25.8	77 25 36.2
Grifton station	35 22 20.5	77 26 17.8
Graingers station	35 19 11.8	77 30 32.0

SOUTH CAROLINA.

Primary Traverse.

A line of primary railroad traverse was run by Mr. S. Tatum, topographer, in 1900 from the Columbia State capitol (located by astronomical methods by the United States Coast and Geodetic Survey) along the Southern Railway to Spartanburg, connecting with the dome of St. Johns College, located by triangulation from the oblique arc of the United States Coast and Geodetic Survey. A circuit was completed by running from Carlisle, of the former line, eastward along the Seaboard Air Line Railway to Chester; thence southward along the Southern Railway to Columbia. Another circuit was completed by running westward from Columbia along the Southern Railway to Leesville; thence northward via highways to Prosperity; thence eastward along the Southern Railway, connecting with the first line at Alston.

Meridian lines were established at Chester, Columbia, Lexington, Union, and Winnsboro.

Geographic positions along Southern Railway from Columbia to Spartanburg.

Station.	Latitude.	Longitude.
	° ' "	° ' "
Columbia, State capitol dome, United States Coast and Geodetic Survey astronomical position	33 59 56.8	81 02 02.7
Road crossing (near river bridge)	34 01 31.9	81 03 53.6
Milepost 7	34 05 08.1	81 05 36.2
Milepost 11	34 07 50.9	81 07 57.2
Bookman flag station, road crossing at	34 09 44.4	81 09 14.8
Littleton flag station	34 10 42.0	81 10 39.4
Milepost 19	34 12 32.4	81 13 42.3
Wallaceville flag station	34 12 34.4	81 15 05.9
Alston station	34 14 34.7	81 18 59.2
Road crossing 2,885 feet north of milepost 133	34 16 51.9	81 20 17.3
Milepost 131	34 18 04.5	81 20 32.9
Dawkins station	34 21 18.8	81 22 04.8
Road crossing 3,050 feet north of milepost 125	34 22 53.7	81 22 49.0
Strother station	34 23 34.2	81 23 39.8
Blair flag station	34 25 03.6	81 24 10.4
Beaver Creek, center of stream	34 26 25.4	81 24 28.5
Lyles Ford	34 27 06.3	81 25 01.3
Milepost 117	34 28 55.4	81 25 05.3
Shelton station	34 29 48.7	81 25 10.1
Milepost No. 113	34 32 13.5	81 26 07.6
Road crossing 383 feet south of milepost 111	34 33 50.4	81 26 43.4

Geographic positions along Southern Railway from Columbia to Spartanburg—Continued.

Station.	Latitude.			Longitude.		
	°	'	"	°	'	"
Carlisle station	34	35	31.2	81	27	54.6
Road crossing 1,330 feet north of milepost 107	34	36	52.7	81	29	20.0
Santuck station	34	38	00.8	81	31	07.8
Road crossing 215 feet south of milepost 103	34	39	09.2	81	31	48.7
Road crossing 2,318 feet south of milepost 101	34	40	19.2	81	32	41.8
Road crossing 245 feet south of milepost 100	34	41	11.1	81	33	37.4
Milepost 97	34	42	56.2	81	35	49.0
Union station	34	42	55.8	81	37	12.3
Milepost 94	34	44	10.9	81	37	58.0
Road crossing 2,360 feet south of milepost 92	34	45	20.8	81	37	43.4
Road crossing 1,270 feet south of milepost 90	34	47	08.4	81	38	36.4
Lockhart Junction	34	49	06.5	81	39	01.8
Jonesville station	34	50	07.0	81	40	42.1
Road crossing 4,255 feet south of milepost 83	34	51	14.8	81	42	12.2
Road crossing 200 feet north of milepost 82	34	51	53.9	81	43	44.1
Pacolet station	34	53	53.7	81	45	34.9
Milepost 77	34	54	23.4	81	47	31.0
Rich Hill flag station	34	54	11.8	81	48	59.7
Road crossing 1,265 feet north of milepost 74	34	55	01.5	81	50	34.1
Glendale station	34	55	24.1	81	51	38.5
Spartanburg, dome of St. John's College, United States Coast and Geodetic Survey position	34	57	17.2	81	54	55.6

Geographic positions along Seaboard Air Line Railway from Carlisle to Chester.

Station.	Latitude.			Longitude.		
	°	'	"	°	'	"
Carlisle, crossing of Seaboard Air Line Rwy. and Southern Rwy	34	35	27.3	81	27	50.8
Broad River, right bank	34	37	21.6	81	25	01.4
Leeds station	34	37	48.8	81	23	40.7
Milepost 54	34	38	41.7	81	20	42.4
Milepost 53	34	39	11.5	81	19	52.4
Milepost 51	34	39	44.6	81	18	05.2
Road crossing 1,955 feet east of milepost 50	34	40	06.4	81	16	46.2
Road crossing	34	42	12.1	81	14	20.2
Chester station, Seaboard Air Line Rwy	34	42	30.2	81	12	57.8

Geographic positions along Southern Railway from Chester to Columbia.

Station.	Latitude.			Longitude.		
	°	'	"	°	'	"
Chester station, Southern Rwy	34	42	16.9	81	12	14.5
Road crossing 1,017 feet north of milepost 46	34	41	09.1	81	11	28.3
Milepost 48	34	39	22.3	81	11	42.6
Road crossing (bridge overhead)	34	38	41.9	81	11	10.3
Cornwall station	34	36	23.4	81	10	42.7
Milepost 54	34	34	40.2	81	10	20.8
Blackstock station	34	33	29.3	81	09	10.1
Woodward station	34	31	33.7	81	10	14.1
Road crossing 270 feet south of milepost 59	34	31	12.0	81	09	44.3
Road crossing 700 feet south of milepost 61	34	29	51.1	81	08	27.8
Whiteoak station	34	28	19.5	81	07	04.6
Milepost 65	34	27	03.7	81	07	14.4
Adgers station	34	25	59.0	81	07	27.1
Road crossing 550 feet north of milepost 69	34	24	38.3	81	05	41.9
Winnsboro station	34	22	33.8	81	05	04.0
Milepost 73	34	21	20.8	81	04	52.4
Rockton station	34	20	24.7	81	04	46.4
Milepost 77	34	18	49.6	81	02	57.6
Simpson station	34	18	33.9	81	02	48.9
Milepost 80	34	18	38.4	81	00	22.0
Ridgeway station	34	18	18.9	80	57	39.5
Milepost 84	34	17	31.5	80	57	05.3
Campbells flag station	34	16	52.4	80	56	59.0
Milepost 87	34	15	13.6	80	57	32.2
Blythewood station	34	12	52.7	80	58	24.5
Milepost 93	34	10	33.5	80	57	16.4
Killian station	34	08	12.8	80	56	48.5
Milepost 97	34	07	16.7	80	56	45.8
Road crossing 815 feet north of milepost 98	34	06	44.2	80	56	50.4
Milepost 99	34	05	48.6	80	57	36.8
Dents flag station	34	05	08.2	80	58	27.7
Road crossing 3,475 feet south of milepost 101	34	03	58.6	80	58	58.8
Crossing of Seaboard Air Line	34	03	16.2	81	00	10.2
Milepost 104	34	02	34.2	81	00	38.6
Columbia, Blanding street station	34	00	39.2	81	01	29.0
Columbia, East Capitol street crossing	33	59	21.5	81	01	46.8

Geographic positions along Southern Railway from Columbia to Leesville.

Station.	Latitude.			Longitude.		
	°	'	"	°	'	"
Broad River, east bank	33	58	35.0	81	02	48.1
Cayce station	33	58	22.6	81	03	19.8
Road crossing 250 feet west of milepost 114	33	58	33.2	81	07	15.7
Arthur station	33	58	11.2	81	08	48.3
Milepost 119	33	58	17.5	81	12	17.6
Lexington station	33	57	58.3	81	14	05.2
Barrs station	33	56	17.5	81	17	36.4
Shumpert station	33	55	50.6	81	20	05.2
Milepost 129	33	55	25.4	81	21	24.7
Gilbert station	33	55	24.7	81	23	37.6
Summit station	33	55	24.7	81	25	20.6
Fredonia station	33	55	33.6	81	27	44.4
Leesville station	33	54	59.9	81	30	46.5

Geographic positions along highway from Leesville to Prosperity.

Station.	Latitude.			Longitude.		
	°	'	"	°	'	"
Crossing of Hollow Creek	33	56	59.1	81	32	02.4
Delmar post office, road crossing 2 miles south of	33	59	14.7	81	31	19.8
Delmar post-office	34	00	38.0	81	30	41.3
Delmar post-office, 1½ miles north of, crossing of roads	34	01	29.4	81	29	51.9
Dupler post-office	34	03	00.1	81	29	42.9
Baptist Church	34	03	30.6	81	29	50.0
Saluda River, south bank	34	04	45.1	81	29	07.0
Upwell	34	05	22.6	81	28	48.1
Oneal School	34	07	00.7	81	30	14.6
Prosperity, .3 miles south of, road forks	34	10	27.5	81	32	07.1
Prosperity, .2 miles south of, road crossing (Columbia road)	34	10	48.4	81	31	56.2

Geographic positions along Southern Railway from Prosperity to Alston.

Station.	Latitude.			Longitude.		
	°	'	"	°	'	"
Prosperity, crossing Southern Rwy. and street	34	12	30.8	81	32	57.4
Road crossing 1,025 feet west of milepost 39	34	12	34.3	81	31	27.6
Road crossing 1,992 feet west of milepost 37	34	12	59.2	81	29	38.4
Road crossing 1,920 feet west of milepost 36	34	13	08.9	81	28	36.5
Road crossing, overhead bridge	34	13	49.2	81	26	56.3
Pomaria station	34	15	43.0	81	24	47.8
Road crossing 2,125 feet east of milepost 29	34	15	43.4	81	22	05.2
Road crossing 2,905 feet east of milepost 27	34	14	41.2	81	20	19.4
Road crossing 297 feet west of milepost 26	34	14	29.0	81	20	02.0
Peaks station	34	14	29.2	81	19	22.4
Alston station	34	14	34.7	81	18	59.2

Meridian Marks.

CHESTER, CHESTER COUNTY.

Location of station: In city park, just east of summit house, on top of knoll.

Station mark: A marble post 48 by 8 by 8 inches, set 46 inches in the ground, in the center of top of which is cemented a bronze tablet.

Distant mark: North of station 458 feet, a marble post 48 by 8 by 8 inches, set 46 inches in the ground, in center of top of which is cemented a bronze tablet.

Local reference: James Hamilton, jr., city engineer.

COLUMBIA, RICHLAND COUNTY.

Location of station: In State College park, east of college building and just north of street forming southern boundary of park.

Station mark: A marble post 48 by 6 by 6 inches, set 46 inches in the ground, in the center of top of which is cemented a bronze tablet.

Distant mark: North of station, a marble post 48 by 8 by 8 inches, set 46 inches in the ground, in top of which is cemented a bronze tablet.

Local referee: Professor Colcock.

LEXINGTON, LEXINGTON COUNTY.

Location of station: In city park, near southeast corner, about 10 feet north of south side.

Station mark: A granite post 48 by 10 by 10 inches, set 46 inches in the ground, with bronze tablet cemented in top.

Distant mark: A granite post 48 by 10 by 10 inches, set 46 inches in ground, 360.5 feet distant, in northeast corner of city cemetery.

UNION, UNION COUNTY.

Location of station: In grounds surrounding Union High School, west of high-school building and north of street forming southern boundary of grounds.

Station mark: A marble post 42 by 8 by 8 inches, set 40 inches in the ground, in the center of top of which is cemented a bronze tablet.

Distant mark: North of station 371 feet, near northern boundary of high-school grounds, a marble post 42 by 8 by 8 inches, set 40 inches in the ground, in the center of top of which is cemented a bronze tablet.

Resident referee: Colonel Young.

WINNSBORO, FAIRFIELD COUNTY.

Location of station: In park in front of Winnsboro College, about 200 feet west of east side of park and 5 feet north of south side of park.

Station mark: A granite post 48 by 8 by 8 inches, set 46 inches in the ground, with bronze tablet cemented in top.

Distant mark: North of station 348 feet, a granite post 48 by 8 by 8 inches, set 46 inches in ground.

Local referee: President Winnsboro College.

CENTRAL SECTION OF TOPOGRAPHY.

OHIO.

Primary Traverse.

The following geographic positions were determined from primary traverse in 1900 by Mr. George T. Hawkins, topographer.

Starting from United States Coast and Geodetic Survey astronomic pier at Mount Lookout, Cincinnati, the line follows the Baltimore and Ohio Southwestern and Baltimore and Ohio railroads to Columbus, Ohio; thence along the Hocking Valley Railroad to Toledo, Ohio, where it was tied to St. Mary's Church spire (United States Lake Survey station); thence back to Columbus, following line of Toledo and Ohio Central Railway, and connected with original line. Meridian lines were established at Bowling Green, Delaware, Findlay, Kenton, Marysville, Upper Sandusky, and Washington Court-House.

Geographic positions along Baltimore and Ohio Southwestern and Baltimore and Ohio railroads from Cincinnati to Columbus.

Station.	Latitude.	Longitude.
	° ' "	° ' "
Cincinnati, Mount Lookout astronomic pier	39 08 21.93	84 25 21.52
Madisonville station	39 09 26.0	84 23 49.0
East Madisonville station	39 09 35.3	84 23 10.0
Madeira station	39 11 17.0	84 21 45.9
Allandale station	39 11 49.2	84 20 34.4
Remington station	39 13 35.8	84 19 26.7
Symmes station	39 14 50.0	84 17 45.8
Camp Ground station	39 15 18.2	84 16 47.5
Loveland, crossing of Pennsylvania and Baltimore and Ohio Southwestern railways	39 16 00.6	84 15 31.9
Hills station, crossing 340 feet west of	39 15 18.7	84 11 17.7
Cozaddale station, crossing 80 feet west of	39 16 15.2	84 09 39.9
Pleasant Plain station, crossing 110 feet west of	39 16 47.5	84 06 43.6
Windsor station, crossing 40 feet west of	39 17 04.6	84 02 59.5
Blanchester station, crossing 320 feet east of	39 17 31.4	83 59 14.2
Midland station, crossing 310 feet west of	39 18 13.7	83 54 35.4
Midland station	39 18 14.4	83 54 31.5
Cuba station, crossing under railway 300 feet south of	39 21 41.0	83 51 58.1

Geographic positions along Baltimore and Ohio Southwestern and Baltimore and Ohio railroads from Cincinnati to Columbus—Continued.

Station.	Latitude.			Longitude.		
	°	'	"	°	'	"
Milepost 52, crossing 450 feet north of	39	23	59.4	83	51	17.8
Wilmington, Baltimore and Ohio station at	39	26	36.6	83	49	25.2
Blind siding, crossing 450 feet west of head block at ..	39	27	56.2	83	45	05.3
Melvin station, crossing 200 feet east of	39	28	24.8	83	43	01.2
Reesville, crossing at	39	28	57.1	83	40	41.2
Sabina station, crossing 100 feet west of	39	29	33.6	83	38	07.4
Milepost 69, crossing 800 feet west of	39	30	12.2	83	35	19.4
Rattlesnake, crossing over railroad at	39	30	41.8	83	33	09.4
Jasper Mills, crossing at	39	31	08.0	83	31	14.4
Washington Court-House, south azimuth stone 1,400 feet southward from Baltimore and Ohio station, near coal chutes 6 feet east of main track, 11 feet from end of bulkhead leading to elevated tracks. A limestone post, 36 by 8 by 8 inches, set 33 inches in the ground, in the center of top of which is cemented a bronze meridian tablet. Distant mark is a copper bolt cemented in east abutment of wagon bridge. Azimuth 218° 12' 45". Distance from south stone 1,093 feet	39	32	04.0	83	26	53.7
Washington Court-House, crossing of Baltimore and Ohio and Cincinnati, Hamilton and Dayton railways.	39	32	13.3	83	26	43.4
Fayette station	39	34	09.9	83	25	13.7
Bloomingsburg station, crossing 300 feet east of	39	36	22.7	83	23	17.4
Madison Mills station, crossing 30 feet east of	39	39	13.5	83	20	21.4
Cook station, crossing 200 feet east of	39	40	59.4	83	18	24.3
Mount Sterling station, 300 feet east of Main street crossing	39	43	17.6	83	16	03.7
Era station, crossing 430 feet west of	39	44	23.2	83	14	38.1
Derby station, crossing 350 feet west of	39	46	08.4	83	12	20.5
Morgan station, crossing 100 feet west of	39	48	17.8	83	09	19.5
Pleasant Corners station, crossing 100 feet southwest of ..	39	50	37.5	83	07	41.1
Grove City station, crossing 100 feet southwest of	39	52	59.7	83	05	44.3
Urbancrest station, crossing 100 feet northeast of	39	53	53.2	83	05	00.4
Briggsdale station, crossing 50 feet northeast of	39	55	36.0	83	03	36.1
United States Geological Survey triangulation station, north base	39	55	57.3	83	03	18.6
Columbus, crossing Baltimore and Ohio Railway and Broad street	39	57	31.9	83	01	54.4

Positions along Hocking Valley Railway from Columbus to Toledo.

Station.	Latitude.	Longitude.
	° ' "	° ' "
Crossing Hocking Valley Railway and pike road east and west	39 59 16.8	83 01 37.1
Columbus, Lane avenue station, crossing 150 feet south of	40 00 24.3	83 01 55.5
Olentangy station, crossing under railway 550 feet north of	40 03 48.5	83 02 48.1
Elmwood station, crossing 200 feet south of	40 05 25.2	83 03 09.4
Milepost 113, crossing 850 feet north of	40 07 01.8	83 03 30.7
Powell station, crossing 160 feet south of	40 09 29.6	83 04 42.3
Milepost 107, crossing 170 feet south of	40 11 44.5	83 05 22.7
Hyatts station, crossing 1,200 feet south of	40 12 58.3	83 05 17.6
Milepost 103, crossing 340 feet south of	40 15 12.6	83 05 08.5
Crossing telephone line	40 17 18.3	83 04 59.8
Delaware, south azimuth stone, 30 feet southeast of "Big Four" and Hocking Valley railways. A limestone post, 28 by 6 by 6 inches, set 28 inches in the ground, in the center of top of which is cemented a bronze meridian tablet. Azimuth 185° 10'	40 17 34.5	83 04 58.4
Delaware, north azimuth stone, 105 feet north of center of street and 72 feet east of railroad. A limestone post, 36 by 6 by 6 inches, set 30 inches in the ground; in center of top is cemented a copper bolt. Azimuth 5° 10'	40 17 47.0	83 04 56.9
Delaware station, crossing 50 feet north of	40 17 58.7	83 04 57.4
Siding, crossing 150 feet south of south end of	40 20 00.3	83 06 03.3
Milepost 95, crossing 200 feet north of	40 21 51.6	83 07 15.9
Radnor station, crossing 160 feet north of	40 23 09.6	83 08 06.0
Mileposts 90 and 91, crossing halfway between	40 25 22.7	83 09 39.1
Prospect station, crossing at	40 27 06.1	83 10 45.7
Crossing, four corners	40 29 28.0	83 09 59.3
Owen station, crossing 600 feet north of	40 31 13.2	83 09 28.6
Mileposts 79 and 80, crossing halfway between	40 34 31.3	83 08 30.8
Marion station, 140 feet south of Main street crossing	40 35 19.2	83 08 28.0
Marion, south azimuth stone, 225 feet north of "Big Four" crossing and 45 feet north of tool house, between Y tracks and main line of Hocking Valley Railway. A limestone post, 40 by 7 by 6 inches, set 40 inches in the ground, in the center of top of which is cemented a bronze meridian tablet. Distant mark is spire of Catholic Church. Azimuth of same is 259° 11' 30"	40 35 25.0	83 08 30.1
Crossing under railroad	40 38 01.5	83 10 25.1

Positions along Hocking Valley Railway from Columbus to Toledo—Continued.

Station.	Latitude.			Longitude.		
	°	'	"	°	'	"
Morrall station, crossing 160 feet north of	40	41	12.4	83	12	45.6
T. 3 S., R. 14 E., $\frac{1}{4}$ corner between secs. 33 and 34	40	44	17.6	83	14	44.8
Harpster station	40	44	20.4	83	15	04.2
Milepost 63, crossing 1,180 feet north of	40	47	19.8	83	17	12.1
Upper Sandusky, south azimuth stone, 9 feet east of railway and 1,395 feet distant from north stone. A limestone post, 30 by 5 by 5 inches, set 30 inches in the ground, in the center of top of which is cemented a bronze meridian tablet. Azimuth 180° 18' 30"	40	49	14.8	83	17	31.4
Upper Sandusky, north azimuth stone 55 feet south and 150 feet east of crossing of Pittsburg, Fort Wayne and Chicago Railway and Hocking Valley Railway, 11 feet east of Hocking Valley Railway. A limestone post 38 by 6 by 6 inches, set 34 inches in the ground, in center of top is cemented a copper bolt	40	49	28.6	83	17	31.3
Upper Sandusky station	40	49	30.0	83	17	31.3
T. 2 S., R. 14 E., west corner of secs. 19 and 30	40	50	49.7	83	18	16.6
Crossing at flag station	40	53	26.8	83	19	54.7
Crawford station, crossing at	40	55	05.2	83	21	03.8
Carey station, crossing south of	40	57	04.2	83	22	28.3
Carey, south azimuth stone. A copper bolt sunk and cemented in south abutment of bridge north of station, on second stone and 4 feet east of east rail. Azimuth 151° 40' 20" to north mark.	40	57	10.3	83	22	32.6
Carey, north azimuth stone, 339 feet north of "Big Four" crossing, 8 feet southeast of Northern Ohio crossing and $3\frac{1}{4}$ feet east of east rail on Hocking Valley Railway. A marble post 24 by 8 by 8 inches, set 24 inches in the ground, in center of top is cemented a copper bolt.	40	57	22.9	83	22	41.5
$\frac{1}{4}$ corner north of sec. 5 on base line, range 13 E.	40	59	31.7	83	23	49.1
Milepost 45, crossing 900 feet north of	41	01	43.4	83	24	16.0
Alvada station, crossing 100 feet north of	41	03	00.7	83	24	24.1
Siding, crossing 190 feet south of south end of	41	05	38.5	83	24	23.1
Crossing of telephone line	41	07	23.2	83	24	24.0
Fostoria, south azimuth stone, 7 feet east of east rail on Hocking Valley Railway, in arch culvert east of Fostoria Bulb and Bottle Co.'s Works. A bronze meridian tablet cemented in culvert. Azimuth, 179° 35' 25"	41	08	38.8	83	24	24.6

Positions along Hocking Valley Railway from Columbus to Toledo—Continued.

