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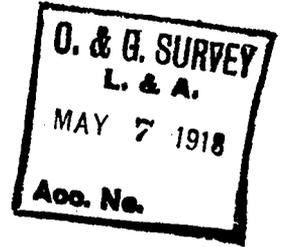
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DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

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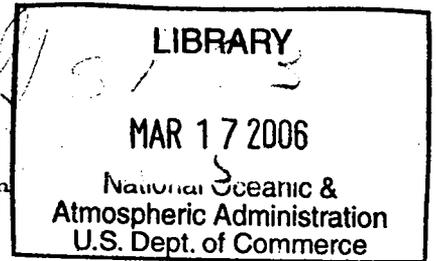


RESULTS OF MAGNETIC OBSERVATIONS MADE BY THE UNITED STATES COAST AND GEODETIC SURVEY IN 1915

BY

DANIEL L. HAZARD

Chief, Division of Terrestrial Magnetism



SPECIAL PUBLICATION No. 36.



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By DANIEL L. HAZARD,  
*Chief, Division of Terrestrial Magnetism.*

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## INTRODUCTION.

In 1882 the results of magnetic observations made by this bureau prior to 1881, together with description of stations, were published as Appendix 9, Report for 1881. From that time to 1902 the results were published only in connection with a discussion of the distribution or secular change of one or more of the three magnetic elements. In Magnetic Declination Tables and Isogonic Charts for 1902 the declination results were given for all stations occupied up to that time and descriptions were given of the stations occupied subsequent to 1881. From 1903 to 1911 there has been published annually an appendix to the Superintendent's report, giving the results of magnetic observations made during the fiscal year (July to June) covered by the report.

When in 1912 it was decided to confine the annual report of the Superintendent to administrative matters and to publish separately the scientific results which had formerly appeared as appendices to the report, the time was deemed opportune to change from the *fiscal* year to the *calendar* year in the publication of the results of magnetic observations in the field. Accordingly Special Publications No. 15 contained the results of observations made between July 1, 1911, and December 31, 1912, Special Publication No. 20 the results for the year 1913, and Special Publication No. 25 the results for the year 1914.

Five magnetic observatories have continued in operation throughout the year: At Cheltenham, Md.; Sitka, Alaska; near Honolulu, Hawaii; on Vieques Island, P. R.; and near Tucson, Ariz. Their records have furnished the means for reducing to mean of day the values of declination obtained from the field observations. There will be found in the tables the mean values of the magnetic elements for each of the observatories for the year 1915.

## DISTRIBUTION OF OBSERVATIONS ON LAND.

The distribution of the stations on land is shown in the following table, from which it will be seen that observations were made in 35 States and Territories. Numerous old stations were reoccupied in order to determine the secular change of the magnetic elements, and many auxiliary stations were occupied where previous observations had indicated the presence of local disturbance. In the case of these auxiliary stations the observing program was usually very much curtailed, being limited to morning or afternoon azimuth, one set of declination with magnet erect, one set of oscillations, and dip with one needle without reversal of polarities.

## RESULTS OF MAGNETIC OBSERVATIONS IN 1915.

*Summary of results on land.*

State	Localities	Stations	Old localities re-occupied	Declination results	Dip results	Intensity results
Alabama.....	38	50	8	50	49	50
Alaska.....	12	12	3	12	2	2
Arizona.....	1	1	1	2	2	2
Colorado.....	6	6	2	6	6	6
Florida.....	15	16	5	16	16	16
Georgia.....	39	43	7	43	46	43
Hawaii.....	1	1	1	1	1	1
Illinois.....	9	10	2	10	10	10
Indiana.....	8	12	2	12	12	12
Iowa.....	2	2	1	2	2	2
Kansas.....	7	7	3	7	7	7
Kentucky.....	30	42	6	42	42	42
Maryland.....	1	1	1	7	8	8
Massachusetts.....	6	11	1	11	11	11
Michigan.....	24	40	6	39	34	37
Minnesota.....	11	12	3	12	12	12
Mississippi.....	17	17	4	17	17	17
Missouri.....	5	8	1	8	8	8
Nebraska.....	10	13	4	13	13	13
New Mexico.....	10	10	1	10	10	10
New York.....	3	3	3	3	3	3
North Carolina.....	2	6	2	6	6	6
North Dakota.....	3	3	1	3	3	3
Ohio.....	13	27	2	27	27	27
Oklahoma.....	16	16	1	16	16	16
Porto Rico.....	1	1	1	1	1	1
South Carolina.....	2	2	1	2	2	2
South Dakota.....	3	3	0	3	3	3
Tennessee.....	9	10	3	10	10	10
Texas.....	35	43	6	43	39	39
Utah.....	5	5	1	5	5	5
Virginia.....	12	21	7	21	21	21
West Virginia.....	21	22	3	22	22	22
Wisconsin.....	8	8	1	8	8	8
Wyoming.....	11	11	3	11	11	11
Foreign countries.....	1	1	0	1	1	1
Total.....	397	496	97	502	486	487

## SECULAR CHANGE OF THE MAGNETIC DECLINATION.

A comparison of the declination results at "repeat" stations occupied during the year with the results of earlier observations in the same localities is presented in the following table. The letter after the name of a station indicates (a) that the old station was reoccupied exactly, (b) that the new station was very near the old one, and (c) that the new station was some distance (a quarter of a mile or more) from the old one. A tabular value of the annual change refers approximately to the middle of the period from which it is derived. A plus sign indicates increasing east declination or decreasing west declination; a minus sign, the reverse.

*Comparison of declination results at repeat stations.*

State and station	Former observation		Last observation		Average annual change
	Date	Declination	Date	Declination	
Massachusetts:		° /		° /	
Palmer (a).....	1913, Au	10 25.4 W	1915, No	10 35.8 W	- 4.7
New York:					
Buffalo (a).....	1908, Jy	6 26.2 W	1915, Oc	7 02.7 W	- 5.0
Rochester (a).....	1910, Au	7 43.9 W	1915, Oc	8 08.4 W	- 4.7
Albany (a).....	1912, Je	11 49.6 W	1915, Oc	12 07.6 W	- 5.4
Maryland:					
Cheltenham (a).....	1913 year	5 54.6 W	1915 year	6 04.0 W	- 4.7
Virginia:					
Lynchburg (a).....	1912, Jy	3 14.1 W	1915, Je	3 25.3 W	- 3.9
Bedford (a).....	1908, No	2 12.4 W	1915, Je	2 33.7 W	- 3.2
Rustburg (a).....	1901, Se	3 29.3 W	1915, Je	4 17.5 W	- 3.5
Covington (a).....	1900, Ap	2 01.0 W	1915, Je	2 46.3 W	- 3.0
Bristol (a).....	1910, Ap	0 43.2 W	1915, No	0 47.8 W	- 0.8
West Virginia:					
Charleston (c).....	1898, Je	1 56.7 W	1915, Je	2 37.9 W	- 2.4
Wheeling (c).....	1898, Jy	1 01.3 W	1915, Au	2 01.0 W	- 3.5
North Carolina:					
Concord (b).....	1899, Au	2 48.8 W	1915, My	3 30.2 W	- 2.6
Graham (b).....	1899, De	2 02.9 W	1915, My	3 03.0 W	- 3.9
South Carolina:					
Spartanburg (a).....	1905, Ap	0 11.4 W	1915, My	0 31.4 W	- 2.0
Georgia:					
Waycross (a).....	1908, Mh	1 05.8 E	1915, Fe	1 02.2 E	- 0.5
La Grange (a).....	1911, Oc	2 03.8 E	1915, Fe	2 12.9 E	+ 2.7
Bainbridge (a).....	1911, Au	2 13.1 E	1915, Mh	2 17.6 E	+ 1.3
Milledgeville (a).....	1911, Se	2 35.6 E	1915, Ap	2 35.0 E	- 0.2
Atlanta (a).....	1911, Ap	1 37.2 E	1915, Se	1 35.9 E	- 0.3
Florida:					
Jupiter (a).....	1911, Au	1 32.4 E	1915, Mh	1 36.6 E	+ 1.2
Miami (b).....	1911, Au	1 30.0 E	1915, Mh	1 30.9 E	+ 0.3
Key West (a).....	1911, Au	2 27.8 E	1915, Mh	2 30.6 E	+ 0.8
Tampa (c).....	1903, Ap	2 12.4 E	1915, Mh	2 12.4 E	0.0
Gainesville (a).....	1914, Mh	2 10.6 E	1915, Jy	2 10.6 E	0.0
Alabama:					
Selma (a).....	1911, Jy	2 57.8 E	1915, Mh	3 04.2 E	+ 1.7
Tuscaloosa (a).....	1910, My	4 26.1 E	1915, Mh	4 31.2 E	+ 1.1
Livingston (a).....	1908, Ap	4 37.5 E	1915, Mh	4 45.8 E	+ 1.2
Mobile (a).....	1908, Ap	4 33.4 E	1915, Ap	4 48.9 E	+ 2.2
Florence (a).....	1909, Jy	3 54.9 E	1915, My	3 57.8 E	+ 0.5
Athens (a).....	1911, Se	5 09.4 E	1915, Je	5 11.5 E	+ 0.6
Scottsboro (a).....	1910, My	3 17.4 E	1915, Au	3 18.5 E	+ 0.2
Mississippi:					
Meridian (a).....	1910, My	4 54.0 E	1915, Ap	5 01.6 E	+ 1.6
Poplarville (c).....	1896, Fe	5 20.9 E	1915, Ap	5 37.9 E	+ 0.9
Jackson (a).....	1910, My	6 08.4 E	1915, My	6 18.6 E	+ 2.0
Tennessee:					
Nashville (a).....	1911, No	3 40.4 E	1915, Je	3 35.0 E	- 1.5
Elora (a).....	1911, Oc	1 48.8 E	1915, Au	1 47.6 E	- 0.8
Kentucky:					
Princeton (a).....	1910, Se	3 47.8 E	1915, Je	3 44.6 E	- 0.7
Maysville (a).....	1912, Se	2 32.0 W	1915, Oc	2 39.6 W	- 2.4
Louisville (b).....	1904, No	1 20.1 E	1915, Oc	1 03.2 E	- 1.6
Ohio:					
Waverly (a).....	1903, Ap	2 05.2 W	1915, Oc	2 38.8 W	- 2.7
Indiana:					
Vincennes (a).....	1907, Jy	3 07.5 E	1915, Je	2 59.4 E	- 1.0
Corydon (a).....	1909, Au	4 07.8 E	1915, No	4 07.8 E	0.0
Illinois:					
Springfield (a).....	1911, Au	4 17.9 E	1915, Jy	4 12.6 E	- 1.4
Michigan:					
Michigamme (a).....	1908, Au	0 36.5 W	1915, Au	0 58.8 W	- 3.2
Escanaba (b).....	1904, Se	0 54.5 W	1915, Se	1 31.6 W	- 3.4
Mackinac Is. (a).....	1905, Se	1 49.2 W	1915, Se	2 30.0 W	- 4.1
Traverse City (a).....	1907, Se	0 44.8 W	1915, Oc	1 12.0 W	- 3.4
Bay City (a).....	1910, Se	1 42.6 W	1915, Oc	1 58.4 W	- 3.1
Detroit (a).....	1907, Je	1 29.0 W	1915, Oc	1 55.1 W	- 3.1
Wisconsin:					
Madison (a).....	1907, Jy	4 52.9 E	1915, Jy	4 35.6 E	- 2.2

*Comparison of declination results at repeat stations—Continued.*

State and station	Former observation		Last observation		Average annual change
	Date	Declination	Date	Declination	
<b>Minnesota:</b>		° /		° /	/
Willmar (a).....	1907, Au	8 31.3 E	1915, Je	8 37.0 E	+ 0.8
Bemidji (a).....	1907, Au	9 11.4 E	1915, Je	9 12.8 E	+ 0.2
St. Paul (a).....	1911, Jy	8 49.8 E	1915, Jy	8 42.2 E	- 1.9
<b>Iowa:</b>					
Sioux City (a).....	1905, Jy	9 42.4 E	1915, Je	9 39.6 E	- 0.2
<b>North Dakota:</b>					
Pembina (a).....	1911, Jy	11 31.7 E	1915, Jy	11 17.6 E	- 3.4
<b>Nebraska:</b>					
Lincoln (a).....	1913, Je	10 00.4 E	1915, Je	10 00.0 E	- 0.2
Newport (b).....	1910, Jy	12 26.2 E	1915, Au	12 31.1 E	+ 1.0
Chadron (a).....	1910, Jy	14 32.8 E	1915, Au	14 39.1 E	+ 1.2
Alma (a).....	1909, Se	11 58.4 E	1915, Oc	12 06.2 E	+ 1.3
<b>Kansas:</b>					
Scott City (b).....	1904, No	12 04.5 E	1915, Oc	12 28.8 E	+ 2.2
Concordia (a).....	1904, Se	9 40.7 E	1915, No	9 56.6 E	+ 1.4
<b>Missouri:</b>					
St. Louis (a).....	1908, Jy	5 06.3 E	1915, Jy	5 06.5 E	0.0
<b>Oklahoma:</b>					
Woodward (c).....	1900, No	10 52.5 E	1915, Oc	11 31.7 E	+ 2.6
<b>Texas:</b>					
Galveston (b).....	1906, Ap	7 28.2 E	1915, Fe	7 58.5 E	+ 3.4
Austin (a).....	1908, My	8 26.6 E	1915, Fe	8 52.5 E	+ 3.8
Laredo (a).....	1895, Ap	8 34.6 E	1915, My	9 33.6 E	+ 2.9
Sierra Blanca (a).....	1905, Ja	11 36.8 E	1915, Je	12 18.0 E	+ 4.0
<b>New Mexico:</b>					
Santa Fe (b).....	1899, De	12 34.8 E	1915, Au	13 26.2 E	+ 3.3
<b>Arizona:</b>					
Tucson (a).....	1913 year	13 37.0 E	1915 year	13 42.6 E	+ 2.8
<b>Colorado:</b>					
Montrose (b).....	1905, Oc	14 16.6 E	1915, Oc	14 47.9 E	+ 3.1
Canon City (b).....	1906 Se	14 03.1 E	1915, Oc	14 26.6 E	+ 2.6
<b>Utah:</b>					
Ögden (a).....	1910, Au	18 01.0 E	1915, Se	18 09.0 E	+ 1.6
<b>Wyoming:</b>					
Cheyenne (a).....	1910, Jy	15 13.2 E	1915, Se	15 17.8 E	+ 0.9
Green River (a).....	1910, Jy	17 11.4 E	1915, Se	17 22.0 E	+ 2.0
<b>Hawaii:</b>					
Honolulu Obs'y (a)....	1913 year	9 37.3 E	1915 year	9 41.6 E	+ 2.2
<b>Alaska:</b>					
Sitka Obs'y (a).....	1913 year	30 22.0 E	1915 year	30 23.3 E	+ 0.6
Ketchikan (a).....	1912, Je	29 12.5 E	1915, My	29 18.2 E	+ 1.9
Dutch Harbor (a).....	1912, Jy	17 27.0 E	1915, Se	17 19.1 E	- 2.5
<b>Porto Rico:</b>					
Vieques Obs'y (a).....	1913 year	2 49.6 W	1915 year	3 10.4 W	-10.4

## OBSERVATIONS AT SEA.

Only such observations were made on board ship as were required for the determination of the deviations of ships' compasses for purposes of navigation.

## INSTRUMENTAL CORRECTIONS.

Most of the instruments used in the field work have been compared with the observatory instruments at Cheltenham at the end of the year, the results in general differing but little from those obtained at the end of 1914.

Beginning with 1913 the results of horizontal intensity observations made by the Coast and Geodetic Survey have been reduced to the international standard of the Department of Terrestrial Magnetism of the Carnegie Institution of Washington. The published results of horizontal intensity determinations made before that year must be diminished by 0.001 H to reduce them to that standard.

*Corrections to magnetometers.*

Number	Pattern	Correction to east declination	Correction to H in parts of H
4	.....	0.0	-0.0024
17	C. & G. S.	0.0	.0000
19	C. & G. S.	0.0	.0000
20	C. & G. S.	0.0	.0000
26	Wild-Edelmann	0.0	-.0010
29	C. & G. S.	0.0	.0000
30	India Survey	0.0	.0000
31	India Survey	0.0	-.0007
36	India Survey	-0.4	.0000
37	India Survey	0.0	+.0012
38	Carnegie Institution	0.0	-.0006
40	India Survey	0.0	.0000

*Corrections to dip circles.*

Number	Pattern	Needles	Designation	Correction
15	Kew-Casella	1 and 2	15.12	-2.0
31	Kew Dover	1 and 2	31.12	-1.0 to -4.0
33	L. C.-Dover	1 and 2	33.12	-3.4
36	Kew-Dover	1 and 2	36.12	-1.7
56	Kew-Casella	1 and 3	56.13	-0.7
5678	Kew-Casella	1 and 2	78.12	-2.0
5678	Kew-Casella	5 and 6	78.56	-2.0

REDUCTION OF OBSERVATIONS.

Each value of the magnetic declination has been corrected for diurnal variation with the aid of the continuous observations at the nearest magnetic observatory, allowance being made for the change in diurnal range with change in magnetic latitude. No attempt has been made to correct the dip and intensity results for diurnal variation.

ARRANGEMENT OF TABLE.

The results presented are arranged by States alphabetically, and the results for each State are given in the order of increasing latitudes. The latitudes and longitudes are in most cases the results of solar observations made with the small theodolite which forms a part of the magnetometer. In default of observations or a chart the geographic coordinates were scaled from the best available map, either a topographic sheet of the United States Geological Survey, a post-route map, or some other State map. In such cases only the nearest whole minute of latitude or longitude is given. The horizontal intensity is expressed in terms of the one hundred-thousandth part of a C. G. S. unit of intensity of magnetic force, termed a gamma and designated by the Greek letter  $\gamma$ .

In order to include the desired amount of information in the available space, the months have been abbreviated as follows:

January	Ja	May	My	September	Se
February	Fe	June	Je	October	Oc
March	Mh	July	Jy	November	No
April	Ap	August	Au	December	De

Where the number in the magnetometer column is in italics, the declination observations were made with a compass declinometer. The letter C in that column indicates that the declination was determined with the compass attachment of the dip circle and that the horizontal intensity was computed from observations of dip and total intensity with the dip circle.

The observer is indicated by the initials of his name. The names of the observers are as follows:

F. L. Adams	G. Hartnell	W. W. Merrymon
J. R. Benton	W. M. Hill	F. Neumann
R. C. Briggs	A. Joachims	H. W. Pease
W. K. Doolittle	R. R. Lukeas	J. Senior
A. L. Giacomini	H. E. McComb	F. P. Ulrich
J. W. Green		

*Magnetic observations on land.*

ALABAMA.

Station	Latitude	Longitude	Date	Declination	Dip	Horizontal Intensity	Instruments		Observer
							M	D.C.	
	° /	° /		<i>East</i> ° /	° /	γ			
Mobile.....	30 41.0	88 09.2	Ap 19	4 48.9	61 58.0	25917	20	31.12	F.L.A.
Mobile, aux.....	30 41.0	88 09.2	Ap 19	4 49.3	.. .. .	25903	20	.....	F.L.A.
Bay Minette.....	30 52.6	87 47.7	Ap 17	4 44.6	62 19.0	25723	20	31.12	F.L.A.
Florala.....	30 59.6	86 19.4	Jy 13, 14	3 39.6	62 40.9	25410	17	15.12	J.R.B.
Atmore.....	31 01.4	87 29.8	Jy 21	4 29.2	62 36.6	25539	17	15.12	J.R.B.
Samson.....	31 06.9	86 03.2	Jy 15	3 44.1	62 54.1	25240	17	15.12	J.R.B.
Calvert.....	31 08.4	88 00.4	Jy 23	4 43.6	62 30.1	25548	17	15.12	J.R.B.
Scrantage.....	31 12.3	87 38.4	Jy 22	4 36.8	62 36.5	25463	17	15.12	J.R.B.
Opp.....	31 16.7	86 16.0	Jy 17	3 45.4	63 14.7	24975	17	15.12	J.R.B.
Chatom.....	31 27.6	88 14.5	Ap 15	4 47.8	62 43.8	25412	20	31.12	F.L.A.
Jackson.....	31 30.8	87 53.7	Jy 27, 28	4 38.2	62 50.6	25325	17	15.12	J.R.B.
Georgiana.....	31 38.8	86 44.5	Jy 19, 20	3 56.4	63 14.2	24934	17	15.12	J.R.B.
Luverne.....	31 42.6	86 14.9	Fe 24	3 28.8	63 22.1	24925	20	31.12	F.L.A.
Clayton.....	31 52.2	85 26.2	Mh 1	3 26.0	63 52.2	24467	20	31.12	F.L.A.
Clayton, aux.....	31 52.2	85 25.8	Fe 26	3 27.4	63 53.5	24436	20	31.12	F.L.A.
Pine Hill.....	31 58.0	87 35.6	Jy 30	3 50.6	63 21.8	25090	17	15.12	J.R.B.
Butler.....	32 05.7	88 09.8	Ap 12	5 03.0	63 38.7	25048	20	31.12	F.L.A.
Safford.....	32 17.0	87 21.4	Au 2	3 39.8	63 29.8	25126	17	15.12	J.R.B.
Linden.....	32 18.6	87 47.7	Mh 13	4 26.6	63 41.2	25074	20	31.12	F.L.A.
Selma.....	32 26.8	87 02.3	Mh 11	3 04.2	63 44.3	25004	20	31.12	F.L.A.
Livingston.....	32 35.2	88 10.5	Mh 20	4 45.8	63 52.8	24792	20	31.12	F.L.A.
Marion.....	32 36.6	87 17.6	Mh 15	3 42.7	64 11.0	24742	20	31.12	F.L.A.
Opelika.....	32 37.8	85 23.0	Fe 16	2 51.0	64 17.2	24433	20	31.12	F.L.A.
Maplesville.....	32 47.0	86 53.0	Au 4	2 51.0	64 34.6	24389	17	15.12	J.R.B.
Clanton.....	32 50.8	86 37.2	Fe 20	2 49.1	64 13.9	24549	20	31.12	F.L.A.
Rockford.....	32 53.0	86 12.7	Fe 18	3 19.3	64 31.1	24241	20	31.12	F.L.A.
Montevallo.....	33 06.6	86 52.0	Au 5, 6	3 00.3	64 34.9	24373	17	15.12	J.R.B.
Tuscaloosa.....	33 12.4	87 32.7	Mh 17	4 31.2	64 57.1	24117	20	31.12	F.L.A.
Carrollton.....	33 15	88 07.1	Mh 18	4 21.0	64 40.0	24368	20	31.12	F.L.A.
Wedowee.....	33 18.2	85 28.9	Fe 12	2 33.2	65 01.4	23973	20	31.12	F.L.A.
Warrior.....	33 49.6	86 48.0	Au 9	2 54.8	65 35.0	23760	17	15.12	J.R.B.
Woodville, aux.....	34 35	86 17	Au 12	2 37.4	66 29.8	22800	17	15.1	J.R.B.
Berkeley, aux.....	34 38	86 26	Au 12	2 49.5	66 54.2	22798	17	15.1	J.R.B.
Hillsboro, aux. 3.....	34 38.0	87 10.8	Je 2	2 17	66 05.0	23308	20	31.1	F.L.A.
Hillsboro, aux. 1.....	34 38.2	87 10.6	Je 2	2 14	65 59.9	23285	20	31.1	F.L.A.
Hillsboro.....	34 38.3	87 10.8	Je 1	2 16.6	66 04.9	23285	20	31.12	F.L.A.
Hillsboro, aux. 2.....	34 38.4	87 10.8	Je 2	2 13	66 05.7	23287	20	31.1	F.L.A.
Paint Rock.....	34 38.5	86 19.9	Au 11	2 13.2	66 32.4	22813	17	15.12	J.R.B.
Scottsboro.....	34 40.8	86 02.3	Au 13	3 18.5	66 44.6	22584	17	15.12	J.R.B.
Town Creek.....	34 40.9	87 24.9	My 29	4 35.6	66 44.4	22908	20	31.12	F.L.A.
Gurley, aux.....	34 42	86 22	Au 12	2 41.2	66 54.4	22613	17	15.1	J.R.B.
Athens, aux. 1.....	34 44.7	86 59	Je 3	4 03.8	65 50.4	23522	20	31.1	F.L.A.
Athens, aux. 4.....	34 47.8	87 04	Je 4	3 41.6	66 30.2	22950	20	31.1	F.L.A.
Athens.....	34 49.1	86 59.5	Je 4	5 11.5	66 42.2	22855	20	31.12	F.L.A.
Athens, aux. 3.....	34 49.2	86 54	Je 4	3 33.6	66 28.6	23451	20	31.1	F.L.A.
Florence.....	34 49.6	87 44.8	My 27	3 57.8	66 33.6	22841	20	31.12	F.L.A.
Stevenson.....	34 51.7	85 50.2	Au 16, 17	3 30.2	66 46.5	22630	17	15.12	J.R.B.
New Market.....	34 53.2	86 26.5	Au 25	3 08.2	66 32.0	22866	17	15.12	J.R.B.
Athens, aux. 2.....	34 53.7	86 59	Je 3	4 06.9	66 16.8	23333	20	31.1	F.L.A.
Plevna.....	34 58	86 25	Au 24	2 04.8	66 19.3	23130	17	15.1	J.R.B.

*Magnetic observations on land—Continued.*

## ALASKA.

Station	Latitude	Longitude	Date	Declination	Dip	Horizontal intensity	Instruments		Observer
							M	D.C.	
Dutch Harbor.....	53 53.4	166 32.1	Se 13	17 19.1	.. .. .	.....	4	.....	A.L.G.
Jon, Felice Strait.....	54 58.0	131 25.7	Au 26	29 21.1	.. .. .	.....	5	.....	W.K.D.
Fripo, Danger Passage..	55 01.5	131 13.6	Jy 31	27 52.4	.. .. .	.....	5	.....	W.K.D.
Sage, Danger Passage..	55 02.4	131 12.4	Jy 31	28 02.6	.. .. .	.....	5	.....	W.K.D.
Mist Harbor, Nagai Island.....	55 08.4	159 51.8	Jy 9	19 27.8	68 28.4	19412	4	33.12	A.L.G.
Pow, Hassler Harbor...	55 13.1	131 26.0	Se 4	29 35.4	.. .. .	.....	5	.....	R.C.B.
Ketchikan.....	55 20.2	131 39.5	My 24	29 18.2	.. .. .	.....	5	.....	W.K.D.
Sitka Obs'y.....	57 02.9	135 20.2	Year	30 23.3	74 27.0	15586	37	2EI	J.W.G.
Kuskokwim River:									
Island.....	59 45.0	161 53.7	Au 7	20 30	.. .. .	.....	743	.....	R.R.L.
Fish.....	60 10.7	162 19.4	Jy 21	20 19	.. .. .	.....	743	.....	J.S.
Bethel.....	60 48	161 45.2	Au 21	21 01	.. .. .	.....	743	.....	J.S.
Elf, Fidalgo Bay.....	60 51.1	146 09.1	Se 29	28 57.0	.. .. .	.....	8	.....	A.J.

## ARIZONA.

Tucson Obs'y.....	32 14.8	110 50.1	Jy 2-10	<i>East</i> 13 42.9	59 24.9	27100	38	36.12	W.M.H.
Do.....	32 14.8	110 50.1	Year	13 42.6	59 25.0	27115	30	3EI	F.P.U.

## COLORADO.

Lake City.....	38 02.0	107 19.0	Oc 9	<i>East</i> 15 11.5	65 57.4	23142	29	56.13	H.E.M.
Ordway.....	38 13.8	103 44.0	Oc 18	13 24.4	66 29.9	23259	29	56.13	H.E.M.
Canon City.....	38 28	105 14.5	Oc 12	14 26.6	66 24.1	23132	29	56.13	H.E.M.
Eads.....	38 29	102 46.3	Oc 19	13 06.6	67 21.0	22501	29	56.13	H.E.M.
Montrose.....	38 29	107 53.0	Oc 7, 8	14 47.9	66 08.4	23231	29	56.13	H.E.M.
Walden.....	40 44	106 17.5	Se 11	16 14.1	68 19.6	21759	29	56.13	H.E.M.

## FLORIDA.

Key West.....	24 33.7	81 47.6	Mh 19	<i>East</i> 2 30.6	56 10.1	28310	19	78.12	F.N.
Long Key.....	24 47.8	80 51.1	Mh 18	2 16.4	56 29.3	28072	19	78.12	F.N.
Detroit.....	25 26.8	80 28.1	Mh 17	1 45.0	57 00.8	28006	19	78.12	F.N.
Miami, old.....	25 46.0	80 11.7	Mh 12	0 52.9	58 03	27497	19	78.1	F.N.
Miami, new.....	25 46.3	80 11.4	Mh 13	1 30.9	57 47.2	27592	19	78.12	F.N.
Palm Beach.....	26 42.9	80 02.5	Mh 9, 10	1 33.1	59 05.8	26838	19	78.12	F.N.
Jupiter.....	26 56.3	80 04.2	Mh 8	1 36.6	59 05.3	26878	19	78.12	F.N.
Fort Pierce.....	27 26.8	80 19.5	Mh 4, 5	1 12.6	59 18.8	26942	19	78.12	F.N.
Tampa.....	27 57.0	82 28.0	Mh 24	2 12.4	60 07.6	26763	19	78.12	F.N.
Bronson.....	29 26.9	82 38.2	Mh 25	2 34.4	61 34.3	25775	19	78.12	F.N.
Interlachen.....	29 36.8	81 53.8	Jy 5, 6	1 20.0	61 58.5	25614	17	15.12	J.R.B.
Gainesville.....	29 39.2	82 20.6	Jy 1, 2	2 10.6	61 59.5	25508	17	15.12	J.R.B.
Fort White.....	29 55.5	82 42.7	Jy 8	1 35.4	61 39.4	25853	17	15.12	J.R.B.
Panama City.....	30 08.5	85 39.6	Mh 8	3 29.5	61 47.7	25998	20	31.12	F.L.A.
Crawfordville.....	30 11	84 22.6	Ap 2	2 47.0	62 01.3	25630	19	78.12	F.N.
Crestview.....	30 45.4	86 33.4	Jy 12	4 03.6	62 24.9	25544	17	15.12	J.R.B.

## GEORGIA.

Statenville.....	30 41	83 02.0	Mh 29, 30	<i>East</i> 1 51.8	62 53.0	25188	19	78.12	F.N.
Fargo.....	30 41.5	82 32.9	Mh 27	1 09.6	62 50.0	25101	19	78.12	F.N.
Folkston.....	30 49.4	81 59.9	Mh 1, 2	1 06.4	63 00.6	24904	19	78.12	F.N.
Cairo.....	30 51.7	84 14.0	Ap 6	2 22.0	62 43.8	25254	19	78.12	F.N.
Bainbridge.....	30 54.7	84 34.9	Mh 31	2 17.6	62 35.6	25392	19	78.12	F.N.
Homerville.....	31 01.2	82 45.4	Fe 25, 26	1 03.8	63 02.2	24992	19	78.12	F.N.

*Magnetic observations on land—Continued.*

GEORGIA—Continued.

Station	Latitude	Longitude	Date	Declination	Dip	Horizontal Intensity	Instruments		Observer
							M	D.C.	
	° /	° /		East ° /	° /	γ			
Moultrie.....	31 10.6	83 47.8	Ap 12	2 20.8	63 03.5	24970	19	78.12	F.N.
Do.....	31 10.6	83 47.8	Ap 12	.....	63 06.3	.....	..	78.56	F.N.
Camilla.....	31 13.4	84 10.7	Ap 8	2 03.0	63 05.0	25102	19	78.12	F.N.
Waycross.....	31 14.4	82 21.4	Fe 20	1 02.2	63 09.9	25000	19	78.12	F.N.
Blackshear.....	31 17.2	82 14.7	Fe 19	0 58.5	63 30.9	24753	19	78.12	F.N.
Newton.....	31 18.8	84 18.7	Ap 9	2 20.6	63 23.6	24996	19	78.12	F.N.
Do.....	31 18.8	84 18.7	Ap 10	.....	63 21.1	.....	..	78.56	F.N.
Alma.....	31 32	82 28.2	Fe 23, 24	1 16.4	63 49.8	24441	19	78.12	F.N.
Fort Gaines.....	31 35.5	85 02.8	Mh 3, 5	2 33.6	63 40.1	24798	20	31.12	F.L.A.
Ocilla.....	31 35.6	83 15.4	Ap 14	1 56.4	63 53.7	24304	19	78.12	F.N.
Do.....	31 35.6	83 15.4	Ap 14	.....	63 58.1	.....	..	78.56	F.N.
Claxton.....	32 09.8	81 52.8	Fe 10, 11	0 46.4	64 11.9	24289	19	78.12	F.N.
Lyons.....	32 11.6	82 19.4	Fe 12	1 01.0	64 17.0	24312	19	78.12	F.N.
Eastman.....	32 11.7	83 12.2	Ap 17	1 31.0	64 07.2	24353	19	78.56	F.N.
Ellaville.....	32 14.3	84 20.0	Ap 15	2 06.9	64 07.0	24339	19	78.56	F.N.
Metter.....	32 23.1	82 04.3	Fe 15	0 47.6	64 23.9	24242	19	78.12	F.N.
Boxspring.....	32 32.6	84 39.6	Se 8, 9	2 27.8	64 19.5	24241	17	15.12	J.R.B.
Fort Valley.....	32 33.8	83 54.7	Se 10	1 52.8	64 23.7	24217	17	15.12	J.R.B.
Manchester.....	32 51.4	84 36.0	Se 7, 8	2 16.2	64 30.6	24101	17	15.12	J.R.B.
Stevens Pottery.....	32 58	83 18	Ap 20	1 37.0	64 50	23945	19	78.5	F.N.
Browns Crossing.....	33 02.7	83 21	Ap 19	1 40.0	65 33	23329	19	78.5	F.N.
La Grange.....	33 02.7	85 02.2	Fe 10	2 12.9	64 40.0	24183	20	31.12	F.L.A.
Milledgeville.....	33 04.5	83 15.0	Ap 19	2 35.0	65 25.2	23452	19	78.56	F.N.
Meriwether.....	33 09	83 18	Ap 20	1 43.9	65 12	23706	19	78.5	F.N.
Carrs Station.....	33 11	83 07	Ap 19	0 45.3	64 59	23888	19	78.5	F.N.
McDonough.....	33 26.6	84 12.0	Ap 22	1 43.8	65 11.2	23843	19	78.56	F.N.
Atlanta.....	33 44.2	84 22.3	Se 3, 6	1 35.9	65 29.3	23576	17	15.12	J.R.B.
Decatur.....	33 47	84 19.6	Ap 24	1 32.2	65 32.2	23630	19	78.56	F.N.
Lincolnton.....	33 47.3	82 27.4	My 3	0 37.7	65 40.0	23430	19	78.56	F.N.
Lawrenceville.....	33 57.6	83 58.8	Ap 28	1 27.6	65 44.5	23401	19	78.56	F.N.
Rock Mart.....	33 59.5	85 03.2	Au 28, 30	2 09.5	65 46.4	23342	17	15.12	J.R.B.
Winder.....	34 00.1	83 45.8	Ap 29	1 19.8	65 55.2	23228	19	78.56	F.N.
Acworth.....	34 03.9	84 41.4	Se 2	2 03.6	65 51.0	23311	17	15.12	J.R.B.
Alpharetta.....	34 04.6	84 18.0	Ap 26	1 19.6	65 44.0	23504	19	78.56	F.N.
Jefferson.....	34 07.4	83 34.4	Ap 30	1 21.6	65 51.4	23266	19	78.56	F.N.
Cumming.....	34 12.5	84 07.8	Ap 27	1 21.8	65 58.6	23251	19	78.56	F.N.
Homer.....	34 19	83 29.0	My 5	1 00.0	66 06.4	23202	19	78.56	F.N.
Hartwell.....	34 21.1	82 55.3	My 10	0 29.7	66 09.0	23162	19	78.56	F.N.
Fair Mount.....	34 26.1	84 43.0	Au 31	1 59.2	66 12.1	23041	17	15.12	J.R.B.
Clayton.....	34 52.6	83 25.3	My 8	0 54.4	66 53.2	22716	19	78.56	F.N.

HAWAII.

Honolulu Obs'y.....	21 19.2	158 03.8	Year	East 9 41.6	39 29.6	28998	36	4EI	W.W.M.
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ILLINOIS.

Golconda.....	37 21.9	88 30.2	Je 18	East 4 34.7	68 19.7	21616	20	31.12	F.L.A.
Salem.....	38 37.6	88 56.2	Je 30	3 53.0	69 59.0	20370	20	31.12	F.L.A.
Edwardsville, 1.....	38 47.2	89 57.1	Jy 6	5 20.8	70 03.0	20350	20	31.12	F.L.A.
Edwardsville, 2.....	38 49.4	89 58.0	Jy 8, 9	5 48.0	70 16.5	20026	20	31.12	F.L.A.
Springfield.....	39 49.7	89 39.4	Jy 10	4 12.6	70 41.1	19903	20	31.12	F.L.A.
Galesburg.....	40 57.2	90 24.7	Jy 13	5 04.4	71 32.6	19296	20	31.12	F.L.A.
Lacon.....	41 01.5	89 23.8	Jy 15	4 17.2	71 48.8	18914	20	31.12	F.L.A.
Mendota.....	41 34.6	89 07.3	Jy 17	3 59.8	72 39.2	18162	20	31.12	F.L.A.
Durand.....	42 26.1	89 19.1	Jy 20	4 14.2	73 15.8	17792	20	31.12	F.L.A.
Rockton.....	42 27.4	89 04.5	Jy 19	2 59.5	73 09.8	17715	20	31.12	F.L.A.

## Magnetic observations on land—Continued.

## INDIANA.

Sta.	Latitude	Longitude	Date	Declination	Dip	Horizontal intensity	Instruments		Observer
							M	D.C.	
Mount Vernon.....	37 56.0	87 52.4	Je 22	East 4 00.6	69 13.7	20966	20	31.12	F.L.A.
Alton.....	38 07.2	86 25.6	Oc 27, 30	3 22.9	69 45.7	20350	19	78.56	F.N.
Corydon, aux. 1.....	38 09	86 09	No 4	3 38.8	70 03	20426	19	78.6	F.N.
Corydon, aux. 2.....	38 12	86 06	No 5	2 58.5	70 22	20196	19	78.6	F.N.
Corydon.....	38 12.2	86 09.1	No 4	4 07.8	70 14.3	20286	19	78.56	F.N.
Corydon, aux. 3.....	38 13	86 12	No 5	4 18.7	70 08	20306	19	78.6	F.N.
Corydon, aux. 4.....	38 15	86 09	No 5	3 42.0	70 22	20128	19	78.6	F.N.
Jeffersonville.....	38 17	85 44.3	Oc 20, 21	1 20.0	70 14.3	20178	19	78.56	F.N.
New Salisbury.....	38 18.2	86 05.9	No 6	3 06.6	70 45.2	19706	19	78.56	F.N.
New Albany.....	38 19	85 48.6	Oc 21, 22	1 37.8	70 39.2	19714	19	78.56	F.N.
Princeton.....	38 20.5	87 33.8	Je 24, 25	3 23.3	69 40.6	20637	20	31.12	F.L.A.
Vincennes.....	38 40.4	87 32.5	Je 26	2 59.4	70 04.4	20328	20	31.12	F.L.A.

## IOWA.

Blanchard.....	40 35	95 12.9	No 20	East 9 37.1	70 28.6	20058	29	56.13	H.E.M.
Sioux City.....	42 29.4	96 28.4	Je 10	9 39.6	72 29.9	18358	29	56.13	H.E.M.