Station.	Latitude.	Longitude.
	° ' "	° ' "
Fostoria, north azimuth stone, 500 feet south of Baltimore and Ohio and Hocking Valley crossing, and 7 feet east of east rail of Hocking Valley Railway. A sandstone post 36 by 8 by 8 inches, set 34 inches in the ground, in the center of top is cemented a copper bolt.....	41 09 01.2	83 24 24.8
Fostoria, Hocking Valley Railway, and Toledo and Ohio Central Railway, and street-car crossing.....	41 09 13.0	83 24 25.6
Fostoria station, Hocking Valley Railway.....	41 09 40.7	83 24 37.1
Milepost 33, crossing 1,300 feet north of.....	41 12 11.9	83 25 02.2
Longley station, crossing 320 feet north of.....	41 13 20.6	83 25 14.3
T. 3 N., Rs. 12 and 13 E., cor. secs. 7, 18, 13, 12.....	41 13 29.6	83 25 13.7
Risingsun station, crossing 130 feet south of.....	41 16 06.8	83 25 43.4
T. 4 N., R. 12 E., corner secs. 11, 12, 13, and 14.....	41 18 43.5	83 26 14.6
Bradner station, crossing 150 feet north of.....	41 19 22.6	83 26 17.8
Milepost 21, crossing 840 feet south of.....	41 22 12.1	83 26 47.5
Pemberville station, crossing 80 feet north of.....	41 24 28.6	83 27 11.3
T. 5 N., R. 12 E., corner secs. 2, 3, 10, 11.....	41 24 49.6	83 27 16.7
Milepost 16, crossing 480 feet south of.....	41 26 33.2	83 27 39.9
Lemoyne station.....	41 29 39.6	83 28 25.7
Pike crossing.....	41 29 45.2	83 28 27.0

Positions along the Toledo and Ohio Central Railway between Toledo and Columbus.

Station.	Latitude.	Longitude.
	° ' "	° ' "
Line City, crossing of telephone line road at.....	41 32 06.2	83 34 01.8
Crossing of telephone line road.....	41 29 50.4	83 35 15.5
Dowling station, crossing 250 feet north of.....	41 28 40.4	83 35 53.6
Dowling, 1½ miles southeast of, corner secs. 20, 21, 23, 29.....	41 27 27.8	83 36 35.4
Telephone line road.....	41 25 13.3	83 37 46.2
Bowling Green station, 200 feet north of, telephone road crossing.....	41 22 33.2	83 38 40.8
Corner Ts. 4 and 5 N., Rs. 10 and 11 E.....	41 20 31.3	83 39 02.4
Portage station, crossing 150 feet south of.....	41 19 35.9	83 38 44.8
Mermill station, crossing 200 feet north of.....	41 17 51.0	83 38 44.3
Corner Ts. 3 and 4 N., Rs. 10 and 11 E.....	41 15 14.0	83 39 00.6
Cygnat station, crossing 270 feet north of.....	41 14 23.5	83 38 43.3
Milepost 32, crossing at.....	41 12 40.0	83 38 42.8
West corner secs. 30 and 31, T. 3 N., R. 11 E.....	41 10 55.8	83 38 57.6

Positions along the Toledo and Ohio Central Railway between Toledo and Columbus—Continued.

Station.	Latitude.	Longitude.
	° ' "	° ' "
Galatea, Baltimore and Ohio, and Toledo and Ohio		
Central crossing.....	41 10 40.8	83 38 42.8
Vanburen station, crossing 120 feet south of.....	41 08 17.5	83 38 42.8
Mortimer, crossing 465 feet south of railways.....	41 06 33.4	83 38 42.9
Mortimer station.....	41 06 38.0	83 38 42.9
Corner Ts. 1 and 2 N., Rs. 10 and 11 E.....	41 04 49.9	83 38 58.3
North Findlay, crossing of Lake Erie and Western		
Railway.....	41 02 50.7	83 38 42.2
Findlay, north azimuth stone at 790 feet north of "Big		
Four" crossing, 320 feet north of street, and 5 feet		
east of east rail of Toledo and Ohio Central Railway.		
A limestone post 36 by 7 by 5 inches, set 34 inches		
in the ground. A copper bolt is cemented in top.....	41 02 23.4	83 38 38.9
Findlay, south azimuth stone, 268 feet south of "Big		
Four" crossing, 4 feet north of sidewalk on Main		
street, and 17 feet west of west rail of Toledo and		
Ohio Central Railway. A limestone post 40 by 7 by		
5 inches set 35 inches in ground, in center of top of		
which is cemented a bronze meridian tablet. Azi-		
muth 178° 02' 30" to north stone.....	41 02 15.0	83 38 38.5
Findlay station.....	41 02 11.0	83 38 37.9
Findlay, crossing of Toledo and Ohio Central Railway		
and Findlay, Fort Wayne and Western Railway....	41 01 20.4	83 38 32.2
Milepost 46, crossing 250 feet south of.....	41 00 28.2	83 38 28.1
Base line crossing.....	40 59 36.0	83 38 27.9
Milepost 49, crossing 130 feet south of.....	40 57 53.4	83 38 33.5
Milepost 51, crossing 200 feet south of.....	40 56 08.2	83 38 32.4
Corner Ts. 1 and 2 S., Rs. 10 and 11 E.....	40 54 23.3	83 39 03.7
Northern Ohio Railway crossing.....	40 53 56.8	83 38 48.7
Arlington station, crossing 180 feet north of.....	40 53 34.9	83 38 48.9
Milepost 56, crossing 470 feet south of.....	40 51 46.2	83 38 49.6
Williamstown station, crossing 70 feet south of.....	40 50 01.6	83 38 49.8
Corner Ts. 2 and 3 S., Rs. 10 and 11 E.....	40 49 09.7	83 39 04.6
Dunkirk station, crossing 900 feet north of.....	40 47 24.5	83 38 49.8
Pittsburg, Fort Wayne and Chicago Railway crossing.	40 47 17.9	83 38 49.9
Milepost 64, crossing 910 feet south of.....	40 44 46.5	83 38 34.9
Blanchard station, 150 feet north of; telephone line		
road crossing.....	40 43 54.2	83 38 35.6
Milepost 67, crossing 500 feet south of.....	40 42 14.0	83 38 36.1
Milepost 69, crossing under railway 450 feet south of..	40 40 30.3	83 38 35.1

Positions along the Toledo and Ohio Central Railway between Toledo and Columbus—Continued.

Station.	Latitude.	Longitude.
	° ' "	° ' "
Pike crossing.....	40 39 19.2	83 37 59.9
Kenton, northwest azimuth stone 9 feet south of south rail on Toledo and Ohio Central Railway and 12 feet northwest of switch block. A sandstone post 30 by 6 by 6 inches, set 23 inches in ground, in center of top of which is cemented a bronze meridian tablet. Azimuth 273° 48' 22" to southeast stone.....	40 38 40.8	83 36 58.1
Kenton, southeast azimuth stone on middle pier of "Big Four" Railway bridge over Scioto River and Toledo and Ohio Central Railway; 15 feet south of Toledo and Ohio Central Railway and 3½ feet west of west rail of "Big Four" Railway. A copper bolt in top of stonework.....	40 38 40.0	83 36 42.2
Kenton station, street crossing 140 feet east of.....	40 38 36.9	83 36 29.2
Erie Railway crossing.....	40 38 00.6	83 35 47.2
Siding, crossing 70 feet north of north end of.....	40 34 35.9	83 34 29.9
"Big Four" Railway crossing.....	40 31 09.6	83 33 47.6
Ridgeway station, crossing 175 feet south of.....	40 30 57.9	83 33 46.1
Mileposts 83 and 84, crossing halfway between, 1,450 feet north of creek.....	40 29 21.1	83 33 33.6
Milepost 86, crossing 480 feet north of.....	40 27 11.0	83 33 16.9
West Mansfield, main road running north from.....	40 24 34.3	83 32 46.7
Milepost 91, crossing 830 feet south of.....	40 22 59.3	83 31 24.0
Lunda station, crossing 400 feet south of.....	41 21 59.2	83 30 31.7
Raymonds station, crossing 180 feet northwest of.....	40 19 56.2	83 28 11.5
Peoria, Erie Railway crossing at.....	40 18 39.2	83 27 04.0
Milepost 98, crossing 1,340 feet south of.....	40 18 05.4	83 26 34.9
Siding, crossing 120 feet north of north end of.....	40 16 28.9	83 25 11.7
Marysville station, crossing 100 feet east of.....	40 14 25.7	83 22 13.5
Marysville, north azimuth stone at 940 feet north of "Big Four" crossing, 450 feet north of north end of Y, 200 feet north of east and west road, and 16 feet east of east rail of Toledo and Ohio Central Railway. A sandstone post 30 by 6 by 6 inches, set 26 inches in ground; in center of top is cemented a copper bolt.....	40 14 12.8	83 21 15.7
Marysville, south azimuth stone at 613 feet south of crossing of "Big Four" Railway, 6 feet east of east rail of Toledo and Ohio Central Railway. A sandstone post 30 by 6 by 6 inches, set 28 inches in ground, in center of top of which is cemented a bronze meridian tablet. Azimuth 139° 43' 20" to north stone.....	40 14 01.1	83 21 02.8

Positions along the Toledo and Ohio Central Railway between Toledo and Columbus—Continued.

Station.	Latitude.	Longitude.
	° ' "	° ' "
Milepost 106, 330 feet south of pike and telephone line crossing.....	40 13 36.3	83 20 36.1
Milepost 108, crossing 1,350 feet south of.....	40 12 08.2	83 19 00.5
Blind siding, crossing 20 feet northwest of head block..	40 10 06.4	83 16 48.5
Milepost 113, pike crossing 530 feet southeast of.....	40 08 54.0	83 15 30.0
Arnold station, 580 feet southeast of pike and telephone line crossing.....	40 08 27.4	83 15 01.2
Flag station, telephone line 200 feet southeast of.....	40 06 15.6	83 12 38.5
Amlin station, crossing 100 feet northwest of.....	40 04 36.4	83 10 51.1
Milepost 122, crossing 300 feet southeast of.....	40 02 54.5	83 09 01.0
Telephone-line crossing.....	40 01 56.6	83 07 58.4
Toledo and Ohio Central Railway and Pennsylvania Railway crossing.....	40 00 04.5	83 05 57.4
Milepost 127, crossing at.....	39 59 36.1	83 05 26.7

Meridian Marks.

BOWLING GREEN, WOOD COUNTY.

Location of station: In southwest corner of court-house grounds.

Station mark: A limestone post 36 by 7 by 5 inches, set 34 inches in the ground, in the center of top of which is countersunk and cemented a bronze tablet.

Reference mark: West line of grounds 21 feet; south line of grounds 12 feet.

Distant mark: North of station 352 feet, a limestone post 36 by 7 by 5 inches, set 36 inches in the ground, having a copper bolt cemented in its top.

Resident referee: County clerk.

DELAWARE, DELAWARE COUNTY.

Location of station: In western part of college grounds.

Station mark: A limestone post 36 by 6 by 6 inches, set 33 inches in the ground, in the center of top of which is countersunk and cemented a bronze tablet.

Reference mark: Fountain bears S. 68° W., distance 69 feet; western line of college grounds 50 feet east.

Distant mark: North of station 480 feet, a limestone post 24 by 6 by 6 inches, set 24 inches in the ground and having a copper bolt cemented in its top.

Resident referee: Custodian of college buildings.

FINDLAY, HANCOCK COUNTY.

Location of station: In southeast part of college grounds.

Station mark: A sandstone post 36 by 6 by 6 inches, set 32 inches in the ground, in the center of top of which is countersunk and cemented a bronze tablet.

Reference mark: Twenty-four feet from south fence, 15 feet from east fence, and 41 feet from water plug at corner.

Distant mark: North of station 525 feet, a sandstone post 36 by 6 by 6 inches, set 36 inches in the ground, having a copper bolt cemented in its top.

Resident referee: President of the school of the Church of God.

KENTON, HARDIN COUNTY.

Location of station: In southeast part of public-school yard.

Station mark: A sandstone post 36 by 7 by 7 inches, set 32 inches in the ground, in the center of top of which is countersunk and cemented a bronze tablet.

Reference marks: Thirty feet north of south fence and 18 feet from east fence and 36 feet from southeast corner of school yard.

Distant mark: North of station 315 feet, a sandstone post 30 by 6 by 6 inches, set 30 inches in the ground, having a copper bolt cemented in its top.

Resident referee: President of school board.

MARYSVILLE, UNION COUNTY.

Location of station: On church lot, 9 feet northeast of the northeast corner of Methodist Church.

Station mark: A sandstone post 36 by 6 by 6 inches, set 34 inches in ground, in center of top of which is countersunk and cemented a bronze tablet.

Reference marks: Twenty-seven feet from corner of street.

Distant mark: In the court-house grounds, north of station 375 feet, a sandstone post 30 by 6 by 6 inches, set 28 inches in the ground, having a copper bolt cemented in its top.

Resident referee: County clerk.

UPPER SANDUSKY, WYANDOT COUNTY.

Location of station: In southeastern part of public-school grounds, 10 feet north of sidewalk.

Station mark: A limestone post 36 by 7 by 7 inches, set 34 inches in the ground, in the center of top of which is countersunk and cemented a bronze tablet.

Reference marks: A white oak tree, 30 inches in diameter, bears N. 30 E., distant 48 feet.

Distant mark: North of station 348 feet, a limestone post 30 by 5 by 5 inches, set 30 inches in the ground, having a copper bolt cemented in its top.

Resident referees: School board.

WASHINGTON COURT-HOUSE, FAYETTE COUNTY.

Location of station: Two feet from curb line on north side of Temple street, in schoolhouse yard.

Station mark: A limestone post 36 by 8 by 8 inches, set 33 inches in the ground, in the center of top of which is countersunk and cemented a bronze tablet.

Reference marks: A locust tree 20 inches in diameter, bears S. 80° W., distant 40 feet; bay window in new schoolhouse, bears N. 40° E., distant 171 feet.

Distant mark: Three hundred feet north of station, a limestone post 30 by 6 by 6 inches, set 30 inches in the ground, having a copper bolt cemented in its top.

Resident referee: County clerk.

KENTUCKY AND INDIANA.

Primary Traverse.

Thirty-eight geographic positions in Kentucky and Indiana were determined from primary traverse by Mr. George T. Hawkins, topographer, in 1900.

This traverse starts from the Coast and Geodetic Survey astronomic pier at Henderson, Ky., and follows line of the Louisville, Henderson and St. Louis Railroad to Hawesville, Ky., crossing the Ohio River by triangulation, thence along the Cannelton branch of Louisville, Evansville and St. Louis Railroad to Lincoln City, Ind., connecting there with point on traverse run in 1899.

A spur line follows the wagon road from Hawesville, Ky., to southern edge of Rockford quadrangle.

Geographic positions along the Louisville, Henderson and St. Louis Railroad.

Station.	Latitude.	Longitude.
KENTUCKY.		
	° ' "	° ' "
Henderson, astronomic pier	37 50 24.8	87 35 26.1
Baskett, road crossing at	37 52 22.8	87 27 42.7
Spottsville	37 52 16.2	87 24 47.3
Worthington, road crossing at	37 50 18.2	87 17 42.7
Stanley, road crossing west of	37 49 31.3	87 14 42.2
Griffith, road crossing at	37 49 00.9	87 12 44.5
Road crossing near sawmill	37 48 39.6	87 10 04.9
Road crossing at store	37 48 25.2	87 09 15.2
Road crossing	37 47 18.5	87 08 27.8
Owensboro station	37 46 01.5	87 06 40.5
Crossing of Illinois Central and Louisville and Nashville railroads	37 46 11.5	87 05 34.8
Owensboro, road crossing east of	37 46 29.1	87 04 49.3
Thruston or Pates, road crossing at	37 47 56.3	87 03 07.4
Thruston or Pates, road crossing northeast of	37 49 26.1	87 01 52.9
Powers, road crossing at	37 51 57.0	86 59 39.3
Road crossing under railroad	37 53 35.6	86 58 58.8
Waitman, road crossing at	37 54 33.1	86 56 59.8
Lewisport, road crossing at	37 56 02.6	86 53 54.2
Lewisport, road crossing 2 miles east of	37 56 50.8	86 50 51.2
Falcon, road crossing at	37 57 07.5	86 49 33.8
Petri, road crossing at	37 55 44.4	86 48 14.5
Hawesville, crossing of Cross Main street	37 54 13.5	86 44 50.3

Geographic positions along the Louisville, Evansville and St. Louis Railroad.

Station.	Latitude.	Longitude.
INDIANA.		
	° ' "	° ' "
Cannelton, ferry landing at	37 54 36.6	86 44 40.6
Tell City depot	37 56 38.6	86 46 09.8
Windy Creek road crossing	37 59 06.6	86 47 11.6
Troy station	37 59 47.3	86 48 16.1
Road crossing at east end of big cut	38 02 11.3	86 49 11.2
Evanston, center of section 4, southeast of	38 02 21.5	86 50 18.5
Evanston station	38 02 24.9	86 50 25.0
T. 5 S., Rs. 4 and 5 W., secs. 19 and 24, $\frac{1}{4}$ corner between	38 04 06.1	86 54 14.0
Kennedy, road crossing at	38 04 46.6	86 55 22.3
T. 5 S., R. 5 W., secs. 9 and 10, $\frac{1}{4}$ corner between	38 05 55.1	86 57 34.9

Geographic positions along wagon road from Hawesville, Ky., to southern edge of Rockport quadrangle (spur Traverse Line).

Station.	Latitude.			Longitude.		
	°	'	"	°	'	"
Hawesville, 2½ miles south of, forks of road	37	52	28.0	86	46	28.4
Chambers, forks of road east of	37	50	19.9	86	46	52.2
Corner of road 500 feet north of Pellville and Knottsville road	37	50	07.9	86	47	26.1
Floral, forks of road, 3 miles northeast of	37	49	26.6	86	47	22.1
Floral, forks of road, 1½ miles northeast of	37	48	37.5	86	47	51.7
Floral, cross roads at	37	47	16.4	86	48	35.6
Floral, south azimuth mark	37	46	08.9	86	48	39.1

Meridian Marks.

OWENSBORO, DAVIES COUNTY, KY.

Location of station: In southeastern part of court-house grounds.

Station mark: A limestone post 36 by 7 by 7 inches, set 33 inches in the ground, in the center of top of which is countersunk and cemented an aluminum tablet.

Reference marks: Southeastern corner of court-house bears N. 30° W., distance 130 feet. Southeastern corner of grounds bears S. 50° E., distance 70 feet.

Distant mark: North of station 300 feet. A limestone post 36 by 7 by 7 inches, set 36 inches in the ground, having an aluminum tablet countersunk and cemented in its top.

Resident referee: County judge.

HAWESVILLE, HANCOCK COUNTY, KY.; CANNELTON, PERRY COUNTY, IND.

Location of station: In northeastern part of Hawesville, 30 feet north of railway, and on west bank of creek and south bank of Ohio River.

Station mark: A sandstone post 36 by 8 by 7 inches, set 36 inches in the ground, in the center of top of which is countersunk and cemented a bronze tablet.

Reference marks: Northeastern corner of Mr. Carter's yard fence bears S. 45° W., distance 70 feet. Locust tree 24 inches in diameter bears S. 15° W., distance 90 feet.

Distant mark: North of station about 2,700 feet, in Cannelton, Ind., in south part of town, on north bank of Ohio River, and 110 feet from and in front of Sunlight Hotel, a sandstone post 36 by 8 by 6 inches, set 36 inches in the ground, having a copper bolt cemented in its top.

Resident referee: County surveyor.

IOWA.

Primary Traverse.

Thirty-five geographic positions in northeastern Iowa determined from primary railroad traverse by Mr. George T. Hawkins, topographer, in 1899 and 1900.

The traverse begins at the junction of railways at Independence, previously located by primary traverse, and follows the Burlington, Cedar Rapids and Northern Railway to Postville, thence eastward along the Chicago, Milwaukee and St. Paul Railway to McGregor triangulation station of the Mississippi River Commission.

Geographic positions along the Burlington, Cedar Rapids and Northern Railway.