## KANSAS.

Scott City.....	38 30.0	100 52.0	Oc 20	East 12 28.8	67 28.1	22443	29	56.13	H.E.M.
Russell Springs.....	38 54	101 10.4	Oc 21	12 59.6	67 48.3	22151	29	56.13	H.E.M.
Lawrence.....	38 58	95 13.7	No 4	8 52.9	69 05.3	21144	29	56.13	H.E.M.
Oakley.....	39 08	100 50.1	Oc 23	12 18.7	68 14.0	21808	29	56.13	H.E.M.
Concordia.....	39 34.8	97 40.6	No 2	9 56.6	69 09.1	21270	29	56.13	H.E.M.
St. Francis.....	39 47.0	101 45.9	Oc 27	13 05.5	68 45.3	21489	29	56.13	H.E.M.
Atwood.....	39 48.6	101 02.1	Oc 25	12 33.1	68 46.6	21418	29	56.13	H.E.M.

## KENTUCKY.

Pine Knot.....	36 39.1	84 29.3	No 24	0 13.2 E	68 45.4	21664	19	78.56	F.N.
Herndon.....	36 43.6	87 33.3	Je 11, 12	3 54.9 E	68 02.2	21829	20	31.12	F.L.A.
Parkers Lake.....	36 51	84 29.0	No 22, 23	1 48.4 E	69 42.7	20890	19	78.56	F.N.
Burnside.....	36 59.1	84 36.0	No 22	1 44.0 E	68 58.0	21252	19	78.56	F.N.
Calvert City.....	37 00.8	88 21.0	Je 15	4 34.5 E	68 21.9	21553	20	31.12	F.L.A.
Princeton.....	37 06.9	87 53.2	Je 14	3 44.6 E	68 13.4	21695	20	31.12	F.L.A.
Smithland.....	37 07.8	88 25.0	Je 17	4 11.0 E	68 30.0	21224	20	31.12	F.L.A.
Stanford, aux. 2.....	37 29.8	84 38.2	No 20	2 23.4 E	70 11	20392	19	78.6	F.N.
Stanford, aux. 3.....	37 30.6	84 42.9	No 20	2 52.6 E	69 44	20092	19	78.6	F.N.
Stanford, aux. 1.....	37 31.1	84 36.3	No 18	1 56.1 E	70 22	20013	19	78.6	F.N.
Stanford, old.....	37 31.4	84 40	No 16	2 52.1 E	69 58	20226	19	78.6	F.N.
Stanford, new.....	37 31.4	84 40.5	No 17	2 51.6 E	70 06.2	20107	19	78.56	F.N.
Lebanon.....	37 33.9	85 15.8	No 11	2 01.4 E	69 37.4	20566	19	78.56	F.N.
Stanford, aux. 4.....	37 34.4	84 42.0	No 20	1 50.2 E	70 04	20380	19	78.6	F.N.
Lancaster, aux. 4.....	37 34.8	84 36.5	No 15	2 21.9 E	69 54	20324	19	78.56	F.N.
Junction City.....	37 35	84 47.8	No 12	1 21.2 E	69 33.7	20597	19	78.56	F.N.
Lancaster, aux. 2.....	37 35.8	84 30.2	No 15	0 29.6 E	69 48	20583	19	78.6	F.N.
Brumfield.....	37 36.2	84 69.5	No 10	1 29.7 E	69 39.3	20624	19	78.56	F.N.
Lancaster, aux. 3.....	37 38.2	84 37.8	No 15	2 46.8 E	69 41	20541	19	78.6	F.N.
Lancaster, aux. 1.....	37 39.8	84 32.0	No 13	1 35.0 E	70 10	20495	19	78.6	F.N.
Lebanon Junction.....	37 50.4	85 44.2	No 9	2 03.4 E	69 30.2	20720	19	78.56	F.N.
Stephensport.....	37 54.7	86 32.0	No 1	2 30.5 E	69 40.8	20446	19	78.56	F.N.
Ekron.....	37 56.1	86 11.0	Oc 26	3 59.6 E	69 57.0	20634	19	78.56	F.N.
West Point.....	37 59.8	85 56.3	Oc 25	1 21.4 E	69 48.7	20754	19	78.56	F.N.
Shepherdsville.....	38 00.0	85 43.4	Oc 23	0 41.4 E	69 35.2	20706	19	78.56	F.N.
Chenaultt.....	38 01.0	86 31.0	Oc 28	2 30.4 E	69 38.4	20534	19	78.56	F.N.
Peckenpaugh.....	38 09.9	86 18.4	Oc 29	3 29.3 E	70 03.0	20197	19	78.56	F.N.
Louisville.....	38 14.2	85 42.9	Oc 19, 20	1 03.2 E	70 00.2	20372	19	78.56	F.N.
Coalton.....	38 22.0	82 45.8	Se 16	1 03.8 W	70 14.9	20206	19	78.56	F.N.
Ashland.....	38 24.7	82 38.2	Se 15	1 55.0 W	71 00.8	19408	19	78.56	F.N.

*Magnetic observations on land—Continued.*

KENTUCKY—Continued.

Station	Latitude	Longitude	Date	Declination	Dip	Horizontal intensity	Instruments		Observer
							M	D.C.	
Argillite.....	38 28.9	82 50.4	Se 18	1 10.2 W	70 58.4	19478	19	78.56	F.N.
Ruggles.....	38 29.6	83 11.8	Oc 6	0 38.8 E	70 44.3	19580	19	78.56	F.N.
Marshall.....	38 31.8	83 46.2	Oc 13	1 29.4 W	70 08.0	20514	19	78.56	F.N.
Garrison.....	38 35.9	83 10.8	Oc 7	0 29.5 W	71 02.4	19488	19	78.56	F.N.
Maysville, aux. 2.....	38 37.0	83 47	Oc 11	1 59.9 E	70 24	20090	19	78.5	F.N.
Maysville, aux. 4.....	38 37.8	83 40	Oc 11	1 56.6 W	70 22	19910	19	78.5	F.N.
Maysville.....	38 39.1	83 42.6	Oc 12	2 39.6 W	70 24.0	19968	19	78.56	F.N.
Maysville, aux. 1.....	38 40.6	83 49	Oc 11	0 55.6 E	70 30	20130	19	78.6	F.N.
Concord.....	38 40.8	83 28.5	Oc 8	0 10.6 E	70 47.8	19389	19	78.56	F.N.
Maysville, aux. 3.....	38 41.3	83 44	Oc 11	2 20.2 W	70 45	19810	19	78.6	F.N.
Limeville.....	38 41.6	82 53.2	Se 20	2 43.6 W	71 20.0	18876	19	78.56	F.N.
Dover.....	38 45.6	83 53.1	Oc 9	1 03.6 E	70 39.0	19823	19	78.56	F.N.

MARYLAND.

Cheltenham Obs'y.....	38 44.0	76 50.5	Ja 5-22	<i>West</i> 6 02.0	70 46.4	19439	38	78.12	G.H.
Do.....	38 44.0	76 50.5	Fe 2-11	6 02.4	.....	19444	40	.....	G.H.
Do.....	38 44.0	76 50.5	Ap 16, 17	.....	70 47.5	.....	..	56.13	G.H.
Do.....	38 44.0	76 50.5	Ap 17	.....	70 47.5	.....	..	56.34	G.H.
Do.....	38 44.0	76 50.5	Mh 25, 27	.....	.....	19424	40	.....	G.H.
Do.....	38 44.0	76 50.5	Oc 15-21	6 05.4	.....	19364	17	.....	G.H.
Do.....	38 44.0	76 50.5	No 2-23	6 05.7	70 48.4	19361	40	15.12	G.H.
Do.....	38 44.0	76 50.5	De 13-16	6 05.1	70 49.2	19368	29	56.13	G.H.
Do.....	38 44.0	76 50.5	De 14	.....	70 49.8	.....	..	56.34	G.H.
Do.....	38 44.0	76 50.5	De 14-18	6 05.6	70 47.6	19348	20	31.12	G.H.
Do.....	38 44.0	76 50.5	Year	6 04.0	70 47.0	19412	26	26EI	G.H.

MASSACHUSETTS.

Springfield.....	42 05.7	72 34.4	No 3	<i>West</i> 12 20.2	73 09.0	17076	20	31.12	F.L.A.
Palmer, aux. 1.....	42 06	72 20	No 6	10 22.5	73 34	16899	20	31.1	F.L.A.
Westfield.....	42 07.0	72 42.4	Oc 29	12 19.1	73 05.7	17039	20	31.12	F.L.A.
Palmer, aux. 3.....	42 08	72 23	No 8	12 20.5	73 11	16999	20	31.1	F.L.A.
Palmer.....	42 08.7	72 20.6	No 4, 6	10 35.8	73 29.2	16726	20	31.12	F.L.A.
Palmer, aux. 5.....	42 10	72 17	No 8, 9	12 42.8	73 12	16963	20	31.1	F.L.A.
Palmer, aux. 2.....	42 11	72 22	No 6	12 15.5	73 10	16875	20	31.1	F.L.A.
Palmer, aux. 4.....	42 12	72 19	No 8	11 09.3	73 22	16800	20	31.1	F.L.A.
East Brookfield.....	42 15.2	72 02.2	No 10	12 33.8	73 17.2	16884	20	31.12	F.L.A.
Sterling.....	42 26.6	71 46.7	No 12	13 11.9	73 23.8	16808	20	31.12	F.L.A.
Hinsdale.....	42 27.3	73 08.4	Oc 27	12 36.4	73 30.4	16816	20	31.12	F.L.A.

MICHIGAN.

Detroit.....	42 20.4	82 57.6	Oc 19	1 55.1 W	73 19.6	17291	20	31.12	F.L.A.
Bay City, old.....	43 36.2	83 50.9	Oc 15, 16	1 58.4 W	74 23.7	16509	20	31.12	F.L.A.
Bay City, new.....	43 36.6	83 50.7	Oc 15, 16	2 01.1 W	74 25.6	16526	20	31.12	F.L.A.
Dublin.....	44 11.8	85 57.1	Oc 12	0 01.4 W	74 45.8	16356	20	31.12	F.L.A.
Thompsonville.....	44 32.0	85 57.4	Oc 11	0 41.6 W	75 17.0	15827	20	31.12	F.L.A.
Honor, aux 1.....	44 39	86 00	Oc 6	.....	75 31	15477	20	31.1	F.L.A.
Honor.....	44 40.5	86 00.3	Oc 2, 4	1 27.6 W	75 32.0	15460	20	31.12	F.L.A.
Honor, aux. 2.....	44 40.5	85 59	Oc 6	0 52.2 W	75 31	15439	20	31.1	F.L.A.
Honor, aux. A.....	44 40.5	86 00.3	Oc 9	1 19.2 W	.....	15440	20	.....	F.L.A.
Honor, aux. B.....	44 40.5	86 00.3	Oc 9	1 23.8 W	.....	15348	20	.....	F.L.A.
Honor, aux. C.....	44 40.5	86 00.3	Oc 9	1 28.7 W	.....	.....	20	.....	F.L.A.
Traverse City.....	44 45	85 38	Oc 1	1 12.0 W	75 43.5	15275	20	31.12	F.L.A.
Petoskey.....	45 22.4	84 58.3	Se 30	0 36.2 W	76 01.2	14934	20	31.12	F.L.A.
Levering.....	45 38.7	84 48.7	Se 28	1 19.8 W	76 05.4	14898	20	31.12	F.L.A.
Escanaba.....	45 44.7	87 02.6	Se 7, 8	1 31.6 W	75 46.8	15077	20	31.12	F.L.A.
Mackinac Island.....	45 51.5	84 37.0	Se 25, 27	2 30.0 W	76 13.2	14847	20	31.12	F.L.A.

*Magnetic observations on land—Continued.*

MICHIGAN—Continued.

Station	Latitude	Longitude	Date	Declination	Dip	Horizontal Intensity	Instruments		Observer
							M	D.C.	
St. Ignace.....	45 51.0	84 45.0	Se 22, 24	2 03.8 W	76 07.0	14897	20	31.12	F.L.A.
Northland.....	46 05.1	87 35.6	Se 3, 4	1 31.1 E	76 13.0	14909	20	31.12	F.L.A.
Engadine.....	46 07.3	85 34.2	Se 17	1 01.4 W	76 20.8	14585	20	31.12	F.L.A.
Channing.....	46 08.9	88 05.5	Se 3	1 19.5 E	76 21.6	14644	20	31.12	F.L.A.
Trout Lake.....	46 12	85 01.5	Se 18	1 05.1 W	76 37.0	14393	20	31.12	F.L.A.
Rudyard.....	46 14.4	84 36.4	Se 21	2 10.5 W	76 54.1	14045	20	31.12	F.L.A.
Forsyth.....	46 18.0	87 18.6	Se 9	0 44.3 E	76 21.2	14602	20	31.12	F.L.A.
Seney.....	46 21.6	85 56.3	Se 11	1 05.2 W	76 28.3	14529	20	31.12	F.L.A.
Michigamme, aux. 3....	46 29	88 05	Se 1	1 08.4 E	76 40.1	14161	20	31.1	F.L.A.
Michigamme, aux. 4....	46 31	88 05	Se 1	0 39.9 W	73 49.7	17608	20	31.1	F.L.A.
Michigamme, aux. 5....	46 32	88 00	Se 2	0 08.2 E	74 54.0	16128	20	31.1	F.L.A.
Michigamme, aux. 1....	46 32	88 08	Au 28	0 43.0 W	85 47.7	4452	20	31.1	F.L.A.
Michigamme.....	46 32.3	88 05.1	Au 30	0 58.8 W	76 08.5	15944	20	31.12	F.L.A.
Michigamme, aux. A....	46 32.3	88 05.1	Au 30	0 03.5 E	.....	.....	20	.....	F.L.A.
Michigamme, aux. B....	46 32.3	88 05.1	Au 30	2 18.8 W	.....	.....	20	.....	F.L.A.
Matchwood.....	46 33.4	89 24.4	Au 20, 21	2 18.4 E	76 25.4	14561	20	31.12	F.L.A.
Michigamme, aux. 2....	46 34	88 07	Se 1	1 30.3 E	78 10.3	12424	20	31.1	F.L.A.
Nestoria, aux. 1.....	46 34.9	88 15.5	Au 28	0 38.8 E	77 00.3	13977	20	31.1	F.L.A.
Nestoria.....	46 34.9	88 15.6	Au 27	0 51.8 E	77 11.5	13834	20	31.12	F.L.A.
Grand Marais.....	46 40.9	85 58.8	Se 14	1 11.4 W	76 44.4	14248	20	31.12	F.L.A.
L'Anse.....	46 46.0	88 27.0	Au 26	1 50.5 E	76 33.0	14434	20	31.12	F.L.A.
Eagle River.....	47 25.6	88 17.9	Au 23	3 08.4 E	77 41.1	13292	20	31.12	F.L.A.
Eagle River, aux. 2....	47 25.6	88 17.9	Au 25	3 16.5 E	.....	13222	20	.....	F.L.A.
Eagle River, aux. 1....	47 25.6	88 17.8	Au 25	3 06.3 E	77 41.7	13207	20	31.1	F.L.A.

MINNESOTA.

Station	Latitude	Longitude	Date	Declination	Dip	Horizontal Intensity	M	D.C.	Observer
St. Paul.....	44 58.0	93 06.2	Jy 30	8 42.2	74 48.0	16277	20	31.12	F.L.A.
Willmar.....	45 09.6	95 03.7	Je 12	8 37.0	74 50.1	16215	29	56.13	H.E.M.
Kingsdale.....	46 14.4	92 19.0	Au 10, 11	8 06.6	76 42.5	14454	20	31.12	F.L.A.
Kingsdale, aux.....	46 14.4	92 19.0	Au 11	8 08.5	76 42.5	14472	20	31.12	F.L.A.
Two Harbors.....	47 00.9	91 39.8	Au 14, 17	7 51.7	77 01.2	14039	20	31.12	F.L.A.
Bemidji.....	47 27.5	94 52.2	Je 14	9 12.8	76 43.6	14407	29	56.13	H.E.M.
International Falls....	48 35.9	93 24.5	Je 15	7 10.6	77 19.5	13694	29	56.13	H.E.M.
Baudette.....	48 43.5	94 36.0	Je 19	9 33.0	77 20.5	13727	29	56.13	H.E.M.
Warroad.....	48 54.6	95 19.6	Je 22	10 17.1	77 52.4	13278	29	56.13	H.E.M.
Monument 899.....	49 00.0	95 39.6	Je 25	9 56.6	77 28.3	13636	29	56.13	H.E.M.
Monument 877.....	49 00.0	96 14.8	Je 29	9 54.8	77 25.3	13640	29	56.13	H.E.M.
Monument 853.....	49 00.0	96 46.6	Jy 3	10 48.4	77 27.5	13675	29	56.13	H.E.M.

MISSISSIPPI.

Station	Latitude	Longitude	Date	Declination	Dip	Horizontal Intensity	M	D.C.	Observer
Pascagoula.....	30 22.4	88 32.5	Ap 24	5 08.3	61 42.1	26056	20	31.12	F.L.A.
Poplarville.....	30 51.3	89 31.9	Ap 28	5 37.9	61 53.9	25995	20	31.12	F.L.A.
Tylertown.....	31 07.1	90 10.2	My 5	5 56.7	62 02.8	25926	20	31.12	F.L.A.
Purvis.....	31 07.8	89 24.2	Ap 27	5 38.6	62 20.8	25731	20	31.12	F.L.A.
Leakesville.....	31 09.2	88 34.5	Ap 21	5 03.0	62 28.4	25572	20	31.12	F.L.A.
Columbia.....	31 15.0	89 55.0	My 3	5 43.2	62 15.0	25817	20	31.12	F.L.A.
Monticello.....	31 32.5	90 06.6	My 8	5 54.4	62 37.0	25583	20	31.12	F.L.A.
Prentiss.....	31 36.1	89 52.6	My 10	5 56.6	62 41.7	25572	20	31.12	F.L.A.
Mendenhall.....	31 57.9	89 51.9	My 13	5 55.4	63 03.1	25278	20	31.12	F.L.A.
Quitman.....	32 02.5	88 43.5	Ap 9	4 52.4	63 11.6	25241	20	31.12	F.L.A.
Jackson.....	32 20.2	90 10.7	My 14	6 18.6	63 55.3	24646	20	31.12	F.L.A.
Meridian.....	32 22.3	88 43.8	Ap 5	5 01.6	63 32.4	24999	20	31.12	F.L.A.
Carthage.....	32 44.8	89 31.0	My 17	5 50.8	63 51.4	24876	20	31.12	F.L.A.
DeKalb.....	32 45.5	88 38.3	Ap 7	5 06.4	63 56.9	24877	20	31.12	F.L.A.
Marks.....	34 15.2	90 16.2	My 22	5 51.4	65 16.4	23928	20	31.12	F.L.A.
Senatobia.....	34 37.2	89 58.1	My 19	5 47.6	65 38.3	23638	20	31.12	F.L.A.
Ashland.....	34 50.3	89 08.2	My 25	4 57.0	66 11.1	23196	20	31.12	F.L.A.

## RESULTS OF MAGNETIC OBSERVATIONS IN 1915.

*Magnetic observations on land—Continued.*

## MISSOURI.

Station	Latitude	Longitude	Date	Declination	Dip	Horizontal intensity	Instruments		Observer
							M	D.C.	
St. Louis.....	38 38.4	90 16.0	Jy 2	<i>East</i> 5 06.5	69 53.9	20476	20	31.12	F.L.A.
Maysville.....	39 53	94 21.6	No 8	8 33.8	70 07.2	20379	29	56.13	H.E.M.
Union Star.....	39 59	94 36.4	No 12	8 38.0	70 15.5	20306	29	56.13	H.E.M.
Stanberry, aux. B.....	40 12	94 33	No 16	9 22.6	70 11	20437	29	56.3	H.E.M.
Stanberry, aux. A.....	40 14	94 29	No 16	9 18.1	70 08	20843	29	56.3	H.E.M.
Stanberry.....	40 14	94 31.4	No 15	10 28.8	69 55.2	20886	29	56.13	H.E.M.
Stanberry, aux. C.....	40 17	94 32	No 16	11 42.6	70 42	20047	29	56.3	H.E.M.
Maryville.....	40 21	94 52	No 19	9 43.0	70 23.3	20156	29	56.13	H.E.M.

## NEBRASKA.

Alma.....	40 06.4	99 22.9	Oc 29	<i>East</i> 12 06.2	69 07.9	21108	29	56.13	H.E.M.
Lincoln.....	40 49.5	96 40.8	Je 7	10 00.0	70 39.5	19966	29	56.13	H.E.M.
Papillion, aux. A.....	41 07.4	96 02.5	Au 10	9 40.1	71 07.1	19430	29	56.1	H.E.M.
Papillion.....	41 09.7	96 02.5	Au 10	11 30.2	71 09.9	19553	29	56.13	H.E.M.
Papillion, aux. C.....	41 10.1	96 00.0	Au 11	9 26.1	71 06.7	19383	29	56.1	H.E.M.
Papillion, aux. B.....	41 10.5	96 05.0	Au 11	9 43.3	71 06.2	19385	29	56.1	H.E.M.
Ponca.....	42 34	96 42.8	Au 12, 13	10 34.4	72 02.4	18716	29	56.13	H.E.M.
Bassett.....	42 34.9	99 32.5	Au 27	12 30.4	71 28.1	19284	29	56.13	H.E.M.
Newport.....	42 36.2	99 20.2	Au 24	12 31.1	71 31.7	19198	29	56.13	H.E.M.
Center.....	42 36.8	97 52.0	Au 14	11 43.8	71 53.1	19064	29	56.13	H.E.M.
Chadron.....	42 49.1	103 00.2	Au 30	14 39.1	71 16.8	19376	29	56.13	H.E.M.
Butte.....	42 55.0	98 50.7	Au 16	12 16.5	71 52.7	18998	29	56.13	H.E.M.
Cody.....	42 56.7	101 15.0	Au 28	13 38.2	71 36.6	19051	29	56.13	H.E.M.

## NEW MEXICO.

Rincon.....	32 40.2	107 04.7	Jy 23, 24	<i>East</i> 12 46.2	60 19.0	26745	38	36.12	W.M.H.
Hillsboro.....	32 55	107 39.0	Jy 27, 28	13 34.4	60 18.9	26892	38	36.12	W.M.H.
Texico.....	34 24.0	103 01.6	Au 22	12 05.4	63 13.3	25203	38	36.12	W.M.H.
Clovis.....	34 24	103 09.9	Au 19, 20	12 07.7	63 16.3	25204	38	36.12	W.M.H.
Fort Sumner.....	34 28.2	104 16.1	Au 16, 17	12 46.0	63 06.6	25231	38	36.12	W.M.H.
Vaughn.....	34 37.0	105 14.0	Au 13, 14	13 14.0	62 40.1	25479	38	36.12	W.M.H.
Estancia.....	34 45.3	106 06.5	Au 11	13 24.8	62 48.7	25362	38	36.12	W.M.H.
Los Lunas.....	34 48.1	106 43.6	Jy 30, 31	13 48.0	62 39.0	25519	38	36.12	W.M.H.
Bernalillo.....	35 18.5	106 33.1	Au 4	14 16.2	63 26.7	24769	38	36.12	W.M.H.
Santa Fe.....	35 41.0	105 56.7	Au 8-10	13 26.2	63 54.1	24796	38	36.12	W.M.H.

## NEW YORK.

Albany.....	42 40.5	73 45.0	Oc 25	<i>West</i> 12 07.6	73 47.9	16568	20	31.12	F.L.A.
Buffalo.....	42 54.6	78 54.4	Oc 20, 21	7 02.7	73 54.2	16672	20	31.12	F.L.A.
Rochester.....	43 07.9	77 36.0	Oc 23	8 08.4	74 11.6	16402	20	31.12	F.L.A.

## NORTH CAROLINA.

Concord, aux. 4.....	35 21	80 34	My 17	<i>West</i> 3 38	67 23	21892	19	78.5	F.N.
Concord, aux. 1.....	35 22	80 38	My 17	0 52	68 55	22453	19	78.5	F.N.
Concord, aux. 3.....	35 24	80 31	My 17	2 13	67 14	22058	19	78.5	F.N.
Concord.....	35 24	80 35.8	My 15	3 30.2	68 01.8	21399	19	78.56	F.N.
Concord, aux. 2.....	35 28	80 35	My 17	2 15	67 44	21239	19	78.5	F.N.
Graham.....	36 04.2	79 25.5	My 21	3 03.0	68 08.9	21498	19	78.56	F.N.

*Magnetic observations on land—Continued.*

NORTH DAKOTA.

Station	Latitude	Longitude	Date	Declination	Dip	Horizontal Intensity	Instruments		Observer
							M	D.C.	
Pembina.....	48 58.0	97 15.0	Jy 6	<i>East</i> 11 17.6	77 19.1	13770	29	56.13	H.E.M.
Monument 816.....	49 00.0	97 33.5	Jy 11	11 48.8	77 22.1	13747	29	56.13	H.E.M.
Monument 798.....	49 00.0	97 57.9	Jy 12	12 22.6	76 51.5	14476	29	56.13	H.E.M.

OHIO.

Station	Latitude	Longitude	Date	Declination	Dip	Horizontal Intensity	M	D.C.	Observer
Portsmouth, aux. 6.....	38 41.5	83 08.3	Se 24	<i>West</i> 1 03.7	70 57	19612	19	78.6	F.N.
Portsmouth, aux. 2.....	38 43.1	83 04.1	Se 23	1 51.0	71 05	19480	19	78.5	F.N.
Portsmouth, aux. 8.....	38 44.8	82 43.8	Se 25	1 24.0	70 54	19117	19	78.5	F.N.
Portsmouth, aux. 3.....	38 45.0	83 02.3	Se 23	2 27.4	71 12	19233	19	78.5	F.N.
Portsmouth.....	38 45.1	82 58.4	Se 22, 29	3 41.9	71 22.9	19055	19	78.56	F.N.
Portsmouth, aux. 1.....	38 45.7	82 59.4	Se 23	2 52.4	71 19	19136	19	78.5	F.N.
Portsmouth, aux. 5.....	38 46.3	82 51.7	Se 24	2 47.5	70 56	19082	19	78.6	F.N.
Portsmouth, aux. 7.....	38 47.2	82 59.0	Se 24	3 41.6	71 14	19122	19	78.6	F.N.
Portsmouth, aux. 4.....	38 47.3	82 57.0	Se 24	4 32.2	71 00	19159	19	78.6	F.N.
Portsmouth, aux. 9.....	38 51.4	82 50.1	Se 25	2 02.8	70 41	19531	19	78.5	F.N.
Portsmouth, aux. 10.....	38 52.8	82 59.5	Se 25	3 54.0	71 13	18929	19	78.5	F.N.
Waverly, aux. 1.....	39 03	83 01	Oc 2	3 09.8	70 32	19598	19	78.6	F.N.
Waverly, aux. 4.....	39 05	82 58	Oc 4	2 13.0	70 31	19574	19	78.5	F.N.
Waverly, aux. 3.....	39 07	83 08	Oc 4	2 19.5	70 51	19480	19	78.5	F.N.
Waverly, aux. 2.....	39 09	82 55	Oc 2	1 59.4	70 34	19565	19	78.6	F.N.
Waverly.....	39 09.1	83 00.2	Oc 2	2 38.8	70 35.2	19642	19	78.56	F.N.
Coolville.....	39 13.6	81 48.0	Se 11	2 06.6	71 05.2	19216	19	78.56	F.N.
Warner.....	39 34	81 25.6	Se 9, 10	3 00.6	71 09.9	19239	19	78.56	F.N.
Summerfield.....	39 48.1	81 20.3	Se 8	3 16.9	71 22.8	19028	19	78.56	F.N.
Beallsville.....	39 52	81 02.8	Se 6, 7	1 40.0	71 38.4	18969	19	78.56	F.N.
Barnesville.....	39 59.4	81 10.4	Se 2, 3	2 37.5	71 34.5	18821	19	78.56	F.N.
Dillonvale.....	40 11.8	80 45.2	Au 26	2 06.6	72 01.0	18412	19	78.56	F.N.
Piedmont.....	40 11.8	81 11.8	Se 1	2 48.6	71 48.5	18612	19	78.56	F.N.
Bowenston.....	40 25.9	81 11.0	Au 31	2 37.5	72 00.4	18430	19	78.56	F.N.
Amsterdam.....	40 28	80 55.5	Au 24	3 06.2	72 06.4	18458	19	78.56	F.N.
Salineville.....	40 37	80 49.2	Au 19	3 32.4	72 23.5	18148	19	78.56	F.N.
Minerva.....	40 43.5	81 07.8	Au 23	2 56.9	72 19.6	18302	19	78.56	F.N.

OKLAHOMA.

Station	Latitude	Longitude	Date	Declination	Dip	Horizontal Intensity	M	D.C.	Observer
Waurika.....	34 09.4	98 00.2	Se 20, 21	<i>East</i> 10 10.5	63 33.1	25402	38	36.12	W.M.H.
Hollis.....	34 40.6	99 51.9	Se 26, 27	11 14.7	63 57.7	25008	38	36.12	W.M.H.
Rush Springs.....	34 47.0	97 57.1	Oc 4, 5	10 25.2	64 31.6	24571	38	36.12	W.M.H.
Binger.....	35 18.3	98 20.2	Oc 7, 8	10 04.6	64 59.9	24282	38	36.12	W.M.H.
Weatherford.....	35 32.0	98 43.9	Oc 9, 10	10 22.1	65 06.9	24172	38	36.12	W.M.H.
Geary.....	35 37.6	98 19.8	Oc 13, 14	10 11.4	65 27.7	23952	38	36.12	W.M.H.
Hammon.....	35 38.2	99 23.5	Oc 22	11 00.3	65 20.1	23985	38	36.12	W.M.H.
Thomas.....	35 45.4	98 45	Oc 20	10 25.9	65 33.7	23729	38	36.12	W.M.H.
Trail.....	35 58.2	99 19.2	Oc 25, 26	11 04.8	65 39.2	23824	38	36.12	W.M.H.
Okeene.....	36 07.0	98 19	Oc 17, 18	10 11.3	65 56.3	23581	38	36.12	W.M.H.
Arnette.....	36 07.7	99 45.8	No 1, 2	11 25.8	65 50.2	23619	38	36.12	W.M.H.
Woodward.....	36 26.4	99 24.2	Oc 28, 29	11 31.7	66 11.7	23287	38	36.12	W.M.H.
Carmen.....	36 34.7	98 28.1	No 15, 16	10 55.3	66 18.0	23249	38	36.12	W.M.H.
Waynoka.....	36 35.7	98 53.0	No 12, 13	10 51.1	66 11.6	23390	38	36.12	W.M.H.
Medford.....	36 48.6	97 44.0	No 18, 19	11 03.0	66 57.8	22842	38	36.12	W.M.H.
Buffalo.....	36 50.1	99 34.2	No 9	11 09.2	66 28.6	23086	38	36.12	W.M.H.

PORTO RICO.

Station	Latitude	Longitude	Date	Declination	Dip	Horizontal Intensity	M	D.C.	Observer
Porto Rico Obs'y.....	18 08.8	65 26.9	Year	<i>West</i> 3 10.2	50 45.5	28271	31	1EI	H.W.P.

## Magnetic observations on land—Continued.

## SOUTH CAROLINA.

Station	Latitude	Longitude	Date	Declination	Dip	Horizontal Intensity	Instruments		Observer
							M	D.C.	
Ridgeland.....	32 29.1	80 57.8	Fe 8	0 14.3 E	64 34.0	24034	19	78.12	F.N.
Spartanburg.....	34 57.5	81 56.1	My 13	0 31.4 W	66 52.2	22521	19	78.56	F.N.

## SOUTH DAKOTA.

Station	Latitude	Longitude	Date	Declination	Dip	Horizontal Intensity	M	D.C.	Observer
Wheeler.....	43 10	98 50.1	Au 19, 20	<i>East</i> 12 23.8	71 55.5	18975	29	56.13	H.E.M.
Gregory.....	43 15	99 25.7	Au 17, 18	12 52.9	72 07.1	18782	29	56.13	H.E.M.
Winner.....	43 23	99 51.6	Au 18, 19	13 07.8	72 10.0	18712	29	56.13	H.E.M.

## TENNESSEE.

McCracken's school-house.....	35 01	86 27	Au 24	1 30.8 E	66 46.6	23164	17	15.1	J.R.B.
Elora.....	35 01.6	86 21.7	Au 21	1 47.6 E	66 39.4	22778	17	15.12	J.R.B.
Sherwood.....	35 03.6	85 56.0	Au 19, 20	2 18.1 E	66 19.8	23138	17	15.12	J.R.B.
Huntland.....	35 04	86 17	Au 23	2 44.2 E	66 35.9	22820	17	15.1	J.R.B.
Oregon Mill.....	35 07	86 21	Au 23	2 14.7 E	66 47.8	22557	17	15.1	J.R.B.
Pulaski, new.....	35 12.0	87 01.3	Je 7	3 58.0 E	66 39.6	22891	20	31.12	F.L.A.
Pulaski, old.....	35 12.0	87 02.0	Je 8	4 06.9 E	66 35.7	22928	20	31.12	F.L.A.
Nashville.....	36 08.3	86 44.3	Je 9	3 35.0 E	67 31.0	22175	20	31.12	F.L.A.
Glen Mary.....	36 18.3	84 41.2	No 25	0 50.1 E	68 54.0	21651	19	78.56	F.N.
Jacksboro.....	36 20.0	84 12.7	No 27	0 15.6 W	68 16.7	21621	19	78.56	F.N.

## TEXAS.

Brownsville.....	25 53.6	97 30.4	Ap 19-21	<i>East</i> 8 47.4	54 47.2	29558	38	36.12	W.M.H.
Edinburg.....	26 18.2	98 10.9	Ap 23	9 11.5	55 02.3	29423	38	36.12	W.M.H.
Rio Grande.....	26 22.4	98 45.0	Ap 29, 30	9 19.1	55 04.7	29391	38	36.12	W.M.H.
Raymondville.....	26 30	97 46.5	Ap 17	8 57.4	55 21.5	29300	38	36.12	W.M.H.
Falfurrias.....	27 13.3	98 07.3	My 10, 11	9 17.5	56 09.7	28963	38	36.12	W.M.H.
Sarita.....	27 14	97 48.3	Ap 14	9 05.6	56 11.6	29009	38	36.12	W.M.H.
Hebronville.....	27 19.0	98 41.5	My 13, 14	9 22.9	56 08.3	28967	38	36.12	W.M.H.
Kingsville.....	27 30.2	97 54.4	Ap 9, 10	9 18.4	56 33.9	28746	38	36.12	W.M.H.
Laredo, new.....	27 30.4	99 31.2	My 17-20	9 46.9	56 10.1	28848	38	36.12	W.M.H.
Laredo, north mer.....	27 30.4	99 31.2	My 20	9 30.4	.....	.....	38	.....	W.M.H.
Laredo, aux. A.....	27 30.4	99 31.2	My 21	9 38.1	.....	.....	38	.....	W.M.H.
Laredo, aux. B.....	27 30.4	99 31.2	My 21	9 36.1	.....	.....	38	.....	W.M.H.
Laredo, old.....	27 30.5	99 31.0	My 15	9 33.6	56 20.5	28915	38	36.12	W.M.H.
Alice.....	27 45.0	98 04.2	My 6, 7	9 16.2	56 45.3	28717	38	36.12	W.M.H.
Rockport.....	28 01.2	97 03.9	Ap 7, 8	8 46.0	57 23.2	28495	38	36.12	W.M.H.
Encinal.....	28 02.8	99 23.6	My 24, 25	9 39.9	56 55.3	28611	38	36.12	W.M.H.
Oakville.....	28 26.5	98 08.0	Mh 26	9 18.8	57 51.7	28093	38	36.12	W.M.H.
Tilden.....	28 27.7	98 32.9	My 29	9 24.8	57 35.4	28272	38	36.12	W.M.H.
Port Lavaca, old.....	28 37.1	96 37.2	Ap 5	8 31.2	58 16.8	28092	38	36.12	W.M.H.
Port Lavaca, new.....	28 37.4	96 38.8	Ap 2, 3	8 41.9	58 21.9	28053	38	36.12	W.M.H.
Goliad.....	28 38.6	97 24.0	Mh 30	9 29.5	58 14.3	27856	38	36.12	W.M.H.
Jourdanton.....	28 55.3	98 32.3	Mh 21, 22	9 16.5	58 04.1	28067	38	36.12	W.M.H.
Batesville.....	28 57	99 38.8	Je 4	9 50.0	58 01.9	28199	38	36.12	W.M.H.
Galveston, old.....	29 17.0	94 49.0	Fe 11	7 58.5	59 18.7	27539	38	36.1	W.M.H.
Galveston, aux.....	29 17.0	94 49.0	Fe 10	8 04.5	59 16.8	27585	38	36.12	W.M.H.
Galveston, new.....	29 20.2	94 48.0	Fe 13, 15	8 01.8	59 18.8	27579	38	36.12	W.M.H.
Anahuac.....	29 45.4	94 40.9	Fe 18	7 54.6	59 49.7	27356	38	36.12	W.M.H.
Anahuac, aux.....	29 46.2	94 40	Fe 17	7 57.2	.....	.....	38	.....	W.M.H.
Boerne.....	29 46.6	98 43.8	Mh 15, 17	9 49.6	58 56.7	27751	38	36.12	W.M.H.
Hempstead.....	30 05.5	96 03.6	Fe 23, 24	8 31.6	59 58.1	27180	38	36.12	W.M.H.
Sanderson.....	30 08.1	102 24.2	Je 8	11 03.8	58 23.8	28079	38	36.12	W.M.H.
Austin.....	30 16.0	97 46.3	Fe 27, Mh 1	8 52.5	59 59.7	27279	38	36.12	W.M.H.
Johnson City.....	30 16.8	98 28.3	Mh 6, 12	9 25.3	59 47.9	27314	38	36.12	W.M.H.
Fort Davis.....	30 35.4	103 54.3	Je 11, 12	11 38.2	58 44.6	28117	38	36.12	W.M.H.
Van Horn.....	31 02.7	104 51.8	Je 17	11 52.8	59 14.4	27370	38	36.12	W.M.H.
Sierra Blanca.....	31 10.2	105 23.8	Je 15, 16	12 18.0	59 12.3	27438	38	36.12	W.M.H.
Midland.....	31 59.3	102 05.9	Je 21	11 19.5	60 47.0	26578	38	36.12	W.M.H.
Lamesa.....	32 43.9	101 55.2	Au 28	12 03.8	61 25.6	26402	38	36.12	W.M.H.

*Magnetic observations on land—Continued.*

TEXAS—Continued.

Station	Latitude	Longitude	Date	Declination	Dip	Horizontal Intensity	Instruments		Observer
							M	D.C.	
Tahoka.....	33 09.5	101 46.0	Au 26	East 11 01.9	62 07.9	25992	38	36.12	W.M.H.
Post.....	33 11.8	101 23.9	Je 25	11 34.7	62 00.2	26080	38	36.12	W.M.H.
Archer City.....	33 35.6	98 36.5	Se 15, 16	10 05.2	63 24.0	25131	38	36.12	W.M.H.
Crosbyton.....	33 40.3	101 14.3	Se 3, 4	11 17.4	62 33.5	25467	38	36.12	W.M.H.
Wheeler.....	35 26.6	100 19.8	Se 9,10	11 20.0	64 51.5	24196	38	36.12	W.M.H.

UTAH.

Cisco.....	39 00	109 19.7	Oc 5, 6	East 15 54.0	66 19.9	22975	29	56.13	H.E.M.
Price.....	39 36	110 48.5	Oc 3	17 07.1	66 16.3	23030	29	56.13	H.E.M.
Tooele.....	40 32.4	112 17.0	Se 29	17 48.2	66 58.5	22449	29	56.13	H.E.M.
Farmington.....	40 59	111 53.8	Se 27	17 42.8	67 24.5	22184	29	26.13	H.E.M.
Ogden.....	41 13.1	111 59.9	Se 24	18 09.0	67 33.1	22087	29	56.13	H.E.M.

VIRGINIA.

Danville.....	36 36.0	79 24.8	My 24	West 2 23.4	68 23.6	21402	19	78.56	F.N.
Bristol.....	36 36.2	82 10.5	No 29	0 47.8	68 25.7	21280	19	78.56	F.N.
Mt. Airy.....	36 56	79 13.4	My 26	3 19.2	68 46.4	21001	19	78.56	F.N.
Nathalie.....	36 56.1	78 58.0	My 27	2 42.2	69 00.8	20639	19	78.56	F.N.
Gretna.....	36 57	79 22.8	My 25	3 23.8	68 44.2	21131	19	78.56	F.N.
Gladys.....	37 10	79 05.4	My 29, 31	3 47.2	69 02.8	20865	19	78.56	F.N.
Rustburg, aux. 2.....	37 14	79 05	Je 5	3 30	68 44	21119	19	78.5	F.N.
Roanoke.....	37 15.0	79 58.6	Je 10	2 15.6	69 29.4	20502	19	78.56	F.N.
Rustburg, aux. 4.....	37 16	79 03	Je 5	4 33	68 10	21553	19	78.5	F.N.
Rustburg, aux. 3.....	37 16	79 08	Je 5	3 04	68 37	21736	19	78.5	F.N.
Rustburg.....	37 17.1	79 05.7	Je 4	4 17.5	68 47.6	21211	19	78.56	F.N.
Bedford, aux. 3.....	37 18	79 31	Je 9	2 55	69 43	20373	19	78.5	F.N.
Rustburg, aux. 1.....	37 20	79 06	Je 4	2 35	69 06	20484	19	78.5	F.N.
Bedford, aux. 4.....	37 21	79 28	Je 9	2 33	69 37	20452	19	78.5	F.N.
Bedford.....	37 21.0	79 31.5	Je 8	2 33.7	69 36.4	20403	19	78.56	F.N.
Bedford, aux. 1.....	37 22	79 34	Je 8	2 41	69 40	20355	19	78.5	F.N.
Lynchburg.....	37 24	79 08	Je 7	3 25.3	69 38.6	20365	19	78.56	F.N.
Bedford, aux. 2.....	37 24	79 31	Je 8	2 52	69 36	20445	19	78.6	F.N.
Buchanan.....	37 32.0	79 41.5	Je 11, 12	2 47.6	69 45.0	20282	19	78.56	F.N.
Covington, new.....	37 47.1	79 58.4	Je 15, 16	2 46.5	69 41.7	20243	19	78.56	F.N.
Covington, old.....	37 47.6	79 59.0	Je 14	2 46.3	69 43.4	20251	19	78.5	F.N.

WEST VIRGINIA.

Union.....	37 35.5	80 32.6	Je 17, 18	West 2 28.6	69 32.4	20427	19	78.56	F.N.
Meadow Creek.....	37 48	80 56.0	Je 21, 22	2 07.6	69 39.8	20368	19	78.56	F.N.
Rainelle.....	37 58.2	80 46.0	Je 19	2 07.0	69 57.1	20239	19	78.56	F.N.
Montgomery.....	38 11	81 19.5	Je 23	2 23.0	70 19.6	19903	19	78.56	F.N.
Blakeley.....	38 17.6	81 15.6	Je 28	1 43.6	70 26.2	19769	19	78.56	F.N.
Charleston.....	38 21.4	81 37.6	Je 24, 25	2 37.9	70 06.2	20088	19	78.56	F.N.
Blue Creek.....	38 27.2	81 26.9	Je 26	2 29.6	70 15.4	19858	19	78.56	F.N.
Glenwood.....	38 35.5	82 11.1	Se 13	1 32.8	70 45.6	19564	19	78.56	F.N.
Point Pleasant.....	38 50.5	82 08.8	Jy 1, 2	1 33.2	70 44.8	19571	19	78.56	F.N.
Murraysville.....	39 04.9	81 49.2	Jy 5	1 38.6	70 49.5	19629	19	78.56	F.N.
Walker.....	39 10.8	81 23	Jy 6	3 06.2	70 51.9	19533	19	78.56	F.N.
Bristol.....	39 17.5	80 31.5	Jy 9	3 21.6	71 05.4	19372	19	78.56	F.N.
Pennsboro.....	39 17.7	80 58	Jy 7	1 50.0	70 54.8	19372	19	78.56	F.N.
Wallace.....	39 24.9	80 29.7	Au 3	3 22.6	71 03.0	19381	19	78.56	F.N.
Jacksonburg.....	39 31.8	80 38.7	Au 4	2 11.2	71 25.0	19095	19	78.56	F.N.
Sistersville.....	39 33.2	80 59.6	Au 7	1 58.5	71 11.2	19154	19	78.56	F.N.
Woodland.....	39 48.5	80 48.5	Au 9	2 42.2	71 34.2	18971	19	78.56	F.N.
Moundsville.....	39 55.0	80 44.2	Au 10, 11	2 36.8	71 34.3	19022	19	78.56	F.N.
Wheeling, old.....	40 03.5	80 44.4	Au 12	2 01.0	71 56	18596	19	78.5	F.N.
Wheeling, new.....	40 03.6	80 40.0	Au 13, 14	1 59.8	72 17.7	18338	19	78.56	F.N.
Wellsburg.....	40 16.1	80 36.4	Au 16	2 40.4	72 13.6	18374	19	78.56	F.N.
New Cumberland.....	40 29.9	80 36.5	Au 18	3 03.1	72 26.2	18038	19	78.56	F.N.

*Magnetic observations on land—Continued.*

## WISCONSIN.

Station	Latitude	Longitude	Date	Declination	Dip	Horizontal intensity	Instruments		Observer
							M	D.C.	
	° /	° /		<i>East</i> ° /	° /	γ			
Madison.....	43 04.5	89 25.3	Jy 22	4 35.6	73 52.6	17319	20	31.12	F.L.A.
Lavalle.....	43 35.4	90 07.0	Jy 23	5 07.1	73 55.4	17094	20	31.12	F.L.A.
Alma.....	44 19.6	91 58.2	Jy 26, 28	6 19.8	74 20.1	16642	20	31.12	F.L.A.
Ellsworth.....	44 44.7	92 28.1	Au 5	6 11.9	74 33.6	16464	20	31.12	F.L.A.
Clear Lake.....	45 15.2	92 15.5	Au 6	5 43.0	74 44.2	16188	20	31.12	F.L.A.
Webster.....	45 53.2	92 21.3	Au 9	5 47.2	75 49.4	15444	20	31.12	F.L.A.
Washburn.....	46 41.1	90 52.1	Au 18	5 18.8	76 37.2	14547	20	31.12	F.L.A.
East End.....	46 43.1	92 01.2	Au 12, 13	7 35.4	76 24.3	14565	20	31.12	F.L.A.

## WYOMING.

	Latitude	Longitude	Date	Declination	Dip	Horizontal intensity	M	D.C.	Observer
Fox Park.....	41 05	106 09.2	Se 8, 9	15 54.2	68 37.3	21425	29	56.13	H.E.M.
Cheyenne.....	41 09.1	104 50.2	Se 7	15 17.8	69 15.9	21010	29	56.13	H.E.M.
Evanston.....	41 16.4	110 58.1	Se 23	17 37.8	68 07.1	21702	29	56.13	H.E.M.
Laramie.....	41 18.3	105 35.3	Se 13	15 12.2	69 14.3	20896	29	56.13	H.E.M.
Green River.....	41 31.6	109 27.9	Se 19	17 22.0	68 31.8	21395	29	56.13	H.E.M.
Bitter Creek.....	41 33.1	108 33.7	Se 17	16 42.9	68 40.2	21378	29	56.13	H.E.M.
Rawlins.....	41 48.0	107 12.7	Se 16	16 15.1	69 09.1	21006	29	56.13	H.E.M.
Kemmerer.....	41 48	110 32.3	Se 20	17 59.2	68 27.4	21516	29	56.13	H.E.M.
Medicine Bow.....	41 54.4	106 12.9	Se 15	15 49.0	69 27.2	20824	29	56.13	H.E.M.
Torrington.....	42 04	104 10.4	Se 5	15 37.7	70 07.4	20279	29	56.13	H.E.M.
Lusk.....	42 45.9	104 27.1	Au 31	14 52.1	70 49.1	19728	29	56.13	H.E.M.

## FOREIGN COUNTRIES.

	Latitude	Longitude	Date	Declination	Dip	Horizontal intensity	M	D.C.	Observer
	-			<i>East</i> ° /					
Buffalo Point, Manitoba	49 00.1	95 13.4	Je 24	8 01.3	77 51.8	13239	29	56.13	H.E.M.

## DESCRIPTIONS OF STATIONS.

Magnetic observers are instructed to mark each station (except auxiliary stations for development of local disturbance) in as permanent a manner as possible, either with a stone, a draintile filled with cement, or a post of some durable wood, so that it may be available for future occupation. They are also required to furnish a sufficiently detailed description to locate the station even if the marking should be destroyed, and to determine the bearings of two or three prominent objects in addition to the one used as a reference mark in the azimuth and declination observations. The information is given in abridged form on the following pages. Further details can usually be obtained upon application to the Superintendent of the Coast and Geodetic Survey.

The usual method of marking a station is by a stone post about 30 inches long and 6 inches square, set so as to project 2 or 3 inches above the ground. In the center of the top is set a circular bronze plate  $3\frac{1}{2}$  inches in diameter.

When the local authorities desire it and are willing to bear the expense, a second stone is set to mark the true meridian.

The descriptions of stations are arranged alphabetically by States and by names of stations.

ALABAMA.

*Athens, Limestone County.*—The station of 1911, which is in the county fair grounds, inside the race track, was reoccupied. It is 12 feet north of the fence inside the south stretch of the race track, midway between the extreme ends of the track. The station is marked by a limestone post 8 by 12 by 34 inches, projecting 5 inches above the ground, with a bronze disk in the top. The following true bearings were determined in 1911 and 1915:

	° /	
North gable of residence $\frac{1}{4}$ mile distant (mark).....	23	55.4 west of south
East gable of residence back of sheds.....	66	09.2 west of south
South gable of barn on fair grounds.....	23	19.2 west of north
North gable of barn 350 feet distant.....	26	40.6 east of south

Observations were also made at the following auxiliary stations:

1. Tanner, 5 miles south of Athens; about one-eighth mile east of the railroad, southwest of and across the road from the schoolhouse.

2. Hays Mill, about 5.3 miles north of Athens; about 200 yards north of the railroad depot, in a field on the side of the track.

3. Clems Mill, about 5 $\frac{1}{2}$  miles east of Athens and about one-eighth mile west of Fairmont; in a stony field on a hill about 300 or 400 feet east of the mill and 60 feet north of the center of the road.

4. Blackburn, about 5 $\frac{1}{2}$  miles a little south of west from Athens; 38 feet southeast of a mail box across the road from the old post office.

*Atmore, Escambia County.*—Observations were made on some unused cut-over ground about one-half mile east of the center of town, at a point about 500 feet south of the Louisville & Nashville Railroad track. The point was not marked.

*Bay Minette, Baldwin County.*—The station is about one-half mile south of the courthouse, in the west side of Brady Road at the intersection of Brady Road and the road leading to the fair grounds and about 2 feet from the edge of the street. It is 10 feet north of the post marking the northwest corner of the Fort Morgan Field, belonging to the Bay Minette Land Co., and 127.2 feet from the picket fence about the residence of J. D. Burns. The exact spot is marked by a bronze disk in the top of a cement post 8 by 8 by 30 inches set flush with the surface of the ground. The following true bearings were determined:

	° /	
Top of tower on courthouse (mark).....	17	46.9 west of north
Steeple of Mormon Church.....	81	39.2 west of south
Point of water tank of turpentine factory.....	38	48.6 east of north
Northeast corner of wall of fertilizer plant.....	68	06.7 east of north

*Berkeley, Madison County.*—Observations were made at a point about 500 feet west of the church and schoolhouse which make up the place of Berkeley.

*Butler, Choctaw County.*—The station is in the high-school garden plot, southwest of the building and 244.6 feet from the threshold of the door of the school building. The station is almost in line with two oaks, one 12 inches in diameter 133.8 feet to the northwest, and the other 154.3 feet to the southeast, which stands on the south line of the school ground. The exact spot is marked by a bronze disk in the top of a cement block 8 by 8 by 30 inches projecting 2 inches above the ground. The following true bearings were determined:

	° /	
Steeple of Methodist Church (mark).....	80	46.7 west of north
Center of circular window in east gable of courthouse.....	71	38.4 west of north
Southwest corner of old courthouse, under eaves.....	66	38.2 west of north
Northwest corner of upper part of high-school wall.....	45	19.8 east of north

A second post 8 by 8 by 30 inches with a bronze pin at the center is about 360 feet north marking the meridian.

*Calvert, Washington County.*—Observations were made on some unused land about three-eighths mile south of the center of town, between the Southern Railway track and the wagon road. The point at which the observations were made was about 400 feet west of the railroad, about 150 feet east of the wagon road, and about 100 feet south of a wire fence. The point was not marked.

*Carrollton, Pickens County.*—The station is on private property belonging to Mr. J. W. Cox, on open ground directly south of the cemetery and between the cemetery and a small pine grove. It is about a quarter mile northwest from the courthouse. The station is 177.8 feet from the southwest corner and 202.7 feet from the southeast corner of the cemetery. It is marked by a bronze disk set in the top of a cement post, 8 by 8 by 30 inches, projecting 1 inch above the ground. It is just a little northeast of a footpath running diagonally across the lot. The following true bearings were determined:

	° /	
Ball on roof of water tower (mark).....	38	45.8 east of south
Ball on weather vane on residence of Mr. Owen.....	48	54.9 east of south
Southwest corner of wall of school building.....	70	44.7 east of south
West gable of Judge Hutchins's residence.....	68	18.5 east of north
Southwest upper corner of Dodd's monument.....	34	33.1 east of north

## ALABAMA—continued.

*Chatom, Washington County.*—The station is a little less than one-fourth mile southeast of the courthouse, on the east side of the street running east of and parallel to the Alabama, Tennessee & Northern R. R., and about 600 feet south of the street crossing the railroad at the depot. It is about 7 feet from the east line of the street, 45.8 feet from a pine tree directly across the road, 48.9 feet a little west of south from another pine tree, and 70.3 feet a little east of north from a third pine tree, which is within the street limits. The station is marked by a bronze disk in the top of a cement post 8 by 8 by 30 inches projecting 4 inches above the ground. The following true bearings were determined:

South gable of Dr. J. Chason's barn (mark).....	69 14.6 west of north
Southwest corner of erect wall of courthouse.....	37 22.4 west of north
Center of ball on roof of courthouse.....	35 37.5 west of north
Northeast corner of wall of courthouse.....	32 01.6 west of north
Southwest corner of erect wall of bank building.....	26 23.6 west of north

A meridian post 6 by 6 by 30 inches, projecting 6 inches above the ground, was set in the southern part of the cross street about 600 feet north of the magnetic station, between the railroad station and the residence of F. J. Jordan.

*Clanton, Chilton County.*—The station is about one-half mile east of the county courthouse on the east end of a 20-acre plot of ground upon which the Chilton County High School stands. It is about 600 feet distant from the school building, about 100 feet north of the road running along the south side of the lot. It is 15.2 feet west from a sweet-gum tree standing on the edge of the bank above the road running past the east end of the lot, and 75.6 feet from the northern one of two large sweet-gum trees standing close together at the southeast corner of the lot. The station is marked by a concrete block, 8 by 8 by 30 inches, projecting 4 inches above the surface of the ground, and having a bronze disk in the top. The following true bearings were determined:

Center point on tower of courthouse (mark).....	78 46.9 west of south
Dormer gable of house across from school.....	46 10.8 west of south
Northeast corner wall of schoolhouse.....	74 02.7 west of south
Northeast corner of spire of colored church.....	65 27.9 west of north

*Clayton, Barbour County.*—The station is in the back part of a cotton field belonging to G. W. Peach, directly back of the public-school grounds. It is just in the edge of a terrace, 70.2 feet south of the north boundary fence of the lot, and 241.5 feet east of a large oak, 30 inches in diameter, which stands in the southeast corner of the school lot, the distance being measured to the tree at a height of about 3 feet above the ground. The station is marked by a cement block, 8 by 8 by 30 inches, projecting 8 inches above the ground, and having a bronze disk in the top. The following true bearings were determined:

Southwest corner of school building.....	86 01.9 west of north
Spire on cupola of county courthouse (mark).....	22 28.6 west of north
Steeple of Methodist Church.....	16 29.0 west of north
North steeple of colored church.....	79 30.2 east of north

Observations were also made a few hundred feet east of the primary station.

*Floralia, Covington County.*—Observations were made at a point about three-quarter mile southwest of the center of town, in a pasture belonging to Mr. Chandler. The point was not marked.

*Florence, Lauderdale County.*—The station of 1909 was reoccupied. It is in the southeast corner of the grounds of the Baptist University, about 2 miles northwest of the town's center. It is 78 feet south west from the fence bordering the grounds on the northeast, 115.3 feet from the fence bordering the grounds on the southeast, and 171 feet from the eastern corner of the ruined wall of the university building. The station is marked by a limestone post 6 by 6 by 33 inches projecting 6 inches above the ground and lettered U. S. C. & G. S., 1909. The following true bearings were determined in 1909 and 1915:

Eastern edge of abutment of town's water tank near base (mark).....	40 25.2 west of north
Outer corner of lower capstone of abutment on west side of water tank.....	46 08.0 west of north

The meridian line is marked by a hole in the top of a post of Georgia marble 4 by 6 by 42 inches projecting 18 inches above the ground and 300 feet north.

*Georgiana, Butler County.*—Observations were made at a point about one-half mile northwest of town, on some vacant and unfenced ground which has been laid off into lots. This ground is situated on the east side of the highway, just beyond a fork in the highway, and is opposite the house of Mr. Black. The point was about 200 feet east of the highway and about 100 feet south of a fence. The point was not marked.

*Gurley, Madison County.*—Observations were made at a point about one-half mile east of the railroad station, in an unused field on the north side of the railroad and county road. The station was not marked.

ALABAMA—continued.

*Hillsboro, Lawrence County.*—The station is about 600 feet north of the railroad, in the back end of a pasture belonging to T. J. Porter, back of the Porter Hotel, and near a grove of gum trees. It is 100.5 feet from the road fence, 89 feet from the north fence, 40.3 feet from a gum tree to the east, and 32.4 feet from a gum tree a little west of north. The station is marked by a bronze disk in the top of a cement post, 10 by 10 by 30 inches, set flush with the surface of the ground. The following true bearings were determined:

Steeple on Baptist Church (mark).....	32 51. 6 west of south
East side of chimney (near base) on residence of F. T. Neely.....	38 45. 7 east of north
Gable on W. O. W. Hall.....	26 55. 2 east of south
Ornament on northwest corner of Robinson block.....	19 14. 6 west of south

The meridian line is marked by an iron pin set by the fence along the road 250 feet south.

An auxiliary station was made about 1,300 feet to the southeast in a pasture belonging to J. P. Gibson, about 25 feet from a large water oak and in the line from the oak to the Baptist Church spire, about 95 feet from the fence to the west. Observations were made at a second auxiliary station about 900 feet to the north, about 20 feet east of a large water oak. Observations were made at a third auxiliary station about 1,900 feet south of the tracks, in a pasture between the road running south past the Baptist Church and the road past the Methodist Church. The station is about midway of the pasture and 40 feet east of a large sweet gum tree.

*Jackson, Clarke County.*—Observations were made at a point about one-half mile north of the post office, near the southwest corner of a 10-acre lot. No mark was left.

*Linden, Marengo County.*—The station is on private land in front of the residence of Judge William Cunninghame, about a quarter of a mile north from the courthouse. It is in a row of small trees on the west side of the driveway leading south from his residence. The station is marked by a bronze disk set in a cement post, 12 by 12 by 24 inches, projecting about 1 inch above ground. It is 103.1 and 115.3 feet, respectively, from the southwest and southeast corners of the picket fence surrounding Mr. Cunninghame's residence and 412 feet from the northwest corner of the new public school building. The following true bearings were determined:

South gable of old courthouse.....	75 51. 3 west of north
Ball on top of spire of Methodist Church (mark).....	42 23. 4 west of south
Top of clock tower on county courthouse.....	7 24. 9 west of south
Northeast corner of wall of school building.....	10 05. 4 east of south

*Livingston, Sumpter County.*—The station of 1908 was reoccupied. To reach the station proceed one block southeast from the courthouse square and then turn one-half block northeast; the station is in the center of the street. It is 27.6 feet from the fence on the northwest, 54.2 feet from the fence on the southeast, and is about midway between the nearest intersecting streets. The station is marked by a limestone post, 11 by 11 by 34 inches, set 1 inch below the surface and roughly lettered U. S. C. S. A small hole in the stone marks the exact spot. The station is about 10 feet northeast of the line of fence dividing the plot on the northwest side of the street. The following true bearings were determined:

Spire of Baptist Church (mark).....	6 09. 3 west of north
Spire on colored Methodist Church.....	37 03. 0 east of north
Flag pole on dome of courthouse.....	77 22. 5 west of north

*Luverne, Crenshaw County.*—The station is on the grounds of the public school just south of the business section of the village. It is 221 feet from the southwest corner of the school building; 222.9 feet from the southeast corner; 21.9 feet west of a hickory tree (11 inches in diameter); 27.1 feet from the south boundary fence; 30.5 feet east from a tree 11 inches in diameter. It is marked by a bronze disk set in a cement block, 8 by 8 by 30 inches, projecting about 2 inches above the surface of the ground. The following true bearings were determined:

Steeple of Baptist Church.....	26 49. 0 east of north
Base of southeast corner of schoolhouse.....	13 47. 5 east of north
Center point of roof of water tower.....	54 07. 7 west of north
Higher point on tower of residence of Mr. Douglas (mark).....	20 41. 9 west of south

*Maplesville, Chilton County.*—Observations were made at a point about one-half mile southwest of Maplesville in a pasture belonging to Mr. Glover, having a sand pit in one end of it. The point was not marked.

*Marion, Perry County.*—The station is about a quarter mile south of the center of the village, in the south part of the campus of Marion Institute. It is about 14 feet north of the sidewalk along the south side of the grounds in an open part of the campus, 229 feet a little south of west from a large oak tree (40 inches in diameter) standing in the western edge of the group of trees near the running track. The station is marked by a cement post, 8 by 8 by 30 inches,

## ALABAMA—continued.

projecting 8 inches above the ground, and having a bronze disk in the top. The following true bearings were determined:

Spire of Baptist Church (mark).....	5 43.2 east of north
Point on roof of W. L. Murphy's residence.....	0 03.6 west of north
North side of base of south pillar on Central College building.....	53 59.2 west of north
East side of top of tall smokestack.....	13 05.1 east of south

*Mobile, Mobile County.*—The station of 1912 was reoccupied. It is on the athletic grounds of the Spring Hill College, about 7 miles west of the courthouse. It is 59 feet and 53.6 feet from the picket fences on the south and west sides, respectively, and 230.2 feet from the lower left-hand corner of the west steps of the gymnasium. The station is marked by a Bedford limestone post, 6 by 6 by 30 inches, set flush with the ground and having a bronze disk in the top. The following true bearings were determined in 1915:

Northwest edge of southeast corner post on veranda of main building.....	57 11.8 east of north
Base of cross on Main Hall (center).....	44 35.7 east of north
Southwest corner of gymnasium.....	23 41.5 west of north

A 6-inch vertical groove was cut in the outside wall of the gymnasium at a distance of 244.2 feet due north of the magnetic station to mark the north end of the meridian line.

Declination observations were also made about 50 feet north of the primary station.

*Montevallo, Shelby County.*—Observations were made at a point about one-half mile west of Montevallo (or 1 mile east of Wilton), on land belonging to Mr. Burr Nabors. The point was about halfway up a hill, just east of a lane, and about 400 feet north of a gate where the lane joins the main highway. The point was not marked.

*New Market, Madison County.*—Observations were made about three-fourths mile south of town, in a pasture belonging to O. C. Davis on the west side of the highway to Huntsville, just beyond a rocky creek bed. The observations were made at a point near the highest part of the pasture, about 200 feet west of a cabin and 100 feet north of a fence. The point was not marked.

*Opelika, Lee County.*—The station is about a half mile south of the town in an undeveloped portion of the cemetery, about 100 feet from the north boundary fence, in the edge of an alleyway in the new part of the cemetery, nearly straight west from the stone obelisk on the Samford lot. It is 167.5 feet from the northwest corner of the cement coping about the Sims lot and 203 feet from the northwest corner of the cement-covered grave of Martha H. Griffin. The station is marked by a bronze disk set in a concrete block, 8 by 8 by 30 inches. The concrete block projects about 4 inches above the surface of the ground. The following true bearings were determined:

Spire on county house (mark).....	39 16.3 east of north
Point at top of tower of cotton factory.....	24 56.3 west of north
Gable point on Trinity Methodist Episcopal Church South.....	23 55.6 east of north
Ball on top of black water tower.....	51 32.6 east of north
Point of stone obelisk of Samford monument.....	81 40.9 east of south

*Opp, Covington County.*—Observations were made at a point about three-fourths mile west of town, in a field belonging to Mr. Stewart. The field is on the south side of the Louisville & Nashville Railroad, and the point at which observations were made was 350 feet south of the track and 100 feet west of a wire fence. The point was not marked.

*Paint Rock, Jackson County.*—Observations were made about one-half mile south of town, in a pasture lying between the highway to Woodville and the Southern Railway, at a point about 300 feet west of the railroad, about 60 feet east of the fence of the pasture, and nearly opposite the gate to the pasture on the other side of the road. The point was not marked.

Auxiliary stations were occupied as follows:

Gurley, 5 miles to the northwest.

Berkeley, 6 miles to the west.

Woodville (2 miles south of it), 6 miles to the southeast.

*Pine Hill, Wilcox County.*—Observations were made at a point about one-half mile southeast of town, in a pasture belonging to Mr. Weatherby, near the west end of the pasture. The point was not marked.

*Plevna, Madison County.*—Observations were made about one-fourth mile east of Plevna Station, on a triangular mound where one public road joins another.

*Rockford, Coosa County.*—The station lies about 500 feet northwest of the northwest corner of the courthouse, on ground belonging to the street and lying between the walk and the road. It is about 13 feet from the line of the northwest end of the courthouse building. A sweet-gum tree, 16 inches in diameter, blazed on the side toward the station, and with a bronze wedge driven into the blaze, stands 15.6 feet toward the northeast; a hickory tree, 18 inches in diameter, with two nails driven into a blaze, stands 29.2 feet southeast of the station. The station is marked by a bronze

ALABAMA—continued.

disk set in the top of a cement block, 8 by 10 by 30 inches, projecting about 6 inches above the ground. The following true bearings were determined:

	° /	
Point of ventilator on south end of high school (mark).....	24	18.6 west of south
Pole on cupola of public school.....	14	58.6 east of south
West edge of base of flagpole on west tower of courthouse.....	60	30.2 east of south
Point on ventilator on jail building.....	78	24.6 east of south

*Safford, Dallas County.*—Observations were made at a point about one-fourth mile north of the railroad station, in an unfenced field on the east side of the highway, about 150 feet back from the highway. The point was not marked.

*Samson, Geneva County.*—Observations were made at a point about one-half mile west of town, in an unfenced pasture south of the track of the Louisville & Nashville Railroad. The point was about 350 feet from the track. The point was not marked.

*Scottsboro, Jackson County.*—Observations were made at the station of 1903 and 1910, located on the grounds of what used to be the Scottsboro Baptist Institute, but has now been transferred to the State of Alabama. The station is in the southwest corner of the campus, 38 feet from the south fence, 39 feet from the west fence, 17.6 feet south of west from a small hickory tree, and about 250 feet from the southwest corner of the college building. It is marked by a limestone post 6 by 6 by 38 inches, set flush with ground, and lettered U. S. C. & G. S., 1903. The following true bearings were determined in 1915:

	° /	
Apex of courthouse dome (mark).....	47	50.1 west of north
East gable of corrugated iron building about 800 feet away.....	85	37.0 west of south
Apex of house 300 feet away.....	65	35.2 east of south

*Scrantage, Baldwin County.*—Observations were made at a point reached by leaving the highway at Boonville and going west about a mile through a woods road to a house belonging to Mrs. Crosby. The point was about 400 feet west of the house and about 100 feet north of the road, on some cut-over land. The point was not marked.

*Selma, Dallas County.*—The station of 1911 was reoccupied. It is in the northeast corner of the county fair grounds, about 1½ miles north of the center of the town. It is 151 feet west and 11.2 feet south of the fence around the grounds and 140 feet northeast of the fence around the inside of the race track. It is marked by a limestone post, 6 by 8 by 33 inches, projecting 14 inches above the ground and lettered U. S. C. & G. S., 1903. The following true bearings were determined in 1915:

	° /	
First spire west of water tank (mark).....	4	18.2 west of south
Water tank.....	2	44.6 east of south
Cupola of courthouse.....	9	37.4 west of south
Baptist Church spire.....	11	47.5 west of south
Spire of Methodist Episcopal Church.....	13	28.5 west of south

*Stevenson, Jackson County.*—Observations were made about one-half mile southeast of town, in a pasture belonging to Mr. Parton, just beyond a small creek, at a point near the center of the lot. The point was not marked.

*Town Creek, Lawrence County.*—The station is about one-eighth mile north of the railroad, in a pasture belonging to B. M. Huston. It is 57.6 feet from the fence to the east, 90.9 feet from the nearest tree in a small clump of sweet gums to the west, and 104.1 feet from a corner post at a jog in the pasture southwest from the station. The exact spot is marked by a bronze disk in the top of a cement block, 12 by 14 by 20 inches, projecting 1 inch above the ground. The following true bearings were determined:

	° /	
West side of chimney of W. H. Smith's residence (mark).....	2	30.9 west of south
Point on cupola of Saunders place.....	83	44.6 east of south
Methodist Church spire (base).....	83	19.3 west of south

The meridian line is marked by a piece of iron pipe 18 inches long driven into the ground near a fence about 450 feet north of the magnetic station.

*Tuscaloosa, Tuscaloosa County.*—The station of 1910 was reoccupied. It is on the grounds of the State University, 227.4 feet and 166.3 feet, respectively, from the southeast and northeast corners of Garland Hall, and 180.7 feet from the southeast corner of the boys' dormitory. The station is marked by a limestone post, 5 by 6 by 30 inches, set 28 inches in the ground and lettered U. S. C. & G. S., 1905. The following true bearings were determined:

	° /	
Base of flag staff on main dome of State Hospital for the Insane (mark).....	57	54.8 east of north
Southeast corner of base of monument in entrance to university grounds.....	37	16.9 west of south
Point on small cupola left of main dome.....	55	52.8 east of north
Point on second cupola left of main dome.....	55	23.4 east of north

## ALABAMA—continued.

*Warrior, Jefferson County.*—Observations were made at a point about one-half mile north of town, on the east side of the main highway and about 400 feet from it. The point was in an unfenced pasture having a great many trees in it, about 60 feet south of a wire fence. The point was not marked.

*Wedowee, Randolph County.*—The station is about one-fourth mile north of the center of the town on the grounds of the high school. It is 152.6 feet south from the southwest corner of the high school building, 174.3 feet from the southeast corner of the building, and about 35 feet west of the center of the path. The station is marked by a bronzed disk set in a concrete post, about 2 feet deep and 1 foot in diameter, set flush with the surface of the ground. The following true bearings were determined:

Spire on county house (mark).....	13 03. 0 east of south
Spire on Methodist Church.....	14 16. 0 west of south
Spire on Baptist Church.....	23 15. 2 west of south
Cupola of high school (pinnacle).....	15 47. 6 east of north

*Woodville, Jackson County.*—Observations were made at a point about 2 miles south of Woodville, at the side of the highway to Guntersville, and about one-half mile beyond the bridge across Little Paint Rock Creek. The point was near a crossing over a small stream.

## ALASKA.

*Dutch Harbor.*—The station is on Amaknak Island on the hill just southeast of the village of Dutch Harbor, near the station of 1908. It is about 164 feet south of a water tank covered with a sod and 98 feet south of the azimuth mark, on a line from the azimuth mark to the astronomical station in Unalaska. The station is marked by a bottle with its top 1 foot below the surface and by a bowlder 6 by 10 by 16 inches, with a 1-inch drill hole to mark the exact spot. The astronomical station at Unalaska bears  $0^{\circ} 01.0'$  west of true south.

*Ketchikan.*—The station of 1907 was reoccupied. It is on the northeastern end of Pennock Island, in front and a little north of the northern Indian burial ground. It is about 60 yards from the end of the island, 5 yards from high-water mark, and 50 yards east of a large spruce tree which is blazed on its northern face about 8 feet above the ground. The station is marked by a cement block about 1 foot square projecting about 3 inches above the surface and lettered U. S. C. & G. S., 1907. The following true bearings were determined in 1907:

Flagpole on schoolhouse cupola.....	45 35. 1 east of north
Sharp peak south of Ketchikan.....	80 01. 1 east of north
East end of wharf on Pennock Island.....	72 44. 4 east of south

*Mist Harbor, Nagai Island.*—The station is on a slight shoulder, about 90 feet high, on the hill slope forming the northwestward side of Mist Harbor and on the narrow strip of land between the harbor and Northeast Bight. It is a short distance back from the Mist Harbor shore line and on range with the spits well closed. The station mark is a piece of weathered oak 6 by 7 by 24 inches, tarred and set in fine gravel and earth; it rests on a semirocky bottom and projects several inches above the surface of a low crowned mound. The exact spot is marked by a five-eighths inch copper bolt set in the upper surface of the station mark and projecting nearly 1 inch above it. The following true bearings were determined:

West Base.....	27 58. 6 east of south
Pinnacle, north part Bendel Island.....	45 28. 2 east of south
Highest peak, Bendel Island.....	29 05. 0 east of south

## COLORADO.

*Canon City, Fremont County.*—As the station of 1906 could not be recovered, a new station was established in Greydene Park about one block west of the north high school and in the north part of the town. It is 31.7 feet north of the edge of the cement walk on the south; 78.95 feet east of the edge of the cement walk on the west; 84.4 feet northeast of the intersection of the above walks at the southwest corner; 68.6 feet south of the edge of the cement walk on the north; and 64.25 feet west of the large flagpole. The station is not marked.

*Eads, Kiowa County.*—The station is in the southeast part of the courthouse yard near the town's center. It is 73.1 feet north of the south fence; 86.4 feet west of the east fence; 87.4 feet southeast of the southeast corner of the courthouse; and 61.3 feet east of the cement walk leading south from the courthouse. It is marked by a cement post 12 by 12 by 20 inches, having a bronze disk in the top and projecting 2 inches above ground. The following true bearings were determined:

Southeast corner of jail (mark).....	5 48. 2 east of north
Northwest corner of M. P. depot.....	62 03. 6 west of south
Southwest corner of courthouse.....	48 05. 8 west of north
Northeast corner of courthouse.....	17 54. 8 west of north

COLORADO—continued.

*Lake City, Hinsdale County.*—The station is near the northwest corner of the school grounds a little north of the town's center. It is 76.1 feet northwest of the northwest corner of the schoolhouse; 50 feet east of the row of trees on the west; 40.9 feet south of a fence; and 164 feet north and a little east of a U. S. G. S. iron post (elevation station). The station is marked by a cement post 7 by 7 by 20 inches, having a bronze disk in the top and setting flush with the ground. The following true bearings were determined:

	o /	
U. S. Geological Survey iron post on school grounds (mark) .....	33	09.3 west of south
East gable of house west of school grounds.....	49	18.0 west of north
West gable of house one block to northeast.....	66	44.6 east of north
Northeast corner of high school.....	46	09.9 east of south
Right edge of chimney on house just south of school.....	25	21.8 west of south

*Montrose, Montrose County.*—As the station of 1905 could not be recovered, a new station was established 300 feet southwest of its approximate position. The new station is near the southwest corner of the fairgrounds about one-half mile northeast of the town's center. It is 83.1 feet east of the board fence on the west, 11.5 feet east of the third row of trees east of this fence, 244.2 feet north of the south fence, 136 feet west of the northwest corner of the exhibition hall, 131.4 feet south of the fence around the outside of the track. It is marked by a sandstone post 6 by 6 by 12 inches lettered U. S. C. & G. S., 1915, and setting flush with the ground. The following true bearings were determined:

	o /	
Chimney on cottage north of fairgrounds (mark).....	1	24.5 west of north
South gable of a ranch house.....	17	15.5 east of north
West gable of a house one block east of grounds.....	58	42.7 east of north
Spire on north judges' stand.....	39	11.6 west of north
Spire on south judges' stand.....	38	36.0 west of north

*Ordway, Crowley County.*—The station is in the west side of the city park, just north of the town's center. It is 50.25 feet east of the edge of the cement walk on the west side of the park, 99.95 feet west of the northwest corner of the bandstand, 46.45 feet north of a small hydrant, 130.8 feet south of a small hydrant. The station is not marked.

*Walden, Jackson County.*—The station is near the southwest corner of the courtyard near the west edge of town. It is 102 feet southwest of the southwest corner of the courthouse; the west side of the courthouse produced southward passes 80.7 feet east of the station; the south side produced westward passes 61.8 feet north of the station. It is marked by a cement post 12 by 12 by 20 inches, with a bronze disk in the top, and projects 2 inches above the ground. The following true bearings were determined:

	o /	
Spire on cupola of A. J. Monroe's house (mark).....	25	17.6 west of north
Northwest corner of courthouse (2d floor).....	32	10.6 east of north
Southeast corner of courthouse (2d floor).....	65	12.6 east of north
Spire on cupola of fire station.....	62	39.4 east of south
West gable of large store on west side Main Street.....	43	59.1 east of south

FLORIDA.

*Bronson, Levy County.*—The station is in the northwest corner of the public-school grounds which adjoin the courthouse grounds on the east. It is about 10 feet south of the line of the north fence of the courthouse extended, about 110 feet from the east fence of the courthouse, and about 110 feet from the northwest corner of the schoolhouse. The exact spot is marked by a marble post 6 by 6 by 30 inches, with a bronze disk set in the top which projects about 3 inches above the surface of the ground. The following true bearings were determined:

	o /	
West corner of roof on house 200 yards away (mark).....	18	20.8 east of south
Lower east edge of courthouse.....	18	19.1 west of south
South gable of residence 500 feet distant.....	87	33.7 west of north
Gable of barn 250 yards distant.....	11	26.4 west of north
West edge of schoolhouse.....	82	39.9 east of south

*Crawfordville, Wakulla County.*—The station is in the northwest corner of the Methodist Church grounds. It is 42.4 feet from the fence on the west, 44.4 feet from the one on the north, 51.5 feet from a large oak northwest of it, and about 175 feet from the northwest corner of the church. The exact spot is marked by a limestone post weighing about 150 pounds. The stone is about 4 by 4 inches at the top which sets flush with the surface of the ground, and has a cross cut in the top to mark the exact point. The following true bearings were determined:

	o /	
West gable of barn ¼ mile distant (mark).....	20	02.3 west of south
East gable of smokehouse on farm ¼ mile distant.....	5	18.4 east of north
North gable of residence 200 yards distant.....	88	40.5 east of north
Lower northeast edge of Raker's store.....	53	16.7 east of south
Lower southwest corner of Methodist Church.....	33	30.6 east of south

## FLORIDA—continued.

The south end of a 465-foot meridian is marked by a post nearly similar. This post sets flush with the surface of the ground, is 11 feet from the corner fence post southeast of it and 33 feet from the telephone pole northwest of it.

*Crestview, Walton County.*—Observations were made at a point about one-quarter mile north of the railroad station, on some vacant ground which has been subdivided into lots but is now grown up with bushes and little trees. It is close to a fork in the highway. The point was not marked.