Station.	Latitude.	Longitude.
	° ' "	° ' "
Independence, junction of railways at	42 28 42.7	91 54 28.9
T. 89 N., R. 9 W., corner secs. 21, 22, 27, and 28	42 29 54.7	91 54 18.9
T. 90 N., R. 9 W., corner secs. 27, 28, 33, and 34	42 34 15.1	91 54 20.8
T. 90 N., R. 9 W., corner secs. 9, 10, 15, and 16	42 36 52.6	91 54 18.7
Hazleton station	42 37 06.8	91 54 21.3
Crossing Chicago Great Western Railway	42 40 18.8	91 54 42.5
Oelwein station	42 40 44.9	91 54 42.3
T. 91 N., R. 9 W., center section 20	42 40 45.4	91 54 48.8
T. 91 N., R. 9 W., corner secs. 9, 10, 15, and 16	42 42 04.6	91 54 15.3
T. 92 N., R. 9 W., corner secs. 22, 23, 26, and 27	42 45 35.9	91 53 01.0
Maynard station	42 46 28.8	91 52 59.4
T. 93 N., R. 9 W., corner secs. 14, 15, 22, and 23	42 51 44.0	91 53 06.7
Randalia station	42 51 49.4	91 53 06.7
Crossing Chicago, Milwaukee and St. Paul Railway	42 53 47.3	91 52 43.2
T. 94 N., R. 9 W., corner secs. 25, 26, 35, and 36	42 55 16.6	91 51 54.6
West Union station	42 57 18.3	91 48 30.4
T. 94 N., R. 8 W., secs. 21 and 22, $\frac{1}{4}$ corner between	42 56 34.8	91 47 07.0
Brainard station	42 55 52.1	91 42 26.4
T. 94 N., R. 7 W., secs. 29 and 30, $\frac{1}{4}$ corner between	42 55 41.3	91 42 20.1
Elgin station	42 57 23.5	91 38 31.3
T. 94 N., R. 7 W., secs. 14 and 15, $\frac{1}{4}$ corner between	42 57 24.7	91 38 47.9
T. 94 N., R. 7 W., secs. 2, 3, 10, and 11, corner of	42 58 42.8	91 38 45.9
Clermont station	43 00 14.2	91 39 11.1
Postville, junction 3 miles west of	43 04 40.9	91 37.48.0

Geographic positions along the Chicago, Milwaukee and St. Paul Railroad.

Station.	Latitude.	Longitude.
	° ' "	° ' "
Postville station	43 05 14.8	91 34 17.0
T. 96 N., R. 6 W., secs. 33 and 32, $\frac{1}{4}$ corner between	43 05 20.75	91 34 08.3
Luana station	43 03 32.66	91 27 09.3
Monona station	43 03 15.8	91 23 32.8
T. 96 N., R. 6 W., secs. 11, 12, 13, and 14, corner of	43 03 06.7	91 23 24.8
Valdora station	43 01 26.7	91 21 03.7
Beulah station	43 01 34.6	91 18 36.8
Giard station	43 02 15.0	91 15 42.4
West McGregor station	43 02 28.9	91 11 57.5
North McGregor, crossing of railroads at	43 02 38.6	91 10 42.3
McGregor, Mississippi River Commission triangulation station	43 03 31.93	91 10 49.35

MISSOURI.

Primary Traverse.

Fifty-seven geographic positions determined by primary railroad traverse by Mr. George T. Hawkins, topographer, in 1900.

Starting from U. S. Mississippi River Commission triangulation station Quincy, the traverse was run along the line of Omaha, Kansas City and Quincy Railroad to Kirksville; thence to Glenwood, via Wabash Railroad; thence eastward to Wayland, via Keokuk and Western Railroad, and there connected with U. S. Mississippi River Commission triangulation station Fox River.

Geographic positions along the Omaha, Kansas City and Quincy Railroad.

Station.	Latitude.	Longitude.
	° ' "	° ' "
Quincy, Mississippi River Commission triangulation station	39 56 31.00	91 24 51.18
West Quincy station	39 56 07.0	91 26 09.1
Taylor station	39 56 17.5	91 31 18.0
Maywood station	39 57 11.3	91 35 56.1
T. 60 N., Rs. 6 and 7 W., secs. 31 and 36, $\frac{1}{4}$ corner between	39 57 15.6	91 37 02.3
Durham station	39 58 30.1	91 39 57.4
T. 60 N., R. 7 W., secs. 7, 8, 17, and 18, corner of	40 00 17.3	91 42 39.3
Ewing station	40 00 18.9	91 42 50.8
T. 61 N., R. 8 W., secs. 26 and 27, $\frac{1}{4}$ corner between	40 03 24.5	91 46 02.5

*Geographic positions along the Omaha, Kansas City and Quincy Railroad—
Continued.*

Station.	Latitude.	Longitude.
	° ' "	° ' "
Lewistown station	40 05 08.6	91 48 57.2
T. 61 N., R. 8 W., corner on range line between secs. 7 and 18	40 05 37.4	91 50 16.2
T. 61 N., R. 9 W., secs. 3, 4, 9, and 10, corner of	40 06 30.5	91 53 40.2
Labelle station	40 07 02.7	91 54 59.9
Knox station	40 08 35.1	92 00 38.5
T. 62 N., R. 10 W., secs. 19, 20, 29, and 30, corner of	40 09 11.3	92 02 35.6
T. 62 N., R. 11 W., secs. 20 and 21, $\frac{1}{2}$, corner between	40 09 39.7	92 08 00.9
T. 62 N., Rs. 11 and 12 W., secs. 19 and 24, $\frac{1}{2}$, corner between	40 09 41.6	92 10 30.8
Edina station	40 09 45.2	92 10 40.5
T. 62 N., R. 13 W., secs. 24 and 25, $\frac{1}{2}$, corner between	40 09 14.8	92 17 55.4
Hurdland station	40 09 06.5	92 18 09.7
Crossing Atchison, Topeka and Santa Fe Railway and Omaha, Kansas City and Quincy Railway	40 08 46.9	92 20 05.6
Brashear station	40 08 45.2	92 22 42.3
T. 62 N., R. 14 W., secs. 24 and 25, $\frac{1}{2}$, corner between	40 09 12.3	92 24 43.8
T. 62 N., Rs. 14 and 15 W., secs. 13 and 18, $\frac{1}{2}$, corner between	40 10 32.1	92 30 56.1
Kirksville, crossing Wabash railroad	40 12 05.0	92 35 10.5

Geographic positions along Wabash Railroad between Kirksville and Glenwood.

Station.	Latitude.	Longitude.
	° ' "	° ' "
T. 63 N., R. 15 W., secs. 20 and 21, $\frac{1}{2}$, corner between	40 14 59.7	92 35 31.5
T. 65 N., R. 15 W., secs. 33 and 34, corner on township line between	40 18 03.1	92 34 22.6
Sublett station	40 18 09.8	92 34 13.0
Greentop station	40 20 47.6	92 34 03.3
Queen City station	40 24 28.7	92 34 09.6
T. 65 N., R. 15 W., corner secs. 21, 22, 27, and 28	40 25 27.8	92 34 41.4
Julesburg station	40 27 54.5	92 36 21.5

Geographic positions along or near Keokuk and Western railroad, between Glenwood and Wayland.

Station.	Latitude.	Longitude.
T. 66 N., R. 15 W., secs. 14, 15, 22, and 23, corner of . . .	40 31 07.4	92 33 29.9
T. 66 N., R. 14 W., secs. 13 and 24, corner on range line between	40 31 09.3	92 31 14.3
Crossing of railroad and range line between Rs. 13 and 14, T. 66 N	40 30 13.9	92 24 57.6
T. 66 N., R. 13 W., secs. 28, 29, 32, and 33, corner of . . .	40 29 29.8	92 22 16.6
Downing station	40 29 13.6	92 22 07.7
T. 65 N., R. 12 W., secs. 5 and 6, corner on township line between	40 28 39.3	92 16 29.3
Crawford station	40 28 28.4	92 16 29.0
Memphis station	40 27 13.8	92 09 56.9
T. 65 N., R. 11 W., secs. 8 and 9, $\frac{1}{4}$ corner between . . .	40 27 22.4	92 08 04.2
T. 65 N., R. 11 W., secs. 10 and 11, $\frac{1}{4}$ corner between . . .	40 27 20.1	92 05 47.3
Arbela station	40 24 49.6	92 00 58.8
Granger station	40 28 00.0	91 58 31.9
T. 65 N., R. 10 W., sec. 2, center of	40 28 05.7	91 58 31.4
T. 65 N., Rs. 9 and 10 W., crossing of railroad and range line between	40 27 41.4	91 56 43.6
Luray station	40 27 03.0	91 52 29.1
T. 65 N., R. 9 W., secs. 11 and 14, $\frac{1}{4}$ corner between . . .	40 26 41.3	91 51 46.7
Ashton station	40 26 46.6	91 48 26.4
T. 65 N., R. 8 W., secs. 8, 9, 16, and 17, corner of	40 26 41.7	91 48 00.4
Crossing of Atchison, Topeka and Santa Fe Railroad . . .	40 26 17.9	91 46 32.4
Kahoka station	40 25 22.1	91 43 02.4
Clark City	40 25 11.0	91 40 53.5
T. 65 N., R. 7 W., sec. 21, center of	40 25 09.5	91 40 23.9
T. 65 N., R. 6 W., secs. 29, 30, 31, and 32, corner of . . .	40 23 41.8	91 35 16.1
Wayland station	40 23 42.2	91 35 07.4
Fox River, Mississippi River Commission triangula- tion station	40 21 34.82	91 35 20.87

MISSOURI-KANSAS.

Primary Traverse.

Forty geographic positions along or near the Kansas City, Fort Scott and Memphis Railway between the astronomic pier at Fort Scott, Kans., and the astronomic pier at Springfield, Mo., located from primary railroad traverse by Mr. George T. Hawkins, topographer, in 1900.

Geographic positions along the Kansas City, Fort Scott and Memphis Railway.

Station.	Latitude.	Longitude.
KANSAS.		
Fort Scott astronomic pier.....	37 50 25.76	94 42 26.75
Washburn station.....	37 47 10.2	94 41 51.2
Clarksburg station.....	37 45 36.2	94 39 23.1
T. 26 S., R. 25 E., secs. 26, 27, 34, and 35, corner of.....	37 45 16.7	94 38 58.0
T. 26 S., R. 25 E., sec. 36, southeast corner of.....	37 44 49.4	94 38 24.4
Garland station.....	37 43 56.2	94 37 19.2
T. 27 S., R. 25 E., secs. 23, 24, 25, and 26, corner of.....	37 40 27.5	94 37 50.0
Arcadia, section corner $\frac{1}{4}$ mile west of.....	37 38 42.1	94 37 50.0
Arcadia station.....	37 38 38.7	94 37 40.0
Crossing of railway and Kansas-Missouri State line.....	37 37 47.8	94 37 03.6
MISSOURI.		
Last Chance station.....	37 36 18.5	94 35 29.2
Ts. 32 and 33 N., R. 33 W., secs. 2, 3, 34, and 35, corner of.....	37 33 58.8	94 31 59.0
Liberal, crossing of railroads.....	37 33 37.9	94 31 27.5
Liberal station.....	37 33 28.9	94 31 13.9
T. 32 N., R. 32 W., secs. 13, 14, 23, and 24, corner of.....	37 31 08.9	94 24 24.0
Iantha station.....	37 31 02.1	94 23 57.0
T. 32 N., Rs. 31 and 32 W., crossing of railway and range line between.....	37 30 59.1	94 23 18.4
Lamar station.....	37 29 13.8	94 16 44.9
T. 32 N., R. 30 W., sec. 32, $\frac{1}{4}$ corner, south side of.....	37 28 16.6	94 15 13.1
Kenoma station.....	37 26 17.9	94 11 58.3
T. 31 N., Rs. 29 and 30 W., secs. 18, 19, 24, and 13, cor- ner of.....	37 25 31.2	94 10 18.0
Golden City station.....	37 24 01.3	94 05 28.7
T. 31 N., R. 29 W., sec. 26, center of.....	37 24 04.1	94 05 24.1
T. 31 N., R. 28 W., secs. 17, 18, 19, and 20, corner of.....	37 23 32.7	94 02 40.5
Lockwood station.....	37 23 16.0	93 57 17.4
T. 31 N., Rs. 27 and 28 W., crossing of railway and range line between.....	37 23 09.5	93 56 05.6
Fletcher station.....	37 22 46.4	93 53 44.8
T. 30 N., R. 26 W., sec. 6, $\frac{1}{4}$ corner north of.....	37 22 29.9	93 50 25.1
South Greenfield station.....	37 22 34.3	93 50 23.7
Pilgrim station.....	37 21 29.6	93 46 34.2
T. 30 N., R. 25 W., secs. 8 and 17, $\frac{1}{4}$ corner between.....	37 20 36.3	93 42 26.5
Everton station.....	37 20 28.3	93 42 19.8
Emmet station.....	37 19 32.0	93 39 35.8
T. 30 N., R. 24 W., secs. 20 and 21, $\frac{1}{4}$ corner between.....	37 19 04.5	93 35 19.3
Ash Grove station.....	37 19 01.9	93 35 16.2

*Geographic positions along the Kansas City, Fort Scott and Memphis Railway—
Continued.*

Station.	Latitude.	Longitude.
MISSOURI—continued.		
T. 30 N., R. 24 W., secs. 34 and 35, south corner of.....	37 16 52.9	93 33 12.1
T. 29 N., R. 24 W., secs. 1 and 1, 2 and 2, corner of.....	37 15 33.5	93 30 48.5
Bois D'Arc station.....	37 15 30.3	93 30 28.1
T. 29 N., R. 23 W., secs. 9, 10, 15, and 16, corner of.....	37 13 43.2	93 26 28.1
Elwood station.....	37 13 35.3	93 25 55.9
Nichols Junction.....	37 13 10.2	93 21 52.9

The following positions were obtained by Mr. George T. Hawkins, topographer, in 1900, from primary traverse, which starts from Springfield, Mo., astronomic pier and follows the St. Louis and San Francisco Railroad to Oswego, Kans., where it was connected with the courthouse spire, located by astronomic methods in 1884.

Geographic positions along the St. Louis and San Francisco Railroad.

Station.	Latitude.	Longitude.
MISSOURI.		
	° ' "	° ' "
Springfield astronomic pier.....	37 13 15.96	93 17 17.58
Dorchester station.....	37 12 36.4	93 23 13.3
T. 28 N., R. 23 W., sec. 2, $\frac{1}{4}$ corner north of.....	37 10 12.0	93 24 56.7
Brookline station.....	37 09 50.2	93 25 12.7
Republic station.....	37 07 11.1	93 28 53.2
T. 28 N., R. 23 W., secs. 19 and 20, $\frac{1}{4}$ corner between.....	37 07 09.9	93 28 52.6
T. 27 N., R. 24 W., secs. 4, 5, 8, 9, corner of.....	37 04 10.1	93 33 18.3
Billings station.....	37 04 03.4	93 33 19.9
Logan, section corner just east of.....	37 01 07.0	93 36 37.7
Logan station.....	37 00 51.8	93 37 00.6
Marionville station.....	36 59 59.9	93 37 53.0
Aurora station.....	36 58 37.5	93 43 16.2
T. 26 N., R. 26 W., secs. 11 and 12, $\frac{1}{4}$ corner between.....	36 58 38.1	93 44 11.8
Verona station.....	36 57 54.0	93 47 52.4
T. 26 N., R. 26 W., secs. 17 and 20, $\frac{1}{4}$ corner between.....	36 57 24.6	93 47 59.5
T. 26 N., R. 27 W., secs. 25 and 30, $\frac{1}{4}$ corner between.....	36 56 07.7	93 49 39.1
Globe station.....	36 55 53.6	93 51 09.4
Monett station.....	36 55 14.6	93 55 19.8
Pierce City, secs. 21 and 28, $\frac{1}{4}$ corner between.....	36 56 46.5	94 00 00.2
Pierce City station.....	36 56 41.8	94 00 10.9
Snyder station.....	36 58 01.7	94 01 10.6
T. 26 N., R. 28 W., secs. 17 and 18, $\frac{1}{4}$ corner between.....	36 58 07.1	94 01 31.9

Geographic positions along the St. Louis and San Francisco Railroad—Continued.

Station.	Latitude.	Longitude.
MISSOURI—continued.		
Wentworth station	36 59 43.6	94 04 23.5
Talmage station	37 00 58.1	94 05 36.2
Talmage, section corner at	37 01 15.7	94 05 46.3
T. 27 N., R. 29 W., secs. 20 and 21, $\frac{1}{4}$ corner between	37 02 35.6	94 06 48.4
Sarcoxie station	37 04 03.0	94 07 01.1
T. 28 N., R. 30 W., secs. 25 and 36, corner on range line between	37 06 34.4	94 08 51.4
Reeds station	37 07 06.1	94 10 04.5
T. 28 N., R. 30 W., secs. 17, 18, 19, 20, corner of	37 08 27.1	94 14 14.8
Knights station	37 08 35.2	94 14 59.6
T. 28 N., R. 31 W., secs. 11, 12, 13, 14, corner of	37 09 20.4	94 16 26.0
Carthage station	37 11 06.1	94 18 35.7
T. 28 N., R. 31 W., sec. 6, one-fourth corner west of (elevation 960 feet)	37 10 39.2	94 20 42.7
Crossing, north and south (elevation 998 feet)	37 10 44.1	94 21 53.8
Macy station	37 11 11.6	94 23 48.0
Mansur station	37 11 40.6	94 25 07.2
Boysur, road crossing	37 11 46.1	94 26 44.8
Joplin Junction, head block	37 11 43.6	94 27 44.3
T. 29 N., R. 33 W., secs. 25, 26, 35, and 36, corner of	37 12 03.0	94 29 24.6
T. 28 N., R. 33 W., secs. 4 and 5, corner on township line between	37 11 17.0	94 32 40.1
Crossing, Missouri Pacific Railway	37 11 08.3	94 32 49.5
Carl Junction	37 10 46.5	94 33 50.5
Smithfield station	37 10 10.6	94 36 09.1
Missouri-Kansas State Line and "Frisco" Railway, crossing of	37 10 01.6	94 37 02.9
KANSAS.		
T. 33 S., R. 25 E., secs. 17 and 18, $\frac{1}{4}$ corner between	37 10 17.4	94 42 13.3
Crestline station	37 10 17.4	94 42 17.1
T. 33 S., R. 24 E., secs. 13 and 14, $\frac{1}{4}$ corner between	37 10 17.6	94 44 24.6
T. 33 S., R. 24 E., secs. 16 and 17, $\frac{1}{4}$ corner between	37 10 18.1	94 47 41.3
Kansas City, Pittsburg and Gulf Rwy., crossing of	37 10 35.4	94 50 12.1
Columbus station	37 10 34.2	94 50 32.4
Sherwin, crossing of Missouri Pacific R. R.	37 10 48.6	94 56 51.5
T. 33 S., Rs. 22 and 23 E., secs. 7, 18, 12, 13, corner of	37 10 47.9	94 57 29.0
Oswego, section corner 3 miles east of	37 09 56.3	95 02 56.5
Oswego, court-house spire	37 09 58.9	95 06 24.0

Meridian Marks.

EDINA, KNOX COUNTY, MO.

Location of station: In court-house square.

Station mark: A granite post 36 by 6 by 6 inches, set 34 inches in the ground, 15 feet north of east and west walk and 78 feet from fence on east side of grounds. In center of top of the post is countersunk and cemented a bronze tablet.

Distant mark: Four hundred feet north of station, a marble post 20 by 6 by 6 inches, set 20 inches in the ground, in center of top of which is cemented a copper bolt. Stone is 10 feet south of east and west fence on north side of square and 80 feet from fence on east side of grounds.

Resident referee: County clerk.

CARTHAGE, JASPER COUNTY, MO.

Location of station: In west part of Central Park.

Station mark: A limestone post 42 by 8 by 6 inches, set 40 inches in the ground, in the center of top of which is countersunk and cemented a bronze tablet.

Reference marks: Forty-eight feet from southwest corner of park and 1 foot from line of fence.

Distant mark: North of station 252 feet, a limestone post 30 by 8 by 6 inches, set 28 inches in ground and with a copper bolt cemented in its top.

Resident referee: County clerk.

KAHOKA, CLARK COUNTY, MO.

Location of station: In eastern part of court-house grounds.

Station mark: A marble post 36 by 6 by 6 inches, set 32 inches in the ground, in the center of top of which is countersunk and cemented a bronze tablet.

Reference marks: An ash tree 10 inches in diameter N. 73° W., distant 24 feet. An ash tree 14 inches in diameter N. 60° E., distant 15 feet.

Distant mark: North of station 300 feet, on inside line of sidewalk on north side of grounds, a marble post 30 by 6 by 6 inches, set 30 inches in the ground; has a copper bolt cemented in its top.

Resident referee: County clerk.

KIRKSVILLE, ADAIR COUNTY, MO.

Location of station: In northwest part of Normal School grounds.

Station mark: A limestone post 36 by 6 by 6 inches, set 34 inches in the ground, in the center of top of which is countersunk and cemented a bronze tablet.

Reference marks: A maple tree 10 inches in diameter bears N. 40° E., distant 63 feet. A maple tree 24 inches in diameter bears S. 80° W., distant 72 feet.

Distant mark: A limestone post 24 by 6 by 6 inches, set 24 inches in the ground, 360 feet north of station, 28 feet southwest of large maple tree, and 120 feet from northwest corner of grounds. Stone post has a copper bolt cemented in center of its top.

Residence referee: County clerk.

LAMAR, BARTON COUNTY, MO.

Location of station: In western part of court-house grounds.

Station mark: A limestone post 36 by 8 by 8 inches, set 34 inches in the ground, in the center of top of which is countersunk and cemented a bronze tablet.

Reference marks: Southwest corner of court-house N. 35° E., distant 132 feet. Southwest corner of grounds bears S. 50° W., distant 63 feet.

Distant mark: North of station 322 feet, a limestone post 24 by 9 by 9 inches, set 24 inches in the ground, with copper bolt in its top.

Resident referee: County clerk.

LANCASTER, SCHUYLER COUNTY, MO.

Location of station: In east part of public-school yard.

Station mark: A limestone post 40 by 8 by 6 inches, set 30 inches in the ground, in the center of top of which is countersunk and cemented a bronze tablet.

Reference marks: Southeast corner of schoolhouse N. 10° 30' W., distant 123 feet; 3 feet from south line and 45 feet from east line of grounds.

Distant mark: North of station 276 feet, on line of sidewalk on north side of street, 36 feet west of street corner, a limestone post 30 by 8 by 8 inches, set 30 inches in ground, having a copper bolt cemented in its top.

Resident referee: County clerk.

MEMPHIS, SCOTLAND COUNTY, MO.

Location of station: In eastern part of high-school grounds.

Station mark: A limestone post 40 by 8 by 6 inches, set 36 inches in the ground, in the center of top of which is countersunk and cemented a bronze tablet.

Reference marks: Southeast corner of schoolhouse N. 16° W., distant 123 feet. Maple tree 8 inches in diameter bears N. 74° E., distant 30 feet.

Distant mark: North of station 290 feet and 4 feet south of north

fence. A limestone post 30 by 8 by 8 inches, set 30 inches in the ground, with copper bolt cemented in the top.

Resident referee: County clerk.

COLUMBUS, CHEROKEE COUNTY, KANS.

Location of station: In eastern part of court-house grounds.

Station mark: A limestone post 36 by 6 by 6 inches, set 34 inches in the ground, in the center of top of which is countersunk and cemented a bronze tablet.

Reference marks: Southeastern corner of court-house N. 50° W., distant, 84 feet. It is 21 feet from south line and 30 feet from east line of grounds.

Distant mark: North of station 270 feet. A limestone post 24 by 6 by 6 inches, set 24 inches in the ground, in the center of top of which is set a copper bolt.

Resident referee: County clerk.

ARKANSAS.

Primary Traverse.

Twenty-two geographic positions, determined by Mr. Geo. T. Hawkins, topographer, from primary traverse in Arkansas, in 1900. The line starts from a position in front of station at Gurdon, established by primary traverse in 1898, and follows the St. Louis, Iron Mountain and Southern Railway to Camden; thence along the St. Louis and Texas Railway to Harlow.

Geographic positions in Arkansas.

Station.	Latitude.	Longitude.
	° ' "	° ' "
Gurdon station	33 55 08.0	93 09 12.1
Whelan station.....	33 49 47.1	93 07 36.3
Sayre, road crossing at.....	33 45 04.3	93 05 32.3
T. 11 S., R. 19 W., secs. 29 and 30, $\frac{1}{4}$ corner between	33 45 02.7	93 05 15.2
Basham station.....	33 43 21.7	93 03 14.0
Chidester station	33 42 07.9	93 01 14.1
T. 12 S., R. 19 W., secs. 11, 12, 13, 14, corner of	33 41 55.1	93 01 10.4
Van Wagoner station.....	33 41 00.9	92 59 15.1
Wise station.....	33 39 30.9	92 56 02.5
Lester, crossing $\frac{1}{4}$ mile north of	33 38 56.0	92 55 06.8
Camden, at road crossing 1 mile northwest of, iron bench-mark post, elevation 143 feet.....	33 35 44.9	92 51 10.5
Camden, crossing of telephone line.....	33 34 55.8	92 50 00.6

Geographic positions in Arkansas—Continued.

Station.	Latitude.	Longitude.
	° ' "	° ' "
Camden, crossing, street to Iron Mountain station at south end of bridge	33 34 51.0	92 49 41.4
Camden, road crossing at post-office 4 miles northeast of	33 39 02.9	92 46 24.7
Lilley station	33 40 09.3	92 44 25.2
Onalaska station	33 40 19.8	92 43 57.6
Eagle Mill station	33 40 53.2	92 42 30.5
Millville station	33 42 22.7	92 39 19.1
T. 11 S., R. 15 W., secs. 34 and 35, $\frac{1}{4}$ corner between	33 43 30.6	92 37 14.5
Bearden station	33 43 22.1	92 36 58.6
Best station	33 43 40.9	92 36 18.3
Harlow station	33 44 45.3	92 33 59.8

Meridian Marks.

CAMDEN, OUACHITA COUNTY, ARK.

Location of station: In western part of court-house grounds.

Station mark: A limestone post 42 by 8 by 8 inches, set 38 inches in the ground, in the center of top of which is countersunk and cemented a bronze tablet.

Reference marks: 27 feet from west gate, 39 feet from west door of court-house, and 6 feet south of walk.

Distant mark: 260 feet north of station, in northern part of Methodist churchyard, across street from court-house, 2 feet from north line of churchyard and 10 feet from north wall of church, a limestone post 30 by 8 by 8 inches, set 30 inches in the ground, having a copper bolt set in center of its top.

Resident referee: County clerk.

ROCKY MOUNTAIN SECTION OF TOPOGRAPHY.

SOUTH DAKOTA-WYOMING.

Triangulation Stations.

In 1900 Mr. A. F. Dunnington, topographer, executed control for the Edgemont quadrangle by reoccupying Fossil, Bradley, Sullivan, and Alkali, and establishing two new stations—Provo and Cottonwood. He also extended triangulation northward from Terry Peak, Bear Butte, and Crow Peak, occupying eight new stations, controlling three 30-minute quadrangles.

PROVO, FALL RIVER COUNTY, S. DAK.

On highest point of knob on west end of bald ridge 2 miles south-east of Provo station, Burlington and Missouri River Railroad, and about 10 miles south of Edgemont.

Station mark: A bronze bench-mark tablet cemented in sandstone, 9 by 13 by 6 inches, set flush with surface of ground.

[Latitude 43° 10' 18.03". Longitude 103° 48' 12.52".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Cottonwood	111 23 38.98	291 10 41.84	4.4043384
Sullivan	161 40 02.55	341 32 07.30	4.6932508
Bradley	208 34 01.20	28 41 37.58	4.4956729
Fossil	261 06 55.77	81 19 23.45	4.3973066

COTTONWOOD, CONVERSE COUNTY, WYO.

This station is on the highest point of the bald divide, about 2½ miles west of the Dakota-Wyoming State line. It is 6 miles north-west of the junction of Alum and Cottonwood creeks and about 2½ miles southwest of south end of hay road, which bears southwest, and leaves the Edgemont and Lance Creek wagon road about 8 miles west of Edgemont.

Station mark: A bronze bench-mark tablet set in sandstone, 10 by 10 by 6 inches, 3 inches below surface of ground; a mound of small stones was erected over tablet.

[Latitude 43° 15' 16.38". Longitude 104° 05' 39.88".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Alkali Butte	143 49 32.35	323 33 37.12	4.7222453
Sullivan	191 57 58.51	12 02 02.85	4.5849751
Provo	291 10 41.84	111 22 38.98	4.4043384

OWL BUTTE, BUTTE COUNTY, S. DAK.

A lone, bare butte in open prairie about 35 miles northeast of Sturgis, on divide east of Willow Creek. Station is near the center of summit.

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

[Latitude 44° 48' 20.27". Longitude 103° 13' 05.18".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Bear Butte	23 36 51.15	203 28 22.65	4.6012777
Susie Peak	79 32 16.68	259 10 20.70	4.6212654
Castle Rock	141 36 30.14	321 26 47.25	4.4640921

CASTLE ROCK, BUTTE COUNTY, S. DAK.

A prominent peak in T. 12 N., R. 5 E., Black Hills meridian, 28 miles air line northeast of Belle Fourche, 12 miles southwest of junction of Sand Creek and South Fork of Moreau River. The summit is a narrow ridge about 150 yards in length, the station being on a knob at northern end, which is about 10 feet lower than south end. Road from Belle Fourche to Slim Buttes passes from southwest to northeast about 2 miles east of the peak.

Station mark: A bronze triangulation tablet cemented in a flat rock buried in the ground flush with surface.

[Latitude 45° 00' 38.65". Longitude 103° 26' 50.83".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Susie Peak	36 58 45.39	216 46 29.57	4.5814773
Wymonkota	90 11 12.42	269 44 24.24	4.6971830
Owl Butte	321 26 47.25	141 36 30.14	4.4640921
Bear Butte	357 49 38.82	177 50 48.88	4.7740756

SUSIE PEAK, BUTTE COUNTY, S. DAK.

A small conical peak near the center of T. 9 N., R. 3 E., Black Hills meridian, situated on east end of a high ridge bearing southeast and northwest, being the divide between Crow and Owl creeks, about 6 miles northeast of the town of Belle Fourche and about 2 miles north of Belle Fourche River.

Station mark: A bronze triangulation tablet cemented in stone sunk flush with surface of ground.

[Latitude 44° 44' 10.08". Longitude 103° 44' 13.75".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Terry	8 09 49.51	189 05 58.21	4.6616893
Crow Peak	30 34 32.16	210 25 19.14	4.5342997
Warren Peak	63 20 21.79	242 50 33.50	4.7991448
Wymonkota	138 34 02.37	318 19 33.87	4.6099751
Castle Rock	216 46 29.57	36 58 45.39	4.5814773
Owl Butte	259 10 20.70	79 32 16.68	4.6212654
Bear Butte	318 43 45.57	138 57 09.55	4.5838871

WYMONKOTA, CUSTER COUNTY, MONT.

A small conical peak situated in southeastern corner of State, on bare divide between Owl and Lone Tree creeks, about one-half mile southeast of head of the latter, about 2 miles west of Watson's sheep ranch, and about $1\frac{1}{2}$ miles west of the "Hash Knife" road from Belle Fourche.

Station mark: A bronze triangulation tablet cemented in large rock set in ground.

[Latitude $45^{\circ} 00' 37.62''$. Longitude $104^{\circ} 04' 44.71''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Warren	26 15 49.71	206 00 23.64	4.8175736
Alzada	70 47 36.29	250 30 27.84	4.5290474
Castle Rock	269 44 24.24	90 11 12.42	4.6971830
Susie Peak	318 19 33.87	138 34 02.37	4.6099751
Crow Peak	350 43 02.11	170 48 14.23	4.7836118

ALZADA, CROOK COUNTY, WYO.

A bald peak, most southerly of group of bare hills, about 8 miles southwest from Alzada post-office, Mont., on the divide between the Little Missouri and Belle Fourche rivers, about 6 miles southwest from the big bend of the latter, and about 5 miles south of the Wyoming-Montana line.

Station mark: A bronze triangulation tablet cemented in stone sunk below surface of ground between two large rocks bearing southeast and northwest about $3\frac{1}{2}$ feet apart, the southeast rock 30 by 18 inches, 5 inches above ground, and the northwest rock 24 by 8 inches, 12 inches above ground.

[Latitude $44^{\circ} 54' 34.73''$. Longitude $104^{\circ} 29' 00.17''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Wymonkota	250 30 27.84	70 47 36.29	4.5290474
Crow Peak	319 12 17.68	139 34 33.11	4.8078017
Warren Peak	356 17 47.66	176 19 26.09	4.6801626

WARREN PEAK, CROOK COUNTY, WYOMING.

The most easterly of the two high bare summits of the Bear Lodge Mountains, about 6 miles northwest of the town of Sundance, Wyoming, at the head of Bear and Miller creeks. Richardson's ranch lies

about 6 miles north, on Beaver Creek. Road from ranch to Sundance passes about three-fourths of a mile northeast of station.

Station mark: A bronze triangulation tablet cemented in stone in place on highest point, 6 feet southeast of a mining claim stake in cairn of rocks.

[Latitude 44° 28' 46.79". Longitude 104° 26' 40.23".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Alzada	176 19 26.09	356 17 47.66	4.6801626
Wymonkofa	206 00 23.64	26 15 49.71	4.8175736
Susie Peak	242 50 33.50	63 20 21.79	4.7991448
Belle Fourche	244 47 34.89	65 12 58.96	4.7230707
Crow Peak	271 16 58.99	91 37 31.29	4.5898094

BELLE FOURCHE, BUTTE COUNTY, SOUTH DAKOTA.

A three-point station on summit of a sandy hill north of Belle Fourche River, a meridian mark distant 1,570 feet north of south meridian station, which is in the grounds of the county court-house in Belle Fourche.

Station mark: A sandstone post, 30 by 12 by 12 inches, set 25 inches in the ground, in the top of which is cemented a bronze meridian tablet.

[Latitude 44° 40' 50.31". Longitude 103° 50' 28.93".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Crow Peak	21 21 15	201 16 25	4.3984959
Warren Peak	65 12 59	244 47 35	4.7230707
Susie Peak	233 12 58	53 17 22	4.0131451

DEER EARS, BUTTE COUNTY, SOUTH DAKOTA.

(Not occupied.)

The south summit of a double-topped hill known as "Deer Ears," near the line between T. 12 N., Rs. 7 and 8 E., Black Hills meridian.

[Latitude 44° 59' 57.09". Longitude 103° 10' 41.88".]

STATE CORNER—WYOMING, MONTANA, AND SOUTH DAKOTA.

The stone post marking the corner common to Wyoming, Montana, and South Dakota, being the northeast corner of Wyoming.

Station mark: A white sandstone, 18 by 22 inches, 20 inches above

ground, bearing no marks; against this rests a triangular sandstone column, 50 inches long, which has fallen from its original position above the other, one side 16 inches wide marked "Dak. 45 N. L.," underneath "27 W. L.;" one side 12 inches wide marked "N. W. Mont.," and the other 12 inches wide marked "S. W. Wyo." Three pits, each 4 feet square, lie north, west, and south of mark.

[Latitude $44^{\circ} 59' 54.0''$. Longitude $104^{\circ} 03' 02.4''$.]

STATE CORNER, MONTANA AND SOUTH DAKOTA.

(Not occupied.)

The stone post marking the southeast corner of Montana.

Station mark: A stone, 20 by 8 inches, 33 inches above ground. Among a lot of large loose stones on ground, one is marked on one side "Wyo.," on another side "Mon. 45 N. L.," and another stone is marked "Dak. 27 W. L."

Reference marks: Three stones set in ground 6 feet distant east, northwest, and southwest from station are marked on top "D.," "M.," and "W.," respectively.

[Latitude $44^{\circ} 59' 55.7''$. Longitude $104^{\circ} 01' 57.3''$.]

Meridian Mark.

BELLE FOURCHE, BUTTE COUNTY, SOUTH DAKOTA.

Location of station: In grounds of county court-house.

Station mark: Red sandstone post, 60 by 10 by 10 inches, set 56 inches in the ground, in center of top of which is cemented a bronze bench-mark tablet.

Reference mark: Southeast corner of court-house, distant 47.75 feet. True azimuth to same is $167^{\circ} 10'$.

Distant mark: North of station 1,570 feet, on summit of sand hill north of Belle Fourche River, a sandstone post, about 30 by 12 by 12 inches, set 25 inches in the ground, in top of which is cemented a meridian tablet.

TEXAS.

Triangulation Stations.

In March, April, and May, 1900, triangulation control was extended from stations County Line, Dexter, Tex., and Marietta, Ind. T., westward over the Gainesville and Montague quadrangles, by Mr. R. H. Chapman, topographer.

In addition to the occupation of the three old stations, nine new stations were selected and occupied, and four points were located by intersections.

HENSON, COOKE COUNTY.

On a rocky, thinly timbered hill, about 6 miles northeast of Gainesville, about 150 yards northeast of Henson's house, about 6 miles southwest from Callisburg, and one-half mile east of Gainesville-Whitesboro road.

Theodolite elevated 18 feet.

Station mark: A bronze tablet cemented in rock in place level with surface.

Reference marks: Nail in base blaze on post oak, azimuth $129^{\circ} 13'$, distance 42 feet; nail in base blaze on post oak, azimuth $243^{\circ} 54'$, distance 18.9 feet; nail in base blaze on post oak, azimuth $12^{\circ} 54'$, distance 14.2 feet.

[Latitude $33^{\circ} 38' 45.87''$. Longitude $97^{\circ} 03' 24.41''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Hood	70 11 31.76	250 02 27.00	4.4311207
Hemphill	107 57 58.85	287 51 01.20	4.3094543
Huneycutt	173 35 18.33	353 34 54.10	4.0030462
County Line	227 02 59.91	47 06 06.66	4.0737988

HUNEYCUTT, COOKE COUNTY.

On a flat, timbered ridge, about 12 miles northeast of Gainesville, about one-eighth mile west of Gainesville-Horseshoe Bend road, and one-half mile northwest of the widow Huneycutt's house, from which a wood road passes station. Due east from station is a very sandy field.

Theodolite elevated 18 feet.

Station mark: A bronze tablet cemented in rock in place about 3 inches under surface of ground.

Reference marks: Nail in blaze on black-oak tree, azimuth $302^{\circ} 13'$, distance 36.65 feet; nail in blaze on post-oak tree, azimuth $44^{\circ} 32'$, distance 24.10 feet; nail in blaze on post-oak tree, azimuth $142^{\circ} 31'$, distance 33.70 feet.

[Latitude $33^{\circ} 44' 10.69''$. Longitude $97^{\circ} 04' 08.10''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Hood	51 41 32.10	231 33 50.90	4.4901191
Hemphill	78 29 38.85	258 23 04.96	4.2706120
Marietta	175 10 59.88	355 10 22.26	4.3153285
Dexter	229 01 55.28	49 05 48.81	4.1555001
County Line	281 08 41.03	101 12 12.24	3.9994935
Henson	353 34 54.10	173 35 18.33	4.0030462

GAINESVILLE, THIRD WARD SCHOOL, COOKE COUNTY.

(Not occupied.)

Station mark: Middle of statue on cupola of Third Ward school building.

[Latitude 33° 38' 04.48". Longitude 97° 08' 51.86".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Hemphill	124 33 22.25	304 29 26.20	4. 1243076
Henson	261 23 52.45	81 25 53.85	3. 9311680

HEMPHILL, COOKE COUNTY.

On a high, rolling prairie, about 11 miles northwest from Gainesville, in pasture owned by J. C. Hemphill, just east of line of posts (no wire) running north and south and on highest point in vicinity. It is one-half mile northeast from Hemphill homestead, one-fourth mile north of house occupied by J. R. Bice, and about 1 mile northeast of Van Slack church.

Station mark: A bronze tablet in sandstone post 36 by 8 by 10 inches, set 32 inches in the ground.

[Latitude 33° 42' 09.39". Longitude 97° 15' 57.65".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Hood	21 05 53.53	201 03 45.56	4. 2189604
Muenster	62 36 24.98	242 32 46.93	4. 0573381
Meador	92 24 21.45	272 17 30.02	4. 2812156
Marietta	214 06 33.63	34 12 30.88	4. 4684405
Dexter	245 38 15.59	65 48 43.34	4. 5036342
Huneycutt	258 23 04.96	78 29 38.85	4. 2706120
Henson	287 51 01.20	107 57 58.85	4. 3094543

HOOD, COOKE COUNTY.

On a high, rolling prairie ridge, about 12 miles southwest from Gainesville, 2 miles northeast from Hood post-office, and 5 miles southwest from Myra post-office. In pasture owned by W. P. Gregory, 57 yards northeast from J. F. Hood's house, one-half mile south of W. P. Gregory's house, and 6 feet west of fence on west side of road from Myra to Hood. It is 52 feet 4 inches north (6 feet west) of corner post on line of Gregory and Hood property, between Gainesville-Rosston and Gainesville-Forrestburg roads.

Station mark: A bronze tablet in sandstone post 30 by 8 by 8 inches, set 30 inches in the ground.

[Latitude 33° 33' 47.98". Longitude 97° 19' 48.70".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Jackson	102 32 46.31	282 29 16.77	4.0004447
Meador	141 01 13.31	320 56 30.61	4.3199664
Muenster	157 42 37.58	337 41 07.82	4.0420488
Hemphill	201 03 45.56	21 05 53.53	4.2189604
Huneycutt	231 33 50.90	51 42 32.10	4.4901191
Henson	250 02 27.00	70 11 31.76	4.4311207

MUNSTER, COOKE COUNTY.

The belfry on the Roman Catholic Church at Muenster was occupied at a point about 45 feet above ground.

Station mark: Gilt cross on spire of church.

[Latitude 33° 39' 18.81". Longitude 87° 22' 30.87".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Jackson	34 52 06.74	214 50 06.74	3.9901891
Jim Ned	78 57 58.34	258 49 28.52	4.3833586
Meador	123 58 48.57	303 55 35.45	4.0339101
Hemphill	242 32 46.93	62 36 24.98	4.0573381
Hood	337 41 07.82	157 42 37.58	4.0420488

JACKSON, COOKE COUNTY.

On a high rolling prairie, about 7 miles southwest of Muenster and 7 miles northwest from Hood (post-office), one-half mile north of Gainesville-Forrestburg road, in pasture owned by J. S. Jackson, one-half mile northward from his house. Higher ground under cultivation lies one-fourth mile northward of station.

Station mark: A bronze tablet set in fossiliferous limestone post, 24 by 8 by 8 inches, set 24 inches in ground.

[Latitude 33° 34' 58.40". Longitude 97° 26' 07.61".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Jim Ned	100 34 01.41	280 27 32.01	4.2660752
Muenster	214 50 06.74	34 52 06.74	3.9901891
Hood	282 29 16.77	102 32 46.31	4.0004447

MEADOR, MONTAGUE COUNTY.

On a prairie knoll, with few small trees, about 4 miles northeast of Saint Jo and 1 mile north of Missouri, Kansas and Texas Railway track, in "stack" yard owned by Meador Bros. (Saint Jo). The Saint Jo-Marysville road passes about 400 yards west of station.

Theodolite elevated 18 feet.

Station mark: A bronze tablet cemented in a stone post, about 36 by 8 by 10 inches, set 36 inches in ground.

[Latitude $33^{\circ} 42' 34.81''$. Longitude $97^{\circ} 28' 19.05''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Jim Ned	54 05 15.87	232 59 58.68	4.2604098
Saint Jo	76 43 55.23	256 42 19.02	3.6615794
Mosley	94 54 05.67	274 50 04.80	4.0497723
Hemphill	272 17 30.02	92 24 21.45	4.2812156
Muenster	303 55 35.45	123 58 48.57	4.0339101
Hood	320 56 30.61	141 01 13.31	4.3199664

SAINT JO (SCHOOLHOUSE), MONTAGUE COUNTY.

(Not occupied.)

Station mark: Point of cupola on brick schoolhouse at Saint Jo.

[Latitude $33^{\circ} 42' 00.60''$. Longitude $97^{\circ} 31' 12.44''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Jim Ned	46 51 37.99	226 47 56.93	4.1489547
Mosley	106 39 41.46	286 37 17.02	3.8452950
Meador	256 42 19.02	76 43 55.23	3.6615794

MOSLEY, MONTAGUE COUNTY.