*Detroit, Dade County.*—The station is on the north side of the canal, about one-quarter of a mile east of the center of the town. It is about 700 yards east of the bridge crossing the canal and 28 feet from the center of the road. A lone cabbage palm stands 52 feet east of north from it. It is also about 190 feet west of another lone palm on the south side of the canal. The mark is a cement post 8 by 8 by 28 feet, projecting 6 inches above the ground, and having a bronze disk set in the top. It is about 30 feet east of the line dividing two fields. The following true bearings were determined:

East gable of residence 1 mile distant (mark).....	22 20.3 west of north
East gable of warehouse $\frac{1}{2}$ mile distant.....	66 41.0 west of south
East gable of general store $\frac{1}{2}$ mile distant.....	79 24.1 west of south
South gable of railroad station.....	85 32.3 west of south
East gable of dwelling $\frac{1}{2}$ mile distant.....	89 52.4 west of north

*Fort Pierce, St. Lucie County.*—The station is in the southeast corner of the courthouse grounds. It is 14.2 feet from the cement walk on the east, and 29 feet from the nearest telegraph pole. The nearest end of the courthouse is about 160 feet distant. It is marked by a cement post, 8 by 8 by 28 inches, with a bronze disk set in the top, and projecting 2 inches above the surface of the ground. The following true bearings were determined:

West gable of two-story building on Cobb's pier (mark).....	7 36.6 east of north
Apex of railroad water tank.....	67 52.9 west of south
Northeast (lower) corner of courthouse cornerstone.....	43 21.2 west of north
Apex of tower of water tank.....	34 54.2 west of north
South gable of boat house on east bank of Indian River.....	32 28.8 east of north

The north end of a meridian line 346.7 feet long is marked by a similar post which sets on the east side of the road.

*Fort White, Columbia County.*—Observations were made at a point about one-half mile north of the town, on the east side of the Atlantic Coast Line tracks and the highway next to them, in a field belonging to Mr. Chiles. The point was about 150 feet east of the fence and about 300 feet east of the railroad. The point was not marked.

*Gainesville, Alachua County.*—The station of 1914 was reoccupied. It is in the southeastern part of the campus of the Florida University, about 2 miles west from the town's center, and about 650 feet east from the engineering building. It is 177.2 feet from the fence on the east boundary of the campus and 358 feet from the fence on the south boundary. The station is marked by a granite post 6 by 6 by 33 inches, projecting about 7 inches above the ground, and lettered U. S. C. & G. S., 1914. The following true bearings were determined in 1914:

Top of fertilizer factory water tank (mark).....	70 58.6 east of south
Center of top of smokestack of city light plant.....	79 08.4 east of south
Southeast corner of stone post at top of central south gable of Language Hall..	40 28.4 west of north
Southeast gable point of Agricultural Building.....	80 59.2 west of north

A similar post was set about 400 feet due north of the magnetic station to mark the north end of a meridian line. The post shows about 5 inches above the ground.

*Interlachen, Putnam County.*—Observations were made at a point about one-half mile west of Interlachen, in an old pasture just south of the Atlantic Coast Line Railroad, at a point about 250 feet from the track. The point was not marked.

*Jupiter, Palm Beach County.*—The station of 1911 was recovered. It is 20 feet back from the edge of the sea bluff and is surrounded with scrub palmettos 4 to 6 feet high. Cabbage palmettos are to the west of it but on lower elevation. It is on the north side of the inlet about 60 feet north of the farthest north of two frame sheds and sets on ground nearly level with the roof of the north shed. The underground mark consists of a wine bottle, mouth up, 28 inches below the surface of the ground. The surface mark is a 5 by 5-inch wooden painted post, projecting 14 inches above the ground, with a copper nail in the top. One side of the post near the top has carved on it the letters U. S. The following true bearings were determined:

West gable of life-saving station (mark).....	11 42.4 east of south
Spire on lighthouse.....	71 02.6 west of north
Gable on house of C. R. Carlin.....	66 50.4 west of south
Second gable on house of C. R. Carlin.....	67 16.5 west of south
North side of water tank.....	66 17.0 west of south

FLORIDA—continued.

*Key West, Monroe County.*—The station of 1911 was reoccupied. It is on the grounds of the United States barracks, north of the hospital building. It is 79.0 feet and 98.5 feet, respectively, from the brick posts at the northeast and northwest corners of the porch of the hospital; it is also 66.3 feet from the north fence of the barracks. It is marked by a brass plug lettered U. S. C. & G. S., set in the coral rock about 6 inches below the surface of the ground. The following true bearings were determined in 1915:

	° /	
Southeast tower of armory (mark).....	3	26.4 east of south
Northwest tower of armory.....	1	26.4 east of south
East gable of freight house on pier.....	59	25.3 west of north
Apex of roof of concrete building 500 feet distant.....	41	21.8 east of north
North gable of stables (barracks).....	32	05.7 east of south

*Long Key, Monroe County.*—The station is located on the beach of the hotel grounds. It is about 35 feet back from the highest water mark and in line with the first row of cabbage palms. The mark is a cement post, 8 by 8 by 28 inches, with a bronze disk in the top, projecting 5 inches above the surface of the ground. The following true bearings were determined:

	° /	
South side of a post 500 feet north (mark).....	22	01.3 west of north
Southeast edge of "Porpoise" cottage.....	36	31.0 east of north
West end of viaduct.....	70	30.3 west of south
South edge of base of flagpole on Long Key Hotel.....	71	51.9 west of north
South gable of cottage marked "Shark".....	54	37.9 west of north

*Miami, Dade County.*—The station of 1911 was recovered, but found unsuitable for magnetic work. A new station was established in the southeast section of the Royal Palm Hotel Park (practically a public park) near the intersection of Fourteenth Street and the boulevard along the beach. The old stone, 7 by 7 by 18 inches, lettered U. S. C. & G. S., 1903, was set flush with the surface of the ground. It is 55.7 feet to the edge of the cement walk on the east, 59.6 feet to the one on the south, 36.2 feet from the coconut palm southwest of it, and 30 feet from the nearest one northwest. The following true bearings were determined:

	° /	
Lower center of north wireless tower of Government station across Biscayne Sound (mark).....	63	56.5 east of north
South wireless tower.....	64	22.3 east of north
Flagstaff, dome of wheel-chair house across Biscayne Sound.....	87	18.0 east of south
Lower north side of flagpole on roof of Royal Palm Hotel.....	41	28.2 west of south
Outside east edge of basement window nearest southeast corner of the Presbyterian Church.....	53	08.0 west of north

*Palm Beach, Palm Beach County.*—The station is in the southwest quarter of the grounds of the Royal Poinciana Hotel. It is northwest of a cluster of four cabbage palms which lie nearly in line with the foul line to the left field of the ball grounds and about 75 feet north of the road running along the south side of the hotel grounds. It is 14.8 feet from the first palm, counting from the north; 13.1 feet from the second; 24.2 feet from the third; and 30.2 feet from the extreme south one. The mark is a concrete post, 8 by 8 by 28 inches, with a bronze disk set in the top and sunk flush with the ground. The following true bearings were determined:

	° /	
Flagpole on "The Breakers" (mark).....	51	42.6 east of north
West gable of barn 200 yards distant.....	82	11.7 east of south
Southeast edge of residence $\frac{1}{4}$ of a mile distant.....	88	48.2 west of south
Upper east gable of clubhouse on grounds.....	55	20.2 west of north
Flagpole on "The Poinciana".....	40	51.8 west of north

The north end of a meridian line 719.4 feet long is marked by a similar stone which sets 17 feet south of the south edge of the cement road for wheel chairs and bicycles, near the row of large Australian pines. It is 9 feet from the nearest on the northwest and 17 feet from the nearest northeast.

*Panama City, Bay County.*—The station is on the grounds of the new public-school building. It is about 15 feet from the east line of the lot (the lot is not fenced) and 56.1 feet from the stake which marks the northeast corner of the lot. It is 70.1 feet from the northern one of two tall pine trees, about 18 inches in diameter, and 71.7 feet from the southern one, and 386.7 feet from the northeast corner of the school building. The station is marked by a bronze disk set in a cement core, 16 inches in diameter and 2 feet deep, and sunk flush with the surface of the ground. The following true bearings were determined:

	° /	
Ball on roof of water tower (mark).....	35	50.2 west of south
Northwest corner of wall of school building.....	33	09.5 west of south
Southeast corner of wall of school building.....	12	47.0 west of south

## FLORIDA—continued.

*Tampa, Hillsboro County.*—The station of 1903 was found to be no longer suitable for magnetic observations, so a new one was established about 1 mile due south of the old one. It is inside the race track of the city park on the west bank of the river. It is in the north end of the park, 87 feet from the cement drain which lies due west on the inside of the track, 157 feet from the same drain due north, and is about 300 feet northeast of the grand stand. The exact spot is marked by a marble post 6 by 6 by 30 inches with a bronze disk set in the top which projects about 5 inches above the surface of the ground. The following true bearings were determined:

Apex of water tank $\frac{3}{4}$ mile distant (mark).....	12 10.8 east of north
Methodist Church spire.....	65 42.4 east of north
Catholic Church spire.....	88 55.2 east of north
South tower of Tampa Bay Hotel.....	41 56.1 east of south
Ornament on south gable of Exhibition Hall.....	14 43.0 west of south

## GEORGIA.

*Acworth, Cobb County.*—Observations were made at a point about three-fourths mile northwest of town, on land belonging to Mr. Awtelle, on the east side of a minor road branching northwestward from the main highway. The point was not marked.

*Alma, Bacon County.*—The station is in the southeast corner of the town park, which lies one-third of a mile northeast of the depot. It is about 115 feet from the east side of the main pavilion, about 20 feet from the edge of a pond, and 41 feet from the south fence of the park. The exact spot is marked by a cement post, 8 by 8 by 30 inches, with a bronze disk set in the top nearly flush with the surface of the ground. The following true bearings were determined:

East gable of Lamb's residence (mark).....	16 02.8 west of north
Northeast edge of Dowdy's residence.....	35 18.4 west of north
North gable of residence $\frac{1}{4}$ mile southeast.....	54 42.7 east of south
North gable of Cockman's residence.....	59 48.7 west of south
Northeast edge of Pearson's residence.....	80 09.3 west of north

A cement post 6 inches square marks the north end of a meridian line 202.6 feet long and is placed just inside the north fence of the park. An oak stake, 2 by 3 by 27 inches, with a nail in the top, was driven into the ground at the fence about 350 feet north of the north meridian mark and left projecting about 6 inches above the ground, as a check on the meridian.

*Alpharetta, Milton County.*—The station is in the west end of the baseball grounds, about one-fourth mile west of the courthouse. It is 44.6 feet from the corner fence post on the south, 30.3 feet from one on the west, and 43.2 feet from one on the northwest. A large hickory stands 254.3 feet distant in the east end of the park. The exact spot is marked by a bronze disk in the square top of a limestone post, 6 by 10 by 25 inches, which projects about 2 inches above ground. The following true bearings were determined:

Northwest corner of residence 400 feet distant.....	5 00.8 east of north
Methodist Church spire.....	54 01.0 east of north
Northwest corner of brick hotel building.....	87 17.9 east of south
Northwest corner of schoolhouse.....	82 55.2 west of north
West gable of barn 200 yards distant.....	18 22.0 west of north

The north end of a meridian line 296.6 feet long is marked by a 1-inch pipe 2 $\frac{1}{2}$  feet long with a mark cut in the top to mark the exact line. It projects about 4 inches above ground and sets near a brick wall about 3 feet high.

*Atlanta, Fulton County.*—The station of 1911 was reoccupied. It is in the central part of Grant Park, on the lawn east of an oval of concrete walk, which is about 300 feet east and uphill from the north end of the small lake just east of the main entrance to the park. It is about 220 feet east of the above-mentioned oval and 42 feet south of the center of the asphalt road passing north of the oval. It is marked by a limestone post, 5 by 7 by 30 inches, projecting about 6 inches above ground, and lettered U. S. C. & G. S., 1905. The following true bearings were determined:

North gable of greenhouse (mark).....	38 05.3 west of south
East lower edge of south stone post at foot of steps to dancing pavilion.....	7 31.5 east of north

*Bainbridge, Decatur County.*—The station of 1911 was reoccupied. It is in the northeastern part of the city, in what is called the Fair Grounds, the property of Mr. George Griffin. It is south of the race track and northeast of the baseball diamond, in what would be the territory between the center and right fielders. It is about 85.3 feet from the outside edge of the race track, 233.8 feet southeast from the center of the trunk of a blazed pine tree, and 118.5 feet west from the southwest corner of a small negro cabin painted white. It is marked by a cement post, 8 by 9 by 24 inches,

GEORGIA—continued.

projecting above the ground, with a bronze disk in the top. The following true bearings were determined in 1911 and 1915:

	° /	
Lower west edge of mill smokestack (mark).....	0	26.6 east of south
Three nails in vertical row in blaze on pine tree.....	62	47.7 west of south
South gable of house in south end of race track.....	7	42.0 west of north
South gable of house in north end of race track.....	21	29.3 east of north
Northwest corner of residence 200 yards away.....	8	25.5 west of south

*Blackshear, Pierce County.*—The station is in the south section of the courthouse grounds, to the left of the path leading to the courthouse. The spot, which is marked by a cement post, 8 by 8 by 30 inches, with a bronze disk set in the top, measures 30.5 feet from the wire fence on the south, 60.8 feet from the tree nearest the gate, and 49.6 feet from the second tree from the entrance gate. The south corner of the courthouse is about 225 feet distant. The following true bearings were determined:

	° /	
West gable of outhouse adjoining Strickland's barn (mark).....	7	37.8 west of north
North gable of 2-story building 250 yards on north side of main road.....	55	40.6 east of south
North gable of Robinson's barn.....	77	30.2 west of south
East gable of Davis's residence.....	38	54.7 west of north
Lower east corner of courthouse.....	10	23.6 west of north

*Boxspring, Talbot County.*—Observations were made in an unfenced lot belonging to the Thunderburg estate, about one-fourth mile north and up hill from the railroad station, and about 500 feet north of a small frame church without steeple. The magnetic station was about 150 feet east of the edge of the highway and about 300 feet north of the house on the next lot. The point was not marked.

*Browns Crossing, Baldwin County.*—Observations were made at a point about 150 feet from the railroad station, 35 feet from a wire fence on the south, and equidistant from the two stores near the station. There were no cars on the track at the time of observation, and the spot was not marked.

*Cairo, Grady County.*—The station is located in the north central part of the public-school grounds which lies about one-third mile southeast of the center of the town. It is 53 feet from the corner of the fence southwest of it, 34 feet from a pine west of it, and about 35 feet from the center of the road on the north. The exact spot is marked by a cement post 8 by 8 by 30 inches with a bronze disk in the top and projecting about 2 inches above the ground. The following true bearings were determined:

	° /	
North gable of storehouse near school building (mark).....	0	22.5 east of south
Lower east corner of chimney on residence one-fourth mile distant.....	5	33.9 east of south
Northwest corner of residence across road from schoolhouse.....	42	39.0 west of south
Northeast edge of residence one-third mile distant.....	86	55.9 west of south
Apex of granite monument in cemetery.....	40	11.5 east of north

A similar post marks the south end of a 442-foot meridian line.

*Camilla, Mitchell County.*—The station is in the southeast corner of the public school grounds. It is 42.3 feet from the fence on the east, 15.3 feet from the fence on the south, and 163.5 feet from the southeast corner of the east porch of the main school building. The exact spot is marked by a cement post 8 by 8 by 30 inches, with a bronze disk set in the top, which projects about 2 inches above the surface of the ground. The following true bearings were determined:

	° /	
East side of smokestack of power plant (mark).....	2	46.1 east of north
West gable of residence 200 yards distant.....	48	47.3 east of south
Methodist Church spire.....	89	21.5 west of north
Lower southeast corner of high-school building.....	59	35.3 west of north
Lower southwest corner of grammar-school building.....	47	57.1 west of north

A stake was driven in the ground, 289 feet distant, to mark the north end of a meridian line. At the request of the instructor of science a brass marker was left and a post similar to the above will be set in the line with the two marks already down.

*Carrs Station, Hancock County.*—Observations were made at a point about 400 feet west of the railroad and 60 feet north of the road running west from the station. It is about 15 feet above the level of the railroad tracks. The station was not marked.

*Claxton, Evans County.*—The station is on the farm of Mr. E. Hodges, about 3 miles east of the center of the town. It is in the southwest corner of the field about 300 feet west of Mr. Hodges's residence. The wire fence on the west side of the field measures 57 feet from the stone, and a small tree on the south side of the field, near the main road, meas-

GEORGIA—continued.

ures 150.4 feet from it. The station is marked by a cement post 6 by 6 by 32 inches with a bronze disk, set in the top, which projects 6 inches above the surface of the ground. The following true bearings were determined:

	° /	
Lower west corner of roof on shed one-half mile north (mark).....	2	38.1 west of north
North gable of Hodges's residence.....	81	38.0 east of south
South gable of barn one-half mile away.....	58	52.4 west of north
North gable of Hodges's feed house.....	51	05.2 east of south

The north end of a meridian line 600 feet long is marked by a similar post.

*Clayton, Rabun County.*—The station is located in the grove at the south end of Main Street. It is about halfway to the summit of the ridge from the railroad on the east, 194 feet south of the wire fence on the north side of the grove, and 163 feet from the southeast corner of the barn in the grove. The exact spot is marked by a granite rock, projecting 8 inches above ground. A small hole cut in the highest point of the rock was used as a center. The following true bearings were determined:

	° /	
Southeast corner of shed 400 feet distant (mark).....	15	58.2 east of north
North gable of residence three-fourths mile distant.....	12	03.6 west of south
North gable of residence one-fourth mile distant.....	40	04.3 east of south
Southwest corner of Methodist Church.....	20	06.0 west of north

*Cumming, Forsyth County.*—The station is on top of the ridge one-fourth mile northeast of town, on the property of Mr. McAfee. It is on the east side of an old wagon road, about 100 feet northeast of the barn and about 10 feet above the main turnpike, in elevation. It is 12 feet northeast of a large tree stump on the east side of the road and 20 feet from a prominent oak due west of it. The exact spot is marked by a limestone post 6 by 10 by 25 inches with a 1-inch hole drilled in the top, projecting about 4 inches above ground. The following true bearings were determined:

	° /	
North corner of Geist's residence (mark).....	30	05.1 west of south
West gable of building 300 yards distant.....	62	13.8 west of south
North corner of chimney on residence 300 yards distant.....	52	08.1 west of south
Apex of water tank one-third mile distant.....	66	42.1 west of north

*Decatur, Dekalb County.*—The station is in the west side of the grounds of the Donald Frazer School, which is about one-fourth mile due north of the courthouse. It is about 200 feet west of the old schoolhouse and between the second and third rows of trees, counting from the south end of the grounds. It is 12.4 feet from the tree on the northeast, 20.5 feet from one on the northwest, 54.7 feet from the tree on the southwest corner of the grounds, and 38.5 feet from the end tree of the second row south of the station. The exact spot is marked by a bronze disk in the top of a limestone post 6 by 10 by 24 inches, which projects about 1 inch above the surface of the ground. The following true bearings were determined:

	° /	
West side of center pillar on porch of residence 250 yards distant.....	17	09.8 west of north
East gable of barn two-thirds mile distant.....	22	36.2 east of north
West gable of residence 300 yards distant.....	47	23.5 east of north
Southeast corner of school building.....	70	49.4 east of south
Upper end of scales in hand of statue of "Justice" on courthouse dome.....	3	18.6 west of south

*Eastman, Dodge County.*—The station is on the east side of the courthouse grounds. It is 63.5 feet to the row of shrubbery on the west, 44.1 feet to the telegraph pole east, 108.8 feet to the tree southwest of it, and 101 feet to another tree south of it. The exact spot is marked by a bronze disk in the top of a cement post 8 by 8 by 30 inches, which projects 2 inches above the surface of the ground. The following true bearings were determined:

	° /	
East lightning rod on residence one-half mile distant (mark).....	0	53.3 west of north
South gable of residence one-fourth mile distant.....	64	10.2 east of north
West corner of Methodist Church.....	31	07.7 west of south
South corner of courthouse.....	82	30.1 west of south
East corner of jail.....	34	26.4 west of north

The north end of a meridian line 302 feet long is marked by a similar post with a one-fourth inch hole in the top.

*Ellaville, Schley County.*—The station is in the southwest corner of the courthouse grounds. It is 87.6 feet from the middle of an oak southwest of it, 63.7 feet from the fence on the south, 63.6 feet from the southeast corner of the porch of a frame dwelling, and 77 feet from a large oak north of it. The exact spot is marked by a bronze disk in the top of a cement post 8 by 8 by 30 inches, which projects 1 inch above the surface of the ground. The following true bearings were determined:

GEORGIA—continued.

West gable of residence one-fourth mile distant (mark).....	1 06. 6 west of south
West gable of residence one-fourth mile distant.....	41 17. 2 west of south
East gable of residence one-fourth mile distant.....	62 29. 2 west of south
Northwest (lower) corner of courthouse.....	14 30. 6 east of north
Northwest corner of store 300 feet distant.....	72 38. 6 east of south

The north end of a 345-foot meridian is marked by an iron pipe 25 inches long projecting about 4 inches above ground. It sits next to the fence on the north side of the main street.

*Fair Mount, Gordon County.*—Observations were made at a point about one-half mile west of town, in a field belonging to Mrs. Tate, on the south side of the highway and a little beyond the crest of a hill which has been cut down for the highway. The point was not marked.

*Fargo, Clinch County.*—The station is located in the middle of a proposed street which is the third one north of the depot. It is 40.3 feet from the wood post marking the northwest corner of the crossing, 59 feet from the one marking the southwest corner, and about 78 feet from the center of the main road on the east. The exact spot is marked by a cement post 8 by 8 by 30 inches, with a bronze disk in the top, which projects about 3 inches above the surface of the ground. The following true bearings were determined:

Apex of water tank at mill (mark).....	15 39. 4 west of south
South gable of Liverman's residence.....	86 48. 9 west of north
East gable of schoolhouse.....	32 14. 8 east of south
West gable of Hudson's Hotel.....	15 37. 0 east of south
Apex of railroad water tank.....	11 52. 0 east of south

*Folkston, Charlton County.*—The station is in the southeast corner of the courthouse grounds which lie about one-fourth of a mile east of the center of the town. It is 44.8 feet from the fence on the south, 43.2 feet from the fence on the east, and about 100 feet from the southeast corner of the courthouse. It is marked by a granite post 6 by 7 by 32 inches, with a bronze disk set in top and projecting 4 inches above the ground. The following true bearings were determined:

Southeast edge of school (mark).....	2 25. 4 west of south
Belfry on Methodist Church.....	36 29. 2 west of south
Northeast corner of old bank building.....	78 55. 3 west of south
Upper southwest edge of Wilson's residence.....	39 10. 2 west of north
Monument in cemetery marked "Wright".....	39 13. 0 east of north

The south end of a 372.8 feet meridian line is marked by a 125-pound iron casting (probably from an old engine) 4 inches square at the base, about 40 inches long, and projects 8 inches above the ground. The upper end is 2 inches in diameter and increases uniformly to the square base.

*Fort Gaines, Clay County.*—The station is about a quarter mile south of the courthouse, three-quarters of a mile from the railroad station, on what is known as the Adams place, private property controlled by R. C. McAllister, rented by J. T. Connell. It is 72.1 feet south of a large oak tree which is partly dead. It is 194.5 feet southwest of the northwest corner of the stone foundation under the north end of the piazza, and 182.5 feet from the southwest corner of foundation under south end of piazza. It is marked by a bronze disk set in the top of a cement post, 8 by 8 by 30 inches, projecting about 3 inches above the ground. The following true bearings were determined:

Spire of colored Methodist Church (mark).....	10 51. 8 west of north
Spire of Presbyterian Church.....	13 51. 4 west of north
Spire of Methodist Church.....	35 49. 0 west of north
Point on roof of silo.....	86 27. 0 west of north

*Fort Valley, Houston County.*—Observations were made in a vacant field about one-fourth mile south of the railroad station, on the east side of the main street leading south from the station, and just beyond the last house (not counting negro cabins) on that street. The observations were made at a point about 300 feet east of the west fence of the field, and about 200 feet south of the north fence. The point was not marked.

*Hartwell, Hart County.*—The station is in the southeast corner of the public school grounds. It is 38.3 feet from the fence across the road on the south and 177 feet southeast of the main school building. The exact spot is marked by a limestone post 6 by 6 by 28 inches, projecting 3 inches above ground, with a bronze disk in the top. The following true bearings were determined:

Southwest corner of barn 500 feet distant.....	0 20. 2 west of north
West gable of residence 500 feet distant.....	48 05. 5 east of south
East gable of residence 300 feet distant.....	55 52. 4 west of south
Southwest corner of school building.....	68 46. 3 west of north
Northeast corner of school building.....	36 50. 8 west of north

## GEORGIA—continued.

The north end of a meridian line about 450 feet long is marked by a wooden stake which is set just outside of the wire fence on the south side of the road 300 feet north of the school. This is to be replaced by a substantial stone post by the local authorities.

*Homer, Banks County.*—The station is located in the southeast section of the public school grounds, at the end of the street running west from the north side of the courthouse. It is 37.8 feet from a corner fence post north of it, 136.1 feet from the foundation stone at the northeast corner of the school, 85.1 feet from the northeast corner of the Presbyterian Church, and 85.5 feet from a white oak tree south by east of it. The mark is a limestone post 6 by 6 by 27 inches with a bronze disk in the top which projects 2 inches above ground. The following true bearings were determined:

North side of telegraph pole 500 feet distant (mark).....	0 31.2 east of south
Northeast corner of school building.....	45 48.1 west of north
Northwest edge of jail.....	8 10.6 east of north
West corner of courthouse.....	52 36.2 east of north
West gable of store 150 yards distant.....	72 30.3 east of south

The south end of a meridian line 578.3 feet long is marked by a stone projecting about 10 inches above ground, set near the fence on the west side of the main road, with a cross cut in the top to mark the exact line.

*Homerville, Clinch County.*—The station is in the northern central section of the public school grounds, about one-third of a mile southwest of the center of the town. It is 28.6 feet from the fence on the north side of the grounds and about 130 feet from the center of the road on the northeast. The school building is about 225 feet distant. The exact spot is marked by a marble post 5 by 8 by 28 inches set 1 inch above the ground, with a bronze disk in the top. The following true bearings were determined:

Extreme west point of roof on house $\frac{1}{4}$ of a mile south (mark).....	3 33.0 east of south
South gable of barn $\frac{1}{4}$ of a mile northeast.....	26 19.9 east of north
Methodist Church spire.....	63 26.4 east of north
Upper north gable of residence $\frac{1}{4}$ of a mile southeast.....	72 15.5 east of south
Southwest edge of schoolhouse.....	29 05.3 east of south

A 2 by 3 inch stake, 2 feet long, was driven in the ground 385.9 feet south of the station with a nail driven in the top to mark the true meridian. It projects 4 inches above the ground and sets about 20 feet from the southwest fence.

*Jefferson, Jackson County.*—The station is located in the west end of the public school grounds about 175 feet from the schoolhouse. It is 13.3 feet from a pecan tree east of it, 43.2 feet from one south of it, 78.8 feet from the edge of the cement walk northwest of it, and 22.9 feet from the outside edge of the stone wall southeast of it. The exact spot is marked by a bronze disk in the top of a limestone post 6 by 10 by 23 inches which projects about 2 inches above the surface of the ground. The following true bearings were determined:

Northwest corner of brick chimney of residence 200 feet distant (mark).....	1 48.5 west of south
Baptist Church spire.....	60 24.0 east of south
Presbyterian Church spire.....	26 55.7 west of south
Northwest edge of building 400 feet distant.....	82 12.5 west of south
West side of water tank $\frac{1}{4}$ mile distant.....	76 08.2 west of north

*La Grange, Troup County.*—The station of 1911 was reoccupied. It is in the eastern part of the grounds surrounding the Southern Female College, about one-fourth mile north of the town's center. It is 159 feet east from the southeast corner of the south college building, 15 feet west from the concrete walk east of the college grounds, and 88.6 feet northeast from the northeast corner of the brick foundation of a burned-out building. It is marked by a marble post 7 by 7 by 34 inches, projecting about 10 inches above the ground. The following true bearings were determined:

Lower southwest corner of north college building (mark).....	61 41.8 west of north
East gable point of Dr. Joseph Lane's residence.....	16 32.1 west of north
Lower northwest corner of Dr. Ridley's residence.....	4 37.5 east of north

A north meridian granite post 7 by 7 by 36 inches is 194 feet distant, and 129.9 feet a little north of east from the northeast corner of the front porch of the north college building. This post is about 11 inches above ground and has a small hole in the top to mark the exact line.

*Lawrenceville, Guinnett County.*—The old station has a schoolhouse built directly over it. The new station is located in the east end of the school grounds about 250 feet east of the schoolhouse. It is 48.5 feet from a prominent tree on the southeast, 26.6 feet from one due east and 79.2 feet from a water oak northwest of it. It is about 50 feet from the center of the road on the east and 60 feet from the one on the north. The exact spot is marked by a limestone post 6 by 8 by 27 inches with a 1-inch hole in the top, which projects about 3 inches above ground. The following true bearings were determined:

GEORGIA—continued.

Courthouse dome (mark).....	22	03.2	east of south
Methodist Church spire.....	74	19.8	west of south
Lower northeast corner of schoolhouse.....	67	06.8	west of north
West gable of barn $\frac{1}{2}$ mile distant.....	24	19.2	east of north
South gable of residence 1 mile away.....	20	30.8	east of north

*Lincolnton, Lincoln County.*—The station is in a clearing in the east half of the public school grounds, about one-half way between the road on the east and the frame schoolhouse on the west. It is 36 feet from a lone tree northwest of it, 67 feet from a prominent oak a little east of south, and 28 feet north of the center of the roadway leading to the school. The exact spot is marked by a bronze disk in the top of a limestone post, 6 by 10 by 23 inches, projecting about 2 inches above the ground. The following true bearings were determined:

North gable of barn 500 feet distant (mark).....	13	19.5	east of south
Weather vane on residence $\frac{1}{2}$ mile distant.....	5	43.0	east of north
West gable of residence 300 feet distant.....	25	41.1	east of north
Lightning rod on residence $\frac{1}{2}$ mile distant.....	21	05.0	east of north
West gable of barn 200 yards distant.....	63	06.7	east of south

*Lyons, Toombs County.*—The station is in the southeast corner of the public-school grounds which lie about one-fourth of a mile north of the center of the town. It is 68.8 feet from the fence across the road on the south, 75.3 feet from the tree at the northeast corner of the intersection of the two roads, and 123.4 feet from the southwest post of the fence across the road on the east. The brick school building is about 300 feet distant. The station is marked by a granite post, 6 by 8 by 40 inches, projecting 5 inches above the ground and having a bronze disk in the top. The following true bearings were determined:

West gable of residence $\frac{1}{2}$ mile north (mark).....	1	42.7	east of north
Spire on church $\frac{1}{2}$ mile east.....	88	48.7	east of south
Bell tower on church $\frac{1}{2}$ mile away.....	28	39.4	west of south
Apex of roof on tool house in cemetery.....	79	58.9	west of north
Northeast lower corner of schoolhouse.....	20	41.8	west of north

A 15-inch stake was set at the extreme northeast corner of the field to mark the north end of a meridian line (390.9 feet long). This stake is to be replaced by the local surveyor with a more permanent mark.

*Manchester, Meriwether County.*—Observations were made at a point  $1\frac{1}{2}$  miles east of Manchester at the upper or south edge of a stony hillside cotton field. The field is reached by the main highway running east from Manchester, and is just east of the first place where the highway crosses the Atlanta, Birmingham, and Atlantic Railroad. The point was about 150 feet east of a turn in the highway, and about 600 feet north and uphill from the railroad. The point was not marked.

*McDonough, Henry County.*—The station is in the northeast section of the public school grounds. It is 42.4 feet from a telegraph pole southeast of it, 42.3 feet from the post at the northeast corner of the school garden, 35.8 feet from a tree due south, on the north edge of the garden, 44.1 feet from a tree about 30° south of west, 129.5 feet from a tree due north on the north side of the road, and 23.2 feet from the fence on the east. The exact spot is marked by a bronze disk in the top of a cement post, 8 by 8 by 20 inches, set about 1 inch below the surface of the ground. The following true bearings were determined:

Gable of residence $\frac{1}{2}$ mile south (mark).....	5	38.3	east of south
Northwest corner of school building.....	42	11.8	west of south
Northeast corner of residence 150 yards distant.....	44	28.2	west of north
Apex of water tank.....	16	06.5	west of north
Baptist Church spire.....	0	33.4	west of north

*Meriwether, Baldwin County.*—Observations were made at a point about 300 feet east of the railroad station and 40 feet from a barbed wire fence northeast of it. It is about equidistant from the barn and the general store, the only two buildings on this side of the railroad. No cars were on the track at the time of observation and the station was not marked.

*Metter, Candler County.*—The station is in the southwest part of the public-school grounds, about one-fourth of a mile southwest of the center of the town. It is about 250 feet from the southwest corner of the school building and 27.2 feet from the fence on the south. A granite post, 6 by 8 by 35 inches, with a bronze disk in the top marks the station. The stone projects about 5 inches above the ground. The following true bearings were determined:

West gable of Williams's residence (mark).....	13	31.6	east of north
Apex of roof over Mr. Kennedy's water-tank tower.....	31	34.6	east of north
Upper west gable of Dixon's Hotel.....	44	29.7	east of north
Southeast edge of school.....	79	32.9	east of north
North gable of Jones's residence.....	52	50.6	east of south

## GEORGIA—continued.

The north end of a meridian line 895.8 feet long is marked by a marble slab, 1½ by 8 by 27 inches, set near the railroad property, projecting 4 inches above ground and having a one-fourth-inch hole drilled in the top to define the line.

*Milledgeville, Baldwin County.*—The station of 1908 was reoccupied. It is upon the old capitol grounds, now the grounds of the Georgia Military College. It is 18 feet south of an elm tree, 198 feet southwest of the southwest corner of the college building, and 174 feet west of a board fence. It is marked by a limestone post, 6 by 6 by 30 inches, projecting about 4 inches above the ground and lettered U. S. C. & G. S., 1908. The following true bearings were determined in 1908 and 1915:

Spire on Methodist Episcopal Church (mark).....	63	24.2	west of south
Northwest corner of college building.....	8	04.3	east of north
Dome on State insane asylum.....	5	31.3	east of south
Southeast corner of college building.....	41	37.7	east of north
Southwest corner of gateway.....	45	21.9	east of south

*Moultrie, Colquitt County.*—The station is in the north central part of the public-school grounds. It is 50.5 feet from the north fence and is due south of a tree (inside the fence) which sets exactly in line with the curbing on the east side of the street running north from the station. The exact spot is marked by a bronze disk in the top of a cement post, 8 by 8 by 30 inches, which projects about 1 inch above the surface of the ground. The following true bearing were determined:

West side of chimney on residence 250 yards away (mark).....	5	53.0	west of north
Courthouse spire.....	34	15.1	east of north
Baptist Church spire.....	45	48.6	east of north
Northeast corner of large residence east of school grounds.....	78	11.0	east of south
Lower southwest corner of school building.....	34	36.8	east of south

*Newton, Baker County.*—The station is in the south part of the public-school grounds. It is 27 feet from the center of the path leading to the school building, 63 feet from the center of the main road south, 108 feet from the wire fence on the east, and 128 feet from the center line of the rail fence on the west. The exact spot is marked by a rock nearly square at the top, which projects about 3 inches above the surface, and has a cross cut in it. The following true bearings were determined:

Inside east edge of schoolhouse doorframe (mark).....	7	01.0	west of north
Southwest edge of residence 250 yards distant.....	53	15.4	east of north
Courthouse spire.....	69	09.6	east of south
Inside edge of extreme southerly window frame of Methodist Church.....	79	37.3	west of south

*Ocilla, Irwin County.*—The station is in the city park, adjoining the school grounds on the west and in the west end of town. It is about 125 feet from the street bordering the park on the east, 34.8 feet from the north fence, 24.1 feet from a tree southeast of it, and 12.8 feet from a tree southwest of it. The exact spot is marked by a bronze disk in the top of a cement post 8 by 8 by 30 inches, which projects 1 inch above the ground. The following true bearings were determined:

East side of chimney on residence ¼ mile distant (mark).....	0	00.8	west of south
Lightning rod on east gable of house.....	89	49.8	west of south
Weather vane on dome of courthouse.....	41	55.9	east of south

*Rock Mart, Polk County.*—Observations were made about one-half mile south or southwest of the center of town, in an unplanted part of a cotton field just south and across the creek from the Seaboard Air Line station. The point used was about 200 feet west of the highway and just south of a lane running through the field and entering it nearly opposite a log house. The point was not marked.

*Statenville, Echols County.*—The station is in the northwest corner of the public school grounds. It is 67.7 feet from the fence on the west, 44.7 feet from the fence on the north, 44.1 feet from a tree northwest of it, and 68.9 feet from one on the southeast. The exact spot is marked by a limestone rock about 5 inches square at the top, which has a bronze disk set in it and sets flush with the surface of the ground. The following true bearings were determined:

East gable of barn 300 yards away (mark).....	5	59.3	east of south
South side of east window of bank building.....	89	40.6	west of south
Northeast edge of Manion's Hotel.....	66	42.5	west of north
Northwest corner of railroad station.....	30	50.7	east of north
Northeast corner of schoolhouse.....	53	43.0	east of south

GEORGIA—continued.

The south end of a meridian line about 800 feet long is marked by a similar stone, with a cross cut in the top but without the marker, which is set immediately south of the south fence of the large field adjoining the school property.

*Stevens Pottery, Baldwin County.*—Observations were made at a point about 350 feet west of the railroad in the center of a triangular plot of ground formed by three roads at the north end of the pottery works. It is about 15 feet above the level of the railroad. The spot was not marked.

*Waycross, Ware County.*—The station of 1908 was reoccupied. It is about 1½ miles northeast of the center of the town, in the northeastern corner of the grounds of the new Baptist College. The station is about 11 feet northwest of a line between the northeast corner of the college building and a large pine tree at the northeast corner of the grounds. It is 87.7 feet southwest from the center of this pine tree and 190.6 feet northeast of the northeast corner of the college building. It is marked by a marble slab, 2 by 6 by 28 inches, projecting about 2 inches above the ground and lettered "U. S." on the top and "1908" on one side. The following true bearings were determined:

	o /	
Courthouse spire (mark).....	72	22.3 west of south
Presbyterian Church.....	47	41.2 west of south
Methodist Church.....	50	34.9 west of south
First African Methodist Episcopal Church.....	12	16.9 west of south
West lightning rod on residence ¼ of a mile distant.....	53	07.3 west of south

*Winder, Barrow County.*—The station is located in the north end of the baseball park about one-third mile north of the center of the town. It is just inside the ridge at the north end of the field, 176.5 feet southwest of the corner fence post. It is about 12 or 15 feet outside the foul line to third base. The station is marked by a bronze disk in the top of a limestone post 6 by 10 by 22 inches which projects about 2 inches above ground. The following true bearings were determined:

	o /	
Methodist Church spire (mark).....	0	38.0 west of south
Extreme north gable of residence ¼ mile distant.....	52	10.5 east of north
North gable of residence 200 yards distant.....	34	10.5 east of south
West side of water tank.....	21	01.5 east of south
East gable of residence 200 yards distant.....	6	51.2 west of south

The south end of a meridian line 332.6 feet long is marked by a marble slab 2 by 12 by 20 inches set at the south fence, with a small hole drilled in the top to mark the exact line.

ILLINOIS.

*Durand, Winnebago County.*—The station is in the south edge of the village about 300 feet south of the Chicago, Milwaukee & St. Paul tracks, about 330 feet west of the southwest corner of the Bella Opera House, and on the lawn belonging to the premises of C. G. Hodges. It is near the southeast corner of Mr. Hodges's lot, about 40 feet from the center of the road and at the end of a row of trees running parallel to the road and another row running north along the east side of the lot. The station is unmarked.

*Edwardsville, Madison County.*—The station is in the north part of the Catholic cemetery, about half a mile north of the courthouse. It is in the path leading east from the central path, about 22 feet from the central path. It is 18 feet from the southwest corner of the foundation of the monument to Mary Drda, 32.1 feet from the northwest corner of the Epping Monument, and 5.6 feet from the corner stone marked "J. M." The station is marked by a bronze disk in the top of a limestone post, 6 by 7 by 30 inches, set flush with the ground. The following true bearings were determined:

	o /	
Center of ball on roof of standpipe (mark).....	0	42.1 west of south
Spire of German Methodist Church.....	47	21.8 west of south
Spire of Lutheran Church.....	58	49.6 west of south

Observations were made also at a point about 2 miles south of town and a little more than one-fourth mile east of the trolley line running south along Troy Road. The station was about 3 feet from the fence on the north side of the road running east from the turn in the Troy Road where the electric road turns to the west. The point occupied is about 650 feet east of the edge of the cement road and about 220 feet west of the gate leading from the road into the property of Mrs. F. Giese. The station was not marked.

*Galesburg, Knox County.*—The station is about 2 miles west of the center of the town in the southwest part of the Linwood Cemetery, about 250 feet from the south fence. It is a little east of the circle at the end of the west drive and in the edge of the drive running south past the water tank. The station is marked by a bronze disk in the top of a limestone post, 8 by 8 by 26 inches, set flush with the surface of the ground. It is 29.9 feet from the northwest corner

## ILLINOIS—continued.

of the Harriet E. Dial Monument, 38.8 feet from the northeast corner of the Fred C. Butler Monument and 64.1 feet from the east corner of the Lane Monument. The following true bearings were determined:

Ball on cupola of barn of Eric Pierson (mark).....	14 55.9 east of south
Top of Wilkinson Monument.....	0 43.9 west of north
Spire of Central Congregational Church.....	82 36.8 east of north
Spire of Catholic Church.....	89 04.3 east of north
Point on cupola of red barn $\frac{1}{4}$ mile northwest.....	68 13.0 west of north

*Golconda, Pope County.*—The station is on the county fair grounds about a mile west of the river, about a half mile west and a little north of the railroad station. It is inside the race course near the west end of the oval, about 125 feet from the inside of the track to the west, and northwest of two persimmon trees, 86.8 feet from the tree to the west and 91.7 feet from the one to the east. The station is marked by a bronze disk in the top of a cement post 8 by 8 by 30 inches set flush with the surface of the ground. The following true bearings were determined:

Rod on top of silo of E. B. Clark (mark).....	11 12.6 west of south
Pinnacle on cupola of residence on Raulfusch Hill.....	66 47.6 east of north
Point on roof of judge's stand.....	75 23.9 east of south
Gable of porch of residence of E. B. Clark.....	17 43.1 west of south

*Lacon, Marshall County.*—The station is about one-fourth mile west of the courthouse in a pasture lot belonging to J. I. Thompson, which lies just east of Mr. Thompson's residence. It is in the southeast corner of the lot, 30.5 feet from the south fence and 96.7 feet from the east fence. The station is marked by a bronze disk in the top of a limestone post 8 by 8 by 30 inches set flush with the surface of the ground. The following true bearings were determined:

Point of roof on barn of J. I. Thompson (mark).....	73 39.1 west of north
North side of pipe (near foundation) leading up to the city standpipe.....	51 42.4 west of north
West side of base of chimney of house $\frac{1}{4}$ mile north.....	0 38.6 east of north
Gable of house to south.....	15 23.2 west of south

*Mendota, La Salle County.*—The station is about  $1\frac{1}{4}$  miles north of the town in the city cemetery, about 220 feet east from the soldiers' monument. It is in the edge of the east drive 42.8 feet from the east cemetery fence, 24.5 feet south of the fence bounding the part of the cemetery now in use, and 165.5 feet from the northeast corner of the foundation of the Bradshaw Monument. The station is marked by a bronze disk in the top of a cement post 8 by 8 by 30 inches, projecting 2 inches above the ground. The following true bearings were determined:

Point of tower on railroad station (mark).....	17 22.3 east of south
Point of gun barrel on soldiers' monument.....	77 40.5 west of south
Pinnacle on town standpipe.....	19 33.8 east of south
Windmill 1 mile north.....	1 12.8 west of north

*Rockton, Winnebago County.*—The station is about one-half mile west of the central part of the village in a pasture belonging to George Wilford, which lies north of the main road and west of a crossroad running past the cemetery. The station is 39 feet from the east fence of the pasture and 53.6 feet from the south fence and is unmarked.

*Salem, Marion County.*—The station is about one-half mile northeast of the courthouse, in the grounds of the city baseball park, just north of the cemetery. It is about 250 feet north of the cemetery fence, about 300 feet back from the road, and 12 feet from the outside of the race track. A large oak tree, 30 inches in diameter, stands 51.5 feet north of the station, another large oak stands across the race track 68.2 feet east, and a large twin oak stands 88.2 feet east of south. The station is marked by a bronze disk in the top of a cement block, 8 by 8 by 30 inches, projecting 5 inches above the ground. The following true bearings were determined:

Central point of Methodist Episcopal Church tower (mark).....	53 40.6 west of south
Point of Cutler Monument.....	14 23.6 west of south
Point of roof on east gable of house 400 feet distant.....	46 34.2 west of north

*Springfield, Sangamon County.*—The station of 1911 was reoccupied. It is about 400 feet south-southeast of the center of Lincoln Monument, about  $1\frac{1}{4}$  miles from the town's center. It is 90 feet north from an elm tree 1 foot in diameter, at the edge of the lawn on which the station is located. It is 205 feet southeast from a forked elm 2 feet in diameter. It is 90 feet southwest from the most southeastern of three small white birch trees 3 inches in diameter, and 116 feet south of the most northwestern one of these birch trees. It is marked by a Bedford limestone post 6 by

ILLINOIS—continued.

6 by 24 inches, set flush with the surface of the ground and lettered U. S. C. & G. S., 1907. The following true bearings were determined in 1911:

Westernmost edge of masonry base of Lincoln Monument, at level of platform (mark).....	24 19.5 west of north
Tip of east ear of horse on cavalry group of monument.....	16 01.2 west of north
Tip of spear on infantry group.....	20 02.8 west of north

INDIANA.

*Alton, Crawford County.*—Observations were made about 200 yards south of the school house, which lies near the north edge of the town. The station is not marked.

*Corydon, Harrison County.*—The station of 1909 was reoccupied. It is in the northwestern corner of the county fair grounds, about one-quarter mile south of the town's center. It is inclosed in a space bounded by the road around the race track, the fence on the southwest border of the fair grounds, a row of posts separating the space from the exhibition buildings, and a wire fence along a stream on the north border of the fair grounds. It is 54.5 feet northwest from the row of posts named above, 105 feet west from the fence around the outside of the race track, and 68.6 feet a little west of north from the northeast corner of the poultry house. The station is marked by a limestone post 5 by 7 by 30 inches, projecting about 4 inches above the ground, and lettered U. S. C. & G. S., 1909. The following true bearings were determined:

West gable of house containing Fair Association office.....	83 50.8 east of north
West gable of grain elevator.....	40 51.3 east of north
West gable of residence on pike 500 feet distant.....	76 36.7 east of south
East gable of residence $\frac{1}{2}$ mile distant.....	3 01.0 east of north

Four auxiliary stations were also occupied. Station No. 1 was 3 miles due south of the town on the pike running in that direction, and within a few hundred feet of a public school. No. 2 was on a public road running due east of the town and about 3 miles from the town's center. No. 3 was 3 miles west of the center of the town on the public road leaving the town in this direction. No. 4 was on the road between Corydon and Corydon Junction at a point about 1 mile south of Hurstown Church.

*Jeffersonville, Clark County.*—The station is about 1 mile northeast of the center of the town in Eastern Cemetery, on a line marking the eastern boundary of the old section. It is exactly in line with the west pavement of Seventh Avenue. It is 230 feet south of the fence separating the Catholic and Eastern Cemeteries and exactly in line with a row of trees lining the 10-foot path which runs parallel to the fence just mentioned. The nearest tree northeast of it is 28.3 feet distant and the nearest one southwest is 35.2 feet. It is 40.1 feet from the east corner of the monument marked "Dailey," and 21.2 feet from the near edge of the carriage road running west of it. The exact spot is marked by a limestone post 8 by 8 by 30 inches set with a bronze disk and setting flush with the surface of the ground. The following true bearings were determined:

East corner of chimney on house 300 yards distant (mark).....	2 07.7 east of south
Tower on Blind Asylum.....	84 36.4 east of south
North side of water tank.....	87 28.7 east of south
Methodist Church spire.....	36 34.9 west of south
Courthouse spire.....	88 59.8 west of south

*Mount Vernon, Posey County.*—The station is about one-half mile northeast from the courthouse, near the northeast corner of the grounds of the Central School. It is 56.1 feet from the east fence, 98.9 feet from the north fence, and 223.1 feet from the northeast corner of the school building. The station is marked by a bronze disk in the top of a limestone post 8 by 8 by 22 inches, projecting 2 inches above the surface of the ground. The following true bearings were determined:

Flagpole on cupola of courthouse (mark).....	25 49.0 west of south
Gable of white house.....	4 21.3 east of south
Southeast corner of school building.....	31 56.5 west of south

*New Albany, Floyd County.*—Observations were made over the north stone of a meridian line established on the county poor farm which lies about 2 miles north of the center of the town. The stones are 8 by 8 by 48 inchse and project about 15 inches above ground. They are set in concrete. Small copper tacks set in the tops mark the exact centers. The south end of line, which is 600 feet long, is marked by a similar post. These stones are set about 200 yards back from the pike. The following true bearings were determined:

Trinity Methodist Church spire (mark).....	1 54.3 east of south
Baptist Church cupola.....	9 17.9 east of south
East gable of house on hill 250 yards distant.....	51 02.0 west of south
West gable of house 250 yards distant.....	28 54.1 east of north

INDIANA—continued.

*New Salisbury, Harrison County.*—Observations were made in a large cornfield on the south side of the town, on the west side of the Corydon Pike and about 250 yards south of the depot. The station is not marked.

*Princeton, Gibson County.*—The station is about one-half mile southeast of the courthouse, in the South Side Park, about 150 feet from the edge of the street which runs past the west side of the park, and about 60 feet south of the continuation of the south property line of Indiana Street. A blue-gum tree stands 43.3 feet northeast of the station and a hackberry tree stands 49.6 northwest. Both trees are about 20 inches in diameter. The station is marked by a bronze disk in the top of a limestone post, 6 by 7 by 29 inches, projecting 5 inches above the ground. The following true bearings were determined:

Gable of east shop of Southern car shops (mark).....	1	23.7	east of south
South edge of brick silo.....	40	24.4	east of south
East edge of top of stack on Southern car shops.....	13	42.7	west of south
West edge of stack on school building.....	13	21.9	west of north

*Vincennes, Knox County.*—The station of 1907 was reoccupied. It is in the Catholic Cemetery, which is about three-fourths mile southwest of the courthouse. It is about 20 feet west of the main central driveway, 38.4 feet from the northeast corner of the foundation of the Berry Monument and 38.8 feet from the northwest corner of the foundation of the Caney Monument. It is marked by a Bedford stone post 6 by 6 by 36, set with the top about 6 inches below the surface, and lettered U. S. C. & G. S., 1905. The following true bearings were determined in 1905 and 1915:

Tall steeple on Catholic Church (mark).....	64	50.0	east of north
East gable on strawboard plant.....	12	30.5	west of north
Tip of Folk Monument in city cemetery.....	18	42.8	east of south
Northeast corner of base of Brukhage Monument.....	1	37.8	west of south

IOWA.

*Blanchard, Page County.*—The station is near the west edge of the school grounds near the town's center. It is 94 feet north of the cement walk south of the school, 40.5 feet west of the cement walk to the east, 36 feet south of a pine tree, 16 feet southeast of an ash tree. The station is not marked.

*Sioux City, Woodbury County.*—The station of 1905 was reoccupied. It is across the river (in South Dakota) from Riverside, about 6 miles west of Sioux City. It is near the west end of the United States Government reservation about one-eighth mile west of the house and shop, 42 feet north of the south edge of the reservation, 90 feet from the southwest corner (iron post) of the reservation, 10 feet from the river bank, and 112 feet west of the fourth mooring (from the house). The station is marked by a limestone post 6 by 6 by 30 inches projecting 4 inches above the ground and lettered U. S. C. & G. S. 1905. The following true bearings were determined in 1905 and 1915:

Southwest (or right) gable of United States machine shop (mark).....	54	34.7	east of south
North gable of red barn.....	35	30.4	east of south
Center of first steel mooring northwest of Government house.....	67	40.4	east of south
Center of second steel mooring northwest of Government house.....	74	57.0	east of south
Center of brick smokestack across river.....	87	20.1	east of north

KANSAS.

*Atwood, Rawlins County.*—The station is on the north side of the high-school grounds about one-fourth mile east of the center of the town. It is 77.2 feet north of the northwest corner of the high-school building, 82.3 feet northwest of the northeast corner of the same building, and 3 feet east of the west side of the high-school building produced. It is marked by a cement post 12 by 12 by 20 inches, having a bronze disk in the top and projecting 2 inches above ground. The following true bearings were determined:

Apex of courthouse cupola (mark).....	87	00.2	west of north
Methodist Episcopal Church spire.....	61	51.7	west of north
Chimney on large square house north of town.....	25	54.7	west of north

*Concordia, Cloud County.*—The station of 1904 was reoccupied. It is near the center of the city park one-quarter mile southwest of the center of the town. It is in line with the middle of the street which passes west of the high school, and 2.7 feet west of a line joining two elm trees, one 58.9 feet to the south and the other 153.9 feet to the north at the bottom of the hill. It is 160 paces west of the edge of the street east of the park and 127 paces south of the street north of the park. It is marked by a sandstone post 8 by 8 by 19 inches lettered U. S. C. & G. S., 1904, and setting flush with the ground. The following true bearings were determined:

Spire on courthouse dome (mark).....	30	09.5	east of north
Center of bell pulley on cupola of high school.....	3	57.3	east of north
Apex of new water tower.....	29	26.7	west of north
Left edge of water tower.....	30	08.0	west of north
Cross on main cupola of convent.....	41	53.7	east of south

KANSAS—continued.

*Lawrence, Douglas County.*—A new station was established near the site of the station of 1877. It is near the south central part of the grounds of the old university building, now used as an art institute. It is 151.7 feet southwest of the southwest corner of the building, 53.4 feet west of the walk leading to the building, 27.6 feet west of the west side of the building produced southward, and 131.3 feet north of the row of trees on the south side of the grounds. It is marked by a Bedford limestone post 6 by 6 by 12 inches lettered U. S. and set flush with the ground. The following true bearings were determined:

Methodist Episcopal Church spire (mark).....	68	14.4	east of north
Trinity Church spire.....	70	48.4	east of north
Spire at apex of courthouse dome.....	81	19.8	east of south
Spire on cupola of ex Gov. Hodges's residence .....	83	14.5	west of north
Northwest corner of foundation of old university building.....	8	02.0	east of north

*Oakley, Logan County.*—The station is on the county fair grounds about one-quarter mile northwest of the center of the town. It is near the southeast corner of the race track, 111.3 feet west of the board fence on the east side of the grounds, 186.7 feet northeast of the northeast corner of the exhibition hall, 32.6 feet southeast of the fence around the race track, 15 feet south of the north side of the grand stand produced eastward. The station is marked by a cement post 12 by 12 by 24 inches, having a bronze disk in the top and setting flush with the ground. The following true bearings were determined:

Cupola on distant barn (mark).....	2	18.4	east of south
Flagpole on exhibition hall.....	72	06.6	west of south
Flagpole at apex of high-school cupola.....	84	18.3	east of north
Apex of elevated steel water tank.....	78	00.4	east of south
Chimney on Mr. Irwin's house.....	32	01.8	east of south

*Russell Springs, Logan County.*—The station is near the southeast corner of the high-school grounds about a quarter mile west of the center of the town. It is 31.7 feet north of the row of trees on the south side of the grounds, 35.7 feet west of the row of trees on the east side of the grounds, 140.2 feet southeast of the southeast corner of the school building, 92.8 feet south of the south side of the school building produced eastward. The station is marked by a limestone post 6 by 6 by 24 inches with a cross cut in the top and setting flush with the surface of the ground. The following true bearings were determined:

Methodist Episcopal Church spire (mark).....	85	14.1	east of north
Left edge of courthouse.....	44	36.2	east of south
Apex of courthouse cupola.....	40	01.1	east of south
Southwest corner of high school.....	55	00.2	west of north
Northeast corner of high school.....	33	13.2	west of north

*St. Francis, Cheyenne County.*—The station is in the courthouse yard near the east edge. It is in line with the south side of the courthouse and 112 feet east of its southeast corner, 14.4 feet west of the row of trees to the east, 62.1 feet northeast of the northeast corner of the jail, and 73.1 feet northeast of the northwest corner of the jail. It is marked by a cement post 12 by 12 by 30 inches, having a bronze disk in the top and projecting 3 inches above ground. The following true bearings were determined:

West gable of Mr. Bear's residence (mark).....	21	32.2	east of south
Southeast corner of jail.....	6	54.1	west of south
Southeast corner of courthouse under eaves.....	89	55.0	west of north
Northeast corner of courthouse under eaves.....	70	05.7	west of north
Apex of windmill north of town.....	24	09.6	east of north

*Scott City, Scott County.*—A new station was established about 8 feet west of the station of 1904. It is on the high-school grounds just northeast of the town's center. It is 76.8 feet southeast of the southeast corner of the high school, 103 feet southeast of the northeast corner, 26.5 feet south of the south side of the high school produced, 58.1 feet north of the hydrant near the southeast corner of the grounds. The station is marked by a limestone post 6 by 6 by 30 inches lettered U. S. C. & G. S., 1904 and projecting 6 inches above ground. The following true bearings were determined:

Spire on cupola of grade school (mark).....	1	55.5	west of south
Apex of elevated steel tank.....	33	58.2	west of south
Southwest corner of high school.....	76	24.5	west of north
Northeast corner of high school.....	44	13.4	west of north

KENTUCKY.

*Argillite, Greenup County.*—Observations were made on the west side of the road running north of the railroad station at a point about one-quarter mile from it. The station is not marked.

*Ashland, Boyd County.*—Observations were made in the field at the south end of Sixteenth Street. This street is nearly in the center of the town. The post office on Sixteenth Street is about one-quarter mile due north of the magnetic station. The station is not marked.

*Brumfield, Boyle County.*—Observations were made in the pasture on the north side of the Louisville & Nashville Railroad tracks at a point about 300 feet due north of the depot. The station is not marked.

*Burnside, Pulaski County.*—Observations were made at about the center of the open space in front of the entrance to the town cemetery which is at the south edge of the town and about one-third mile south of the depot. The station is not marked.

*Calvert City, Marshall County.*—The station is on the public-school grounds, about 750 feet north of the railroad track, and a few hundred feet west from the railroad station. It is 86.8 feet south of the southwest corner of the schoolhouse, 42.5 feet east of the west boundary fence, and 12 feet west of the line of the west side of the schoolhouse. The station was not marked.

*Chenault, Breckenridge County.*—Observations were made near the landing about 200 feet back from the shore on high ground. The station is not marked.

*Coalton, Boyd County.*—Observations were made in the pasture in the rear, or east, of the railroad station, at a point 350 feet from it. The station is not marked.

*Concord, Lewis County.*—Observations were made in the middle of the field lying on the east side of the Christian Church, which is on the east edge of the town. The station is not marked.

*Dover, Mason County.*—Observations were made in the large pasture midway between the center of the town and the Chesapeake & Ohio Railroad depot, which is about one-third mile west of the town. The station was about 500 feet south of the pike. It is not marked.

*Ekron, Meade County.*—Observations were made in an open field about 250 yards northeast of the railroad depot. The station is not marked.

*Garrison, Lewis County.*—Observations were made near the center of the large field on the north side of the public school which lies on the south edge of the town. The station was not marked.

*Herdon, Christian County.*—The station is on private property belonging to M. S. Major. It is about one-third mile east of the railroad station, about 200 feet north of the track, and on the hill near Mr. Major's residence 52.8 feet a little south of west from the southwest corner post of the fence surrounding his house. A persimmon tree 8 inches in diameter stands N. 40° W. 136.1' distant. The station was marked only by a wooden peg.

*Junction City, Boyle County.*—Observations were made in the middle of Evan's pasture, which lies about 250 yards southeast of the railroad junction or Junction City depot. The spot is not marked.

*Lancaster, Garrard County.*—Four auxiliary stations were occupied about Lancaster. No. 1 was about 3½ miles notheast of the town on the McCreary pike. No. 2 was 4½ miles southeast of the town on the Hyattsville pike. No. 3 was within a few hundred feet of the 3-mile post marking this distance on the road running from Lancaster to Danville. No. 4 was 3½ miles south of the town on the Stanford pike at a point a little south of the branch road to Gilbert station.

*Lebanon, Marion County.*—The old station of 1881 being unsuitable for magnetic work, a new station was established about two-thirds mile southeast of the old one in the middle of the 100-foot roadway leading to the McChord estate, on the southeast edge of the town. It is in that section of the roadway running about 30° east of south and leading northwest from the lawn about the McChord residence. The middle of it is marked by a row of 15 large trees. The station is between the fourth and fifth trees counting from the north end of the row, or between the eleventh and twelfth trees counting from the south end, which is the entrance to the lawn. It is 17.1 feet from the tree on the south, 20.4 feet from the tree on the north, 51.3 feet from the fence on the east, and 52.3 feet from the fence on the west. The exact spot is marked by a limestone post 8 by 8 by 28 inches, set with a bronze disk and projecting 3 inches above ground. The following true bearings were determined:

Cupola on old courthouse (mark).....	28 14.6 west of north
West gable of residence 250 yards distant.....	43 54.9 east of north
North corner of McChord's residence.....	48 40.0 east of north
Upper south gable of residence 250 yards distant.....	39 41.0 west of south
East gable of residence on pike 200 yards distant.....	58 49.7 west of south

*Lebanon Junction, Bullitt County.*—Observations were made in the meadow southeast of the new Baptist Church and about 250 yards from it. The depot is about 350 yards distant. The station is in the northwest edge of the town and is not marked.

*Limeville, Greenup County.*—Observations were made about 75 feet from a large oak tree in the small meadow about 150 yards west of the depot and the same distance north of the post office. The station is not marked.

*Louisville, Jefferson County.*—As the station of 1904 could not be recovered, a new station was established about 800 feet northeast of the old location. It is in Cherokee Park about 625 feet southwest of the first pavilion. It is 119 feet from the nearest point of the soft-drink stand and 21 feet north of the north side of the footpath passing on the north side of the stand, which lies to the southwest of the station. It is between the footpath just mentioned and the

KENTUCKY—continued.

main driveway, the south side of which is 33 feet distant. It is 68 feet from a tree between it and the soft-drink stand, 53 feet from a laurel on the north side of the driveway, and 43 feet from a maple southeast on the south side of the footpath. The exact spot is marked by a limestone post 8 by 8 by 30 inches, set with a bronze disk and projecting 2 inches above the surface of the ground. The following true bearings were determined:

Middle of smokestack at filtration plant (mark).....	46	13.5	east of north
West foundation corner of first pavilion.....	84	49.8	east of south
South side of attic window of residence $\frac{1}{4}$ mile distant.....	44	06.0	east of south
East gable of church $\frac{1}{4}$ mile distant.....	5	53.2	west of north
Apex of water tank on pumping station.....	45	29.2	east of north

*Marshall, Mason County.*—Observations were made in the meadow west of the railroad station at a point about 500 feet from it. The station is not marked.

*Maysville, Mason County.*—The station of 1912 was reoccupied. It is located in the cemetery of the county infirmary, about 2 miles southeast of the center of the town and one-half mile northeast of the Maysville cemetery. It is 143 feet southeast of the west hedge fence inclosing the cemetery and 69 feet north of the south fence. An apple tree is 21 feet northeast of the station. The station is marked by a limestone post 6 by 6 by 30 inches projecting 3 inches above ground and having a bronze disk in the top. The following true bearings were determined:

Chimney on cemetery greenhouse (mark).....	55	54.4	west of south
Center of chimney of pressed brick factory.....	57	14.0	east of south
East gable of residence $\frac{1}{4}$ mile distant.....	62	08.4	west of south
Base of trolley pole at infirmary road crossing.....	18	31.5	east of south
Southwest corner of infirmary barn.....	61	24.9	east of south

Four auxiliary stations were also occupied. No. 1 was 5 miles northwest of Maysville, in the village of Moranburg; No. 2 was 5 miles southwest, in the village of Washington; No. 3 was on the road running north from Aberdeen, Ind., at a point about 3 miles north of this place; No. 4 was on the pike running up the river from Maysville, at a point about 2 miles east by south from the magnetic station on the poor farm.

*Parkers Lake, McCreary County.*—Observations were made near the north edge of the town graveyard, which is about 250 yards due west of the railroad station and center of the town. The station is not marked.

*Peckenpaugh, Meade County.*—Observations were made in the large pasture about 200 yards back from the steamer landing and 100 feet west of the road leading to the town. The station is not marked.

*Pine Knot, McCreary County.*—Observations were made in a pasture on the north side of the road leading east from the center of the town. It is about one-half mile east of the Queen & Crescent Railroad tracks. The station is not marked.

*Princeton, Caldwell County.*—The station of 1910 was reoccupied. It is on the campus of the Princeton College (now disbanded), corner of Fredonia Road and Plumb Street, 103.9 feet from the fence to the south, and about 90 feet from the edge of the road to the east. The station is marked by a stone post 6 inches square, set flush with the surface of the ground. The following true bearings were determined in 1910 and 1915:

Gable of residence of Mr. Lamb (mark).....	0	11.6	west of south
North side of brick church tower (below ornamentation).....	65	17.9	east of south
Southwest corner of foundation of college building.....	35	02.0	east of north

A stone post 359.75 feet north of the station, about a foot from the edge of the sidewalk, marks the north end of a meridian line.

*Ruggles, Lewis County.*—Observations were made at a point about 350 feet due west of the railroad station. The station was not marked.

*Shepherdsville, Bullitt County.*—The station is near the northeast fence of the county fairgrounds at a point about 400 feet east of the grandstand. It is outside the race track, 69.4 feet from a wire fence southeast of it, 81 feet from the wire fence marking the northeast boundary of the grounds, 50 feet from a prominent cedar northwest of it, 38 feet from another cedar west of it, and about 118 feet from the outside fence of the race track. The exact spot is marked by a limestone post 8 by 8 by 30 inches, set with a bronze disk and projecting about 2 inches above ground. The following true bearings were determined:

East edge of post on northeast corner of check room (mark).....	16	29.9	west of south
East gable of Exhibition Hall.....	31	07.6	west of south
West corner of post supporting roof of grandstand at fifth aisle counting from the east.....	63	27.2	west of south
North corner of residence $\frac{1}{4}$ mile distant.....	8	05.0	west of south
Northwest corner of house 200 yards distant.....	53	18.9	east of south

## KENTUCKY—continued.

*Smithland, Livingston County.*—The station is about one-fourth mile east of the business section, on a hill, on private property belonging to George Rogers. It is in the orchard back of his residence, just south of the old earthworks marking the site of Fort Smith, and 41.5 feet a little east of south of the fence corner directly south of Fort Smith. An apple tree stands to the south 71.8 feet distant, and another apple tree stands a little south of west 54.5 feet distant. The exact spot is marked by a bronze disk in the top of a cement post 8 by 8 inches buried about 3 inches below the surface of the ground. The following true bearings were determined:

Steeple of Methodist Church (mark).....	69 48.1 west of north
Point on southeast corner of tower of Baptist Church.....	88 06.9 west of north
Tower on courthouse.....	81 09.2 west of south
Southeast corner post on cupola of residence of Geo. Rogers (outside at base) . .	9 47.9 west of south

*Stanford, Lincoln County.*—The old station of 1881 being unsuitable for future magnetic work, a new station was established in the town cemetery, on the summit of a high hill, about two-thirds mile due west of the courthouse. It is on the north side of what is commonly known as the old churchyard section at a point about 75 feet from the north fence. The stone, 6 by 6 by 30 inches, set with bronze disk, is between the second and third road counting from the north fence, and about 20 feet from the tip of the fork branching in an easterly direction. The post projects about 4 inches above ground. The keeper's house is about 650 feet distant. The following true bearings were determined:

Courthouse dome (mark).....	89 53.6 east of south
North gable of cemetery keeper's house.....	67 33.3 west of south
Christian Church spire.....	84 18.1 east of north
West gable of Rice's residence on distant ridge.....	40 31.0 east of north
East gable of grain elevator.....	65 59.3 east of north

Four auxiliary stations were also occupied. No. 1 was 3 miles southeast of town on the pike passing through Rowland. It was about one-third mile east of this pike on a branch road leaving it near the summit of a ridge. No. 2 was about 3 miles south of the town on the Somerset road. It was about 200 yards southwest of the fork near the Louisville & Nashville Railroad crossing. No. 3 was nearly 3 miles southwest of the town on the Hustonville pike near the southwest end of a long ridge. No. 4 was about 3½ miles northwest on the Danville pike. It was on the northwest side of a stream at a point about 200 yards north of the bridge.

*Stephensport, Breckenridge County.*—Observations were made near the river bank about 250 yards west of the steamer landing. The station was not marked.

*West Point, Hardin County.*—Observations were made near the center of the large meadow about 200 yards northwest of the Louisville, Henderson & St. Louis Railroad depot, on the west side of the road running to the town. This point is about one-eighth mile south of the center of the town. The station is not marked.

## MASSACHUSETTS.

*East Brookfield, Worcester County.*—The station is about a mile north of the village on private property owned by A. Majores. It is about 500 feet south of the road which passes the Majores's residence, and about 8 feet from the high-water line of the lake, 173.8 feet east of the nearer one of two large pine trees. It is approximately in line with the gate leading into the field in front of Mr. Majores's house and the tower on the Quaboag Manufacturing Co.'s plant. The station is marked by a bronze disk set in a cement post 7 by 7 by 30 inches, projecting 4 inches above the ground. The following true bearings were determined:

Weather vane on tower of Quaboag Manufacturing Co.'s plant (mark).....	2 22.7 east of south
High tension line tower on hill to east.....	79 41.8 east of north
Cupola on large residence at east end of village.....	12 37.4 east of south
Pinnacle on tower of residence on lot west of Majores's place.....	33 45.0 west of north
Southwest corner of residence of A. Majores.....	5 45.7 west of north

*Hinsdale, Berkshire County.*—The station is a little more than one-half mile east of the town in the grounds of the city cemetery. It is about 300 feet from the main entrance on a little point of lawn between the forks of the driveway. It is 3.3 feet from the edge of the drive to the southwest, 3 feet from the edge of the driveway to the east, 54.4 feet from the east boundary fence of cemetery, and 87 feet from the trunk of a larch tree having a diameter of 20 inches, a little west of north. The station is marked by a white marble post 8 by 8 by 30 inches, set flush with the surface, lettered U. S. C. & G. S., 1915, and center marked by a small cross. The following true bearings were determined:

Tip of Joseph White monument (mark).....	18 13.4 west of north
Southwest corner of Edward M. Spring monument.....	7 15.7 west of north
Southeast corner of large white house.....	68 31.1 west of north
Front edge of arch of main gateway, east side (southwest corner of foundation to main arch).....	19 25.1 east of south

MASSACHUSETTS—continued.

*Palmer, Hampden County.*—The station of 1913 was reoccupied. It is on the grounds of the State Hospital for Epileptics, about 1 mile south of town. It is 108 feet southwest of the southwest corner of G cottage and 112 feet from the hydrant in the rear of the cottage. It is in the southwest corner of the lot reserved for the cottage, being 5 feet north of ditch on edge of plowed ground, and 9 feet east of same. The station is marked by a piece of 6-inch tile, projecting about 1 inch above the ground, and having a bronze disk cemented in the top. The following true bearings were determined:

	o /	
Flagpole near Children's Colony House (mark).....	77	42.1 west of south
Cupola on house of hospital farm.....	37	20.1 west of north
Peak of roof of white house on distant hill, just to left of main flagpole.....	19	55.5 east of north
Flagpole on hill above G cottage.....	63	43.5 east of north
Peak of roof of red barn with yellow house.....	31	52.6 west of south

Observations were made at five auxiliary stations near Palmer.

*Auxiliary station No. 1.*—Monson lies about 5 miles a little east of south of Palmer. Observations were made at a point about one-third mile east of Monson in a pasture lot belonging to O. C. McCraig, about 20 feet south of the road fence and 15 feet east of a short cross wall. The spot is perhaps 100 yards west of the residence of W. B. Grout.

*Auxiliary station No. 2.*—Observations were made at a point about one-half mile northwest of Three Rivers, which lies about 2½ miles northwest of the center of the town of Palmer. The station is probably about 4 miles northwest of the principal station. Observations were made on the grounds near the house of James F. Hortnett, about 55 feet south of the southeast corner of Hortnett's residence, and 33 feet southwest of an apple tree.

*Auxiliary station No. 3.*—Observations were taken at a point about 3 miles a little south of west from Palmer, probably very nearly due west from the principal station. It is on land belonging to Mrs. Ferry, in a lane 200 feet north of her residence. The station is about in the middle of the lane and about 90 feet from the road fence.

*Auxiliary station No. 4.*—Observations were made at a point about 1 mile north of Thorndike. This would be about 4½ miles north and 2 miles east from the principal station. It is about 100 yards north of the residence of Fred Simonds and on his ground. It is west of the road and 35 feet due west of a large maple, and about 32 feet north of the fence separating the field from Mr. Simond's yard.

*Auxiliary station No. 5.*—Observations were made near West Brimfield Railroad Station, about 195 feet west of the tracks, 100 feet from the northwest corner of a house near the tracks, and 22 feet from a small elm tree which stands to the north at the side of the road. The station is probably about 5 miles a little north of east from the principal station.

*Springfield, Hampden County.*—The station is about 2 miles south of Court Square in Forest Park. It is southeast of the rose gardens and a little west of south of the summer house overlooking the valley. It is on a ridge running out into the valley. It is 24 feet south of a large chestnut tree 40 inches in diameter; another chestnut 30 inches in diameter stands at a distance of 28 feet, and an elm tree 15 inches in diameter stands at a distance of 130 feet to the west beside the drive and near the fence. The station is marked by a bronze disk set in the top of a limestone post 8 by 8 by 30 inches, projecting 5 inches above the ground. The following true bearings were determined:

	o /	
Vane on park barn (mark).....	51	55.0 east of north
Vane on summer house.....	35	29.3 east of north
West gable of white house ¼ mile distant.....	74	10.0 east of south
Windmill on horizon.....	61	32.8 east of south

*Sterling, Worcester County.*—The station is about one-half a mile east of the village in a pasture lot belonging to C. F. Kendall. It is about 230 feet west of the road fence, 130 feet from the stone marking the southeastern corner of the Robinson lot, 25 feet south of the wall separating the two lots, and 271.2 feet from a maple tree 14 inches in diameter which is the westernmost of a row of maples along the south line of the property. The station is marked by a bronze disk set in the top of a marble post 6 by 6 by 30 inches, projecting 5 inches above the ground. The following true bearings were determined:

	o /	
Spire of Unitarian Church (mark).....	40	48.5 west of north
Spire of Baptist Church.....	34	06.8 west of north
Top of cupola on Hotel Mount Wachusett.....	59	55.0 west of north
Weather vane on barn one-fourth mile distant.....	62	30.3 west of south

*Westfield, Hampden County.*—The station is about 1½ miles east of the center of the town on the grounds of the Westfield State Sanitarium. It is 231.8 feet from the southwest corner of the main office building and 148.9 feet from the southwest corner post of the sleeping porch of the west wing of the sanitarium, distance measured along the slope of the ground. The station is marked by a bronze disk set in the top of an octagonal marble post 8 inches in diameter, 36 inches long, projecting 14 inches above the surface. The following true bearings were determined:

	o /	
Point of index on sun dial (mark).....	33	42.2 east of south
Southwest corner of wall of school building.....	40	24.9 east of south
West gable of brown residence on opposite hill.....	7	19.0 west of south
South edge of top of stack on plant of Pape Manufacturing Co.....	84	15.5 west of south
Spire on Methodist Church.....	78	41.4 west of north

## MICHIGAN.

*Bay City, Bay County.*—The station of 1907 was found to be of no further use for magnetic observations, therefore a new station was established in the north part of the county fair grounds and about 600 feet to the east of the old station. It is about 1 mile northeast of the town's center. It is within the oval of the race track, 132.5 feet from the north end of the oval within the course, 217.3 feet from the southeast corner of the smaller horse barn, and 248.5 feet from the southeast corner of the main horse barn. The station is marked by a bronze disk set in the center of a Bedford limestone post 8 by 8 by 30 inches, projecting 6 inches above the ground. The following true bearings were determined:

Cross on Catholic Church (mark).....	45 58.4 east of north
East edge of top of tall brick chimney.....	14 12.4 east of north
East edge of tall brick building (top).....	1 42.6 east of south
West edge of tiled roof brick building.....	2 59.4 west of south

*Channing, Dickinson County.*—The station is in a vacant lot, south of the public school, upon which the Catholic Church is to be built. It is 180.4 feet from the southwest corner and 187 feet from the southeast corner of the wire fence inclosing the school grounds. The station is unmarked.

*Detroit, Wayne County.*—The station of 1907 was reoccupied. It is on the southeastern shore of Belle Isle, in the Detroit River, about 200 yards west of the lighthouse. It is marked by a blue limestone post, originally 8 inches square, sunk flush with the surface, lettered U. S. C. & G. S., and having a cross in the center. The north and south edges of the stone have been crushed so that the letters no longer show. This stone is about 75 feet from the shore and 64.5 feet from the edge of a driveway. A clump of horse chestnuts stand between the stone and the drive. The following true bearings were determined.

Point on top of lighthouse (mark).....	77 26.0 east of north
Dormer window on large house with pillars (Canadian side).....	10 16.0 east of south
East dormer window on brick house (Canadian side).....	4 49.3 west of south

*Dublin, Manistee County.*—The station is about 350 feet southwest of the Pere Marquette tracks, directly back of the store belonging to C. E. Beagle, in a pasture lot. It is northeast of and in line with two oak trees, about 10 inches in diameter, and 45.7 feet from the nearer one, and 99.6 feet from the road fence. The station is unmarked.

*Eagle River, Keweenaw County.*—The station is in the back part of the public square, about 300 feet north of the road, 260.7 feet from the northeast corner of the school building, and 199.4 feet from the northwest corner of the courthouse barn. The station is marked by a bronze disk set in a circular cement post 14 inches in diameter, flush with the surface of the ground. The following true bearings were determined:

North gable on fuse plant (mark).....	4 14.2 east of south
Southwest corner of courthouse.....	72 28.2 east of south
Ball on belfry of public school.....	7 51.8 west of south
Point on old lighthouse tower.....	85 56.6 west of north

An auxiliary station (unmarked) was made about 750 feet east of the above station, south of a bunch of cedar trees. Auxiliary observations were also made at a point 270 feet southeast of the main station.

*Engadine, Mackinac County.*—The station is southwest of the railroad station in an open sandy lot, and about 260 feet south of the track. It is 118 feet south of the southeast corner of a barn belonging to A. G. Hancock, drayman, and 10.5 feet west of the line in range with the east end of this barn. The station is unmarked.

*Escanaba, Delta County.*—The station is on the shore of Green Bay about 200 feet southeast from the Sand Point Lighthouse, 69.2 feet from the southeast corner post of the fence inclosing the lighthouse, 235 feet from the southwest corner of the foundation of the fog bell station, and 83.2 feet south of the concrete walk leading out to the fog bell. It is about 120 feet from the present water line of Green Bay. The station is marked by a bronze disk set in the top of a cement block 8 by 8 by 30 inches, projecting 6 inches above the surface of the ground. The following true bearings were determined:

Top of dome on residence of J. K. Stacks (mark).....	61 30.1 west of south
Steeple of Swedish Church on east side of bay.....	86 18.4 east of north
North side of top of stack on brewery.....	47 42.1 west of south
High point on courthouse tower.....	88 16.0 west of south

*Forsyth, Marquette County.*—The station is about 600 feet a little west of north from the Little Lake Railroad station; about 300 feet northeast of the signal tower, on private property belonging to Martin Ramil; and about 10 feet east of a road running past the barn on the Ramil property. The station is unmarked.