On northern point of prairie ridge, about 5 miles west of Saint Jo, 3 miles south of Bonita and one-half mile south of Saint Jo-Nocona road, in pasture owned by Luke Mosley, who lives about one-half mile northeast from station.

Station mark: A bronze tablet set in a stone post, 30 by 10 by 8 inches, set 23 inches in the ground.

Reference mark: Nail in blaze on north side of tree 4 inches in diameter. Azimuth, $333^{\circ} 32'$; distance, 55 feet.

[Latitude 33° 43' 05.70". Longitude 97° 35' 33.01".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Jim Ned	17 01 14.61	196 59 57.95	4.0856216
Bowie	55 00 48.97	234 52 13.30	4.4669171
Montague	63 16 22.11	243 12 08.91	4.1194725
Meador	274 50 04.80	94 54 05.67	4.0497723
Saint Jo	286 37 17.02	106 39 41.46	3.8452950

JIM NED, MONTAGUE COUNTY.

On highest point of a bare, flat hill known as "Jim Ned Lookout," about 8 miles southwest from Saint Jo, 8 miles southeast from Montague Court-House, and 1 mile south of Dye post-office, in pasture owned by B. R. Raymond, who lives one-half mile southwest from station. The Dye-Bowie road passes one-eighth mile west of station. Theodolite elevated 18 feet.

Station mark: A bronze tablet cemented in sandstone post, 30 by 10 by 8 inches, set 28 inches in ground.

[Latitude 33° 36' 47.68". Longitude 97° 37' 51.31".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Bowie	75 49 20.60	255 42 02.15	4.3239329
Montague	124 54 50.57	304 51 54.33	3.9998274
Mosley	196 59 57.95	17 01 14.61	4.0856216
Meador	233 59 53.68	54 05 15.87	4.2604098
Muenster	258 49 23.52	78 57 58.34	4.3833586
Jackson	280 27 32.01	100 34 01.41	4.2660752
Saint Jo	226 47 56.93	46 51 37.99	4.1489547

MONTAGUE COURT-HOUSE, MONTAGUE COUNTY.

(Not occupied.)

Station mark: Figure of Justice on tower of court-house at Montague.

[Latitude 33° 39' 53.27". Longitude 97° 43' 09.46".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Mosley	243 12 08.91	63 16 22.11	4.1194725
Jim Ned	304 51 54.33	124 54 50.57	3.9998274

BOWIE, MONTAGUE COUNTY.

(Not occupied.)

Station mark: Middle of top of standpipe in town of Bowie.

[Latitude 33° 33' 59.37". Longitude 97° 51' 03.82'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Mosley	234 52 13.30	55 00 48.97	4.4669171
Jim Ned	255 42 02.15	75 49 20.60	4.3239329

Primary Traverse.

In April and May, 1901, Mr. W. M. Beaman, topographer, ran a line of primary traverse southward from Bell Mountain triangulation station across the Fredericksburg and Boerne quadrangles, and connecting with the Boerne triangulation station, a linear distance of 61 miles. Three hundred and seventy transit stations were occupied, from which the following 29 geographic positions were computed:

Geographic positions along highways between Bell Mountain triangulation station and Waring.

Station.	Latitude.	Longitude.
	° ' "	° ' "
Bell Mountain triangulation station	30 26 47.45	98 43 00.12
Fredericksburg, 14½ miles northeast of, at forks of Bell Mountain-Fredericksburg and Bell Mountain-Willow City roads; bench-mark post, elevation 1,749 feet.	30 24 40.4	98 43 44.9
Fredericksburg, 12½ miles northeast of, at forks of Bell Mountain-Fredericksburg and Willow City-Fredericksburg roads; bench-mark post, elevation 1,826 feet.	30 22 58.1	98 44 03.2
Fredericksburg, 9½ miles northeast of, north side of road near bend in fence; bench-mark post, elevation 1,953 feet	30 21 37.2	98 46 10.8
Fredericksburg, 8 miles northeast of, center of road opposite a galvanized stock tank	30 21 23.0	98 46 34.6
Fredericksburg, 6½ miles northeast of, 60 feet east of gate to Grobes's ranch; bench-mark post, elevation 1,724 feet	30 19 45.7	98 47 57.0
Fredericksburg, 4½ miles northeast of, north side of road 650 feet northeast of Palo Alto Creek; bench-mark post, elevation 1,649 feet	30 18 28.8	98 48 55.2

Geographic positions along highways between Bell Mountain triangulation station and Waring—Continued.

Station.	Latitude.	Longitude.
	° ' "	° ' "
Fredericksburg, 2½ miles northeast of, at forks with a settlement road running northward; bench-mark post, elevation 1,824 feet	30 17 34.6	98 50 01.1
Fredericksburg, county court-house, southeast front of; bronze tablet, elevation 1,708 feet	30 16 30.2	98 52 17.1
Fredericksburg, forks of Fredericksburg-Burnet and Fredericksburg-Comfort lower roads; temporary bench mark on telephone pole, elevation 1,665 feet ...	30 16 08.7	98 51 23.9
Fredericksburg, 2½ miles southeast of, on Comfort lower road; temporary bench mark, east side of road and 3 feet from fence, elevation 1,635 feet	30 14 14.9	98 50 49.9
Fredericksburg, 3 miles southeast of; milestone at forks of Fredericksburg-Austin, and lower Fredericksburg-Comfort roads, elevation 1,613 feet	30 14 31.4	98 50 28.6
Fredericksburg, 5 miles southeast of; gate southwest forks of settlement and Comfort lower road	30 12 39.1	98 50 25.8
Fredericksburg, 5½ miles southeast of; culvert between fences	30 12 19.4	98.50 08.2
Pedernales and South Grape creeks, summit of Fredericksburg and Comfort lower road between	30 10 07.1	98 49 17.3
Comfort-Luckenback and Comfort-Fredericksburg lower roads, at forks of; iron bench-mark post, elevation 1,784 feet	30 09 02.5	98 49 04.4
Gillespie and Kendall County line, stone post west side of road	30 08 33.8	98 49 03.6
Block and South Grape creeks, summit of Fredericksburg-Comfort lower road between	30 06 05.0	98 49 10.7
Forks of Comfort lower road and lane westward to Giles ranch; bench-mark post, elevation 1,611 feet ...	30 04 04.5	98 49 42.6
Comfort and Waring road forks, at bend in road, 1½ miles north of; bench-mark post, elevation 1,453 feet ..	30 01 53.0	98 49 58.6
Comfort and Waring road forks; temporary bench mark at milestone, elevation 1,415 feet	30 00 42.0	98 50 02.6
Fredericksburg-Waring and Fredericksburg-Sisterdale road forks; iron bench-mark post, elevation 1,553 feet	29 59 41.0	98 40 04.5

Geographic positions along San Antonio and Aransas Pass Railroad.

Station.	Latitude.	Longitude.
	° ' "	° ' "
Waring, road crossing 300 feet north of	29 57 01.2	98 48 16.0
Road crossing, 60 feet north of milepost 281	29 56 22.5	98 47 18.3
Welfare, water tank	29 54 27.2	98 47 08.9
Public road crossing, 1,135 feet north of milepost 278 ..	29 53 57.4	98 47 06.0
Road under railroad, one-third mile north of mile post 276	29 52 31.1	98 46 18.3
Milepost 273	29 49 45.2	98 45 42.2

Geographic positions between Boerne City and Boerne triangulation station.

Station.	Latitude.	Longitude.
	° ' "	° ' "
Boerne, intersection of Main street and street to Boerne Hotel	29 47 30.9	98 43 54.2
Boerne, 1 mile southwest of; middle of lane, roads to Boerne, Bandera, and Balcones ranch	29 46 45.3	98 44 14.6
Boerne, triangulation station	29 45 27.24	98 45 30.75

MONTANA.

Secondary Triangulation Stations.

In the fall of 1900 Mr. R. H. Chapman added two new stations—Hospital and Columbia—to the local scheme at Butte, and a new station was established at Walkerville within a few feet of the site of the former one.

From these and other stations, including many "three-point" locations, numerous mines, shaft houses, tunnel mouths, and gallows frames, 100 points in all, were located in the vicinity of Butte in order to give accurate control for underground-mine maps.

The positions given are from preliminary computations only, no figure or station adjustment having been made.

HOSPITAL, SILVERBOW COUNTY.

On long smooth western slope of East Ridge, about one-fourth mile nearly due south from Boston and Montana Hospital, and 923 feet from northwest corner of collar of Atlantic shaft, which bears N. 118° 34' 30" E.

Station mark: An aluminum tablet cemented in granite block 30 by 8 by 8 inches, set 24 inches in the ground.

[Latitude 46° 01' 38.36". Longitude 112° 29' 41.96".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Three (Roadway)	22 02 11	202 01 24	3. 59033
Walkerville	119 04 42	299 03 05	3. 52146
Columbia	298 35 53	118 36 12	3. 30127
Southeast Base	346 34 52	166 35 16	3. 48214

COLUMBIA, SILVERBOW COUNTY.

On rocky hill about 1 mile north of Columbia Garden, on first ridge south of Horse Canyon. It is the highest point on ridge west of road from Homestake mine to Columbia Garden, and about three-fourths mile west from mine.

Station mark: An aluminum tablet cemented in rock in place.

[Latitude 46° 01' 07.36". Longitude 112° 28' 20.29".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Three (Roadway)	50 31 01	230 29 13	3. 62009
Big Butte	92 46 56	272 43 12	3. 82855
Walkerville	118 55 19	298 52 43	3. 72625
Hospital	118 36 12	298 35 53	3. 30127

WALKERVILLE, SILVERBOW COUNTY.

On low summit covered with granite boulders, one-fourth mile north of brick schoolhouse at Walkerville, and one-half mile northeast of shaft house at Alice mine. Elevation 6,463.

Station mark: An aluminum tablet cemented in granite boulder just north (25 feet approximate) of prospect hole on "First Stake" claim and about 250 feet east of Butte-Stringtown road.

[Latitude 46° 02' 30.66". Longitude 112° 31' 57.02".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Big Butte	42 36 51	222 35 32	3. 48500
Columbia	298 52 43	118 55 19	3. 72625
Hospital	299 03 05	119 04 42	3. 52146
Southeast Base	321 39 35	141 41 36	3. 76493

"TUNNEL 10" PROSPECT, SILVERBOW COUNTY.

Prospect hole on highest point of hill southwest from Tunnel 10, Montana Central Railway. The ridge is a spur from "East Ridge" and is cut through by the railway tunnel.

Center of prospect hole is 4.5 feet east from position given.

[Latitude $46^{\circ} 01' 28.06''$. Longitude $112^{\circ} 28' 40.08''$.]

Mines located near Butte.

Name of mine.	Point located.	Latitude.			Longitude.		
		°	'	"	°	'	"
Gopher	West post of gallows frame..	46	00	51.77	112	31	05.04
Nora.....	West post of gallows frame..	46	00	53.63	112	31	03.01
Iduna.....	West post of gallows frame..	46	00	47.73	112	31	09.02
Shaft at northeast corner of South Gaylord and East Mercury streets.	Middle of gallows frame....	46	00	51.16	112	31	12.88
Westlake.....	North post of gallows frame..	46	00	51.38	112	31	09.37
Shaft on lot east of No. 432 East Park street.	East post of gallows frame ..	46	00	54.72	112	31	37.62
Oneida.....	East post of gallows frame ..	46	00	50.06	112	30	47.04
Pat Wall & Co.....	West post of gallows frame..	46	00	47.76	112	30	45.99
Neva.....	West post of gallows frame..	46	00	47.25	112	30	42.75
Bell.....	Center of gallows frame....	46	01	35.96	112	31	22.80
Shaft at northeast corner of North At- lantic and East Ga- lena streets.	West post of gallows frame..	46	00	53.55	112	31	24.36
Monita.....	West post of gallows frame..	46	00	48.07	112	30	53.07
West Stewart.....	West post of gallows frame..	46	01	12.88	112	32	07.27
Anaconda.....	Middle of gallows frame....	46	01	11.08	112	31	24.71
Diamond.....	Flagstaff over shaft	46	01	36.96	112	31	27.63
Neversweat.....	Middle of gallows frame....	46	01	08.84	112	31	34.02
J. I. C.....	Middle of gallows frame....	46	00	43.71	112	31	00.32
Little Rosa.....	Middle of gallows frame....	46	01	01.45	112	31	25.52
Widow Reed (owner).	Middle of gallows frame....	46	01	00.06	112	31	02.65
St. Lawrence.....	Middle of gallows frame....	46	01	08.75	112	31	11.26
St. Lawrence.....	Middle of big ventilator ..	46	01	11.94	112	31	11.40
Mine south of Moun- tain View.	Middle of gallows frame....	46	01	11.58	112	31	06.06
Boston and Montana No. 7.	Middle of gallows frame....	46	01	05.74	112	29	14.63
Belmont.....	Ventilator shaft.....	46	00	48.23	112	31	20.42

Mines located near Butte—Continued.

Name of mine.	Point located.	Latitude.	Longitude.
		° ' "	° ' "
Modoc	Middle of hood on shaft house.	46 01 31.27	112 30 49.92
West Colusa	Middle of gallows frame.....	46 01 23.74	112 30 43.04
Minnie Healy	Middle frame over southeast shaft.	46 01 18.13	112 30 32.50
Minnie Healy	Middle frame over northwest shaft.	46 01 18.85	112 30 33.51
Leonard	Flagstaff	46 01 22.21	112 30 30.92
East Colusa	Middle comb on shaft house	46 01 26.49	112 30 25.27
Bordeaux	Middle of gallows frame	46 01 28.93	112 30 02.80
Speculator	Middle of gallows frame	46 01 39.52	112 31 09.61
L. E. R.	Middle of gallows frame	46 01 17.20	112 31 26.07
Humboldt	Ventilator	46 01 23.94	112 32 19.19
Buffalo	Middle comb on shaft house	46 01 29.64	112 32 12.50
Mountain Con No. 2	Flagstaff	46 01 30.70	112 31 56.48
West Grayrock	Intersection of gables on shaft house.	46 01 42.14	112 31 44.21
Green Mountain	Flagstaff	46 01 33.37	112 31 41.90
Wake-up-Jim	Middle comb on shaft house	46 01 33.20	112 31 35.52
Nipper	Middle frame of vertical shaft.	46 01 14.22	112 31 44.07
Nipper	Middle frame at top of incline shaft.	46 01 14.98	112 31 46.74
Little Mina	South ventilator	46 01 17.96	112 31 50.78
Gagnon	Flagstaff	46 01 08.84	112 32 19.53
Josephine	Middle of west gallows frame	46 01 49.00	112 31 58.99
Magna Charta	Flagstaff	46 02 07.02	112 31 56.26
Lilly	Middle of gallows frame	46 01 07.98	112 28 58.70
"Doc" Wierhurst (owner)	Stack, tunnel south of Columbia garden.	46 00 17.40	112 27 29.06
Valdemere	Flagstaff	46 02 06.02	112 31 44.25
Moose	Flagstaff	46 02 01.46	112 31 40.46
East Grayrock	Flagstaff	46 01 38.32	112 31 30.76
Poulin	Flagstaff	46 01 26.93	112 32 23.94
Highore No. 2	Middle of gallows frame	46 01 26.22	112 31 09.52
Ramsdell Parrot	Peak of gallows frame	46 01 06.36	112 31 37.67
Colusa Parrot	Flagstaff	46 01 06.31	112 31 40.02
Sirius	Middle of gallows frame	46 01 32.12	112 30 30.34
Balaklava	Middle of gallows frame	46 01 34.30	112 30 38.54
Mountain Chief	Middle of gallows frame	46 01 36.50	112 30 39.82
Sioux Chief	Middle of gallows frame	46 01 39.36	112 30 51.90
Old Joe (fraction)	Ventilator	46 01 39.02	112 31 00.96
Adirondack	Middle of gallows frame	46 01 41.20	112 31 09.14

Mines located near Butte—Continued.

Name of mine.	Point located.	Latitude.	Longitude.
Tycoon	Middle of gallows frame	46 01 42.74	112 31 17.12
Speculator No. 6	Middle of gallows frame	46 01 41.92	112 31 25.40
Gem	Ventilator	46 01 48.44	112 30 54.71
Wild Bill	Middle of gallows frame	46 01 42.94	112 31 27.50
Cora (east)	Ventilator	46 01 47.46	112 31 38.14
Atlantic	Northwest corner of shaft collar.	46 01 33.87	112 29 30.57
Star	Middle comb of shaft house	46 01 28.29	112 32 18.08
Tramway	Ventilator	46 01 11.82	112 30 32.70
Mountain View	Middle of gallows frame	46 01 16.55	112 31 05.76
Parnell	Middle of gallows frame	46 01 20.67	112 31 19.92
Stewart	Middle of gallows frame	46 01 13.00	112 31 53.56
Original	Flagstaff	46 01 08.66	112 32 16.68
Parrot	Middle of gallows frame	46 01 06.98	112 31 35.85
Washoe	Middle of cupola	46 01 04.95	112 31 57.58
Bluejay	Middle of gallows frame	46 01 02.65	112 31 48.52
Moonlight	Middle of gallows frame	46 01 01.31	112 31 32.74
Sarsfield	Middle of gallows frame	46 01 00.32	112 28 53.00
Bellona	Middle of gallows frame	46 01 01.92	112 31 36.96
Amazon	Middle of gallows frame	46 00 22.36	112 28 51.40
Altona	Middle of gallows frame	46 00 21.02	112 28 46.04
Homestake	Ventilator	46 01 25.38	112 27 57.53
Clinton	Boiler stack at tunnel	46 01 29.32	112 27 50.12
B. & M. No. 4	Middle of gallows frame	46 01 38.29	112 30 06.54
Sinbad	Middle of gallows frame	46 01 23.28	112 29 16.30
Bill Moran (owner)	Middle of gallows frame	46 00 11.22	112 28 39.60
Glass Bros	Middle frame of shaft	46 00 43.48	112 30 09.48
Rarus	Vertical bolt in middle of stay frame east of shaft.	46 01 07.24	112 30 43.41
Glengary	Middle of gallows frame	46 00 44.60	112 30 44.80
Shaft west of south of Anaconda mine.	Middle of ventilator	46 01 04.28	112 31 28.25
Mine southeast of Neversweat shaft.	Middle of gallows frame	46 01 06.03	112 31 31.01
Silverbow	Ventilator	46 00 53.90	112 30 42.20
Silverbow No. 3	Flagstaff	46 00 44.59	112 30 36.28
Berkeley	Flagstaff	46 01 02.12	112 30 37.10
Pennsylvania	Middle of gallows frame	46 00 59.28	112 30 53.77

UTAH-WYOMING.

Triangulation Stations.

The following stations form a belt of quadrilaterals which starts from a line of the United States Coast and Geodetic Survey station Deseret-Nebo, and extends northeasterly and then easterly along the forty-first parallel of latitude through the Uinta Forest Reserve. Nine of these stations were published in the Nineteenth and the remainder in the Twentieth Annual Report of the United States Geological Survey. All the positions have been recomputed and based on the "U. S. Standard" datum, and are now republished with corrected values.

NEBO, JUAB COUNTY, UTAH.

[Latitude 39° 48' 39.11". Longitude 111° 45' 56.92".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Deseret	134 47 27.68	314 14 12.20	5.0118874
Timpanogos	189 49 32.25	9 54 33.61	4.8107167
Spanish Fork Peak	213 26 56.70	33 36 08.50	4.5674464

DESERET, TOOELE COUNTY, UTAH.

[Latitude 40° 27' 35.30". Longitude 112° 37' 32.55".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Timpanogos	275 20 54.42	95 59 25.06	4.9264460
Spanish Fork Peak	293 28 17.08	114 10 51.86	5.0092198
Nebo	314 14 12.20	134 47 27.68	5.0118874

TIMPANOGOS, UTAH COUNTY, UTAH.

[Latitude 40° 23' 04.92". Longitude 111° 38' 09.04".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Nebo	9 54 33.61	189 49 32.25	4.8107167
Deseret	95 59 25.06	275 20 54.42	4.9264460
Clayton	195 47 43.75	15 50 42.67	4.3766781
Kamas	227 15 07.05	47 32 13.42	4.7032109
Currant Creek Peak	270 51 37.53	91 09 34.01	4.5932849
Spanish Fork Peak	344 15 55.66	164 20 08.53	4.5340282

SPANISH FORK PEAK, UTAH COUNTY, UTAH.

[Latitude, 40° 05' 17.46". Longitude, 111° 31' 37.56".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Nebo	33 36 08.50	213 26 56.70	4.5674464
Deseret	114 10 51.86	293 28 17.08	5.0092198
Timpanogos.....	164 20 08.53	344 15 55.66	4.5340382
Kamas	202 33' 01.42	22 45 51.01	4.8616269
Currant Creek Peak.....	222 51 16.76	43 04 57.11	4.6439550
Strawberry	275 25 26.49	95 46 24.82	4.6678909
Grey Head	280 38 47.23	101 10 20.60	4.8518116
Indian Head.....	293 26 04.72	113 50 13.17	4.7662870

CURRANT CREEK PEAK, WASATCH COUNTY, UTAH.

[Latitude, 40° 22' 42.51". Longitude, 111° 10' 27.48".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Spanish Fork Peak	43 04 57.11	222 51 16.76	4.6439550
Timpanogos.....	91 09 34.01	270 51 37.53	4.5932849
Clayton Peak.....	125 59 02.55	305 44 02.70	4.6050691
Wanship	154 05 43.90	333 53 53.12	4.7704972
Kamas	176 49 22.38	356 48 28.80	4.5431299
Grey Head	318 55 39.11	139 13 38.95	4.7815030
Peak	323 24 40.00	143 40 47.00	4.7763501
Strawberry	336 10 21.58	156 17 44.70	4.6040241

CLAYTON PEAK, AT CORNER OF SUMMIT, SALT LAKE, AND WASATCH COUNTIES, UTAH.

[Latitude 40° 35' 27.46". Longitude 111° 33' 33.48".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Timpanogos	15 50 42.67	195 47 43.75	4.3766781
Wanship	192 51 38.26	12 54 45.17	4.4792754
Porcupine	218 28 39.76	38 46 17.17	4.7836351
Kamas	249 40 20.57	69 54 29.61	4.5137508
Currant Creek Peak	305 44 02.70	125 59 02.55	4.6050691

KAMAS, SUMMIT COUNTY, UTAH.

[Latitude 40° 41' 33.01". Longitude 111° 11' 49.91".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Spanish Fork Peak	22 45 51.01	202 33 01.42	4. 8516269
Timpanogos	47 32 13.42	227 15 07.05	4. 7032109
Clayton Peak	69 54 29.61	249 40 20.57	4. 5137508
Wanship	127 18 26.73	307 07 22.51	4. 4763953
Porcupine	191 28 34.44	11 32 00.20	4. 5674671
Medicine Butte	198 17 51.24	18 29 16.19	4. 8880062
La Motte Peak	256 19 48.60	76 37 15.85	4. 5880839
Currant Creek Peak	356 48 28.80	176 49 22.38	4. 5431299

WANSHIP, ON BOUNDARY LINE BETWEEN SUMMIT AND MORGAN COUNTIES.

[Latitude 40° 51' 20.24". Longitude 111° 28' 46.97".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Clayton Peak	12 54 45.17	192 51 38.26	4. 4792754
Medicine Butte	220 51 58.21	41 14 32.92	4. 8645769
Porcupine	239 44 46.60	59 59 19.11	4. 5565221
Elizabeth Mountain	257 40 58.82	78 10 26.43	4. 8101140
La Motte Peak	278 08 42.73	98 37 16.48	4. 7931848
Kamas	307 07 22.51	127 18 26.73	4. 4763953
Currant Creek Peak	333 53 53.12	154 05 48.90	4. 7704972

PORCUPINE, SUMMIT COUNTY, UTAH.

[Latitude 40° 01' 06.39". Longitude 111° 06' 35.38".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Kamas	11 32 00.20	191 28 34.44	4. 5674671
Clayton Peak	38 46 17.17	218 28 39.76	4. 7836351
Wanship	59 59 19.11	239 44 46.60	4. 5565221
Medicine Butte	204 31 22.53	24 39 22.57	4. 6109744
Elizabeth Mountain	278 01 22.26	98 16 19.18	4. 5089383
La Motte Peak	311 49 13.93	132 03 18.71	4. 6085751

LA MOTTE PEAK, SUMMIT COUNTY, UTAH.

[Latitude 40° 46' 26.67". Longitude 110° 45' 05.04".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Kamas	76 37 15.85	256 19 48.60	4.5880839
Wanship	98 37 16.48	278 08 42.73	4.7931848
Porcupine	132 03 18.71	311 49 13.93	4.6085751
Medicine Butte	168 31 24.33	348 25 15.56	4.8168173
Elizabeth Mountain	184 33 11.98	4 34 02.28	4.3547610
Bridger Butte	202 30 52.24	22 42 12.37	4.7989716
Gilbert Peak	260 50 54.64	31 07 03.28	4.5463910

ELIZABETH MOUNTAIN, SUMMIT COUNTY, UTAH.

[Latitude 40° 58' 38.09". Longitude 110° 43' 48.18".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
La Motte Peak	4 34 02.28	184 33 11.98	4.3547610
Wanship	78 10 26.43	257 40 58.82	4.8101140
Porcupine	98 16 19.18	278 01 22.26	4.5089383
Medicine Butte	160 25 21.23	340 18 21.14	4.6461719
Bridger Butte	212 05 39.46	32 16 10.43	4.6232448
Sage Creek	248 57 50.75	69 21 36.34	4.7341364
Gilbert Peak	297 15 45.93	117 31 06.26	4.5688482

MEDICINE BUTTE, UINTA COUNTY, WYO.

[Latitude 41° 21' 09.90". Longitude 110° 54' 26.39".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Kamas	18 29 16.19	198 17 51.24	4.8880052
Porcupine	24 39 22.57	204 31 22.53	4.6109744
Wanship	41 14 32.92	220 51 58.21	4.8645769
Bridger Butte	279.15 39.35	99 33 14.11	4.5758129
Gilbert Peak	320 44 12.65	141 06 35.92	4.8789648
Elizabeth Mountain	340 18 21.14	160 25 21.23	4.6461719
La Motte Peak	348 25 15.56	168 31 24.33	4.8168173

BRIDGER BUTTE, UINTA COUNTY, WYO.

[Latitude 41° 17' 50.40". Longitude 110° 27' 49.07".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
La Motte Peak	22 42 12.37	202 30 52.24	4. 7989716
Elizabeth Mountain	32 16 10.43	212 05 39.46	4. 6232448
Medicine Butte.....	99 33 14.11	279 15 39.35	4. 5758129
Sage Creek.....	299 51 00.03	120 04 18.12	4. 5126707
Gilbert Peak.....	348 44 47.41	168 49 40.71	4. 7293086

GILBERT PEAK, ON LINE BETWEEN WASATCH AND SUMMIT COUNTIES, UTAH.

[Latitude 40° 49' 25.45". Longitude 110° 20' 22.56".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
La Motte Peak	81 07 03.28	260 50 54.64	4. 5463910
Elizabeth Mountain	117 31 06.26	297 15 45.93	4. 5688482
Medicine Butte.....	141 06 35.92	320 44 12.65	4. 8789648
Bridger Butte.....	168 49 40.71	348 44 47.41	4. 7293086
Sage Creek.....	206 07 18.94	26 15 40.40	4. 6073643
Turtle Bluff.....	218 40 53.40	38 51 45.65	4. 5701299
Widdop.....	235 56 47.98	56 07 25.77	4. 4393071
Phil Pico.....	244 49 20.32	65 05 47.90	4. 5907433
North Burro.....	260 49 03.06	80 55 32.98	4. 1507944
Leidy Peak.....	278 00 01.68	98 19 51.90	4. 6349144
Marsh Peak.....	285 57 57.66	106 18 00.22	4. 6528586

SAGE CREEK, UINTA COUNTY, WYO.

[Latitude 41° 09' 03.30". Longitude 110° 07' 38.02".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
North Burro	6 35 39.39	186 33 49.02	4. 5354837
Gilbert Peak.....	26 15 40.40	206 07 18.94	4. 6073643
Elizabeth Mountain	69 21 36.34	248 57 50.75	4. 7341364
Bridger Butte.....	120 04 18.12	299 51 00.03	4. 5126707
Phil Pico.....	318 43 47.07	138 51 55.70	4. 4210797
Turtle Bluff.....	323 48 45.24	143 51 16.87	3. 9597700
Widdop.....	346 50 12.14	166 52 29.89	4. 3331520

TURTLE BLUFF, Uinta County, WYO.

[Latitude 41° 05' 04.76". Longitude 110° 03' 47.44".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Widdop.....	2 03 07.42	132 02 53.73	4.1342101
Gilbert Peak.....	38 51 45.65	218 40 53.40	4.5701299
Sage Creek.....	143 51 16.87	323 48 45.24	3.9597700
Phil Pico.....	316 05 50.87	136 11 27.82	4.2382357
Milepost 314.....	344 06 02.80	164 07 20.11	4.0021400
Milepost 315.....	353 18 40.62	173 19 12.48	3.9883851

WIDDOP, SUMMIT COUNTY, UTAH.

[Latitude 40° 57' 43.48". Longitude 110° 04' 08.30".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
North Burro.....	34 01 37.55	213 57 30.09	4.1992517
Gilbert Peak.....	56 07 25.77	235 56 47.98	4.4393071
Sage Creek.....	166 52 29.87	346 50 12.14	4.3331520
Turtle Bluff.....	182 02 53.73	2 03 07.42	4.1342101
Milepost 314.....	219 22 54.67	39 24 25.56	3.7081856
Phil Pico.....	264 46 20.88	84 53 11.10	4.0983480
Leidy Peak.....	317 12 08.38	137 21 22.82	4.4661622

NORTH BURRO, SUMMIT COUNTY, UTAH.

[Latitude 40° 50' 38.23". Longitude 110° 10' 26.23".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Gilbert Peak.....	80 55 32.98	260 49 03.06	4.1507944
Sage Creek.....	186 33 49.02	6 35 39.39	4.5354837
Widdop.....	213 57 30.09	34 01 37.55	4.1992517
Phil Pico.....	236 11 30.26	56 21 27.54	4.4093534
Leidy Peak.....	286 08 29.01	106 21 49.80	4.4759231

MILEPOST 315, UTAH-WYOMING.

[Latitude 40° 59' 51.29". Longitude 110° 02' 58.92".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Turtle Bluff.....	173 19 12.48	353 18 40.62	3.9883851
Milepost 314.....	269 50 10.40	89 50 55.84	3.2092432
Phil Pico.....	284 27 35.04	104 32 39.87	4.0500968

UINTA, SWEETWATER COUNTY LINE, INITIAL POINT, WYOMING.

[Latitude 40° 59' 51.30". Longitude 110° 02' 54.85".]

MILEPOST 314, UTAH-WYOMING..

[Latitude 40° 59' 51.43". Longitude 110° 01' 49.65".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Widdop.....	39 24 25.56	219 22 54.67	3.7081856
Milepost 315.....	89 50 55.84	269 50 10.40	3.2092432
Turtle Bluff.....	164 07 20.11	344 06 02.80	4.0021400
Phil Pico.....	286 53 46.33	106 58 05.74	3.9851925

PHIL PICO, UINTA COUNTY, UTAH.

[Latitude 40° 58' 20.18". Longitude 109° 55' 14.14".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
North Burro.....	56 21 27.54	236 11 30.26	4.4093534
Gilbert Peak.....	65 05 47.90	244 49 20.32	4.5907433
Widdop.....	84 52 11.10	207 28 30.66	4.0983480
Milepost 315.....	104 32 39.87	284 27 35.04	4.0500968
Milepost 314.....	106 58 05.74	286 53 46.33	3.9851925
Turtle Bluff.....	136 11 27.82	316 05 50.87	4.2382357
Sage Creek.....	138 51 55.70	318 43 47.07	4.4210797
Twin Buttes.....	218 14 15.28	38 22 46.53	4.4663992
Richards Butte.....	264 33 43.03	84 57 58.50	4.7166557
Lena.....	295 34 16.38	115 54 08.97	4.6754428
Trout Creek Peak.....	318 53 50.69	139 02 11.33	4.4353754
Leidy Peak.....	342 00 22.18	162 03 47.16	4.3762588
Marsh Peak.....	344 53 55.73	164 57 33.64	4.4774312

LEIDY PEAK, UINTA COUNTY, UTAH.

[Latitude 40° 46' 06.79". Longitude 109° 50' 00.89'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Gilbert Peak	98 19 51.90	278 00 01.68	4.6349144
North Burro	106 21 49.80	286 08 29.01	4.4759231
Widdop	137 21 22.82	317 12 08.38	4.4661622
Phil Pico	162 03 47.16	342 00 22.18	4.3762588
Trout Creek Peak	259 02 24.06	79 07 19.08	4.0329170
Lena	266 32 16.83	86 48 42.36	4.5495441
Marsh Peak	355 47 36.34	175 47 49.36	3.8050251

MARSH PEAK, UINTA COUNTY, UTAH.

[Latitude 40° 42' 40.42". Longitude 109° 49' 40.94".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Gilbert Peak	106 18 00.22	285 57 57.66	4.6528536
Phil Pico	164 57 33.64	344 53 55.73	4.4774812
Leidy Peak	175 47 49.36	355 47 36.34	3.8050251
Twin Buttes	191 16 48.14	11 21 39.70	4.7243835
Trout Creek Peak	230 15 37.15	50 20 18.97	4.1194058
Richards Butte	232 26 46.63	52 47 20.28	4.7448761
Lena	256 18 37.30	76 34 49.24	4.5554878
Little Mountain	330 16 33.05	150 21 36.00	4.3440832

TROUT CREEK PEAK, UINTA COUNTY, UTAH.

[Latitude 40° 47' 13.03". Longitude 109° 42' 29.19".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Marsh Peak	50 20 18.97	230 15 37.15	4.1194058
Leidy Peak	79 07 19.08	259 02 24.06	4.0329170
Phil Pico	139 02 11.33	318 53 50.69	4.4358754
Little Mountain	358 21 41.82	178 22 03.68	4.4410184

TWIN BUTTES, SWEETWATER COUNTY, WYO.

[Latitude 41° 10' 45.54". Longitude 109° 42' 16.05".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Marsh Peak	11 21 39.70	191 16 48.14	4. 7243835
Phil Pico	38 22 46.53	218 14 15.28	4. 4668993
Richards Butte	298 20 57.24	118 36 44.26	4. 5826379
Lena	330 38 27.97	150 49 52.43	4. 6983833

RICHARDS BUTTE, SWEETWATER COUNTY, WYO.

[Latitude 41° 00' 54.25". Longitude 109° 18' 15.37".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Lena	20 10 09.52	200 05 49.86	4. 4308414
Marsh Peak	52 47 20.28	232 26 46.63	4. 7448761
Phil Pico	84 57 58.50	264 33 43.03	4. 7166557
Twin Buttes	118 36 44.26	298 20 57.24	4. 5826379

LENA, UINTA COUNTY, UTAH.

[Latitude 40° 47' 13.44". Longitude 109° 24' 51.94".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Little Mountain	41 08 57.10	220 57 50.04	4. 5636299
Marsh Peak	76 34 49.24	256 18 37.30	4. 5554878
Leidy Peak	86 48 42.36	266 32 16.83	4. 5495441
Phil Pico	115 54 08.97	295 34 16.38	4. 6754428
Twin Buttes	150 49 52.43	330 38 27.97	4. 6983833
Richards Butte	200 05 49.86	20 10 09.52	4. 4308414

LITTLE MOUNTAIN, UINTA COUNTY, UTAH.

[Latitude 40° 32' 18.40". Longitude 109° 41' 55.65".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Marsh Peak	150 21 36.00	330 16 33.05	4. 3440832
Trout Creek Peak	178 22 03.68	358 21 41.82	4. 4410184
Lena	220 57 50.04	41 08 57.10	4. 5636299

STRAWBERRY, WASATCH COUNTY, UTAH.

[Latitude 40° 02' 50.21". Longitude 110° 59' 02.69".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Spanish Fork Peak	95 46 24.82	275 25 26.49	4.6678909
Currant Creek Peak	156 17 43.70	336 10 21.58	4.6040241
Grey Head	290 42 49.22	110 53 25.10	4.3996083
Peak	300 11 14.91	120 19 59.04	4.3501804
Indian Head	339 20 18.91	159 23 31.16	4.3044758

INDIAN HEAD, NEAR THE COUNTY LINE BETWEEN UTAH AND WASATCH COUNTIES, UTAH.

[Latitude 39° 52' 38.52". Longitude 110° 54' 03.36".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Spanish Fork Peak	113 50 13.17	293 26 04.72	4.7662870
Strawberry	159 23 31.16	339 20 18.91	4.3044758
Peak	238 13 36.16	58 19 07.32	4.1587604
Grey Head	238 39 17.42	58 46 40.08	4.2825707

GREY HEAD, WASATCH COUNTY, UTAH.

[Latitude 39° 58' 01.24". Longitude 110° 42' 33.58".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Indian Head	58 46 40.08	238 39 17.42	4.2825707
Peak	60 04 27.00	240 02 36.00	3.6772294
Spanish Fork Peak	101 10 20.60	280 38 47.23	4.8518116
Strawberry	110 53 25.10	290 42 49.22	4.3996083
Currant Creek Peak	139 13 38.95	318 55 39.11	4.7815030

PEAK (SECONDARY POINT), WASATCH COUNTY, UTAH.

[Latitude 39° 56' 44.28". Longitude 110° 45' 27.22".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Indian Head	58 19 07.3	238 13 36.1	4.1587604
Strawberry	120 19 59.0	300 11 14.9	4.3501804
Currant Creek Peak	143 40 47.0	323 24 40.0	4.7763501
Grey Head	240 02 36.0	60 04 27.0	3.6772294

WYOMING, SOUTHWEST CORNER STONE.

[Latitude 40° 59' 53.48". Longitude 111° 02' 56.67".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Porcupine.....	112 50 36	292 48 06	3.7638576

PACIFIC SECTION OF TOPOGRAPHY.

IDAHO.

Triangulation Stations.

In order to control the Coeur d'Alene mining district triangulation was extended eastward from Chilco and Skalan in June, 1900, by Mr. C. F. Urquhart, topographer. Five new stations were occupied.

STEVENS, SHOSHONE COUNTY.

On line between Shoshone County, Idaho, and Missoula County, Mont., on a well-known mountain about 5 miles south of Mullan, Idaho. There is a good trail from Mullan to the station.

Station mark: The lone signal tree, about 45 feet south of highest point of mountain.

Reference mark: A copper bolt marked "U. S. G. S." set in solid rock 45 feet from signal tree. Azimuth from signal to bolt 167° 45'.

[Latitude 47° 25' 29.39". Longitude 115° 46' 26.26".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Latour.....	91 27 22.97	271 01 20.43	4.6481338
Kellogg.....	104 51 23.76	284 35 39.87	4.4432141
Chilco.....	132 37 45.67	312 04 10.16	4.8864328
Rocky.....	143 44 46.29	323 30 47.10	4.6028676
Murray.....	170 37 01.65	350 34 28.86	4.4233365

MURRAY, SHOSHONE COUNTY.

(Not occupied.)

On highest point of mountain 3 miles north of Murray and reached by a trail from that town.

Station mark: A copper bolt set in solid rock, over which is a rock monument.

[Latitude 47° 39' 36.10". Longitude 115° 49' 53.36".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Kellogg.....	49 43 18.52	229 30 05.72	4.4693979
Latour.....	58 01 20.20	237 37 47.52	4.6748654
Rocky.....	107 36 27.05	287 24 59.43	4.3082328
Chilco.....	116 22 22.58	295 51 16.67	4.7665873

ROCKY, SHOSHONE COUNTY.

(Not occupied.)

The highest point of a high, rocky mountain, on north fork of Coeur d'Alene River.

Station mark: Summit of peak.

[Latitude 47° 42' 54.21". Longitude 116° 05' 23.22".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Kellogg.....	6 49 33.70	186 47 47.23	4.4047370
Latour.....	33 25 24.87	213 13 17.95	4.5736341
Skalan.....	81 37 53.23	260 57 58.06	4.8349247
Chilco.....	120 48 15.23	300 28 37.39	4.5849139
Murray.....	287 24 59.43	107 36 27.05	4.3082328
Stevens.....	323 30 47.10	143 44 46.29	4.6028676

KELLOGG, SHOSHONE COUNTY.

A well-known mountain about 3 miles south from Wardner, reached by a good trail from that town.

Station mark: The lone fir signal tree on northeast end of summit.

Reference mark: A copper bolt marked "U. S. G. S." set in rock 20.1 feet from signal tree. Azimuth from tree to bolt is 89° 25'.

[Latitude 47° 29' 17.77". Longitude 116° 07' 47.40".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Latour.....	71 00 10.77	250 49 51.40	4.2702192
Skalan.....	103 15 21.92	282 37 17.47	4.8222362
Chilco.....	146 13 00.71	325 55 11.60	4.7324703
Rocky.....	186 47 47.23	6 49 33.70	4.4047370
Murray.....	229 30 05.72	49 43 18.52	4.4693979
Stevens.....	284 35 39.87	104 51 23.76	4.4432141

LATOUR, KOOTENAI COUNTY.

On the highest peak of the high mountain near the head of Latour Creek, about 3 miles south of the well-known point called "Baldy." There is a trail up Latour Creek to mouth of Rocky Creek, thence up ridge on north side of Rocky Creek, around the head of same to station.

Station mark: A copper bolt marked "U. S. G. S." set in solid rock, surmounted by a rock monument 7 feet in height.

[Latitude 47° 28' 00.54". Longitude 116° 21' 48.00".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Skalan.....	114 11 17.60	293 43 34.19	4.7128285
Chilco.....	166 07 57.68	346 00 30.41	4.7197069
Rocky.....	213 13 17.95	33 25 24.87	4.5736341
Murray.....	237 37 47.52	58 01 20.20	4.6748654
Kellogg.....	250 49 51.40	71 00 10.77	4.2702192
Stevens.....	271 01 20.43	91 27 22.97	4.6481338

WASHINGTON.

Triangulation Stations.

Triangulation in north-central Washington was extended westward from the 119th meridian to the 120th meridian, controlling four 30-minute quadrangles and connecting the work based upon the Spokane astronomic station and base with that based upon Ellensburg. Six new and five old stations were occupied during the season of 1900 by Mr. C. F. Urquhart, topographer.

KELLER, FERRY COUNTY.

On the highest point on range of mountains about 7 miles (air line) west from Keller post-office. To reach station take trail from Keller to Nespalem, and at 7 miles from former take trail running northwest up small dry creek, thence up the ridge.

Station mark: A fir tree about 50 feet high, trimmed up.

Reference mark: A copper bolt set in large rock (18 or 20 feet high) 33.6 feet north of tree.

[Latitude 48° 03' 39.93". Longitude 118° 47' 48.89".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Salt Lake.....	108 05 26.64	287 31 18.60	4.7760002
Omach.....	138 42 51.92	318 19 52.78	4.7601759
Moses.....	150 19 12.87	330 07 19.51	4.5994835
Paint Rock.....	208 13 28.45	28 26 41.31	4.6646604
Whitestone.....	281 30 34.12	101 43 20.40	4.3380503

TONK, OKANOGAN COUNTY.

On the highest point of mountain on the north side of Tonk Creek, a small stream that empties into the Okanogan River, a little south from Riverside post-office. The station can be easily reached from the south side, which is covered with bunch grass nearly to the summit.