*Grand Marais, Alger County.*—The station is in East Grand Marais, 53 feet north of the north line of Everette Avenue in a vacant lot directly across the harbor from the ship channel, and 33.5 feet west of the west line of the street which runs up the hill in range with the ship channel. The station is unmarked.

*Honor, Benzie County.*—The station is on the grounds of the public school on a side hill, and all distances are measured along the ground. It is 43.4 feet from the north fence, 77 feet from the east fence, 50.5 feet from the northwest

MICHIGAN—continued.

fence, and 191.5 feet from the north corner of the schoolhouse. A cottonwood tree 9 inches in diameter stands 45 feet east of south from the station. The station is marked by a bronze disk set in a cement post 8 by 8 by 24 inches; the top of the block is 1 inch below the surface of the ground. The following true bearings were determined:

	o /	
Center of base of pinnacle on courthouse (mark).....	60	59.4 west of north
Center of base of pinnacle on Congregational Church steeple .....	55	14.3 west of south
Point of schoolhouse belfry.....	11	54.6 west of south

Two auxiliary stations were also occupied. No. 1 was 2 miles south of the primary station near the premises of John Buver. No. 2 was 1½ miles east of the primary station about 100 yards southeast of the cottage occupied by John Mobby.

Declination observations were also made about 350 feet southwest of the principal station, 225 feet northeast of it, and 175 feet northwest of it.

*L'Anse, Baraga County.*—The station is in a hollow at the foot of a hill southwest of the Methodist Church and directly north of the high school, on property belonging to S. L. Smith. It is 170.4 feet (measured along the ground) from the southwest corner of the foundation of the Methodist Church, 143.1 feet from a telephone pole standing near the road to the west, and 244 feet from a large elm tree to the southeast. The station is marked by a bronze disk in the top of a cement post 8 by 8 by 30 inches, projecting 5 inches above the ground. The following true bearings were determined:

	o /	
Point on roof of belfry of fire hall (mark).....	48	05.1 west of south
Weather vane on public school.....	21	56.4 east of south
Rod on roof of courthouse.....	32	59.4 west of south

*Levering, Emmet County.*—The station is about 500 feet west of the Grand Rapids & Indiana Railroad station in a field belonging to John J. Walker. It is 64 feet north of the road fence and 69.4 feet west of the northwest corner of a hay barn and in line with the north side of the barn. The station is unmarked.

*Mackinac Island, Station II (east side of parade grounds), Mackinac County.*—The station of 1902 was reoccupied as nearly as it could be located. It is in the line connecting the Lake Survey triangulation stone (which is a large rough bowlder about 8 feet north of the fence, overgrown by a bunch of juniper) in the north part of the parade grounds with the north edge of the stone foundation of the east blockhouse, erected in 1780. The precise point is about 139 feet from the middle of the stone, 166.7 feet from the southeast corner of a one-story frame dwelling, and 199 feet from the northwest edge of the small powder magazine. The station is also nearly in line with the east mast of the wireless station and the west gable of the long building within the walled inclosure of the fort. The station is unmarked. The following true bearings were determined:

	o /	
Lower northeast corner of small powder magazine (mark).....	61	32.6 east of south
Northwest corner of powder magazine.....	57	13.3 east of south
Lower north corner of blockhouse.....	23	55.9 east of south
South corner of concrete wall of barn.....	43	47.2 west of south

*Matchwood, Ontonagon County.*—The station is in a stumpy field directly south of the east end of the railroad station, about 570 feet from the track and in range with the road that crosses the track coming down toward the hotel. It is 119.6 feet a little west of south from a small barn and 68 feet east of a wire fence. The station is unmarked.

*Michigamme, Marquette County.*—The station of 1908 was reoccupied. It is on a vacant lot used for a baseball grounds, southeast of the high school. It is 116.7 feet southeast from the southeast corner post of the school grounds, 152.8 feet from the southeast corner of the new school building, and 122.3 feet from the fence inclosing the house across the street south of the high school. The station is marked by a small stone sunk 1 inch below the surface of the ground, with a small hole roughly drilled in the center. The following true bearings were determined in 1915:

	o /	
Cross on Catholic Church (mark).....	42	43.5 east of north
Southwest corner of high-school building.....	55	24.8 west of north
West gable of semaphore house 1 mile distant.....	71	56.8 east of north
West gable of green-roofed bungalow on farther side of lake.....	55	42.5 east of south

Five auxiliary stations were also occupied. No. 1 is at Beaufort flag station, about 190 feet north of the railroad, near the dirt-road crossing. No. 2 is about 2 miles northwest of town, about three-fourths mile beyond the Manty place. It is in the middle of the road at the beginning of a long stretch of corduroy road. No. 3 is about 4 miles south and a little west of the town, about a quarter mile south of a house belonging to Wigini. It is directly west of a log barn. No. 4 is across the lake on a farm belonging to Louis Baker, at a point about 500 feet south of the lake shore and 25 feet northwest of a road running diagonally across the field. No. 5 is at Big Point, about 4 miles east of the town, on the west side of the old Young Men's Christian Association summer camp.

Declination observations were also made 50 feet north and 115 feet south of the principal station.

## MICHIGAN—continued.

*Nestoria, Baraga County.*—The station is on rough ground northeast of the railroad station and hotel. It is approximately 330 feet from the northeast corner of the hotel and about 100 feet north of the road. The station is unmarked.

Observations were made at an auxiliary station about 400 feet east of the main station and 60 feet north of the road.

*Northland, Marquette County.*—The station is about 1,000 feet north of the railroad track, 5 feet west of the northeast corner post of the school property, and directly on the north line of the property. The station is unmarked.

*Petoskey, Emmet County.*—The station is about a mile and a half southwest of the city hall, in the city cemetery. It is in the east side of the drive, 56 feet north of the wire fence which incloses on the south the part of the cemetery now in use, 61.7 feet from the southwest corner of the Kirkland monument, and 129.8 feet southeast of the southeast corner of the Krussell monument. The station is marked by a bronze disk set in the top of a cement post 9 by 9 by 36 inches, sunk flush with the surface of the ground. The following true bearings were determined:

Cross on Catholic Church steeple (mark).....	63 35.0 east of north
Cupola on red barn in distance.....	85 38.2 east of south
Steeple of Baptist Church.....	64 39.3 east of north
Southeast corner of base of Call monument.....	14 50.7 west of north

About 300 yards north, at the north boundary fence, a spike in the top of a cement post marks the true meridian line.

*Rudyard, Chippewa County.*—The station is about 600 feet south of the railroad, in the west end of the grounds of the Catholic Church. It is 52 feet south of the street fence and 95.1 feet and 102 feet, respectively, from the northwest and southwest corners of the church. The station is unmarked.

*St. Ignace, Mackinac County.*—The station is in the Lakeside Cemetery, about 2 miles southwest from the town. It is in an alleyway above the bluff, in the section of the cemetery on the north side of the road, directly in line with the driveway leading into the cemetery and about 20 feet from the edge of the bluff. The station is marked by a bronze disk set in the top of a cement block 8 by 8 by 30 inches, projecting 1 inch above the ground. The following true bearings were determined:

Center of window of cemetery toolhouse (mark).....	10 40.0 east of south
Base of Minthorn monument, east corner.....	52 23.2 east of north
North tower of wireless station on Mackinac Island.....	82 31.0 east of north
Pinnacle of dome of Grand Hotel, Mackinac Island.....	89 56.6 east of south
Southwest corner of Mallett monument.....	21 56.8 east of south

*Seney, Schoolcraft County.*—The station is about 430 feet north of the railroad, in the center of the second street parallel to the railroad and about 50 feet east of the center of the street running north past the hotel. The station is marked by a brass casting set in cement and with a small hole to mark the exact spot. The following true bearings were determined:

Point on railroad water tank (mark).....	76 46.0 west of south
North gable of post-office building.....	11 23.6 west of south
Section corner.....	89 08.3 west of south

*Thompsonville, Benzie County.*—The station is about 400 feet north of the Methodist Church, in the street which runs north between the Methodist and the Congregational Churches. It is 29.7 feet from the west limit of that street and 26 feet north of the north limit of the cross street which runs parallel to the street on which the churches stand. It is 39.1 feet from the northwest corner of the intersection of these two streets and 101 and 100.6 feet from the southwest and southeast corners, respectively. The station is unmarked.

*Traverse City, Grand Traverse County.*—The station of 1907 was reoccupied. It is in the eastern part of the ground immediately surrounding the main buildings of the asylum for the insane, about 600 feet east of the entrance to the office, and about 1½ miles southwest of the center of the town. It is 107.5 feet west of the asylum fence, 58.6 feet northwest of a maple tree about 1.7 feet in diameter, and about 357 feet north of the stone pavement leading to the main office. It is marked by a Bedford limestone post 5 by 6 by 30 inches, projecting about 2 inches above ground and lettered U. S. C. & G. S., 1907. The following true bearings were determined in 1907 and 1915:

Cross on Catholic Church (mark).....	89 28.0 east of south
Southernmost pinnacle on south wing of asylum.....	41 27.0 west of south
Weather vane on cupola over entrance to main office of asylum.....	76 55.0 west of south

*Trout Lake, Chippewa County.*—The station is on a sandy hill about 750 feet north of the main line of the Duluth, South Shore & Atlantic tracks, and about 600 feet northwest of the main line of the Minneapolis, St. Paul & Sault Ste. Marie line. It is directly north of the Trout Lake Hotel, 21 feet east of the line of the west end of the hotel, 40.4 feet southwest of the corner post of a pasture, and about 65 feet west of the west line of the street running north past the Trout Lake Hotel. The station is unmarked.

MINNESOTA.

*Baudette, Beltrami County.*—The station is near the southwest corner of the high-school grounds, near the town's center. It is 81.3 feet from the west fence, 39.4 feet from the south fence, 65.4 feet west of the west side of the walk leading to the south entrance, 68.7 feet southwest of the southwest corner of the school building, and 42.8 feet south of the south side of the school building produced. The station is marked by a cement post 18 by 18 by 50 inches with a bronze disk in the top, which will be flush with ground when yard is graded. (At present it projects 1 foot above surface.) The following true bearings were determined:

Apex of steel water tower in Spooner (mark).....	78 34.6 east of north
Apex of steel water tower in Baudette.....	32 32.0 west of south
Northwest corner of brick block south of school grounds.....	38 56.0 west of south
Northwest corner of main part of school building.....	18 15.0 east of north
Southeast corner of main part of school building.....	63 50.9 east of north

*Bemidji, Beltrami County.*—The station of 1907 was reoccupied. It is in the southeast part of the courthouse grounds near the flagpole, 28.5 feet from the east fence, and 42.2 feet from the south fence. It is marked by a cement post 6 by 8 by 24 inches, lettered U. S. C. & G. S., 1907. The following true bearings were determined in 1907 and 1915:

Flagpole on opera house (mark).....	24 54.6 west of south
Left edge (or southeast corner) of jail.....	89 09.7 west of south
Cross on Catholic Church spire.....	19 13.7 east of north
Left edge (or northeast corner) of brick building in town.....	8 11.6 east of south

*Boundary Monument 858, Kittson County.*—The station is on the international boundary between the United States and Canada. It is 6 miles south and 3 miles west of Stuartburn, Manitoba. It is 67.9 feet west of the apex of Monument 853. The station is not marked. The following true bearings were determined from the Boundary Survey:

Monument 854 (mark).....	89 58.5 east of south
Apex of Monument 853.....	89 58.7 east of south

*Boundary Monument 877, Roseau County.*—The station is on the boundary between the United States and Canada. It is 6.5 miles south and 1 mile east of Sundown, Manitoba, and best reached from Sundown by way of Suran Church. Monument 876 is due south of Sundown. The road from Sundown leads through swampy country, but is passable. The station is about one-fourth mile south of John Klem's farmhouse, and 49 feet west of the west edge of Monument 877. The station is not marked. The following true bearings were determined from the Boundary Survey:

East gable of John Klem's house (mark).....	2 11.4 east of north
Monument 878.....	89 56.2 west of north
Apex of Monument 877.....	89 54.6 east of south

*Boundary Monument 899, Roseau County.*—The station is on the boundary about 3 miles south of Sprague, Manitoba, and reached by wagon road from Sprague. It is about one-fourth mile south of Pete Lind's place, in the middle of the road between Mud Creek and Monument 899. It is 192.3 feet west of Monument 899 and 196 feet northeast of an old log barn. The station is not marked. The following true bearing was determined from the Boundary Survey:

Monument 898.....	89 48.4 west of north
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*International Falls, Koochiching County.*—The station is near the northeast corner of the courthouse yard, a little west of the town's center. It is 35.9 feet from the north fence, 33.2 feet from the east fence, and 101.4 feet northeast of the northeast corner of the courthouse. It is marked by a cement post 10 inches in diameter and 4 feet long, with a bronze disk in the top, which sets flush with the ground. The following true bearings were determined:

Swedish Lutheran Church spire (mark).....	2 12.7 west of south
Roman Catholic Church spire.....	88 11.4 west of north
Left edge of brick smokestack, near top.....	27 22.0 east of north
Apex of elevated steel tank.....	51 40.0 east of north
Norwegian Lutheran Church spire.....	38 32.3 east of south

*Kingsdale, Pine County.*—The station is 438 feet west of the west rail of the main line of the railroad and 37 feet north of the center of the road that crosses the track south of the station. The station is unmarked.

Auxiliary observations were taken at a point about 500 feet farther west and about 10 feet south of the center of the road.

*St. Paul, Ramsey County.*—The station of 1911 was reoccupied. It is in the southwest part of Oakland Cemetery, among the cottonwood trees west of the center of the lake. It is 185.8 feet from the fence bounding the cemetery on the south, about 440 feet from the fence bounding the cemetery on the west, and 148.8 feet from the Elliot monument.

## MINNESOTA—continued.

It is marked by a dressed marble post 4 inches square set flush with the ground and lettered U. S. C. S., 1891. A small hole in the center marks the exact spot. The following true bearings were determined in 1911 and 1915:

Southwest corner of second foundation of Lindeke monument (mark).....	47	37.3	west of north
Center of keystone in arch over entrance to office.....	76	55.8	east of south
Top of spire of cemetery chapel.....	8	20.2	east of north
Southwest corner of Morris monument.....	81	30.1	west of north

*Two Harbors, Lake County.*—The station is on land controlled by the Duluth & Iron Range Railway. It is about 550 feet directly north of the Two Harbors Lighthouse, on a little rise of ground among small cedars, 89.6 feet east of the east rail of a spur track running up toward the lighthouse. It is marked by a bronze disk set in the top of a cement block 9 by 9 by 18 inches, projecting about 2 inches above the surface of the ground. The following true bearings were determined:

Point on harbor light (mark).....	50	18.5	west of south
Cupola of high school building.....	19	02.4	west of north
Steeple of Swedish Lutheran Church.....	34	27.2	west of north
Cupola of public-school building.....	42	56.5	west of north
Point on lighthouse.....	3	13.9	east of south

*Warroad, Roseau County.*—The station is on the west edge of the school grounds one-fourth mile west of the town's center. It is 25 feet northeast of the fence along the river, 130.8 feet southwest of the fence on the east side of the grounds, 124.8 feet west from a Lake Survey monument near this fence, and 318.3 feet northwest of the southwest corner of the high-school building. It is marked by a cement post 6 by 6 by 40 inches with a bronze disk in the top, which projects 1 inch above the ground. The following true bearings were determined:

Southwest corner of high-school foundation (mark).....	40	59.6	east of south
Left edge of a large barn across the river.....	65	54.7	west of south
Center of Lake Survey monument near east fence.....	60	13.4	east of north
Right edge of elevated steel tank.....	84	15.6	east of south
Northeast corner of old high-school foundation.....	76	42.3	east of south

*Willmar, Kandiyohi County.*—The station of 1907 was reoccupied. It is in the northwest part of town. It is 125.8 feet northwest of the northwest corner of the school building, 102.7 feet south of the inner row of trees on the north side of the grounds, and 62.1 feet east of the row of trees on the west side. It is marked by a cement post 8 by 10 by 24 inches, projecting 2 inches above the ground with drill hole in top and faintly lettered U. S. C. & G. S., 1907. The following true bearings were determined in 1907 and 1915:

Point on round cupola of Mr. Tallman's house (mark).....	69	27.5	east of north
Left edge of school building, on bricks.....	61	05.8	east of south
Right edge of school building, on bricks.....	31	17.5	east of south
Southeast corner of house northwest of school grounds.....	37	56.8	west of north

## MISSISSIPPI.

*Ashland, Benton County.*—The station is about one-fourth mile north of the courthouse on ground recently acquired by the school board for the site of the new school building. It is about 275 feet back from the street, 36.3 feet from the northwest corner of the lot, and 19.5 feet from a small sassafras tree. The station is marked by a bronze disk in the top of a cement post 7 by 7 by 30 inches projecting 5 inches above the ground. The following true bearings were determined:

Southeast corner of jail (mark).....	39	48.6	west of south
Northwest corner of courthouse wall.....	13	07.1	west of south
Point of monument of Rich. S. Robinson.....	18	39.0	east of south
Point of monument to Mary Sharp.....	35	48.4	east of south

The true meridian is marked by a similar post with an iron bolt in the top set at the edge of the woods about 200 paces to the north.

*Carthage, Leake County.*—The station is about one-fourth mile a little north of west from the courthouse in a pasture belonging to Mr. W. M. Jordan. It is about 700 feet from the east fence, 295 feet west of a large pine tree standing near the south line of the pasture, 103.5 feet from the north fence, and 22 feet from the south fence which stands on the section line between sections Nos. 1 and 12. The exact spot is marked by a bronze magnetic disk in the top of a cement block 8 by 8 by 30 inches projecting 5 inches above the surface. The following true bearings were determined:

Baptist Church spire (mark).....	68	22.5	east of north
Point on cupola of courthouse.....	62	29.2	east of south
Northwest corner of residence of W. M. Jordan.....	80	42.5	east of north
South gable of residence of D. B. Mills.....	56	43.8	east of north

MISSISSIPPI—continued.

A meridian post of cement 8 inches in diameter with a brass bolt in the top to mark the spot was placed 350 feet south from the magnetic station on land belonging to Dr. H. H. Howard.

*Columbia, Marion County.*—The station is near the northwest corner of the grounds of the lower grade public school, 11.4 feet north of the last tree in the row planted along the street near the west side of the grounds. It is 87 feet west of the fence surrounding the school garden and 301.2 feet from the northwest corner of the main part of the school building. The exact spot is marked by a bronze disk in the top of a cement post 9 by 9 by 30 inches set flush with the surface of the ground. The following true bearings were determined:

	o /	
Ball on roof of water tank (mark).....	58	37.9 west of south
Rod on dome of Baptist Church.....	61	50.1 west of south
Spire on Methodist Episcopal Church.....	40	15.9 west of south
North gable of Presbyterian Church.....	5	08.7 east of south
Southwest corner of school building.....	9	43.4 east of south

*De Kalb, Kemper County.*—The station is about 400 feet west of the county courthouse on the unfenced grounds of the Baptist Church. It is a little north of and in line with the east side of the church, 69.7 feet from the farther northeast corner and 71.5 feet from the nearer northwest corner of the church. The exact spot is marked by a bronze disk embedded in a cement post 1 foot in diameter by 2 feet long set flush with the ground. The following true bearings were determined:

	o /	
Base of rod on Methodist Church spire (mark).....	45	53.7 east of south
Ball on top of cupola of county courthouse.....	86	49.4 east of north
Point of Presbyterian Church spire.....	44	59.2 east of south
Point of roof on dwelling.....	1	32.8 east of north

*Jackson, Hinds County.*—The station of 1910 was reoccupied. It is about 2 miles from the town, on the grounds of Millsaps College, on the south side of Observatory Hill, about 300 feet south of the observatory and 224.5 feet east of a board fence. The station is marked by a limestone post, 6 inches square, projecting 3 inches above the ground. A hole in the top marks the exact spot. The following true bearings were determined in 1910 and 1915:

	o /	
Base of rod on cupola of Orphanage Home (mark).....	40	06.4 west of north
South side of brick chimney of the Asylum for Deaf and Dumb.....	56	03.9 west of south
East wall of new brick building on Millsaps Campus.....	14	29.4 east of south

*Leakesville, Greene County.*—The station is about one-fourth mile a little north of west from the courthouse just north of the road leading west, a little below the Presbyterian Church. It is 52 feet southwest of the fence on the north-east side of Main Street, 47.8 feet a little south of east from an oak tree 15 inches in diameter and 12 feet a little north of east from an oak stump 14 inches in diameter. The station is marked by a bronze disk in the top of a cement post 9 inches in diameter set flush with the surface of the ground. The following true bearings were determined:

	o /	
Spire on courthouse (mark).....	53	39.3 east of south
Southwest corner of southwest post on belfry of schoolhouse.....	31	40.9 west of north
Steeple on Baptist Church.....	81	48.3 east of south
Steeple on Methodist Protestant Church.....	73	31.2 west of south

*Marks, Quitman County.*—The station is about one-fourth mile south of the county courthouse, on the grounds of the public school, 26.3 feet from the south fence, 198.2 feet from the southeast corner post, and 311.3 feet from the southwest corner of the school building. The station is marked by a bronze disk in the top of a cement block 8 by 8 by 30 inches projecting 4 inches above the ground. The following true bearings were determined:

	o /	
Flagpole on dome of courthouse (mark).....	1	20.1 west of north
Steeple on Colored Church.....	74	05.9 west of north
Point on tower of school building.....	7	21.7 west of north
Southeast corner of wall of new Baptist Church.....	2	12.0 east of north

A similar block with an iron bolt in the top marking the true meridian is set near the street line of the school lot at a distance of about 450 feet to the north.

*Mendenhall, Simpson County.*—The station is about one-fourth mile north of the courthouse, on the east side of the road which runs on the section line and passes east of the Agricultural High School property. It is 46.7 feet a little west of north of the northwest corner of Dr. T. T. Robinson's yard, and 9 feet from the fence on the east side of the road, near the northwest corner of lot 1, block 1, Laurel addition to the town of Mendenhall. It is 35.4 feet from an oak tree 14 inches in diameter which stands inside the fence near Dr. Robinson's residence and 22.1 feet from

## MISSISSIPPI—continued.

another oak tree which stands farther north. The station is marked by a bronze disk in the top of a cement block 6 by 14 by 32 inches projecting 3 inches above the ground. The following true bearings were determined:

	°	'	
Steeple on Methodist Church (mark).....	7	54.9	west of south
Top of courthouse dome.....	16	00.2	west of south
Top of jail tower.....	27	22.2	west of south
Ball on cupola of Agricultural High School.....	42	48.8	west of north

*Meridian, Lauderdale County.*—The station of 1910 was reoccupied. It is about 2 miles from the town, on the grounds of the State Asylum for the Insane. It is about 150 feet south of the walk leading to the front of the main building and 260 feet from the southeast corner of this building. The station is marked by a stone post 6 inches square projecting 3 inches above the surface of the ground. The following true bearings were determined in 1910:

	°	'	
Upper northwest corner of building farthest to the southwest, under caves (mark).....	57	24.3	west of south
Lower south edge of main building.....	81	18.0	west of south
Flagstaff on main building (base).....	58	55.2	west of north
Ball on dome of building farthest north.....	22	43.8	west of north

*Monticello, Lawrence County.*—The station is about one-fourth mile south of the courthouse, in about the middle of the western part of the old cemetery, 24.2 feet from the west fence. It is 93.5 feet west from the base of the monument of William Garrett, 117.5 feet northwest of the northwest corner of the Fairman lot, and 169.5 feet southwest of the southwest corner of the Mobly lot. The station is marked by a bronze disk in the top of a cement post 8 by 8 by 30 inches which projects about 4 inches above the ground. The following true bearings were determined:

	°	'	
Flagpole on dome of courthouse (base) (mark).....	32	38.3	east of north
Base of flagpole on high school.....	7	54.9	east of north
West gable of residence of Mr. Beal.....	69	32.1	east of south
West gable of barn of Mrs. F. P. Barron.....	7	13.7	east of south

*Pascagoula, Jackson County.*—The station is about 1 mile northeast of the courthouse, about 250 feet from the southwest corner of the old County Poor Farm plot, in the north edge of the highway running past the south side of the plot. It is 44.1 feet and 51 feet from two pecan trees standing, respectively, southeast and southwest on the opposite side of the road, and a pine tree stands 25.5 feet a little north of east. The exact spot is marked by a bronze disk in the top of a cement post 8 by 8 by 30 inches set flush with the surface of the ground. The following true bearings were determined:

	°	'	
Point of lightning rod on cross of Catholic Church (mark).....	10	46.1	east of north
North side of smokestack on power plant (near bottom).....	87	42.4	west of south
Southeast corner of Catholic school building.....	7	43.5	west of north
Southeast corner of priests' house.....	13	10.8	east of north
South gable of barn to east.....	89	46.0	east of south

*Poplarville, Pearl River County.*—As the old station was found to be unsuitable for further magnetic work, a new one was established on the grounds of the Pearl River County Agricultural High School, about one-fourth mile west of the courthouse. It is in line with the south side and 344.3 feet east of the southeast corner of the administration building, and 145.8 feet from the east fence. Several large pine trees stand north of the station, the nearest pine standing at a distance of 105.8 feet about 24° east of north. The exact spot is marked by a bronze disk in the top of a cement post 8 by 8 by 30 inches projecting 4 inches above the ground. The following true bearings were determined in 1915:

	°	'	
Steeple of Methodist Episcopal Church South (mark).....	51	25.5	east of south
Steeple of Presbyterian Church.....	46	33.2	east of south
Steeple of Baptist Church.....	72	24.6	east of south
Ball on roof of town standpipe.....	89	38.8	east of south
Point of gable over entrance to girls' dormitory.....	61	49.4	west of south

*Prentiss, Jefferson Davis County.*—The station is about one-fourth mile west of the courthouse in the south end of a pasture belonging to O. C. Luper. It is a short distance from the edge of the railroad gravel pit, 14.1 feet from the south fence, 56 feet from the west fence, and 36 feet from the east fence. The station is marked by a bronze disk in the top of a cement post which is about 14 inches square and 22 inches long and set flush with the ground. The following true bearings were determined:

	°	'	
Steeple of Methodist Church (mark).....	44	08.2	east of south
Point of cupola on residence of Dr. Banks.....	57	47.9	east of south
Ball on roof of water tank.....	70	02.9	east of south
Point on belfry of school building.....	85	35.6	east of south
North rail on railroad curve to west.....	57	45.7	west of north

MISSISSIPPI—continued.

*Purvis, Lamar County.*—The station is on the grounds of the Lamar County High School farm about one-half mile southeast of the courthouse. It is in the northwest corner of the campus surrounding the dormitories, 37.6 feet from the fence to the west, 65.3 feet from the fence to the north. An oak tree about 14 inches in diameter stands 47.7 feet a little west of south, and the northwest corner of the boys' dormitory is 221 feet a little north of east. The exact spot is marked by a cement post 8 by 8 by 30 inches set flush with the surface of the ground and having a bronze disk set in the top. The following true bearings were determined:

	o /	
Ball on dome of courthouse (mark).....	39	29.3 west of north
Point on cupola of high school.....	11	08.0 west of north
Steeple of Baptist Church.....	41	29.3 west of north
Southwest corner of boys' dormitory.....	70	56.6 east of south

*Quitman, Clarke County.*—The station is about one-fourth mile southeast of the courthouse in the south part of the grounds of the public school. It is 115 feet east of the post marking the southwest corner of the lot and 54.3 feet north of the fence across the undeveloped street. The exact spot is marked by a cement post 8 by 8 by 30 inches, set flush with the surface of the ground, and having a bronze disk in the top. The following true bearings were determined:

	o /	
Steeple of Baptist Church (mark).....	20	58.6 east of north
Point on cupola of school building.....	9	44.1 east of north
Northwest corner of school building, under eaves.....	5	25.3 east of north
Point on water tank of Mississippi Lumber Co.....	20	28.3 west of north

The north end of a meridian line 669.1 feet long is marked by an iron bar driven into the ground.

*Senatobia, Tate County.*—The station is about one-half mile north and a little west of the courthouse, on the grounds of the County Agricultural High School, a little more than 400 feet back from the road, 25.5 feet north of the south fence, 38.5 feet west of a cross fence, and 64.5 feet southwest of a pecan tree 10 inches in diameter. The station is marked by a bronze disk in the top of a cement post 7 by 7 by 30 inches, projecting about 2 inches above the ground. The following true bearings were determined:

	o /	
Steeple on Presbyterian Church (mark).....	18	01.8 east of south
Pinnacle on west end of high-school roof.....	11	34.4 east of south
Tower on courthouse (at contraction below ornament).....	25	18.1 east of south
Ball on standpipe roof.....	32	04.6 east of south

*Tylertown, Walthal County.*—The station is on a piece of private property belonging to the Lampton Realty Co., lying between the public-school building and the cemetery, about one-half mile north of the railroad station. It is on the east side of the lot, 32.7 feet from the fence marking the east boundary, 225.8 feet south of the southeast corner post of the fence about the school property, and 347.4 feet from the northeast corner post of the iron fence about the cemetery. A large pine tree, scarred on the east side, stands 45.1 feet due west. The exact spot is marked by a bronze disk in the top of a cement block 8 by 8 by 30 inches, set flush with the surface of the ground. The following true bearings were determined:

	o /	
Top of monument, to Mrs. H. S. Brumfield, in cemetery (mark).....	34	19.0 west of south
Point of schoolhouse steeple.....	34	24.5 west of north
South edge of veranda post of house belonging to Geo. Vaught.....	66	44.2 west of south
Northwest corner of Methodist Church.....	28	14.7 west of south

A meridian post was set in the schoolhouse yard, about 350 feet north of the magnetic station.

MISSOURI.

*Maryville, Nodaway County.*—The station is on the campus of the State Normal School, one-half mile west of the center of the town. It is 263.1 feet south of the east corner of the main building, 251 feet east of the south corner, and 7.4 feet southwest of the edge of the main walk leading to the Normal School. It is just north of a group of birch trees and is marked by a marble post 6 by 6 by 24 inches, lettered U. S. C. & G. S., 1915. The post is flush with the ground and is set in concrete. The following true bearings were determined:

	o /	
Apex of elevated steel tank (mark).....	79	34.1 east of north
Left edge of normal school.....	64	46.2 west of north
Right edge of normal school at third floor.....	6	27.9 east of north
Left side of smokestack at bottom of brick heating plant.....	43	59.4 east of north

A hole drilled in the limestone foundation of the main building 243.4 feet north of the magnetic station marks the true meridian.

## MISSOURI—continued.

*Mayville, Dekalb County.*—The station is near the south edge of the high-school grounds just west of the center of the town. It is 37.4 feet north of the cement walk on the south side of the grounds, 28.6 feet east of the cement walk leading to the school building, 148 feet south of the southeast corner of the building, and directly in line with the east side of the building. It is marked by a cement post 12 by 12 by 20 inches, set with a bronze disk, and projecting 1 inch above ground. The following true bearings were determined:

Chimney on distant house (mark).....	8 33.3 west of south
Lower southwest corner of high school.....	23 15.7 west of north
Lower southeast corner of high school.....	0 23.3 east of north
High-school cupola.....	12 09.5 west of north

*Stanberry, Gentry County.*—The station is near the northwest corner of the high-school grounds, one-half mile north of the town's center. It is in line with the row of trees on the north side of the grounds, 23 feet west of the west side of the high school produced northward, 96.9 feet northwest of the northwest corner of the high school, 48.8 feet east of the cement walk on the west side of the grounds, and 62.6 feet south of the brick walk across the street to the north. The station is marked by a cement post 6 by 6 by 24 inches, with a cross cut in the top and set flush with the ground. The following true bearings were determined:

North gable of Methodist Episcopal Church.....	0 00.5 east of south
Flagpole on cupola of high school.....	8 13.0 east of south
Northeast corner of high-school basement.....	45 06.7 east of south
East gable of a house.....	50 59.0 west of north

Three auxiliary stations were also occupied. No. 1 was in a pasture 3 miles east and one-half mile south of the primary station, No. 2 was in a pasture 3 miles south and 1½ miles west of it, and No. 3 was in a pasture 3 miles north and three-fourths mile west of it.

*St. Louis, St. Louis County.*—The station of 1910 and 1912 was reoccupied. It is on the baseball grounds in the northeastern part of Forest Park, about 500 feet a little east of south of the old police substation, which is now used as a boys' clubhouse. It is marked by a limestone post 6 by 6 by 36 inches, lettered U. S. C. & G. S., and projecting 5 inches above the ground. The following true bearings were determined in 1900:

Center of base of flagstaff on police station (mark).....	22 02.1 west of north
Center of base of flagstaff on Young Men's Christian Association building.....	68 42.6 west of south

*Union Star, Dekalb County.*—The station is on the high-school grounds a little north of the town's center. It is 115 feet east of the cement walk leading up to the high-school building, 205 feet southeast of the southeast corner of the same building, and 54.5 feet west of the fence on the east. The station is not marked.

## NEBRASKA.

*Alma, Harlan County.*—The station of 1909 was reoccupied. It is on the high-school square in the north part of the town. It is 131.5 feet north and a little west of the northwest corner of the schoolhouse, 163.1 feet northwest of the northeast corner, and 48 feet south and a little east of the electric light pole at the northwest corner of the grounds. The station is marked by a Bedford limestone post 6 by 6 by 22 inches, sunk level with the ground, and lettered U. S. C. & G. S. The following true bearings were determined:

Courthouse flagpole (mark).....	19 41.5 west of south
Evangelical Church spire.....	18 10.2 west of south
Apex of water tower.....	4 21.3 east of south
Northeast corner of high school.....	38 16.8 east of south
South gable of a house.....	12 29.2 east of north

*Bassett, Rock County.*—The station is near the northeast corner of the courtyard about one-eighth mile southeast of the town's center. It is 132 feet northeast of the northeast corner of the courthouse, 26.3 feet south of the north fence, 64.4 feet west of the east fence. It is marked by a cement post 12 by 12 by 24 inches, with a bronze disk in the top, and projects about 1 inch above the ground. The following true bearings were determined:

Right edge (northeast corner) of Methodist Episcopal Church (mark).....	18 54.6 west of north
Spire on high-school cupola.....	10 07.6 west of north
Southeast corner of courthouse vaults.....	12 30.1 west of south
Flagpole on courthouse cupola.....	26 11.1 west of south

*Butte, Boyd County.*—The station is near the southwest corner of the courthouse yard near the town's center. It is 111 feet southwest of the southwest corner of the courthouse, 110.8 feet south of the cement walk leading west from the courthouse, 24.6 feet north of a row of elm trees, and 53.3 feet east of the cement walk on the west side of the court-

NEBRASKA—continued.

yard. The station is marked by a cement post 10 by 10 by 24 inches, with a bronze disk in the top, which projects 1 inch above the ground. The following true bearings were determined:

	o /	
Southeast corner of brick opera house (mark).....	19	05.4 west of north
Apex of elevated steel water tank.....	18	25.8 east of north
Southeast corner of cement foundation of jail.....	63	07.3 east of north
Methodist Episcopal Church spire.....	88	10.6 east of south
East gable of farmhouse one-fourth mile distant.....	76	33.8 west of south

*Center, Knox County.*—The station is near the southwest corner of the courthouse yard, near the center of town. It is 58.5 feet from the row of elm trees on the south, 48.3 feet from the row on the west, and 183.7 feet southwest of the southwest corner of the jail. The station is marked by a cement post 10 by 10 by 24 inches, with a bronze disk in the top, which sets flush with the ground. The following true bearings were determined:

	o /	
Congregational Church spire (mark).....	10	54.4 west of north
Left edge of left chimney on courthouse.....	45	41.4 east of north
Southeast corner of cement foundation of courthouse vaults.....	54	21.4 east of north
Northwest corner of a house just south of courtyard.....	68	42.1 east of south
South gable of Congregational Church.....	12	31.6 west of north

*Chadron, Dawes County.*—The station of 1910 was reoccupied. It is on a bench of the steep hill about 1 mile due south of town. The curbing on the east side of the street east of the courthouse is in line with the station and the walk on the east side of this street would pass 25 feet to the east of the station if produced. It is 278 feet north from the highest point of the hill, 54 feet northeast from a pine tree. It is marked by a cement post 16 by 16 by 30 inches with a bronze disk in the top and projects about 2 inches above the ground. The following true bearings were determined in 1910 and 1915:

	o /	
Spire at apex of high-school (mark).....	30	53.6 east of north
Spire at apex of Chadron Academy.....	24	06.3 east of north
Southwest corner of brick work on courthouse cupola.....	3	53.6 east of north
Left edge of the west ward school.....	17	36.4 west of north
East gable of Mr. Brown's house.....	81	49.8 west of south

*Cody, Cherry County.*—The station is near the southeast corner of the school grounds, one-quarter mile west of the town's center. It is 156 feet northeast of the southeast corner of the school building; 143.6 feet east of the northeast corner of the school building; the north side of the school building produced eastward passes 2 feet north of the station. It is 167.5 feet north of the fence which is on the south side of the street to the south. The station is marked by a cement post 12 by 12 by 24 inches with a bronze disk in the top and projects 1 inch above the ground. The following true bearings were determined:

	o /	
Apex of railroad water tank (mark).....	7	25.8 east of south
Southeast corner of high school level of second floor.....	66	09.0 west of south
Apex of cupola on old high school.....	75	39.0 west of north
West gable of L. Deaver's house.....	44	24.5 of east north
West gable of Methodist Episcopal Church.....	52	17.0 east of south

*Lincoln, Lancaster County.*—The station of 1914 was reoccupied. It is on the campus of the State University Agricultural School, about 2 miles northeast of the town's center. It is between the roads, just northeast of the Home Economics Building. It is marked by a Bedford limestone post 8 by 8 by 36 inches, with a brass plate in the top. The stone projects about 6 inches above the ground. The following true bearings were determined from the meridian line:

	o /	
Southeast corner of base stone at southeast corner of Agricultural Hall (mark)...	12	28.7 west of south
Northwest corner of base stone on northwest corner of Home Economics Building.....	75	41.3 west of south
Northeast corner of Plant Industry Building, level with third floor.....	76	17.8 east of south
Southwest corner of Plant Industry Building, level with third floor.....	29	00.8 east of south

A similar stone, 494 feet to the south, marks the true meridian.

*Newport, Rock County.*—The old station was found to be of no further use for magnetic observations, therefore a new station was established about 100 feet to the east. It is near the southeast corner of the school grounds, one-fourth mile northwest of the town's center. It is 142.4 feet southeast of the southeast corner of the high school, 79.8 feet east of the cement walk leading to the school, 98.4 feet east of the east side of the annex, 43.1 feet north of the cement walk south of the school grounds, and 21.8 feet from the fence on the east. The station is marked by a cement post 12 by

## NEBRASKA—continued.

12 by 24 inches, with a bronze disk in the top, which sets flush with the ground. The following true bearings were determined:

Apex of railroad water tank (mark).....	49 50.0 east of south
East gable of high-school annex.....	83 34.4 west of north
Spire on high-school cupola.....	43 18.9 west of north
Left edge of bungalow one block east.....	82 00.6 east of north
West gable of house on the north edge of town.....	49 42.3 east of north

*Papillion, Sarpy County.*—The station is on the north side of the city park near the town's center. It is 79.6 feet from the northwest corner of the band stand, 81.1 feet from the northeast corner of the band stand, 15 feet northeast of a large maple tree, 9 feet southeast of a large maple tree, and 100.4 feet southwest of the southwest corner of a building north of the park. It is marked by a cement post 10 by 10 by 24 inches, with a bronze disk in the top, set flush with the ground. The following true bearings were determined:

Southeast corner of a house southwest of park (mark).....	43 12.7 west of south
Right edge of above house.....	55 19.3 west of south
Northeast corner of a residence southeast of park.....	22 56.7 east of south

Observations were made at the following auxiliary stations:

Station A is on a country school grounds 2.8 miles south of the primary station.