Station mark: A lone fir tree 18 feet high about 20 feet north of highest point.

Reference mark: A copper bolt marked "U. S. G. S." set in large rock 17.6 feet S. 3° E. from tree.

[Latitude 48° 32' 43.23". Longitude 119° 14' 15.36."]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Omach	26 40 32.95	206 37 16.77	4. 0787940
Bonaparte.....	197 27 31.35	17 32 39.77	4. 4663412
Fir	238 59 51.86	59 13 24.89	4. 4128438
Moses	326 08 28.00	146 16 19.39	4. 3666952

OMACH, OKANOGAN COUNTY.

On the highest peak on ridge between Tonk and Omach creeks, at the head of Similkin Creek, a small stream flowing into the Okanogan River parallel to Omach Creek. The peak is about 6 miles east of the Okanogan River and can best be ascended from the south and west sides. All timber has been cut from the summit of mountain.

Station mark: A copper bolt marked "U. S. G. S." set in solid rock, above which a rock monument was erected.

[Latitude 48° 26' 56.31". Longitude 119° 18' 37.30".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Salt Lake	36 49 35.99	216 38 22.64	4. 4918667
Buck	88 04 23.29	267 41 20.68	4. 5811673
Lemanasky	144 50 59.09	324 36 59.53	4. 6022378
Bonaparte	200 10 04.43	20 18 29.15	4. 6001909
Tonk	206 37 16.77	26 40 32.95	4. 0787940
Fir	228 50 52.45	49 07 41.26	4. 5631331
Moses	295 04 43.11	115 15 50.06	4. 3066980
Keller	318 19 52.78	138 42 51.92	4. 7601759

SALT LAKE, OKANOGAN COUNTY.

On a low timbered hill 5 or 6 miles east from Molett, on west side of Okanogan River and 13 miles southeast from Alma post-office and ferry. The hill is the highest point in the immediate vicinity and has salt lakes on every side of it.

Station mark: A pine tree trimmed up for signal.

Reference mark: A copper bolt marked "U. S. G. S." set in solid rock 21 feet west from tree.

[Latitude $48^{\circ} 13' 31.03''$. Longitude $119^{\circ} 33' 38.62''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Buck	140 12 24.31	320 00 28.29	4.4854816
Omach	216 38 22.64	36 49 35.99	4.4918667
Moses	246 04 17.57	66 26 36.30	4.6060805
Keller	287 31 18.60	108 05 26.64	4.7760002

LEMANASKY, OKANOGAN COUNTY.

On the highest point on ridge between the Okanogan River and Sinlohegan Creek, about 17 miles from Conconully and 8 miles south from Loomis. The road from Conconully to Lemnasky Lake goes within 2 miles of mountain. All timber has been cut from summit except on north side.

Station mark: A bronze tablet cemented in solid rock, above which was erected a rock cairn 7 feet high.

[Latitude $48^{\circ} 44' 34.06''$. Longitude $119^{\circ} 37' 24.94''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Buck	23 39 30.89	203 30 26.39	4.5703951
Tiffany	70 24 16.66	250 10 17.61	4.3847799
Chapaca (2)	156 58 50.42	336 53 14.31	4.3661596
Bonaparte	262 31 57.97	82 54 31.81	4.5689617
Fir	279 28 30.68	99 59 28.98	4.7102014
Moses	314 42 29.04	135 07 42.81	4.7669900
Omach	324 36 59.53	144 50 59.09	4.6022378

CHAPACA (2), OKANOGAN COUNTY.

(Not occupied.)

A sharp rocky peak 8 or 10 miles a little north of west from Loomis; the flat ridge about 2 miles west is higher.

Station mark: Summit of peak.

[Latitude 48° 56' 06.12". Longitude 119° 44' 51.38".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Lemanasky	336 53 14.31	156 58 50.42	4.3661596
Tiffany	24 54 10.88	204 45 46.51	4.5128241

BUCK, OKANOGAN COUNTY.

A round, timbered mountain, locally known as Buck Mountain, on the divide between Okanogan and Methow rivers. It is the most southeastern high point on ridge and is at the head of Johnson and Sweat creeks. The road between Twisp and Conconully passes about 4 miles south from station at the point where it crosses Sweat Creek, 17 miles from Twisp. From this point horses can be ridden to station. It is difficult to reach from north and west sides.

Station mark: The lone pine signal tree, 20 feet high.

Reference mark: An aluminum bolt, marked "U. S. G. S.," set in rock. Azimuth from tree 134° 09', distance 5.9 feet.

[Latitude 48° 26' 10.72". Longitude 119° 49' 30.94".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Lookout	63 07 29.09	242 51 10.72	4.4804841
Tiffany	162 50 58.70	342 46 05.81	4.4331645
Lemanasky	203 30 26.39	23 39 30.89	4.5703951
Bonaparte	232 53 29.34	53 25 04.68	4.8106748
Fir	248 30 00.29	69 09 58.40	4.8473307
Omach	267 41 20.68	88 04 23.29	4.5811673
Moses	276 59 28.07	97 33 41.19	4.7552967
Salt Lake	320 00 28.29	140 12 24.31	4.4854816

TIFFANY, OKANOGAN COUNTY.

A round, bare, double-topped mountain, lying in the main range between the Okanogan and Methow rivers at the head of Boulder Creek, which is the first tributary of any size of the Chewach River above Winthrop. The station is on the higher and more southerly summit of mountain.

Station mark: A hole drilled 6 inches deep in solid rock on highest point, over which was erected a rock cairn 8 feet high.

[Latitude 48° 40' 09.23". Longitude 119° 56' 01.69'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Lookout	25 32 01.12	205 20 33.59	4.6423317
Chapaca (2)	204 45 46.51	24 54 10.88	4.5128241
Lemanasky	250 10 17.61	70 24 16.66	4.3847799
Moses	296 53 56.32	117 33 05.90	4.8595761
Buck	342 46 05.81	162 50 58.70	4.4331645

LOOKOUT, OKANOGAN COUNTY.

A round-topped, bunch-grass hill, partly timbered on northwest slope, lying on west side of Methow River between Twisp and Lydle creeks, about 10 miles, by trail, from Twisp post-office.

Station mark: An aluminum bolt, stamped "U. S. G. S.," set in drill hole in solid rock, surmounted by a small rock monument.

[Latitude 48° 18' 46.18". Longitude 120° 11' 19.79'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Tiffany	205 20 33.59	25 32 01.12	4.6423317
Buck	242 51 10.72	63 07 29.09	4.4804841

CENTRAL CALIFORNIA (SIERRA FOREST RESERVE).

Triangulation Stations.

Three 30-minute quadrangles in the high Sierras were controlled during the summer of 1900 by Mr. E. T. Perkins, jr., topographer, who extended triangulation southward from Mounts Conness, Lyell, Hoffman, and Devil. In addition to reoccupying these, 10 new stations were occupied and numerous prominent peaks located by intersection.

Positions published herewith are based upon the 1901 United States standard datum of the Coast and Geodetic Survey.

CONNESS, MONO COUNTY.

A primary station of the Coast and Geodetic Survey 10 miles north of Soda Springs. In shape, an irregular parallelogram of granite, from northwest portion of which rises the top of peak with precipitous side of 1,000 feet or more. It can be ascended from Soda Springs in

four hours by a trail built by the Coast and Geodetic Survey. Grass and water can be found within 1 mile of summit.

Station mark: Concrete pier with five-eighths-inch copper bolt in center.

[Latitude 37° 58' 02.59". Longitude 119° 19' 14.23".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Red	12 36 41.02	192 33 26.59	4.5515767
Clarks Peak	17 29 05.74	197 25 09.01	4.4979644
Devil	37 22 32.54	217 07 08.88	4.7855483
Hoffman	51 21 09.23	231 14 10.79	4.3288340
Cottonwood Peak	83 06 44.80	262 51 29.07	4.5639041
Dana	310 11 57.93	130 15 39.67	4.0621370
Lyell	350 09 07.63	170 10 57.54	4.4088947

DANA, TUOLUMNE COUNTY.

A large, bare, somewhat irregular peak, with cone-shaped top, covered with broken sandstone and granite.

Station mark: Stone monument about 6 feet high.

[Latitude 37° 54' 00.88". Longitude 119° 13' 13.53".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Lyell	14 01 13.38	193 59 22.02	4.2637680
Clarks Peak	39 02 46.85	218 55 09.22	4.4630003
Hoffman	77 04 59.75	256 54 20.18	4.4171931
Conness	130 15 39.67	310 11 57.93	4.0621370

HOFFMAN, TUOLUMNE COUNTY.

About 2 miles west of Lake Tenaya and 39 miles from Sequoia, on the west of Tioga road. The mountain has three sharp ridges of granite and the point occupied is the highest and farthest west. On this ridge is Chimney Rock, a cylinder of granite rising from main ledge to height of 60 feet, and it is north of this that station occupied is situated.

Station mark: A cross cut in rock, over which was erected a monument 5 feet high.

[Latitude 37° 50' 50.13". Longitude 119° 30' 35.94".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Devil	29 59 03.70	209 50 37.68	4.6092431
Pilot	76 06 02.86	255 50 24.41	4.5866541
Cottonwood	114 13 51.81	294 05 35.56	4.3353253
Conness	231 14 10.79	51 21 09.23	4.3288340
Dana	256 54 20.18	77 04 59.75	4.4171931
Lyell	299 28 12.89	119 37 00.01	4.3836744
Clarks Peak	336 34 41.61	156 37 42.36	4.2597926
Red	337 23 09.91	157 26 52.71	4.2654986

DEVIL, MARIPOSA COUNTY.

At the southeast end of short, sharp ridge, 9 miles southwest of Wawona Park, bare on top and covered with loose rock. Ascended by wagon road from Wawona. Nearest camping place is 1½ miles northeast of summit. ♥

Station mark: A cairn of stones, 4 feet base, 4½ feet high, on site of old monument, 5.6 feet west of "U. S. G. S." chiseled on rock.

[Latitude 37° 31' 46.80". Longitude 119° 44' 23.06".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Pilot	146 23 49.18	326 16 39.63	4.4928478
Cottonwood	180 37 19.76	00 37 31.81	4.6445464
Hoffman	209 50 37.68	29 59 03.70	4.6092431
Conness	217 07 08.88	37 22 32.54	4.7855484
Clarks Peak	235 55 55.04	56 07 20.30	4.5212361
Red	244 35 09.78	64 47 16.70	4.5097490
Kaiser	297 47 02.53	118 07 16.04	4.7451616
Big Shuteye	305 41 47.10	125 53 10.71	4.5325137

LYELL, MONO COUNTY.

Situated 14 miles southeast of Soda Springs, at end of Tuolumne Meadows. In shape very irregular. The south side is a nearly perpendicular wall, the north a series of meadows until the glacier is reached; the east and west sides are rather steep. The highest point is a short, sharp ridge, about 200 yards long, running northwest and southeast, the northwest end being lower. Ascended from head of Lyell Fork and northeast side of peak.

Station mark: Small stone monument; "U. S. G. S." chiseled on rock east of it.

[Latitude 37° 44' 23.22". Longitude 119° 16' 15.15".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Big Shuteye.....	17 46 48.27	197 41 04.96	4.6571504
Red.....	52 03 35.82	231 58 32.37	4.1882294
Clarks Peak.....	71 03 13.41	250 57 27.71	4.1654618
Hoffman.....	119 37 00.01	299 28 12.89	4.3836744
Conness.....	170 10 57.54	350 09 07.63	4.4088947
Dana.....	193 59 22.02	14 01 13.38	4.2637680
Silver.....	323 29 17.71	143 38 27.25	4.5704983
Kaiser.....	351 13 21.55	171 16 30.07	4.6987072

RED, MADERA COUNTY.

Ascended from camp at large meadows south of Merced Peak, on trail from Wawona to Soda Springs (or "77" corral), five hours by trail. Could camp much nearer at head of Illilouette River and climb the mountain in three hours. Approached mountain from west, apparently the best way. Can take mules to within 2,000 feet of top.

Station mark: A bronze triangulation tablet set between two large rocks, over which is erected a cairn of rocks 5 feet at base, 7 feet high.

[Latitude 37° 39' 15.31." Longitude 119° 24' 31.41".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Big Shuteye.....	2 48 05.05	182 47 24.19	4.5289143
Devil.....	64 47 16.70	244 35 09.78	4.5097490
Hoffman.....	157 26 52.71	337 23 09.91	4.3654986
Conness.....	192 33 26.59	12 36 41.02	4.5515767
Lyll.....	231 58 32.37	52 03 35.82	4.1882294
Silver.....	300 40 31.80	120 54 43.33	4.6010921
Kaiser.....	333 32 06.49	153 40 16.75	4.6487389

BIG SHUTEYE, MADERA COUNTY.

On the bare granite summit of Big Shuteye Peak (Chiquito Peak), the highest point on Chiquito Range, at southeast end of the ridge. Follow trail from Jackass Meadows to where it crosses ridge, then turn to south.

Station mark: A bronze triangulation tablet cemented in solid granite, above which is erected a cairn of rocks 4 feet base and 4 feet high.

[Latitude 37° 21' 00.26". Longitude 119° 25' 38.53'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Devil	125 53 10.71	305 41 47.10	4.5325137
Red	182 47 24.19	2 48 05.05	4.5289143
Lyell	197 41 04.96	17 46 48.27	4.6571504
Silver	249 33 51.80	69 48 41.16	4.5842369
Hilgard	268 29 47.16	88 51 40.06	4.7264787
Kaiser	285 51 29.47	106 00 18.72	4.3493243
Three Sisters	305 14 15.24	125 27 35.30	4.6014723

SILVER, FRESNO COUNTY.

On the highest peak between Fish Creek and Mono Creek, at head of Silver Creek. Summit is flat, running north-northeast and south-southwest. Highest point is at southwest end. Can camp at meadows below Margaret Lakes; thence it is three and one-half hours' travel to station. Can take mules within 700 feet of summit on east. There is grass and water for one night within 1,200 feet of summit.

Station mark: A bronze triangulation tablet set in solid rock, on which was erected a cairn of rocks 5 feet base and 5 feet high.

[Latitude 37° 28' 12.56". Longitude 119° 01' 14.54'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Three Sisters	5 29 45.00	185 28 18.92	4.5635462
Kaiser	36 48 49.60	216 42 50.78	4.3855104
Big Shuteye	69 48 41.16	249 33 51.80	4.5842369
Red	120 54 43.33	300 40 31.80	4.6010921
Lyell	143 38 27.25	323 29 17.71	4.5704983
Hilgard	305 02 47.29	125 09 52.52	4.3230108

KAISER, FRESNO COUNTY.

On a bald peak at the head of Kaiser and Pittman creeks. It is easily ascended from south side. There are numerous lakes and small meadows in the neighborhood.

Station mark: A bronze triangulation tablet set in loose earth, there being no solid rock, above which was erected a cairn of rocks 5 feet base and 5 feet high.

[Latitude 37° 17' 41.24". Longitude 119° 11' 05.57".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Big Shuteye	106 00 18.72	285 51 29.47	4.3493243
Red	153 40 16.75	333 32 06.49	4.6487389
Lyell	171 16 30.07	351 13 21.55	4.6987072
Silver	216 42 50.78	36 48 49.60	4.3855104
Hilgard	256 50 47.29	77 03 50.04	4.5135451
Goddard	237 01 21.12	117 18 14.22	4.6669912
Three Sisters	326 51 09.06	146 55 40.62	4.3067670

HILGARD, FRESNO COUNTY.

Ascended peak from camp on Bear Creek; five and one-half hours' travel. Could camp an hour closer by going to summit of ridge between Bear Creek and Mono Creek. This mountain is best approached along the ridge between Bear and Mono creeks, finally dropping down into northeast fork of Bear Creek and climbing peak from east. On summit of this peak are three small high points of rock. The point occupied is the one to north, or center one.

Station mark: A large flat rock, on which is set a bronze triangulation tablet surmounted by a cairn of rocks 3 feet base and 3 feet high.

[Latitude 37° 21' 40.11". Longitude 118° 49' 34.65".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Three Sisters	40 31 08.67	220 22 39.06	4.5049242
Kaiser	77 03 50.04	256 50 47.29	4.5135451
Big Shuteye	88 51 40.06	268 29 47.16	4.7264787
Silver	125 09 52.52	305 02 47.29	4.3230108
Goddard	341 35 56.51	161 39 49.34	4.4786204

THREE SISTERS, FRESNO COUNTY.

On the south end of summit of the Three Sisters. Can be reached by trail between Shaver and Blaney Meadow (or Hot Springs). Leave trail at large meadow between Red Mountain and Potato Hill, traveling southeast. At foot of mountain on northeast side is a small meadow with running water. Animals can be taken nearly to summit from south to southeast.

Station mark: A bronze triangulation tablet set in loose rock, with a cairn of rocks built over it 3 feet at base and 3 feet high.

[Latitude 37° 08' 30.59". Longitude 119° 03' 36.59'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Big Shuteye.....	125 27 35.30	305 14 15.24	4.6014723
Kaiser.....	146 55 40.62	326 51 09.06	4.3067670
Silver.....	185 28 18.92	5 29 45.00	4.5635462
Hilgard.....	220 22 39.06	40 31 08.67	4.5049242
Goddard.....	277 50 59.53	98 03 19.88	4.4854257
Silliman.....	329 28 41.38	149 41 47.00	4.8062703
Big Baldy.....	342 58 38.44	163 05 03.75	4.7358215

GODDARD, FRESNO COUNTY.

Ascended peak by ridge running from the southwest up from camp on south fork of San Joaquin, at pasture $1\frac{1}{2}$ miles above the camp of the Mount Goddard Copper Mining Company. Can take animals within 1,500 feet of summit. The south end of the mountain was occupied, although the north end is slightly higher. The south end seems to be the recognized summit and is much easier of access.

Station mark: A bronze triangulation tablet set in loose shale rock, over which is erected a cairn of rocks 4 feet base and 4 feet high.

[Latitude 37° 06' 13.35". Longitude 118° 43' 09.82'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Big Baldy.....	16 54 10.44	196 48 19.23	4.6987440
Three Sisters.....	98 03 19.88	277 50 59.53	4.4854257
Kaiser.....	117 18 14.23	297 01 21.12	4.6669912
Hilgard.....	161 39 49.34	341 35 56.51	4.4786204
Silliman.....	357 42 48.51	177 43 37.67	4.7076974

SILLIMAN, TULARE COUNTY.

Highest point in group on west end of ridge. Best reached from camp at Wet Meadows; cross low divide east, follow up creek to first lake, then climb on south side of ridge. Can take mules to top of first point; then one and one-half hours' climb to summit. Good camp at Wet Meadows, from which it is four hours' climb to summit.

Station mark: A bronze triangulation tablet set in solid rock, over which is a cairn of rocks 6 feet base and 6 feet high.

[Latitude 36° 38' 39.71". Longitude 118° 41' 47.89".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Big Baldy	100 48 39.50	280 42 01.26	4.2269529
Three Sisters	149 41 47.00	329 28 41.38	4.8062703
Goddard	177 43 37.67	357 42 48.51	4.7076974

SPANISH, FRESNO COUNTY.

Spanish Mountain can be easily ascended either from Statum or Collins Meadows by riding about two hours.

Station mark: A bronze triangulation tablet set in top of granite rock, over which is erected a cairn of rocks 3 feet base and 3 feet high.

[Latitude 36° 54' 35.21". Longitude 118° 53' 27.21".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Three Sisters	149 43 36.33	329 37 29.39	4.4747072
Goddard	215 17 45.76	35 23 57.36	4.4213575

BIG BALDY, TULARE COUNTY.

Ascended from camp at Woodard's cabin by trail. Time of ascension one hour. Top of mountain is a bare ridge about 200 yards long. Tops of trees growing on the side of hill interfere somewhat with view. South end of hill occupied.

Station mark: A bronze triangulation tablet set in solid rock, and a rock cairn erected over it 7 feet base and 10 feet high. A tree about 15 feet high placed in monument.

[Latitude 36° 40' 21.81". Longitude 118° 52' 54.94".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Three Sisters	163 05 03.75	342 58 38.44	4.7358215
Goddard	196 48 19.23	16 54 10.44	4.6987440
Silliman	280 42 01.26	100 48 39.50	4.2269529

SOUTHERN CALIFORNIA.

Triangulation Stations.

Triangulation in southern California was extended northward and westward from Santa Clara and San Fernando stations of the United

States Coast and Geodetic Survey and connected with two other stations of the same organization—Gaviota and Tepusquet—all based on Yolo base data. Nine new primary stations were occupied and 7 secondary points located by intersections, controlling three 30-minute quadrangles between latitudes $34^{\circ} 30'$ and $35^{\circ} 00'$ and longitudes $118^{\circ} 30'$ and $120^{\circ} 00'$.

The field work was done by Mr. C. F. Urquhart, topographer, during portions of May, June, November, and December, 1900.

LIEBRE, LOS ANGELES COUNTY.

On the highest point of a high, round mountain, sometimes known as Sawmill Mountain, near the east end of the Liebre Range. The mountain is covered with brush about 5 feet high. The new road from Elizabeth Lake to Gorman station passes about 4 miles north from the station at a point 9 miles from former. A trail leaves the road about 1 mile west from Joe Kirby's shack and goes south to summit of an open ridge, from which signal can be seen.

Station mark: An oak tree wired up and used as signal.

Reference mark: A copper bolt marked "U. S. G. S." set in solid rock. Azimuth from reference mark to signal tree $13^{\circ} 42'$; distance 6 feet.

[Latitude $34^{\circ} 40' 53.35''$. Longitude $118^{\circ} 34' 38.63''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
San Fernando	3 13 38.57	133 12 49.60	4.5938706
Hines	67 27 48.01	247 10 48.77	4.6952879
Frazier	105 59 53.39	285 46 28.84	4.5723919
Alamo	72 59 13.47	252 49 16.46	4.4457065

SAN FERNANDO, LOS ANGELES COUNTY.

A station of the United States Coast and Geodetic Survey, on the highest or western crest of San Fernando Mountain, about 5 miles from the long tunnel of the Southern Pacific Railroad.

Station mark: A terra-cotta pipe 24 by 4 inches filled with concrete and set in a triangle of concrete.

[Latitude $34^{\circ} 19' 41.47''$. Longitude $118^{\circ} 36' 05.08''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Santa Clara	89 28 35.36	269 13 45.80	4.6056340
Hines	114 50 26.99	294 34 21.17	4.6815183
Frazier	145 43 47.71	325 31 15.76	4.7772296
Liebre	133 12 49.60	3 13 38.57	4.5938706

ALAMO, LOS ANGELES COUNTY.

(Not occupied.)

A high, rocky mountain near the eastern end of the Alamo Range, sometimes known as Boulder Peak. It can be reached by trail from the Alamo ranch around by Mr. Bailey's ranch, which is about 6 miles south from the road between Elizabeth Lake and Gorman station, at a point 5 miles from the latter.

Station mark: A small tree on highest point of the mountain.

[Latitude $34^{\circ} 36' 27.04''$. Longitude $118^{\circ} 52' 05.92''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Santa Clara	26 38 24.17	206 32 35.20	4.5460392
Frazier	153 16 34.07	333 13 12.39	4.3146687
Liebre	252 49 16.46	72 59 13.47	4.4457065
San Fernando	321 33 54.87	141 42 53.66	4.5967546

FRAZIER, VENTURA COUNTY.

On the highest point of a mountain locally known as Frazier Mountain, in the northeastern corner of Ventura County, about 2 miles from the Los Angeles County line. The wagon road from Gorman station to Bakersfield passes about 4 miles from the station, at a point 4 miles from the former. There is a good trail from Gorman station to Frazier mine, which is near the triangulation station. Another trail from Cuddy's ranch to Frazier mine passes 100 yards north from station.

Station mark: A lone pine tree 100 feet north from the summit of the mountain.

[Latitude $34^{\circ} 46' 25.21''$. Longitude $118^{\circ} 58' 10.93''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Hines	18 24 44.23	198 21 06.61	4.4902268
Reyes	60 50 55.17	240 40 15.20	4.5157054
Pine	103 13 38.72	283 06 51.20	4.2706034
Liebre	285 46 28.84	105 59 53.39	4.5723919
San Fernando	325 31 15.76	145 43 47.71	4.7772296
Alamo	333 13 12.39	153 16 34.07	4.3146687

SANTA CLARA, VENTURA COUNTY.

A station of the United States Coast and Geodetic Survey, on the highest part of the mountain on the south side of Santa Clara River, about 2 miles in an air line from the town of Santa Paula.

Station mark: A terra-cotta pipe 24 by 4 inches filled with concrete and set in a triangle of concrete.

[Latitude $34^{\circ} 19' 26.69''$. Longitude $119^{\circ} 02' 22.57''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Hines	170 44 32.36	350 43 18.21	4.3181190
San Fernando	269 13 45.80	89 28 35.36	4.6056340

HINES, VENTURA COUNTY.

On the highest point of a mountain locally known as Hines Peak, near the source of Santa Paula Creek and on the divide between Santa Paula and Sespe creeks. The point is rather difficult to reach, though there is a trail up Santa Paula Creek to foot of mountain. It may be reached from the Hot Springs on Sespe Creek. The summit is cleared of brush.

Station mark: A bunch of brush about 7 feet high wired together and used as a signal.

Reference mark: A copper bolt marked "U. S." set in solid rock 8.33 feet southwest from signal and station mark.

[Latitude $34^{\circ} 30' 33.01''$. Longitude $119^{\circ} 04' 33.77''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Reyes	125 15 00.85	305 08 00.24	4.3640299
Pine	165 55 35.48	345 52 27.04	4.5394977
Frazier	198 21 06.61	18 24 44.23	4.4902268
Liebre	247 10 48.77	67 27 48.01	4.6952879
San Fernando	294 34 21.17	114 50 26.99	4.6815183
Santa Clara	350 43 18.21	170 44 32.36	4.3181190

PINE, VENTURA COUNTY.

On the highest point on western end of Pine Mountain, more generally known as San Amedia Mountain, which is the highest point in the county. There is an old signal, used by the Wheeler survey, on the east end of mountain about 1 mile from the station. There is a good trail from Mr. Cuddy's ranch to summit.

Station mark: A copper bolt marked "U. S." set in loose rock, above which is a flat rock marked "U. S."

[Latitude 34° 48' 43.09". Longitude 119° 10' 05.12'']

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Reyes.....	27 16 08.13	207 12 14.63	4.3577728
Santa Ynez.....	67 04 40.56	246 37 00.23	4.9075345
San Rafael.....	79 18 24.52	258 56 17.86	4.7800219
McPherson.....	98 13 30.47	277 51 22.50	4.7754341
Frazier.....	283 06 51.20	103 13 38.72	4.2706034
Hines.....	345 52 27.04	165 55 35.48	4.5394977

REYES, VENTURA COUNTY.

On the highest point of the divide between Sespe Creek and Cuyama River, about 8 miles northwest from Rafael Reyes's residence. A wagon road down Cuyama River goes to Mr. Reyes's residence, thence go by good trail to station. Another hill 100 yards north has timber on it and a line was cut through it in line with Pine station.

Station mark: A lone fir tree used as a signal.

Reference mark: A copper bolt marked "U. Δ S." set in a large rock 4.5 feet south from signal tree.

[Latitude 34° 37' 45.47". Longitude 119° 16' 55.01'']

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Santa Ynez.....	79 59 25.73	259 35 41.90	4.8127423
San Rafael.....	100 28 41.94	280 10 31.52	4.6955497
McPherson.....	120 35 27.28	300 17 16.07	4.7517482
Pine.....	207 12 14.63	27 16 08.13	4.3577728
Frazier.....	240 40 15.20	60 50 55.17	4.5157054
Hines.....	305 08 00.24	125 15 00.85	4.3640299

MONTECITO, SANTA BARBARA COUNTY.

(Not occupied.)

The highest point in range of mountains, about 15 miles northeast from Santa Barbara and 12 miles west from Nordoff.

Station mark: A small tree on summit of mountain.

[Latitude 34° 32' 16.09". Longitude 119° 28' 02.44'']

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Santa Ynez.....	88 28 44.70	268 11 26.42	4.6719106
Pine.....	221 57 31.18	42 07 44.09	4.6122972
Reyes.....	239 07 20.27	59 13 39.08	4.2968168

CUYAMA, VENTURA COUNTY.

(Not occupied.)

A prominent mountain on the south side of the Cuyama River, about 10 miles below Rafael Reyes's ranch.

Station mark: Highest point of mountain.

[Latitude $34^{\circ} 45' 09.39''$. Longitude $119^{\circ} 28' 33.68''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
McPherson.....	115 53 33.34	295 42 03.73	4.5352838
Pine.....	256 45 41.17	76 56 13.56	4.4615707
Reyes.....	307 30 51.89	127 37 29.51	4.3509242

CALIENTE, SANTA BARBARA COUNTY.

(Not occupied.)

About 8 miles northwest from the Cuyama ranch, on the highest point of the white, barren mountains, on the north side of the Cuyama River.

Station mark: Highest point of mountain..

[Latitude $35^{\circ} 02' 05.42''$. Longitude $119^{\circ} 45' 38.11''$.]

To station—	Azimuth.	Back azimuth.	Log distance.
	° ' "	° ' "	<i>Meters.</i>
McPherson.....	16 29 20.48	196 27 31.05	4.2326250
Pine.....	294 22 31.13	114 42 52.23	4.7746474
Reyes.....	315 38 33.94	135 54 53.05	4.7977730

M'PHERSON, SANTA BARBARA COUNTY.

About 14 miles from the Cuyama ranch, on a high round mountain covered with brush about 4 feet high. A road goes from this ranch to Bart McPherson's house, from which there is a trail to foot of mountain. A long ridge leads to summit, which may be ascended on horseback. Station called "Peak," distant $2\frac{3}{4}$ miles a little north of east, is about 50 feet higher.

Station mark: The oak signal tree.

Reference mark: A copper bolt marked "U. Δ S." set in loose rock, with a rock marked "U. + S." placed over it. Azimuth from signal tree to reference mark $286^{\circ} 41'$; distance 9.5 feet.

[Latitude 34° 53' 13.75". Longitude 119° 48' 49.08".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
San Rafael	0 12 48.02	180 12 46.38	4.2947312
Santa Ynez	20 43 12.35	200 37 33.66	4.6322557
Tepusquet	94 05 47.00	273 52 58.05	4.5341310
Pine	277 51 22.50	98 13 30.47	4.7754341
Reyes	300 17 16.07	120 35 27.28	4.7517482

SAN RAFAEL, SANTA BARBARA COUNTY.

On the northernmost of two rather flat mountains, the highest of the San Rafael Range. The point is rather difficult to reach. The best route is probably up Santa Cruz Creek from Santa Ynez Valley.

Station mark: A bronze triangulation tablet set in loose rock with a rock marked "U. S." above it, surmounted by a rock monument 7 feet high.

[Latitude 34° 42' 34.06". Longitude 119° 48' 51.97".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Santa Ynez	36 30 39.52	216 25 03.23	4.4044042
Tepusquet	123 03 08.37	302 50 22.77	4.6087544
McPherson	180 12 46.38	0 12 48.02	4.2947312
Pine	258 56 17.86	79 18 24.52	4.7800219
Reyes	280 10 31.52	100 28 41.94	4.6955497

M'KINLEY, SANTA BARBARA COUNTY.

(Not occupied.)

A sharp, rocky peak, sometimes called McKinley Mountain. It can be reached from Los Olivos, from which point it shows as the highest point of the San Rafael Mountains.

Station mark: Highest point of mountain.

[Latitude 34° 42' 03.28". Longitude 119° 50' 44.58".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Santa Ynez	32 09 03.51	212 04 27.73	4.3612394
Gaviota	55 37 39.82	235 25 34.91	4.5946496
Tepusquet	126 31 04.31	306 19 23.07	4.5889200
McPherson	188 04 46.00	8 05 51.91	4.3194832

PEAK, SANTA BARBARA COUNTY.

(Not occupied.)

This point is $2\frac{3}{4}$ miles a little north of west of primary station McPherson, and is the highest point on the range. It can be reached by traveling up the ridge westward from McPherson.

Station mark: Highest point of mountain.

[Latitude $34^{\circ} 54' 02.22''$. Longitude $119^{\circ} 51' 33.00''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Santa Ynez.....	14 48 03.03	194 43 56.49	4.6337473
Tepusquet.....	91 47 18.72	271 36 03.44	4.4767463
McPherson.....	289 46 42.42	109 48 14.50	3.6458659
San Rafael.....	349 03 42.49	169 05 14.41	4.3343919

SANTA YNEZ, SANTA BARBARA COUNTY.

On the highest point of the Santa Ynez Range. It can be reached from the Santa Ynez Valley or the coast via new road from Los Olivos to Santa Barbara. From the valley on north side of mountains, go from Los Olivos or Santa Ynez to Mahoney's ranch, thence by road to the top of divide, thence east along the ridge 5 miles to station.

Station mark: A rock 2 by 4 feet, found in place, with a hole $2\frac{1}{2}$ inches deep drilled in it.

[Latitude $34^{\circ} 31' 31.79''$. Longitude $119^{\circ} 58' 43.93''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Gaviota.....	82 11 19.18	262 03 49.90	4.3100387
Tepusquet.....	155 53 58.83	335 46 52.14	4.6681901
McPherson.....	200 37 33.66	20 43 12.35	4.6322557
San Rafael.....	216 25 03.23	36 30 39.52	4.4044042
Pine.....	246 37 00.23	67 04 40.56	4.9075345
Reyes.....	259 35 41.90	79 59 25.73	4.8127423

ZACA, SANTA BARBARA COUNTY.

(Not occupied.)

A point locally well known as Zaca Peak, about 10 miles east of north from Los Olivos.

Station mark: A small tree on summit.

[Latitude 34° 45' 58.94". Longitude 120° 01' 26.79".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Tepusquet	136 40 59.81	316 35 23.85	4.8364840
McPherson.....	235 06 26.76	55 13 39.49	4.8702877
San Rafael.....	288 08 24.34	108 15 34.46	4.8056366
Santa Ynez	351 09 07.80	171 10 41.27	4.4820598

TEPUSQUET, SANTA BARBARA COUNTY.

A station of the United States Coast and Geodetic Survey on the highest peak of the Tepusquet Range. It can be reached from Goodchild's ranch in the Conyado Valley.

Station mark: A hole drilled in solid rock.

[Latitude 34° 54' 30.98". Longitude 120° 11' 13.14."]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Gaviota	1 24 42.75	181 24 17.54	4.6561948
Gaviota (by C. & G. S.).....	1 24 39.76	181 24 14.86	4.6561948
McPherson.....	273 52 58.05	94 05 47.00	4.5341310
San Rafael.....	302 50 22.77	123 03 08.37	4.6087544
Santa Ynez	335 46 52.14	155 53 58.83	4.6681901

GAVIOTA, SANTA BARBARA COUNTY.

A station of the United States Coast and Geodetic Survey on one of the highest peaks to the eastward of Gaviota Pass. The peak is best reached through the canyon extending toward the eastward from the pass at a distance of about 1 mile from the wharf. The highest peaks in the vicinity (between 150 and 300 feet higher) are situated $1\frac{1}{2}$ miles to the eastward.

Station mark: A copper bolt set in concrete, above which a hollow cement pier is erected.

[Latitude 34° 30' 01.01". Longitude 120° 11' 56.89".]

(By Coast and Geodetic Survey, Yolo base data. Latitude 34° 30' 00.83". Longitude 120° 11' 56.89".)

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	Meters.
Tepusquet	181 24 17.54	1 24 42.45	4.6561948
Tepusquet (by Coast and Geodetic Survey).....	181 24 14.86	1 24 39.76	4.6561948
Santa Ynez	262 03 49.90	82 11 19.18	4.8100887

ALASKA (NOME DISTRICT).

Triangulation Stations.

The following geographic positions are dependent on the positions of Grave and Round triangulation stations, as furnished by the United States Coast and Geodetic Survey.

The field work was done by Mr. R. B. Robertson, with a Saegmuller 4-inch vernier theodolite reading to 30", under the direction of Mr. E. C. Barnard, topographer.

Average closure error of triangles, 11".

ROCKY.

On highest point of a rocky peak about 7 miles N. 73° W. from Chinik. There is no trail to station, but it can be reached by going in a straight line from Chinik. There is good grass and water on west side about 1½ miles distant.

Station mark: + cut in solid rock, over which is a small pile of rock.

[Latitude 64° 34' 24.84". Longitude 162° 48' 10.84'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Round	12 46 14.4	192 43 22.4	4.06137
Town	73 43 30.5	253 31 42.9	4.03657
Lime	121 47 26.3	301 16 49.3	4.50053
Grave	45 35 47.9	225 23 55.6	4.17143

ROUND.

A station of the Coast and Geodetic Survey on a rounded point, about 1 mile north of the island on which the astronomic station was situated. It is about 1,000 feet from the edge of the bluff.

Station mark: A cross cut in the center of top of a rock flush with surface of ground.

[Latitude 64° 28' 22.10". Longitude 162° 51' 21.38'.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Boot	86 39 02.9	266 22 28.0	4.16917
Grave	95 58 35.1	275 49 30.9	3.90852
Town	135 58 30.9	315 49 35.6	4.05584
Rocky	192 43 22.4	12 46 14.4	4.06137

NATURAL ROCK.

(Not occupied.)

A prominent rock on ridge between Golofnin Bay and Quinnehuk River.

[Latitude 64° 45' 25.75". Longitude 162° 51' 40.00".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Town.....	18 01 39	197 53 00	4.39338
Rocky.....	352 15 06	172 18 15	4.31504

TOWN.

On sand spit at entrance to inner Golofnin Bay.

Station mark: Cross cut on large stone flush with surface of ground.

[Latitude 64° 32' 45.81". Longitude 163° 01' 14.42".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Grave.....	1 02 53.9	181 02 44.8	3.86542
Boot.....	36 56 29.9	216 48 50.0	4.05432
Lime.....	139 56 55.1	319 38 06.5	4.40989
Rocky.....	253 31 42.9	73 43 30.5	4.03657
Round.....	315 49 35.6	135 58 30.9	4.05584

GRAVE.

A station of the Coast and Geodetic Survey on a high, grassy point about 300 meters from the end of a rocky point on the west side of the bay (Golofnin). There are several Eskimo graves near by.

Station mark: A cross cut in center of top of a large stone set flush with surface of ground.

[Latitude 64° 28' 48.99". Longitude 163° 01' 24.47".]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Town.....	181 02 44.8	1 02 53.9	3.86542
Rocky.....	225 23 55.6	45 35 47.9	4.17143
Round.....	275 49 30.9	95 58 35.1	3.90852

BOOT.

On highest part of ridge, about 7 miles S. 37° W. from Chinik. This ridge forms a narrow neck of land between Bering Sea and Golofnin Sound. It can be easily reached from any side on foot or with animals. There is plenty of water and some wood on the Golofnin side, and probably on other sides. There is a natural pile of rock

about 100 yards east of station. This is also a triangulation station of the United States Coast and Geodetic Survey.

Station mark: A rock monument.

[Latitude $64^{\circ} 27' 53.11''$. Longitude $163^{\circ} 09' 43.96''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Monument	124 07 51.5	303 39 15.6	4.48456
Lime	161 10 15.9	340 59 08.1	4.48186
Town	216 48 50.0	36 56 29.9	4.05432
Round	266 22 28.0	86 39 02.9	4.16917

LIME.

On a white hill about $3\frac{1}{2}$ miles N. 13° E. of a white hill near Fish River, known as White Mountain, and about the same distance from the town of White Mountain. The station is on the third white hill, counting from White Mountain north. There is little choice of a route to the station from White Mountain, but it is probably best to go via White Mountain and thence from one white hill to the other until station is reached. Wood and water are in abundance about one-half mile east of station.

Station mark: "U. + S." on rock, over which is a spruce tree about 15 feet high.

[Latitude $64^{\circ} 43' 19.55''$. Longitude $163^{\circ} 22' 03.26''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Monument	52 59 57.6	232 42 27.9	4.28622
Solomon	80 25 55.1	259 46 11.9	4.55163
Council	123 11 55.0	302 49 05.0	4.37768
Rocky	301 16 49.3	121 47 26.3	4.50053
Boot	340 59 08.1	161 10 15.9	4.48186
Town	319 38 06.5	139 56 55.1	4.45989

WHITE MOUNTAIN.

(Not occupied.)

A low limestone hill about 200 feet above sea level on north bank of Fish River, one-fourth mile below town of White Mountain.

[Latitude 64° 40' 41.11". Longitude 163° 23' 25.04".]

To station--	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Town	309 35 47	129 55 49	4.36198
Boot	335 12 39	155 25 01	4.41790

MONUMENT.

On highest point of ridge which runs north and east from Bluff City (Topkok), and about 4 miles N. 34° E. therefrom. A trail runs close to signal, coming from the south. It is easily accessible from Bluff City. There is good grass in the draws and water about 2 miles north of station.

Station mark: A rock monument about 9 feet high.

[Latitude 64° 37' 02.65". Longitude 163° 41' 24.56".]

To station--	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Solomon	105 53 38.2	285 31 15.7	4.31164
Council	169 19 13.2	349 13 54.1	4.39978
Lime	232 42 27.9	52 59 57.6	4.28632
Boot	303 39 15.6	124 07 51.5	4.48456

CHOWIK.

(Not occupied.)

A sharp peak about 3,500 feet above sea level, at head of Neukuluk River, Ophir Creek, and Parantulik River.

[Approximate position: Latitude 65° 08' 34". Longitude 163° 45' 30".]

To station--	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Rocky	324 02 16	144 54 08	4.89170
Town	331 54 24	152 34 29	4.87628

COUNCIL.

A round, rocky point about 6 miles S. 42° W. of Council, being the nearest mountain south of Council.

Station mark: A rock marked "U. Δ S.," above which is a rock monument 7 feet high, with a pine tree in the top.

[Latitude $64^{\circ} 50' 19.20''$. Longitude $163^{\circ} 47' 17.57''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Solomon	38 13 07.7	217 56 03.3	4.38542
Lime	302 49 05.0	123 11 55.0	4.37768
Monument	349 13 54.1	169 19 13.2	4.39978

TOPKOK.

(Not occupied.)

On promontory by that name—a United States Coast and Geodetic Survey station.

[Latitude $64^{\circ} 33' 25.57''$. Longitude $163^{\circ} 57' 53.22''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Solomon	151 46 10	331 38 26	4.14420
Monument	242 48 31	63 03 24	4.16949
Boat	284 35 16	105 18 44	4.60103

SOLOMON.

A high ridge, sometimes called Thomson Mountain, between the Right Branch and Big Hurrah Creek, both tributaries of Solomon River, and about 12 miles northeast of the mouth of Solomon River, but not visible therefrom. Ridge has three round points about the same height, the station being on the one which shows to be in the middle from nearly all directions. The point farthest west has two little natural humps on top. Station can be reached by going up Solomon River about 8 miles and thence across country a little north of east 8 or 9 miles. It is possible that it can be more easily reached from the mouth of Topkok River.

Station mark: "U. Δ S." cut on rock in place, over which is a rock monument about 8 feet high.

[Latitude $64^{\circ} 40' 01.81''$. Longitude $164^{\circ} 06' 10.18''$.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ' "	° ' "	<i>Meters.</i>
Council	217 56 03.3	38 13 07.7	4.38542
Monument	285 31 15.7	105 53 38.2	4.31164
Topkok	331 38 26.0	151 46 10.0	4.14420
Lime	259 46 11.9	80 25 55.1	4.55163

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