Station B is about 1 mile north and 2½ miles west of the primary station, and about one-fourth mile east of Portal, about 200 feet north of the Missouri Pacific Railroad, and east of the wagon road.

Station C is 2½ miles east and one-half mile north of the primary station in a hayfield.

*Ponca, Dixon County.*—The station is near the northwest corner of the high-school grounds, one-fourth mile west of the town's center. It is 99.2 feet northwest of the northwest corner of the high-school building, 107 feet from the cement walk along the west side of the street to the west, and 122 feet from the cement walk along the north side of the street to the north. It is marked by a cement post 6 by 6 by 18 inches, with a drill hole and the letters U. S. on top and set flush with the ground. The following true bearings were determined:

Northeast corner of a church southwest of high school (mark).....	11 37.0 west of south
Southwest corner of high school, on bricks.....	21 12.2 east of south
Northeast corner of high school, on bricks.....	56 32.9 east of south
Southeast corner of a residence just north of high school.....	71 32.0 east of north

## NEW MEXICO.

*Bernalillo, Sandoval County.*—The station is southeast of the Santa Fe road in the sand hills about three-fourths mile southeast from the town's center, and opposite the eighth telephone pole counting north from the signpost at the intersection of the first road south from the Santa Fe Railroad station and the Santa Fe road. It is 200 feet northeast from a cross of galvanized nails about 1 foot above the ground in the seventh telephone pole from the above signpost, and 231.2 feet southeast from a triangle of galvanized nails about 1 foot above the ground in the ninth telephone pole from the signpost. It is marked by a limestone post 6 by 6 by 33 inches, with a bronze disk set in the top, which projects about 6 inches above the ground. The following true bearings were determined:

Top of south steeple of Catholic Church (mark).....	15 24.2 west of north
South gable of Santa Fe Railroad station.....	45 07.6 west of north
Upper north edge of Santa Fe Railroad water tank.....	39 51.7 west of north
South gable of the flour mill.....	40 48.0 west of north

*Clovis, Curry County.*—The station is in the southeast corner of block No. 24, or a lot owned by Mr. L. E. Hitchcock, the county surveyor, about 1 mile east from the town's center. The south side of block No. 24 is along the north side of Grand Avenue, and the magnetic station is about 130 feet northwest from the stake at the southwest corner of block No. 25, which is the only stake remaining in position in the vicinity. It is marked by a limestone post 6 by 6 by 30 inches, with a bronze disk set in the top, which projects about 5 inches above the ground. The following true bearings were determined:

Top of town water tank (mark).....	77 05.3 west of south
Top of Baptist Church steeple.....	89 23.3 west of south
Point of east ornamental slab at top of roof of public school.....	76 58.5 west of north
Center of smokestack of electric-light plant.....	76 04.3 west of south

*Estancia, Torrance County.*—The station is in the southwestern part of the public-school grounds, about three-fourths mile west from the town's center, and about 433 feet west from the public-school building. It is 91.7 feet from the south fence of the grounds, and 116.4 feet from the west fence. It is marked by a limestone post 6 by 6 by 33

NEW MEXICO—continued.

inches, with a bronze disk set in the top, which projects about 7 inches above the ground. The following true bearings were determined:

	o /	
Top of water tank of New Mexico Central Railroad (mark).....	86	20.0 east of south
Upper northwest corner of courthouse, under eaves.....	78	20.1 east of north
Lower southeast corner of jail.....	76	39.4 east of north
Base of flagstaff on schoolhouse roof.....	88	33.0 east of north

*Fort Sumner, Guadalupe County.*—The station is in the southwest corner of an inclosed field belonging to Mr. William Parker, at the northeast corner of the intersection of the east and west road running past the schoolhouse and the first road east of the Salazon House, about 1 mile a little south of east from the town's center. It is 94 feet from the west fence of the field and 165 feet from the south fence. It is marked by a limestone post 6 by 6 by 30 inches, with a bronze disk set in the top, which projects about 4 inches above the ground. The following true bearings were determined:

	o /	
Southeast corner of Santa Fe Railroad station, under eaves (mark).....	55	14.4 west of north
North gable of belfry on Presbyterian Church.....	72	44.8 west of north
Northwest corner of public school, under eaves.....	73	59.4 west of north
North gable on roof of the Salazon House.....	50	19.9 west of south

*Hillsboro, Sierra County.*—The station is in the eastern part of the public-school ground, about one-fourth mile northwest from the town's center. It is 197 feet east from the southeast corner of the schoolhouse, and 102 feet northeast from the northeast corner of the picket fence surrounding the house west of the adobe church. It is marked by the neck of a quart glass bottle buried about 1 inch below the ground. The bottle rests upon a ledge of rock. The following true bearings were determined:

	o /	
Top of Union Church steeple (mark).....	47	02.8 east of south
Top of courthouse cupola.....	30	15.8 east of south
Lower west edge of water tank south of courthouse.....	16	57.8 east of south

*Los Lunas, Valencia County.*—The station is near the northwest corner of the intersection of the first road north and the first road east from the Santa Fe Railroad station, about one-half mile northwest from the town's center. It is near the angle of a telephone line which runs east and then bends to the southeast into town. It is 105.3 feet northwest from the center of the western one of the two corner telephone poles, 139.5 feet northwest from a cross of galvanized nails about 1 foot above the ground in a telephone pole, and 147.2 feet from a triangle of galvanized nails about 1 foot above the ground in another telephone pole. It is marked by the neck of a dark-glass bottle buried about 6 inches under the ground. The following true bearings were determined:

	o /	
Top of Santa Fe Railroad water tank (mark).....	33	06.9 east of south
Top of tower of water tank.....	71	20.0 east of south
East gable of the jail.....	70	41.0 east of south
Triangulation station on hill to the south.....	28	48.1 east of south

*Rincon, Dona Ana County.*—The station is on a low hill about 1,200 feet northeast from the Santa Fe Railroad station, and about 220 feet north from a railroad survey mark consisting of a steel rail painted white and showing about 3 feet above the ground. The station is not marked. The following true bearings were determined:

	o /	
Top of schoolhouse cupola (mark).....	59	31.8 west of south
Lower north edge of uncompleted town water tank.....	82	50.8 west of south
East gable of Santa Fe Railroad station.....	36	22.3 west of south
East gable of Harvey Hotel.....	30	21.3 west of south
Lower northeast corner of rock store.....	64	39.1 west of south

*Santa Fe, Santa Fe County.*—The old station was found to be of no further use for magnetic observations, therefore a new station was established about 250 feet northwest from the old station. It is in the northwestern part of the public-school ground, about one-half mile north from the town's center. It is 8.6 feet east from the northeast corner of the War Department latitude monument, 197 feet northwest from the northwest corner of the largest public-school building, and 108.3 feet southwest from the southwest stone wall of the Federal building grounds. It is marked by a limestone post 6 by 6 by 28 inches, with a bronze disk set in the top, which projects about 4 inches above the ground. The following true bearings were determined:

	o /	
Top of Capitol dome (mark).....	17	25.3 west of south
Iron pipe due north of latitude monument.....	0	19.1 west of north
Lower northwest corner of Federal building.....	73	43.4 east of north
Top of south ornamental gable on Mary Jane School for boys.....	47	12.7 east of north

## NEW MEXICO—continued.

*Texico, Curry County.*—The station is just across the State border in New Mexico in the southeastern part of the public school grounds in Texico, about 1½ miles northwest from the center of Farwell. It is 57.2 feet from the east boundary fence of the grounds, 58.3 feet from the south fence, and 159.5 feet southeast from the southeast corner of the public school building. It is marked by a limestone post 6 by 6 by 24 inches, with a bronze disk set in the top, which projects about 2 inches above the ground. The following true bearings were determined:

Top of Methodist Church steeple in Texico (mark).....	42 09.4 east of south
Upper east edge of Santa Fe Railroad water tank.....	39 12.6 east of south
West gable of Santa Fe Railroad station.....	33 32.4 east of south
Top of Farwell town water tank.....	38 43.8 east of south

*Vaughn, Guadalupe County.*—The station is on the plain about 700 feet northwest from the reading room of the Santa Fe Railroad, and about 375 feet north from the Santa Fe north track. It is between two pits dug about 6 feet deep in the ground; so that one pit is to the south and the other one to the north of the magnetic station. It is marked by a limestone post 6 by 6 by 30 inches, with a bronze disk set in the top, which projects about 5 inches above the ground. The following true bearings were determined:

East gable of New Mexico & Southern R. R. station (mark).....	47 37.3 west of north
Upper southwest corner of the Office Bar building.....	79 06.2 west of north
North gable of Harvey Hotel.....	26 06.0 east of south
West gable of Santa Fe R. R. station.....	31 37.5 east of south

## NEW YORK.

*Albany, Albany County.*—The station of 1912 was reoccupied. It is on a hill west of the Loudonville Road, in a field on land of the Van Renssalaer estate, in front of a farmhouse formerly occupied by Mr. Van Wely. The station is not marked, but is 8 feet from the base of a white marble post 8 by 8 inches, projecting 3 feet above the ground, in the direction of the west tower of the State capitol. This post marks a point on the Albany city line. The station is 100 feet east of the driveway to house formerly occupied by Mr. Van Wely. The following true bearings were determined:

West tower of capitol, apex (mark).....	12 09.8 west of south
Tower of city hall.....	6 20.8 west of south
St. Joseph's Church spire.....	0 39.8 west of south

*Buffalo, Erie County.*—The station of 1908 was reoccupied. It is on the parade grounds of Fort Porter in front of the main barracks and in the rear of the building known as the "Castle." The station is in the line connecting the middle of door 11 of the barracks and the northwest corner of the Castle. It is 84.2 feet from the board fence in the rear of the Castle and 47.8 feet west from the west edge of the cement walk leading from the Castle to the Fort Exchange door. The station is marked by a Bedford stone post 8 by 8 by 24 inches, sunk flush with the surface, lettered U. S. C. & G. S., and center marked with a cross. The following true bearings were determined in 1915:

Southeast corner of brick wall of house Nos. 34 and 35 (mark).....	70 42.3 west of south
West edge of stack on Canadian shore.....	63 50.5 west of north
Spire of Episcopal Church.....	20 08.6 east of north

*Rochester, Monroe County.*—The station of 1907 was reoccupied. It is in Highland Park, on a ridge about 1,000 feet northeast from the fountain of Mount Hope reservoir. A line from the center of the children's pavilion in the park to the center of the Duffy-McInnerney Block, at the corner of West Main and North Fitcher Streets, passes through the station, which is in a saddle of the ridge about 400 feet distant from the pavilion. A meridian line was established, and the stone at the north end of this line marks the station. The south stone is 9 paces north of the refreshment store at the pavilion. The two stones (park monuments), each 4 by 4 by 66 inches, were set flush with the ground. The north stone is roughly lettered U. S. C. & G. S. The following true bearings were determined:

Dome on Powers Building (mark).....	17 36.1 west of north
Pole on tower of Sibley Building.....	4 27.2 west of north
Pole on Armory.....	21 39.2 east of north
South one of four spires on St. Paul's Church.....	40 06.8 east of north
Tip on center of children's pavilion.....	20 09.3 east of south

## NORTH CAROLINA.

*Concord, Cabarrus County.*—The station of 1899 was unsuitable for further magnetic observations. The new station is about two-thirds mile northwest of the old one and is located in the southwest central portion of school ground No. 2. It is at the north end of a tennis court and about midway between a lone oak and the shrub fence on the west, being

NORTH CAROLINA—continued.

24.8 feet from the fence and 23.9 feet from the tree. The station is marked by a granite post 8 by 6 by 30 inches, with a bronze disk in the top which projects about 3 inches above ground. The following true bearings were determined:

	o /
East side of telegraph pole north of station (mark).....	6 40.7 west of north
West gable of residence 500 feet distant.....	58 52.9 east of north
North corner of main school building.....	78 40.4 east of south
Extreme west corner of school building.....	38 11.0 east of south
East gable of dwelling 300 feet distant.....	26 31.4 west of south

The north end of a meridian line about 285 feet long is marked by a granite post 8 by 8 by 38 inches, with a marker and projects about 6 inches above ground.

There are four auxiliary stations established in the vicinity of Concord.

No. 1 is about 4 miles from the primary station, on the North Charlotte road running in a southwesterly direction from town. Observations were made about 50 feet back from the main road on the farm road leading to the barn on Morris's farm.

No. 2 is about 4 miles from the primary station, at Cook's Crossing, nearly due north of town. Observations were made about 150 yards west of the crossing on the north side of the road running due west from the crossing.

No. 3 is about 4 miles from the main station, on the Mount Pleasant Road. It is at the summit of a hill which may be distinguished by the grade of the road running over it, which is a steady grade of about 3 per cent beginning a mile or more on the west. Observations were made about 100 feet south of this road near the highest point.

No. 4 is about 4 miles from the main station, on the Bost Mill Road running a little southeast of the town. Observations were made on the grounds of an old church having a cemetery on the northwest side of it.

*Graham, Alamance County.*—The old station was located so near to an electric car line and other disturbances that observations were impracticable, therefore a new station was located about one-half mile due east of the old one. It is in the extreme eastern central part of the town cemetery, which is marked by a thick woods. It is at the east end of the main road leading into the cemetery, 350 feet almost exactly due east from a small rest pavilion and pump in the center of this road, and 27 feet northwest of a large and prominent tree at the end of the road. The exact spot is marked by a bronze disk in the top of a cement post 8 by 8 by 30 inches, projecting 2 inches above the ground. The following true bearings were determined:

	o /
West gable of residence one-fourth mile distant.....	8 22.1 west of north
South edge of building 300 yards distant.....	16 44.9 east of north
Apex of monument marked "Holt".....	88 04.8 west of south
Apex of pavillion roof.....	89 57.7 west of south
Christian Church spire.....	48 13.9 west of north

NORTH DAKOTA.

*Boundary Monument 798, Pembina County.*—The station is on the boundary 1½ miles south of Haskett, Manitoba. It is one-fourth mile west of the railroad, and 73.65 feet east of the center of Monument 798. The station is not marked. The following true bearings were determined:

	o /
West gable of grain elevator in Haskett (mark).....	9 23.0 west of north
Cupola of large barn to southeast.....	30 53.3 east of south
North gable of farmhouse.....	10 24.0 west of south
Monument 798.....	89 57.7 west of south
Monument 797.....	89 58.8 west of south

*Boundary Monument 816, Pembina County.*—The station is on the boundary just west of Monument 816. It is one-half mile south and one-fourth mile west of Gretna, Manitoba, and 1½ miles north and one-half mile west of Neche, N. Dak. A good road leads to the station from either of these towns. It is 120.8 feet west of the center of Monument 816 and 170.6 feet southwest of a cement post containing a small brass plate (U. S. & C. B. Survey). This cement post is 70.55 feet north and a little east of Monument 816. The station is not marked. The following true bearings were determined:

	o /
South gable of house 1 mile distant (mark).....	53 29.1 west of north
U. S. & C. B. Survey cement post near magnetic station.....	69 43.7 east of north
West gable of house at stockyards.....	84 32.7 east of north
Monument 816.....	89 50.5 east of north
Signal station west of Monument 817.....	89 50.5 east of north

*Pembina, Pembina County.*—The station of 1905 and 1911 was reoccupied. It is in the southeast corner of the baseball grounds, about 700 feet southward from the junction of the Pembina and Red Rivers and 536 feet from the west side of the county road. It is 72.5 feet west of the board fence on the east, 180 feet southwest of the northeast

## NORTH DAKOTA—continued.

corner of the fence, and 267.8 feet south of the southeast corner of the grandstand. From a point 6 feet west of the station a flagpole and the Catholic Church spire appear in line. The station is marked by a cement block 6 by 10 by 24 inches, sunk flush with the ground and marked U. S., 1905. The following true bearings were determined in 1905 and 1915:

Icelandic Lutheran Church spire (mark).....	41	53.8	west of south
East dormer gable of Oliver's house.....	70	25.5	west of south
Left edge of B. J. Johnson's house.....	84	32.9	west of north
Center of large flagpole north of ball park.....	0	44.8	east of north
East gable of M. Sorgenson's house.....	63	40.3	west of south

## OHIO.

*Amsterdam, Jefferson County.*—Observations were made on the summit of the hill about 250 yards northwest of the Lake Shore depot. The station is not marked.

*Barnesville, Belmont County.*—Observations were made in the old fair grounds, which lie about three-fourths mile north of the center of the town. The spot selected was about 400 feet west of the grand stand. The station is not marked.

*Beallsville, Monroe County.*—Observations were made about 300 yards northeast of the railroad station on the summit of a hill. The spot selected was also about 75 feet south of a wagon road. The station is not marked.

*Boweston, Harrison County.*—Observations were made in the extreme south corner of the baseball field a few hundred feet south of the Pennsylvania Railroad depot. The station is not marked.

*Coolville, Athens County.*—Observations were made in a large alfalfa field on the river bottom northeast of the town and on the north side of the pike leading to the depot. The spot selected was about 300 yards from the bridge crossing the Hocking River and about 100 feet north of the pike. The station is not marked.

*Dillonvale, Jefferson County.*—Observations were made in the center of the baseball field in the rear of the public school only a few hundred yards from the center of the town. The station is not marked.

*Minerva, Stark County.*—Observations were made in the far corner of center field in the baseball park on the east side of the creek and about one-eighth mile east of the center of the town. The station is not marked.

*Piedmont, Harrison County.*—Observations were made in the large pasture east of the railway station. The spot selected was southeast of the baseball diamond and about 100 feet west of the road bordering the field on the east. The station is not marked.

*Portsmouth, Scioto County.*—As the station of 1900 was no longer suitable for magnetic work, a new station was established about 1½ miles north of it. It is in the meadow of Mrs. Leonard Eck, on the west side of Mabert road at a point about 1 mile north of the New Boston turnpike. The monument sets about 40 feet back from the road and may be easily located by referring to a large prominent cedar which sets about 25 feet south of it. It is marked by a post of hard limestone, 4 feet long, about 2 feet square at its base, and 1 foot square at the top. It projects about 1 foot above ground and sets in a concrete base. A brass pin set in the top marks the exact spot. The following true bearings were determined:

Upper southeast corner Eck's residence.....	89	00.1	west of south
East gable of Hamm's residence.....	18	32.6	west of north
Southwest corner of residence on hill one-fourth mile distant.....	9	17.5	west of north

The north end of a meridian line about 650 feet long is marked by a similar but much heavier monument which projects 27 inches above ground.

Ten auxiliary stations were also occupied. No. 1 was 1 mile northwest of the magnetic station on the Jesse Johnson property; No. 2 was 4 miles southwest on the Friendship road, on the Grice farm; No. 3 was 3 miles west in the City View addition; No. 4 was 2½ miles northeast on the farm of John Bainer; No. 5 was 4 miles east in the Longmeadow addition; No. 6 was 11 miles southwest near the Turkey Creek bridge; No. 7 was 2 miles northwest on the Noel farm; No. 8 was 13 miles east near Vernon Church; No. 9 was 11 miles northeast at Scioto; No. 10 was 11 miles north about one-half mile east of Lucasville.

*Salineville, Columbiana County.*—Observations were made near the summit of the ridge on the east side of the town. The spot selected was about 100 feet east of the footpath leading from the depot to the Cameron farm and about 500 feet north of the wagon road running along the top of the ridge. The station is not marked.

*Summerfield, Noble County.*—Observations were made in left field of the baseball grounds which lie about one-eighth mile northeast of the center of the town. The station is not marked.

*Warner, Washington County.*—Observations were made in a large meadow on the east edge of the town. The spot selected was near the main street of the town and about one-half mile east of the railroad station. The public school is located on the west side of this meadow and is about 200 yards from the point at which observations were made. The station is not marked.

*Waverly, Pike County.*—The station of 1903 was reoccupied. It is in the northwest corner of Waverly cemetery, on the west edge of the roadway running almost north and south parallel to and near the west boundary of the cemetery.

OHIO—continued.

The station is about 50 feet from the north fence of the cemetery. It is marked by a flagstone 3 feet long and 2½ by 15 inches at the top, which is flush with the ground and lettered U. S. C. & G. S., 1903. The following true bearings were determined:

	o /	
Cross on Catholic Church 1 mile distant (mark).....	30	08.7 east of north
Apex of new Detroit Southern R. R. water tank.....	76	40.2 west of south
South gable of barn 1½ miles distant.....	28	22.8 east of south
South corner of brick house 300 yards distant.....	66	56.2 west of south
Apex of ornament on east wall of cemetery.....	89	01.6 east of north

Four auxiliary stations were also occupied. No. 1 was about 6 miles south of Waverly on the Portsmouth Pike on the bank of a small stream crossing the road at a point about 1 mile south of Piketon. No. 2 was about 5 miles northeast on the west edge of the town of Omega. No. 3 was 5 miles due west of Waverly on the Buchanan pike. No. 4 was 5 miles southeast of Waverly near the 5-mile post on the Detroit Southern Railroad.

OKLAHOMA.

*Arnette, Ellis County.*—The station is in the southeastern part of a field belonging to Charles Johnson. This field contains a race track and baseball ground and is about one-fourth mile southwest from the town's center. It is 103 feet northwest from a fence corner near the southwest corner of Collin's second addition, and 87 feet west from the fence running north from this corner. It is marked by a cement block 7 by 7 by 16 inches set in concrete projecting about 1½ inches above the ground. A hole in the top indicated the exact spot. The following true bearings were determined:

	o /	
Top of schoolhouse cupola (mark).....	12	52.1 east of north
Top of Baptist Church steeple.....	39	17.5 east of north
Upper southeast brick corner of courthouse.....	66	36.1 east of north
Top of Methodist Church steeple.....	77	13.8 east of north.

A similar cement block at a distance of 472.5 feet marks the north end of a meridian line.

*Binger, Caddo County.*—The station is in the northwestern part of the park reservation, which is across the road to the southeast of the Congregational Church and about 1,500 feet southeast from the town's center. It is 70.5 feet from the west park fence, and 79.2 feet from the north park fence. It is marked by a limestone post 6 by 5 by 33 inches, with a bronze disk set in the top, which projects about 6 inches above the ground. The following true bearings were determined:

	o /	
Top of Rock Island R. R. water tank (mark).....	66	44.8 east of north
North gable of Rock Island R. R. station.....	69	59.3 east of north
Top of Christian Church cupola.....	51	47.3 west of north

*Buffalo, Harper County.*—The station is in the southeast corner of the pasture on the west side of the cemetery, about 1½ miles southeast from the town's center. It is 109.3 feet northwest from the southwest corner of the cemetery fence, 58.7 feet from the west cemetery fence, and 90.2 feet north from the south fence of the pasture. It is marked by a limestone post 5 by 6 by 27 inches, with a bronze disk set in the top, which projects about 3 inches above the ground. The following true bearings were determined:

	o /	
Top of schoolhouse belfry (mark).....	82	41.6 west of north
Upper southwest corner of schoolhouse under coping of roof.....	82	56.4 west of north
Top of Methodist Church steeple.....	72	54.9 west of north
South gable of Henry Miller's residence.....	73	13.4 west of north
Rock pile in form of pointed monument on ridge to the northeast.....	9	36.1 east of north

About 300 feet distant a 2-inch iron pipe 24 inches long is driven so that 3 inches remains above the ground. A one-fourth inch iron rod 1½ feet long set in the center of the pipe marks the north end of a meridian line.

*Carmen, Alfalfa County.*—The station is in the southwest part of the city park, about one-half mile southeast from the town's center. It is about 105 feet from the west park fence, and about 55 feet northwest from the northwest shore of the park pond. It is marked by a limestone post 6 by 6 by 27 inches, with a bronze disk set in the top, which projects about 5 inches above the ground. The following true bearings were determined:

	o /	
Top of schoolhouse cupola (mark).....	58	48.1 west of north
Top of town water tank.....	41	35.9 west of north
Top of only church steeple in sight.....	52	41.7 west of north
East gable of St. Louis & San Francisco R. R. station.....	22	28.8 west of north

*Geary, Blaine County.*—The station is near the northeast corner of the cemetery in a triangle of ground formed by the east cemetery fence, the road running west from the town, and the northeast fence of a pasture to the east. It is

## OKLAHOMA—continued.

about  $1\frac{1}{4}$  miles southwest from the town's center. It is 167.6 feet southeast from northeast corner of the cemetery fence and 123.4 feet east from the east cemetery fence. It is marked by a limestone post 6 by 6 by 24 inches, with a bronze disk set in the top, which projects about 2 inches above the ground. The following true bearings were determined:

Top of schoolhouse cupola (mark).....	47 13.9 east of north
Top of town water tank.....	54 50.8 east of north
Top of the Hiersche Monument in the cemetery.....	52 26.2 west of south

*Hammon, Roger Mills County.*—The station is in the northwestern part of the city park, about 86 feet east from a creek, and about one-fourth mile southwest from the town's center. It is 93.3 feet southeast from the southwest corner of the park arbor, 135.2 feet a little east of south from the northeast corner, and 76.1 feet southeast from the southeast corner. It is marked by a limestone post 5 by 6 by 24 inches, with a bronze disk set in the top, which projects about 2 inches above the ground. The following true bearings were determined:

Top of Christian Church steeple (mark).....	73 57.8 east of south
Top of Methodist Church steeple.....	81 48.9 east of south
Top of town water tank.....	87 09.0 east of south
Center of northwest corner of public-school house.....	65 16.8 east of south

*Hollis, Harmon County.*—The station is in the east end of Jones Street just across a ditch, and about three-fourths mile a little north of east from the town's center. It is about 340 feet north from the wooden bridge across the ditch at Broadway, and 66.5 feet southwest from the southwest corner of the fence surrounding the residence of J. T. Miller. It is marked by a limestone post 6 by 6 by 27 inches, with a bronze disk set in the top, which projects about 5 inches above the ground. The following true bearings were determined:

Top of Methodist Church steeple (mark).....	89 14.7 west of south
Top of town water tank.....	20 24.6 west of south
Top of public school belfry.....	71 01.4 west of north
West gable of storehouse of oil mill.....	00 45.4 east of south

*Medford, Grant County.*—The station is in the northeast corner of a public reservation northeast of the intersection of the Rock Island and the Santa Fe Railroads, and about one-half mile northeast from the town's center. It is 125.9 feet from the fence across the road to the east and 188 feet from the fence across the road to the north. It is marked by a limestone post 6 by 6 by 28 inches, with a bronze disk set in the top, which projects about 6 inches above the ground. The following true bearings were determined:

Top of Congregational Church steeple (mark).....	79 59.9 west of south
Top of north dome of schoolhouse.....	85 15.2 west of south
Base of flagstaff on courthouse roof.....	70 50.6 west of south
Top of town water tank.....	68 50.1 west of south

*Okeene, Blaine County.*—The station is in the southwestern part of the City Park which contains in its northeast corner the town waterworks. It is about one-half mile southwest from the town's center. It is 72.2 feet from the fence on the west side of the park, and 98 feet from the fence across the road on the south side of the park. It is marked by a limestone post 6 by 6 by 30 inches, with a bronze disk set in the top, which projects about 4 inches above the ground. The following true bearings were determined:

Top of Catholic Church steeple (mark).....	86 20.9 east of north
Top of Methodist Church steeple.....	84 17.5 east of south
Top of town water tank.....	51 17.1 east of north
South gable of highest roof of the flour mill.....	12 40.5 east of north

*Rush Springs, Grady County.*—The station is in the southeastern part of the City Park, which is across the road to the west of the cemetery and about one-half mile east from the town's center. It is 63.5 feet from the east fence of the park, and 92 feet from the south park fence. It is marked by a limestone post 6 by 6 by 24 inches, with a bronze disk set in the top, which projects about 2½ inches above the ground. The following true bearings were determined:

Top of Baptist Church steeple (mark).....	60 14.6 west of south
Top of north steeple of First Baptist Church.....	84 33.9 west of north
East gable of tallest building of the mill south of the park.....	15 03.2 west of south
South gable of Rock Island R. R. station.....	67 08.4 west of south

*Thomas, Custer County.*—The station is in the southeastern part of the City Park about 350 feet northeast from the Hotel St. Nicholas, and about 1,000 feet east from the town's center. It is 11.9 feet southwest from the near edge of the sidewalk running from the center to the southeast corner of the park, and 129.4 feet southeast from the nearest

OKLAHOMA—continued.

point of the park band stand. It is marked by a limestone post 5 by 6 by 28 inches, with a bronze disk set in the top, which projects about 2 inches above the ground. The following true bearings were determined:

Top of cupola on barn of Grand View Farm (mark).....	1	05.0	west of north
Top of cupola on Amish Church.....	65	26.0	east of south
Northwest gable of grain elevator of Thomas Mill Co.....	37	21.6	east of south
Center of southeast corner of first ward schoolhouse.....	39	05.0	east of north

*Trail, Dewey County.*—The station is on the extreme top of the highest hill in the pasture of Frank Callan's farm, which is about one-fourth mile northwest from the town's center. It is marked by a limestone post 5 by 6 by 30 inches, with a bronze disk set in the top, which projects about 4 inches above the ground. The following true bearings were determined:

West gable of south Cozart grain elevator at Camargo (mark).....	8	28.6	east of north
Top of church steeple at Camargo.....	13	04.6	east of north
Lower southwest corner of schoolhouse at Trail.....	49	37.5	east of south

About 570 feet distant, the center of an oak stake marks the south end of a meridian line.

*Waurika, Jefferson County.*—The station is about 21 feet west from the west bank of Beaver-Creek in the northern part of a piece of ground used as a park which belongs to the Pope Addition. This piece of ground is on the south side of the State Highway, which runs east and west, at the iron bridge crossing Beaver Creek. The station is about three-fourths mile southwest from the town's center, 214 feet from the northwest fence of this ground, and 80.5 feet from the west fence. It is marked by a limestone post 6 by 5 by 33 inches, with a bronze disk set in the top, which projects about 6 inches above the ground. The following true bearings were determined:

North gable of W. P. William's house (mark).....	49	43.8	west of south
East gable of Wiley Toomer's house.....	86	06.5	west of south
East gable of J. D. Huffman's house.....	78	22.5	west of north

About 270 feet distant the center of the top of an iron rod marks the south end of a meridian line. This rod is 2 by 2 inches at the top and about 24 inches long and shows about 6 inches above the ground.

*Weatherford, Blaine County.*—The station is east of the central part of the grounds of the Southwestern Normal School, south of the front entrance of Science Hall and near the corner of an east and west road south of the buildings, and a road running north and south along the west side of the athletic field. It is about three-fourths mile north from the town's center. It is 263.6 feet southwest from the southeast corner of Science Hall, 249.7 feet southeast from the southwest corner of Science Hall, and 14.2 feet west from the west edge of the sidewalk running south from the front entrance to Science Hall. It is marked by a limestone post 6 by 5 by 24 inches, with a bronze disk set in the top, which projects about 1 inch above the ground. The following true bearings were determined:

Lower northeast corner of Administration Building (mark).....	49	07.8	west of north
Lower southwest corner of Administration Building.....	62	57.7	west of north
Lower southeast corner of Science Hall.....	27	25.3	east of north
West gable of a white house.....	78	31.8	east of south

*Woodward, Woodward County.*—The station of 1900 was found to be of no further use for magnetic observations; therefore a new station was established in the southern part of Lee Park, where the road running east through the park branches to the southeast. It is about three-fourths mile northeast from the town's center. It is 197.2 feet northwest from the sign post marked Maury Avenue and Fourth Street, and 258.8 feet south from the fence across the road to the north. It is marked by a limestone post 5 by 6 by 30 inches, with a bronze disk set in the top, which projects about 4 inches above the ground. The following true bearings were determined:

Top of Methodist Episcopal Church steeple (mark).....	13	34.9	west of south
Upper northeast corner of Santa Fe R. R. roundhouse under wooden roof....	5	18.4	east of south
Upper north gable on the Woodward Mill elevator.....	66	52.6	west of south

About 212 feet from the magnetic station and near the fence to the north a second limestone post 6 by 6 by 36 inches, lettered U. S. C. & G. S., was set with its top about 8 inches above the ground to indicate the north end of a meridian line. A hole in the top marks the exact spot.

*Wynoka, Woods County.*—The station is in the northwest corner of Elm Park, about one-fourth mile west from the town's center. It is 115.4 feet from the west park fence and 108.6 feet from the north park fence. It is marked by a limestone post 5 by 8 by 27 inches, with a bronze disk set in the top, which projects about 1 inch above the ground. The following true bearings were determined:

West top gable of coal chute near railroad roundhouse (mark).....	32	18.8	east of north
South gable of a dark yellow house.....	22	48.3	east of north
Upper northwest corner of the Commercial Hotel.....	83	59.8	east of north

## SOUTH CAROLINA.

*Ridgeland, Jasper County.*—The station is near the north edge of a large field owned by Mr. Perry, about one-fourth of a mile north of the center of the town, on the west side of the main road. It is 25.9 feet from a wire fence marking the north side of the field, 25.4 feet to a tall pine tree northeast of it, and 63 feet to the line of the east fence (produced) of the field lying north of the station. It is marked by a cement post 8 by 8 by 36 inches with a bronze disk in the top projecting 4 inches above the ground. The following true bearings were determined:

Upper corner of latticed window in attic of Gilmore's residence.....	2	21.2	west of south
Methodist Church spire.....	1	24.2	west of south
North gable of Nettle's residence.....	9	45.5	east of south
North edge of large tombstone near east fence of town cemetery.....	86	14.8	west of south
Lower north corner of chimney of Gill's residence.....	29	50.0	east of south

A similar post marks the south end of a meridian line 982 feet long.

*Spartanburg, Spartanburg County.*—The old station was reoccupied, but the old azimuth marks were no longer available. It is on the campus of the Wofford College, in front of the main building. It is 219.8 feet nearly south from the Coast and Geodetic Survey primary triangulation station "Wofford" on the roof of the college building. It is 73.6 feet north of the south fence and 30.2 feet east from the path leading from main building to Science Hall. The station is marked by a stone post about 6 inches square, with its upper surface just above the ground. On this surface are cut the letters U.S.C.S., also M.S. The following true bearings were determined in 1915:

Southwest corner of Science Hall (mark).....	12	39.2	east of south
East side of belfry on new Baptist Church.....	43	17.0	east of south
South gable of residence 300 yards distant.....	41	10.7	west of south
Southeast corner of residence 300 yards distant.....	84	13.2	west of north
Lower southeast corner of main building.....	24	39.5	east of north

## SOUTH DAKOTA.

*Gregory, Gregory County.*—The station is near the southwest corner of the high-school grounds, one-half mile north of the town's center. It is 93.6 feet west of the southwest corner of the high-school building, 26.3 feet from the row of trees on the west, and 81.7 feet from the cement walk on the south side of the grounds. It is marked by a cement post 10 by 10 by 24 inches, with cross and drill hole and lettered U.S., 1915, which sets flush with the ground. The following true bearings were determined:

Catholic Church spire (mark).....	17	13.6	west of south
Apex of reservoir on butte.....	77	28.8	west of north
Left edge of high-school building, near ground.....	56	33.2	east of north
Chimney on house east of high school.....	84	26.6	east of south
Chimney on hotel in Gregory.....	13	20.1	west of south

*Wheeler, Charles Mix County.*—The station is situated in the courthouse yard near the town's center. It is 33.7 feet from the south fence, 137 feet from the southeast corner of the yard, 61 feet west of the southwest corner of the south wing of the courthouse, and 71.9 feet southwest of the northwest corner of the courthouse. It is marked by a cement post 6 by 6 by 18 inches, with cross and drill hole in top, which sets flush with the ground. The following true bearings were determined:

Northwest corner of post office (mark).....	56	46.9	east of north
North gable of house east of courthouse.....	65	01.3	east of south
Spire on schoolhouse.....	74	23.5	west of south
Right edge of right-hand chimney on Mr. Patrick's house.....	41	59.5	east of north

*Winner, Tripp County.*—The station is near the west edge of the school grounds near the town's center. It is 61 feet northeast of the northwest corner of the school annex and the same distance from its northeast corner, 200 feet northwest of the northeast corner of the school building, and 125 feet northeast of the northeast corner of the Catholic Church. It is marked by a cement block 8 by 8 by 18 inches center-marked and set flush with the ground. The following true bearings were determined:

Apex of railroad water tank (mark).....	4	01.0	east of north
South gable of grain elevator.....	23	49.0	east of north
Left edge of chimney on high school.....	69	10.8	east of south
North gable of a church.....	33	01.2	west of south
Northwest corner of Catholic Church.....	81	39.5	west of south

TENNESSEE.

*Elora, Lincoln County.*—The station of 1911 was reoccupied. It is in the southwest corner of the public-school grounds, about one-half mile northwest of the center of the town. It is 21 feet from the wood fence to the south, 18 feet from the fence to the west, and 66 feet from the southwest edge of the school building. The station is marked by a limestone post 8 by 8 by 30 inches, projecting 4 inches above the ground, with a brass disk in the top. The following true bearings were determined:

	o /	
West gable of house about 500 feet distant (mark).....	65	18.2 east of south
Southeast edge of school on sill right above foundation pillar.....	35	19.0 east of north
Northwest edge of school on sill right above foundation pillar.....	9	10.2 east of north
West gable of small white church tower one-fourth mile distant.....	32	36.7 east of south

*Glenmary, Scott County.*—Observations were made in a large open field near the north edge of the town, and about 350 yards west of the Queen & Crescent Railroad tracks. The station is not marked.

*Huntland, Franklin County.*—Observations were made about one-half mile south of Huntland in a pasture on the west side of the highway belonging to Mr. Lafferty.

*Jacksboro, Campbell County.*—Observations were made at a point about 600 feet due north of what is commonly known as the town's "regulating" stone. The magnetic station is located on the property of Mr. Hester Baird, county surveyor, about 200 feet southwest of his residence, in a small strip of grazing land. It is nearly south of the washhouse and midway between the east and west fences bounding the field. The station is marked by a bronze disk set in the top of a granite post 5 by 5 by 27 inches, projecting about 5 inches above ground. The south meridian stone mentioned above is about 12 by 8 inches by 6 feet with a marker in the top and projects about 2½ feet above ground. This stone is on the north side of the main street, about 100 yards west of the southwest corner of the courthouse grounds.

*McCracken's Schoolhouse, Lincoln County.*—Observations were made about 1 mile west of McCracken schoolhouse, beside the road on some partly cleared land belonging to Allen Crabtree, near a hilltop.

*Nashville, Davidson County.*—The station of 1911 was reoccupied. It is in the Mount Olivet Cemetery, about 3 miles from the center of the city. It is 61 feet from the Wade monument, 89.7 feet from the Collins monument, and 96.8 feet from a large white-oak tree across the driveway. The station is marked by a Bedford limestone post 5 by 8 by 30 inches, projecting 1 inch above the ground and lettered U.S.C.&G.S., 1905. The following true bearings were determined in 1915:

	o /	
Gardiner monument (mark).....	54	39.0 west of north
Flagpole on cupola of State capitol.....	64	08.4 west of north
Ensley monument.....	35	49.7 east of north
Minor monument.....	87	07.6 east of north

*Oregon Mill, Lincoln County.*—Observations were made at a point in a pasture about 500 feet downstream from the mill, about 20 feet from the rail fence along the highway, and about 50 feet from the creek.

*Pulaski, Giles County.*—Observations were made in the vicinity of the station of 1881, which was found unsuitable for further magnetic work, and a new station was established about 1,000 feet west on the grounds of the Massey School, about one-third mile west of the courthouse. It is 281.9 feet south of the southwest corner of the main school building, 146 feet from the southeast corner of the dormitory, 142.7 feet from a large hackberry tree, and 27.4 feet from the south fence. The station is marked by a limestone post 6 by 6 by 30 inches, set flush with the surface of the ground, and having a bronze disk in the top. The following true bearings were determined:

	o /	
Ball on top of courthouse dome (mark).....	81	30.7 east of south
Southwest corner of school building.....	0	19.8 east of north
Steeple of Methodist Episcopal Church South.....	89	50.8 east of north
South edge of wall of Martin College building.....	70	46.7 east of south

A meridian line is marked by a post set near the corner of the school building 281.9 feet north.

*Sherwood, Franklin County.*—Observations were made at a point about one-half mile south of town, in a pasture in front of the house of Mr. W. C. Robison. The point was about 20 feet south of the path through the lot, about 200 feet east of the highway, and about 200 feet from Mr. Robison's house. The point was not marked.

TEXAS.

*Alice, Jim Wells County.*—The station is in the southeastern part of a small park left in a tract of land called the Adam and Preston addition, about 900 feet east from the courthouse, and about one-half mile northeast from the town's center. It is about 22 feet from the south boundary of the park and 24 feet from the east boundary. It is marked by a limestone post 6 by 6 by 28 inches, with a bronze disk set in the top which projects about 2 inches above the ground. The following true bearings were determined:

	o /	
Top of Presbyterian Church steeple (mark).....	75	11.2 west of south
Top of town water tank.....	58	00.6 west of south
Top of Methodist Church steeple.....	80	23.3 west of south
Base of flagstaff on courthouse dome.....	84	38.4 west of north

## TEXAS—continued.

About 275 feet distant a 4-inch glazed pipe filled with cement marks a north meridian point. This marker is lettered N.M.W.S. on the top, which projects about 3 inches above the ground. A brass rod with a cross in the top set in the cement indicates the exact spot.

*Anahuac, Chambers County.*—The station is between the residence of the light keeper and the residence of Mr. Agrilius, and between the northwest fence of a plot belonging to Mrs. Clara Hamilton and the bay shore, about 1 mile southwest from the town's center. It is 164.5 feet from the northwest corner of Mrs. Clara Hamilton's plot, 52.2 feet from the northwest fence of this plot, 84.6 feet west from a triangle of galvanized nails about 1½ feet above the ground in the trunk of an oak tree, and 154.3 feet northeast from a cross of galvanized nails about 1½ feet above the ground in the trunk of a pine tree. It is marked by a granite post 8 by 6 by 29 inches, with a bronze disk in the top which projects about 4 inches above the ground. The following true bearings were determined:

Top of Beacon B (mark).....	56 39.8 west of south
Upper southwest corner of L. R. Miller's barn under eave.....	70 20.0 east of south
Cross of galvanized nails about 1½ feet above the ground in the trunk of a pine tree.....	38 59.0 west of south

*Archer City, Archer County.*—The station is in the southwestern corner of a pasture belonging to S. Wilson, between the residences of C. E. Goodwin and Charles Thuman, and about 1½ miles east from the town's center. It is 53.2 feet from the west fence, 168.6 feet from the south fence, 66.7 feet southeast from a stone about 4 by 4 inches set flush with the ground under the west pasture fence to mark the south line of a road, and 151 feet southeast from a 6 by 4 inch stone, similarly set, to mark the north line of a road. It is marked by a limestone post 6 by 6 by 24 inches, set with a bronze disk and projecting about 4 inches above the ground. The following true bearings were determined:

Top of courthouse cupola (mark).....	85 40.0 west of north
Top of town water tank.....	81 10.7 west of south
Top of Methodist Church steeple.....	88 49.9 west of north
Top of Baptist Church cupola.....	89 51.3 west of north
Gable over east entrance to public school.....	77 36.2 west of south

*Austin, Travis County.*—The station of 1906 was reoccupied. It is in the northwest part of the grounds of the State Deaf and Dumb School, north of the tennis courts. It is marked by a stone post lettered U. S. C. & G. S., which projects 6 inches above the ground. The following true bearings were determined in 1912:

Spire on main building of University of Texas (mark).....	17 49.4 east of north
Congregational Church spire.....	19 49.5 east of north
East spire main building Deaf and Dumb School.....	17 05.7 east of south
South meridian stone.....	0 01.4 east of south

*Batesville, Zavalla County.*—The station is in the southwestern corner of the public-school ground, about 350 feet southwest from the school building, and about one-fourth mile southwest from the town's center. It is 81.7 feet from the southeast fence of the ground, and 55.8 feet from the southwest fence. It is marked by a limestone post 6 by 6 by 28 inches, with a bronze disk in the top, which projects about 3 inches above the ground. The following true bearings were determined:

Top of Methodist Church steeple (mark).....	15 03.9 east of north
West gable on cupola of old schoolhouse.....	11 26.7 east of north
Top of cupola of new schoolhouse.....	41 25.9 east of north

About 400 feet distant a cross in the top of a round field stone marks the north end of a meridian line. This stone is 3 by 8 inches at the top and projects about 3 inches above the ground.

*Boerne, Kendall County.*—The station is in the southeast corner of the County Fairground, about 1½ miles east from the town's center. It is 74.8 feet from the southeast fence of the ground, and 252 feet from the southwest fence. It is marked by a limestone post 6 by 6 by 30 inches with a bronze disk in the top, which projects about 6 inches above the ground. The following true bearings were determined:

Flagstaff on Kronkasky's tower (mark).....	89 25.9 west of south
Lower northwest corner of northern exhibition building.....	38 12.7 west of north
Southeast gable of northern bungalow on Kronkasky's hill.....	88 34.1 west of north

A second limestone post 6 by 6 by 26 inches with a hole in the top marks the north end of a meridian line 330 feet long. This post is about 5 inches above the ground.

*Brownsville, Cameron County.*—The station is in the southern part of the reservation of Fort Brown, between the commanding officer's quarters and the hospital, and about three-fourths mile southeast from the town's center. It is

TEXAS—continued.

231.6 feet from the northeast corner of the house used as the commanding officer's quarters, 279 feet from the northwest corner of the portico of the hospital, and about 113 feet northwest from the bank of the river. It is marked by a limestone post 6 by 6 by 28 inches with a bronze disk in the top, which projects about 3 inches above the ground. The following true bearings were determined:

	o /	
Top of old courthouse dome (mark).....	26	30.6 west of north
Base of wooden cross on Catholic school.....	18	03.6 west of north
East gable of barrack on north side of parade ground.....	30	27.6 west of north
Top of post water tank.....	68	30.4 east of south

*Crosbyton, Crosby County.*—The station is in a pasture of the Bassett Dairy Co., about 1 mile northwest from the town's center, on the south side of the lake, which is southeast of the dairy building, in a triangle formed by two wire fences and the south side of the lake. It is 86.2 feet from the southwest fence, and 91.5 feet from the northwest fence. It is marked by a limestone post 6 by 6 by 24 inches, with a bronze disk set in the top, which is about 2½ inches above the ground. The following true bearings were determined:

	o /	
Top of town water tank (mark).....	75	21.2 east of south
Top of tallest Presbyterian Church steeple.....	78	57.4 east of south
Base of flagstaff on county courthouse.....	56	55.2 east of south
Southwest corner of J. M. Bassett's residence, under eaves.....	21	00.6 east of north

At a distance of about 1,500 feet, on the northwest shore of the lake, a three-fourths inch iron pipe showing about 1 inch above the ground marks the north end of a meridian line.

*Edinburg, Hidalgo County.*—The station is about 350 feet northeast from the courthouse in the northern part of a small parking. It is 85.3 feet, 100.2 feet, and 102 feet from the north fence, the east fence, and the nearest point of the curved fence to the southwest, respectively. It is marked by a limestone post 6 by 6 by 26 inches, with a bronze disk in the top, which projects about 3 inches above the ground. The following true bearings were determined:

	o /	
Upper northeast corner of the schoolhouse under roof projection (mark).....	59	19.5 west of north
West gable of post office.....	13	04.8 east of south
Top of central cupola of courthouse.....	52	16.4 west of south

About 500 feet distant and in about the east central part of the small park to the south of the courthouse, a 2½-inch iron pipe, 30 inches long, filled with cement with a nail in the top marks a south meridian point. The pipe projects about 3 inches above the ground. A marker of the same description about 250 feet distant and near the fence line across the road to the north marks a north meridian point.

*Encinal, Lasalle County.*—The station is east of the school ground and on the east side of the baseball diamond, about one-half mile east from the town's center. It is 457.5 feet from the southeast corner of the school ground and 346.5 feet from the northeast corner. It is marked by a limestone post 6 by 6 by 28 inches, with a bronze disk in the top, which projects about 3 inches above the ground. The following true bearings were determined:

	o /	
Top of Catholic Church steeple (mark).....	82	29.3 west of north
Upper northwest (brick) corner of schoolhouse under eave of roof.....	85	17.5 west of north
East gable of a small church south of schoolhouse.....	72	37.3 west of south

*Falfurrias, Brooks County.*—The station is in the southeastern corner of the ground surrounding the public school, about 1,500 feet south from the town's center. It is 46.6 feet from the south school fence, 43.3 feet from the east school fence, and about 280 feet southeast from the school building. It is marked by a limestone post 6 by 6 by 30 inches with a bronze disk in the top, which projects above the ground. The following true bearings were determined:

	o /	
Top of Catholic Church belfry (mark).....	83	57.0 west of north
Top of Baptist Church steeple.....	89	13.7 west of south
East gable of Episcopal Church.....	81	19.4 west of south
Top of town water tank.....	13	56.2 west of north

*Fort Davis, Jeff Davis County.*—The station is in the southwestern part of a field surrounding a large uncompleted adobe building which was started for a hotel and belongs to Mr. Stewart, the county clerk. It is 133 feet from the northwest corner of the adobe building, 185.5 feet from the southwest corner of the building, 143.4 feet from the southeast boundary fence of the field, and 151.2 feet from the southwest boundary fence. This field is immediately east of the baseball grounds, about one-half mile northeast from the town's center and southeast from the old fort. It is marked

## TEXAS—continued.

by a limestone post 6 by 6 by 24 inches, with a bronze disk in the top, which is about 4 inches above the ground. The following true bearings were determined:

Top of courthouse cupola (mark).....	39 06. 8 west of south
Top of schoolhouse cupola.....	67 52. 6 west of south
Top of Presbyterian Church steeple.....	73 31. 5 west of south
Top of Catholic Church steeple.....	80 32. 8 east of south

*Galveston, Galveston County.*—Observations were made in the vicinity of the station of 1906 located on the Government Military Reserve, Fort Crockett, in the west end of the city of Galveston. The old station was found to be of no further use for magnetic observations, therefore a new station was established on Pelican Island, east of the central part and near to the United States Immigration Station. It is 257.5 feet from the northwest corner of the immigration station and 136.5 feet from the southwest corner of the cover over the cesspool. It is marked by a granite post 8 by 5 by 29 inches, with a bronze disk in the top, which projects about 3 inches above the ground. The following true bearings were determined:

Top of City Hall cupola (mark).....	19 04. 0 west of south
Top of courthouse cupola.....	16 24. 4 west of south
Top of a dome.....	17 05. 6 west of south
Top of tower of life-saving station.....	82 59. 4 east of north
Top of tower of Galviz Hotel.....	22 02. 8 east of south
Top of Bolivar Lighthouse.....	18 48. 2 east of north

*Goliad, Goliad County.*—The station is in the northeastern corner of the churchyard of the Mission of La Bahia Del Espiritu Santo, about 2 miles southeast from the town's center. It is 58.1 feet from the northeast wall, 72 feet from the southeast wall, and 130.5 feet from the southeast corner of the east wing of the church. It is marked by a limestone post 6 by 6 by 30 inches, with a bronze disk in the top, which projects about 6 inches above the ground. The following true bearings were determined:

Top of courthouse cupola (mark).....	26 04. 2 west of north
Top of a church steeple.....	26 43. 1 west of north
Top of ornamental front of the Koonce saloon.....	24 31. 8 west of north

*Hebronville, Jim Hogg County.*—The station is in the northeastern corner of the reservation left for a park, about one-fourth mile northwest from the town's center. It is 172.5 feet south from the fence across the road to the north and 134.4 feet southwest from the stake at the northeast corner of the park. It is marked by a limestone post 6 by 6 by 30 inches, with a bronze disk set in the top, which projects about 3 inches above the ground. The following true bearings were determined:

Top of Catholic Church steeple (mark).....	75 42. 4 east of south
Upper northeast corner of courthouse under eave of roof.....	59 14. 0 east of south
Upper northeast corner of new hotel under eave of roof.....	51 35. 2 east of south

*Hempstead, Waller County.*—The station is in the southeastern part of the ground surrounding the public school, about one-fourth mile south from the town's center. It is about 270 feet from the southeast corner of the south projection of the school building and about 300 feet from the northeast corner of the fence surrounding Mrs. Wischnewsky's house. It is also 39.2 feet northwest from a cross of galvanized nails about 2 feet above the ground in an oak tree, and 142.5 feet a little west of south from a triangle of galvanized nails about 2 feet above the ground in the trunk of another oak tree. It is marked by the neck of a cylindrical glass bottle buried about 6 inches under ground, and another flat glass bottle underneath the first. The following true bearings were determined:

Top of cupola at southeast corner of courthouse (mark).....	25 14. 8 east of north
Upper northeast corner of school building under eave of roof.....	5 13. 6 west of north
Top of cupola at southwest corner of courthouse.....	24 09. 4 east of north

*Johnson City, Blanco County.*—The station is in the northeastern corner of a square belonging to the county, about in the town's center, and about 400 feet northeast from the courthouse, and about 300 feet north from the jail. It is 50.3 feet west from the east fence of this square and 55 feet from the north fence. It is marked by a limestone post 6 by 6 by 30 inches, with a bronze disk in the top which projects about 6 inches above the ground. The following true bearings were determined:

South gable of J. R. Johnson's (the sheriff's) house (mark).....	22 00. 6 east of north
Center of northeast corner of the jail.....	7 58. 8 east of south
Upper northwest corner of the Pearl Hotel under eave of roof.....	59 39. 0 west of south
Center of northwest corner of courthouse.....	37 05. 3 west of south

TEXAS—continued.

*Jourdanton, Atascosa County.*—The station is in the southern corner of the City Park, about one-fourth mile southwest from the town's center. It is 89.5 feet from the southeast fence of the park, and 78 feet from the southwest fence. It is marked by a limestone post 6 by 6 by 30 inches with a bronze disk in the top which projects about 6 inches above the ground. The following true bearings were determined:

Top of schoolhouse cupola (mark).....	44 11.5 east of north
Top of town water tank.....	46 32.4 east of north
Top of central cupola of courthouse.....	31 22.1 east of north

*Kingsville, Kleberg County.*—The station is in the southwest part of the City Park, which is immediately north of the school ground, about one-fourth mile a little north of west from the town's center. It is about 60.5 feet north from the center of the path on the south side of the park and about 124.5 feet east from the west fence line of the school ground. It is 163.1 feet a little north of east from the center of a cast-iron lamp post, and 74.3 feet west and 81.1 feet east, respectively, from two water faucets in the park. It is marked by a limestone post 6 by 6 by 26 inches set in cement with a bronze disk in the top which projects about 2 inches above the ground. The following true bearings were determined:

Top of town water tank (mark).....	72 11.0 east of north
Top of Methodist Church steeple.....	67 25.7 east of south
Lower northwest corner of Hotel Casa Ricardo.....	78 46.3 east of north

Distant 245.4 feet a second post of cement 6 by 4 by 30 inches, with a copper rod set in the top, which is about 3 inches above the ground, marks the north end of a meridian line. This last post is also set in cement.

*Lamesa, Dawson County.*—The station is in the southeastern corner of the public-school grounds, about 340 feet east from the school building, and about one-half mile west from the town's center. It is 83.8 feet from the east fence of the grounds, and 83.6 feet from the south fence. It is marked by a limestone post 6 by 6 by 24 inches, with a bronze disk set in the top, which projects about 4 inches above the ground. The following true bearings were determined:

Top of Methodist Church steeple (mark).....	54 38.2 east of north
Upper north edge of false front of First State Bank, under eaves.....	75 24.1 east of north
Top of Presbyterian Church steeple.....	89 39.5 east of south
Top of schoolhouse cupola.....	84 55.7 west of south

*Laredo, Webb County.*—Observations were made in the vicinity of the 1895 station on the parade ground at Fort McIntosh, but because there was not sufficient room to establish a meridian line desired by the officers of the Army post, a new station was established about 1,200 feet to the southwest. The new station is 148.2 feet from the southeast corner of the porch of the commanding officer's quarters, and 166.2 feet from the west corner of the barrack building at the southwest corner of the parade ground. It is marked by a limestone post 6 by 6 by 28 inches, with a bronze disk in the top, which projects about 2 inches above the ground. The following true bearings were determined:

Top of wooden water tank on north side of quartermaster's office (mark)....	14 41.6 west of north
Upper northwest corner of the post hospital under eave of roof.....	29 08.0 east of north
Base of post flagpole.....	48 00.4 east of north

About 460 feet distant a limestone post 8 by 6 by 30 inches, with a hole in the top marks a north meridian point. It is about 5 inches above the ground.

*Midland, Midland County.*—The station is in the northeastern corner of the campus of the Midland College, about 2 miles southwest from the town's center. It is 318.9 feet from the northeast corner of the college building, and 112.2 feet from the northeast corner stake of the campus. It is marked by a limestone post 6 by 6 by 28 inches, with a bronze disk in the top which projects about 4 inches above the ground. The following true bearings were determined:

Top of courthouse cupola (mark).....	61 30.9 east of north
Top of southern water tank.....	62 29.6 east of north
Top of water tank of water works.....	40 52.4 east of north
Top of south side of schoolhouse cupola.....	88 09.7 east of north

About 435 feet distant and about 87 feet from the southeast corner of the college building a 3-inch iron pipe about 28 inches long projects about 5 inches above the ground to mark the south end of a meridian line.

*Oakville, Live Oak County.*—The station is in the west corner of the strip of land southeast of the cemetery, about one-fourth mile northwest from the town's center. It is 54.5 feet from the southeast cemetery fence, and 151.2 feet northeast from the south corner of the cemetery. It is marked by the necks of two glass bottles, one buried about 7 inches below the ground, and the other buried about 1 inch below the ground. The last is placed above the first. The following true bearings were determined:

Top of schoolhouse belfry (mark).....	70 47.2 east of south
Top of Baptist Church cupola.....	69 58.1 east of north
Top of Methodist Church belfry.....	71 09.4 east of north

## TEXAS—continued.

The neck of a glass bottle buried about 4 inches below the ground marks the south end of a meridian line 2,542 feet long.

*Port Lavaca, Calhoun County.*—Observations were made in the courthouse yard in the immediate vicinity of the 1900 station, but on account of the proximity of the new brick jail, and the large amount of scrap iron in the yard, a new station was established about three-fourths of a mile to the north in the southeastern part of Randle Park. It is 75.5 feet and 93.5 feet, respectively, from the northeast and the southeast park fence. It is marked by a limestone post 6 by 6 by 30 inches with a bronze disk in the top which projects about 6 inches above the ground. The following true bearings were determined:

Top of central cupola on schoolhouse (mark).....	21 31.0 east of south
Base of flagstaff on top front of courthouse.....	19 40.0 east of south
Top of tower at northeast corner of Lavaca Hotel.....	31 39.9 east of south

*Post, Garza County.*—The station is in the northwest corner of town block No. 69, which is across the street from W. O. Stephen's house. It is about one-half mile northwest from the town's center. It is 7.4 feet southeast from the monument at the northwest corner of block No. 69, 6.6 feet east from the property line to the west, and 4.2 feet south from the property line to the north. It is marked by a limestone post 6 by 6 by 28 inches, with a bronze disk in the top, which projects about 4 inches above the ground. The following true bearings were determined:

East gable of W. O. Stephen's house (mark).....	7 59.1 east of south
Upper northeast corner of portico of the sanitarium just above northeast column	79 44.2 east of south
Center of top of chimney on cotton mill.....	64 16.8 east of south
Iron stake on south end of rock ridge to the east (Post Land Co.'s triangulation station).....	87 03.7 west of south

About 554 feet distant at the southwest corner of W. O. Steven's west lawn a second stone post indicates the south end of a meridian line. This post is 30 inches long and 6 by 6 inches at the top, with a circle of solder in a brass plate to mark the exact spot. The post projects about 4 inches above the ground.

*Raymondsville, Cameron County.*—The station is in the southeastern corner of an acre lot belonging to the Lundberg family, about 1,000 feet northeast from the town's center. This lot is the second north of the hotel ground across a road running east and west. The station is 120.6 feet from the north fence of the lot next to the hotel ground, 126 feet from the northeast fence corner of this lot, and about 110 feet east from the track of the St. Louis, Brownsville & Mexico Railway. It is marked by a limestone post 6 by 6 by 30 inches with a bronze disk in the top which projects about 6 inches above the ground. The following true bearings were determined:

Base of tall chimney on Harding's cottage (mark).....	86 35.3 east of south
Upper east corner of water tank on cotton gin.....	18 15.0 west of south
Rod on south gable of St. Louis, Brownsville & Mexico Railway station.....	28 00.5 west of south

*Rio Grande, Starr County.*—The station is in the north part of the parade ground at Fort Ringgold, about 1 mile southeast from the town's center. It is 229 feet from the northwest corner of the barrack at the north corner of the parade ground, and 325.2 feet from the southwest corner of the barrack on the northwest side of the parade ground. It is marked by a limestone post 6 by 6 by 28 inches, with a bronze disk in the top which projects about 3 inches above the ground. The following true bearings were determined:

Top of courthouse cupola (mark).....	59 47.9 west of north
Point on vane of the sundial.....	54 43.2 east of south
Northwest gable of commanding officer's quarters.....	26 12.7 east of south
Base of flagpole.....	50 16.3 east of south

*Rockport, Aransas County.*—The station is in the eastern corner of the City Park, about one-half mile southwest from the town's center. It is 54.2 feet from the northeast park fence and 81.4 feet from the southeast fence. It is marked by a limestone post 6 by 6 by 28 inches, with a bronze disk in the top, which projects about 2 inches above the ground. The following true bearings were determined:

Top of courthouse cupola (mark).....	10 00.7 east of north
Top of Presbyterian Church steeple.....	31 59.0 east of north
Top of First National Bank cupola.....	47 05.6 east of north
Top of Bay Shore Hotel cupola.....	17 44.6 east of south
Top of Baptist Church steeple.....	6 21.0 east of north

*Sanderson, Terrell County.*—It was impossible to determine even the approximate location of the 1890 station, therefore a new station was established in the northwestern corner of the public-school ground, near to the town's center. It is 225.5 feet from the northwest corner of the schoolhouse, 268.2 feet from the northeast corner of the schoolhouse, and

TEXAS—continued.

66 feet from the northeast fence line of the ground. It is marked by a limestone post 6 by 6 by 30 inches, with a bronze disk in the top, which projects about 2 inches above the ground. The following true bearings were determined:

Top of east tower of waterworks (mark).....	89 25. 2 west of north
Top of Presbyterian Church steeple.....	76 50. 0 west of north
Top of Methodist Church steeple.....	73 00. 7 west of south
Top of county courthouse cupola.....	46 07. 4 east of north

*Sarita, Willacy County.*—The station is on land owned by the Kennedy ranch, about 700 feet northwest from the railroad station of the St. Louis, Brownsville & Mexico Railway, about 400 feet southwest from Dr. Spear's house, and about 320 feet east from the west fence of an inclosed field. It is 256 feet from the southwest corner of Dr. Spear's carriage house and 314.5 feet from the northwest corner of Dr. Spear's yard. It is marked by a limestone post 6 by 6 by 28 inches, with a bronze disk in the top, which projects about 2 inches above the ground. The following true bearings were determined:

Base of flagstaff on schoolhouse belfry (mark).....	74 15. 3 east of south
South gable point of courthouse.....	66 05. 0 east of south
Upper northeast corner of railroad station under eave of roof.....	58 48. 4 east of south
Upper southeast corner of Dr. Spear's house under eave of roof.....	69 28. 5 east of north
Top of town water tank.....	76 39. 4 east of north

*Sierra Blanca, El Paso County.*—The station of 1905 was reoccupied. It is a little to the west of north of the Southern Pacific and Texas Pacific Railroad station, a little to the east of south of Mr. Love's house, and about 800 feet north from the town's center. It is about 489 feet to the east of north from the northeastern rail of the Texas Pacific Railroad track, about 247 feet from the northwest corner of a small adobe church, and about 192 feet from the southwest corner of the wooden bridge on the road to the schoolhouse. It is marked by a limestone post 6 by 6 by 28 inches with a bronze disk in the top, which projects about 3 inches above the ground. The following true bearings were determined in 1915:

Central cupola on railroad station (mark).....	21 23. 7 west of south
East corner of top of Southern Pacific Ry.'s oil tank.....	71 10. 6 west of south
Southern point of top of roof of Mr. Love's house.....	17 37. 2 west of north

*Tahoka, Lynn County.*—The station is in the northwestern part of a pasture belonging to H. A. Edwards, the ex-sheriff, about 800 feet southwest from Mr. Edwards's house, and about three-fourths mile southeast from the town's center. It is 91 feet from the west fence of the pasture and 151 feet southeast from the southeast corner of the fence surrounding a cornfield belonging to A. T. Brown. It is marked by a limestone post 6 by 6 by 24 inches, with a bronze disk set in the top, which projects about 4 inches above the ground. The following true bearings were determined:

East gable of public school (mark).....	74 06. 0 west of north
Top of Baptist Church steeple.....	52 11. 8 west of north
West gable of H. A. Edwards's house.....	16 04. 6 east of north

*Tilden, McMullen County.*—The station is in the northeastern part of the school ground, about 300 feet southeast from the schoolhouse, and about one-quarter mile south from the town's center. It is about 45 feet from the northeast fence of the school ground, about 52 feet from the west corner of a small corral, and about 117 feet northeast from a cross of galvanized nails about 2 feet above the ground in the trunk of a mesquite tree. It is marked by a limestone post 6 by 6 by 30 inches, with a bronze disk in the top, which projects about 5 inches above the ground. The following true bearings were determined:

Top of Catholic Church steeple (mark).....	62 59. 1 east of north
Southwest gable of house near east corner of school ground.....	75 45. 8 east of north
Cross of galvanized nails about 2 feet above the ground in the trunk of a mesquite tree.....	36 35. 1 west of south

*Van Horn, Culberson County.*—The station is in the southern part of Beach's pasture, just northeast of the cemetery and about three-fourths of a mile northwest from the town's center. It is 141.5 feet from the southeast pasture fence and 147.5 feet from the northeast cemetery fence. It is marked by a limestone post 6 by 6 by 28 inches, with a bronze disk in the top, which projects about 3 inches above the ground. The following true bearings were determined:

Top of steeple of a small adobe church (mark).....	38 10. 2 east of south
Top of schoolhouse cupola.....	61 57. 5 east of south
Top of town water tank.....	63 43. 0 east of south
Ornamental ball at top of east gable of courthouse.....	65 22. 9 east of south

## TEXAS—continued.

*Wheeler, Wheeler County.*—The station is in the northeastern corner of the public-school grounds, about one-fourth mile north from the town's center. It is 164.2 feet northeast from the northeast corner of the adobe school building and 92.2 feet from the property fence to the north. It is marked by a limestone post 6 by 6 by 24 inches, with a bronze disk set in the top, which projects about 4 inches above the ground. The following true bearings were determined:

Top of Baptist Church steeple (mark).....	4 44.6 east of south
Southwest corner of west tower of the jail (disregarding all ornamental projections).....	16 53.7 east of south
Northeast corner at top of courthouse roof.....	14 36.3 east of south

About 290 feet distant and about 117 feet southeast from the southeast corner of the adobe school building a one-half inch iron rod, showing one-half inch above the ground, marks the south end of a meridian line. In line with this rod and about 6 inches north is a concrete post about 4 by 4 by 12 inches with a hole in the top to indicate the exact line. The top of this post is about 4 inches below the ground.

## UTAH.

*Cisco, Grand County.*—The station is about one-eighth mile north of the hotel and north of the Denver & Rio Grande Railroad. It is 315 feet north of the railroad, 300 feet east of the stub railroad to the west, and 120 feet north of a small ravine. The station is not marked.

*Farmington, Davis County.*—The station is near the southeast corner of the fair grounds about one-half mile northwest of the town's center. It is 440 feet west of the board fence on the east side of the grounds, 119.1 feet north of the board fence on the south, 42.8 feet south of the fence around the track, 295.5 feet east of the northeast corner of the grand stand, and in line with the north side of the grand stand. The station is marked by a granite post 6 by 6 by 18 inches projecting 2 inches above ground and with its center marked. The following true bearings were determined:

Spire on railroad water tank (mark).....	53 54.0 east of north
Spire on cupola of main building at the Lagoon.....	47 21.0 east of south
Spire on east gable of grand stand.....	84 09.6 west of south
Spire on judge's stand.....	85 42.2 west of north
South gable of house 3 miles distant.....	36 14.5 west of north

*Ogden, Weber County.*—The station of 1905 was reoccupied. It is about half a mile west of the west bank of Weber River, west of the Southern Pacific Railroad station, and just south of two piers. These piers formed part of an observatory which has disappeared. They are 5 feet high and 1½ feet square, and the eastern pier is inscribed with the latitude, longitude, and elevation. It is also marked with the name Wheeler, U. S. A., 1873. The station is 45.4 feet south of the southeast corner of the east pier and 46 feet from the southwest corner of the west pier. The station is also 99 feet from a fence corner to the south. The station is now marked by a cement post 12 by 12 by 30 inches projecting 2 inches above ground and having a bronze disk in the top. The following true bearings were determined:

Spire on Union Station tower (mark).....	84 38.0 east of north
Catholic Church spire.....	81 11.0 east of north
Flagstaff on cupola of Orpheum Theater.....	88 49.7 east of north
Center of high brick smokestack.....	58 02.7 east of north
East gable of a brick church.....	35 00.3 west of south

*Price, Carbon County.*—As the station of 1905 could not be re-covered, a new station was established on the ball grounds within the race track about a half mile northeast of the center of the town. It is 72 feet south of the fence on the inside of the track, 271 feet southeast of the southeast corner of the grand stand, 42.5 feet west of the southwest corner of the corral. The south side of this corral produced passes 3 feet north of the station. The station is marked by a sandstone post 6 by 8 by 16 inches with a cross marked in the top and setting flush with the ground. The following true bearings were determined:

Left edge of high-school building (mark).....	71 19.6 west of south
Flagpole on building in park.....	73 00.1 west of north
South gable of cemetery office building.....	33 57.9 east of north
Center of chimney on house near corral bridge.....	62 26.3 west of south
Southwest corner of building in park.....	74 57.4 west of north

*Tooele, Tooele County.*—The station is near the southeast corner of the ball park about one-fourth mile east of the center of the town. It is 41.7 feet north of the board fence on the south, 76.9 feet west of the fence on the east, and 88.5 feet northwest of the southeast corner of the intersection of these fences. The station is not marked.

VIRGINIA.

*Bedford, Bedford County.*—The station of 1908 was reoccupied and is still suitable for magnetic work. It is in the southeastern part of the property belonging to the Elks' National Home, about 700 feet south of the building, and about 1 mile northwest of the center of town. It is 173.7 feet northeast from the fence on the north side of the Norfolk & Western Railroad tracks, measured at right angles to the fence, and 3.6 feet east of the east edge of an old walk with wooden borders. It is also about 30 feet west of the bottom of a bank about 8 feet high. The station is marked by a stone projecting about 8 inches above the ground. The following true bearings were determined:

Base of flagstaff on most eastern tower of Elks' Home (mark).....	14	26.0	east of north
Highest point of Peak of Otter to the northwest.....	30	49.6	west of north
Cupola on Cooperative Female Seminary.....	14	09.5	east of south

A post made of cement, and about 8 by 8 by 30 inches, was set about 600 feet to the north, to mark the north end of a meridian line. The stone is lettered U. S. C. & G. S., and projects about 8 inches above the ground.

Observations were also made at four auxiliary stations. No. 1 was a few hundred feet east of the 3-mile post on the road running west by north from Bedford, on the north side of the road near a fork. No. 2 was about 3½ miles north of the town on the road leaving it in this direction. It is near the summit of a ridge and about 200 yards east of the road. No. 3 was about 150 yards south of the 3-mile post on the road running southward, at a point about 200 feet west of the road. No. 4 was about 300 feet northwest of the 3-mile post on the road running eastward.

*Bristol, Washington County.*—The station of 1906 was reoccupied. It is on the grounds of the Southwestern Virginia Institute, 107 feet from the front line of the grounds and 60 feet to the right from the center of the walk leading to the main entrance of the building. It is marked by a limestone post projecting 3 or 4 inches and lettered U. S. C. & G. S., 1898. A similar but unlettered stone 120.5 feet to the south determines a meridian line. One hundred and twenty-six feet to the north is a hole in the granite step of the institute, also in the meridian. The following true bearings were determined in 1906 and 1915:

Spire on Mary Street Church (mark).....	2	27.0	west of south
Southeast side smokestack Columbian Paper Co.....	60	02.1	east of south
Spire of church, 1½ miles distant.....	4	33.9	west of south
High-school flagstaff.....	22	22.4	east of south
Flagstaff on public school.....	34	39.7	west of south

*Buchanan, Botetourt County.*—The station is on the south side of the James River, in a pasture owned by Mr. Wilson, at a point about 400 feet north of the Hotel Botetourt. It is about 75 feet from the fence on the northwest and the same from one on the northeast. The station was not marked.

*Covington, Alleghany County.*—Observations were made in the vicinity of the station of 1900, but on account of local conditions making it unsuitable for further magnetic work a new station was established in the south corner of the baseball park about one-half mile due south of the old station, which was in the center of the town. It is about 150 feet northwest of a large residence southeast of the park and near an old negro cabin on the southwest side of it. The station is 40.8 feet from the fence on the southwest side of the park and 56.8 feet from the southeast fence. The exact spot is marked by a granolithic post 8 by 8 by 30 inches with a bronze disk set in the top, which projects about 2 inches above the ground. The following true bearings were determined:

Baptist Church spire (mark).....	14	31.8	east of north
East ventilator on schoolhouse roof.....	35	35.5	west of north
North spire on tower of Methodist Church.....	16	46.4	west of north
Tower on old colored Methodist Church.....	11	38.6	west of north
Cupola on residence one-half mile distant.....	1	33.2	east of north

The north end of a meridian line 345 feet long is marked by a similar post, which is near the fence, west of the grand stand.

*Danville, Pittsylvania County.*—The station of 1873 was found unsuitable for magnetic observations, therefore a new station was located in the northwest section of the Bellview Public School grounds, and 3 blocks west of the Keene Street electric car line on the north side of the Dan River. It is at a point halfway between the north side of the school buildings and the northern limit of the playground, and it is 20 feet from the center of the road on the west. The station was not marked.

*Gladys, Campbell County.*—Observations were made on the summit of a long ridge in the field owned by Mr. Oakes and lying one-third mile east of the railroad station. It is on the eastern part of the ridge about 300 feet southwest of the second tobacco barn from the road crossing the ridge and about 200 feet southeast of the third tobacco barn and shed. The station was not marked.

*Gretna, Pittsylvania County.*—Observations were made in the middle of a field about one-fourth mile northeast of the railroad station. This point is east of the railroad coal shed and water tank, and about 75 feet east of the center of the road running north on the east side of the railroad. The station was not marked.

*Lynchburg, Campbell County.*—The station of 1912 was reoccupied and is still suitable for magnetic work. It is in the southeastern corner of the county fair grounds, about 1½ miles southeast of the town's center. It is 111.7 feet north-

## VIRGINIA—continued.

west from the fence bounding the grounds on the southeast and 141 feet northeast from the fence on the southwest. The station is marked by a granite post 5 by 10 by 24 inches, projecting 2 inches above ground, and lettered U. S. C. & G. S., 1910. The following true bearings were determined:

Flagpole on Odd Fellows' Home (mark).....	2 17.2 west of south
Upper shaft of windmill.....	84 58.8 west of south
Southwest corner of grandstand (lower).....	53 21.3 west of north
Northeast corner of exhibition hall.....	30 36.2 west of north
South gable of stable.....	9 27.4 west of north

*Mount Airy, Pittsylvania County.*—The station of 1873 could not be located. Observations were made on the baseball field about 250 feet in back of Creosy's store, at a point about 75 feet back from the road on the south and 150 feet east of home plate. The station was not marked.

*Nathalie, Halifax County.*—Observations were made in the west central portion of a pasture owned by Mr. Wimbish adjoining his residence on the east. It is about one-fourth mile southwest of the railroad station. The spot selected was about 35 feet east of the fence and a few yards nearer to the north fence than the south fence.

*Roanoke, Roanoke County.*—Observations were made about 1½ miles southwest of the center of the city in South Roanoke. The station is in an open lot, about 400 feet southeast of Abraham Avenue and due west of the north corner of the grounds of the Female Institute. A rough wagon road, forking out from Abraham Avenue at a point about 250 yards west of the station, passes about 75 feet northwest of it, and a prominent tree sets almost due south of it. The station is most easily found by walking northwest from Raleigh Court, which runs northeast from the main building of the institute. The station was not marked.

*Rustburg, Campbell County.*—Observations were made over the south stone of the meridian line in the public-school grounds established in 1901. This line, which is 230 feet long, is marked by two limestone posts 6 by 8 inches at the top, projecting about 6 inches above the ground, and lettered U. S. C. & G. S. N. M. and U. S. C. & G. S. S. M., respectively. The following true bearings were determined in 1915 from the meridian line:

North meridian stone (mark).....	0 00.0 north
South gable of residence one-fourth mile distant.....	58 39.3 east of north
East gable of store 500 feet distant.....	87 56.1 west of north
South gable of residence 500 feet distant.....	43 41.3 west of north
Spire on south tower of schoolhouse.....	23 32.2 west of north

Observations were made also at four auxiliary stations. No. 1 was about 3 miles north of town on the Lynchburg Road, about one-eighth mile south of the bridge at Beaver Creek, and about the same distance north of the Norfolk & Western Railroad water tank. No. 2 was a little over 3 miles south of the primary station, about 150 feet east of the one hundredth mile post of the Norfolk & Western Railroad. No. 3 was about 200 yards southwest of the 3-mile post on the public road running southwest from town, in a farm road at a point about 200 feet north from the main road. No. 4 was about 3 miles east of town, in a large open field about 200 feet south of the main road.

## WEST VIRGINIA.

*Blakeley, Kanawha County.*—Observations were made about one-half mile north of the railroad station on the west side of the road and about 150 feet north of the wagon house on Hill's farm. The road runs through a deep valley at this point, with only one short stretch of level pasture. The station was not marked.

*Blue Creek, Kanawha County.*—Observations were made in the clearing about 300 feet south of the pool hall, which is on the south side of the Coal & Coke Railroad, about 500 feet west of the bridge. The spot was about 40 feet south of the dirt road leading around the side of a high hill. The station was not marked.

*Bristol, Harrison County.*—Observations were made in the south central part of Mathews's pasture, which is about 200 yards southwest of the railroad station. The point selected was about 75 feet from the road bordering the south side. The spot was not marked.

*Charleston, Kanawha County.*—As the old station on Savage's lawn was found unsuitable for further magnetic work a new station was established on Capitol Hill several hundred yards northeast of the old station. It is about 200 yards south of the Jacobs's residence, and about 50 feet east of the road leading up the hill from the west past the Jacobs's residence. It is 106.6 feet south of a lone tree across the road, 56.6 feet and 75.0 feet south of two prominent trees on the east side of the road, and 117.6 feet west of a large oak, which is about 35 feet west of the road in front of the Allen residence. The exact spot is marked by a concrete block 8 by 8 by 20 inches set nearly flush with the surface of the ground and having a bronze disk in the top. The following true bearings were determined:

North stone of old meridian line (mark).....	11 17.8 west of north
Upper west side of balustrade on dome.....	38 49.6 west of south
Weather vane on J. F. Jackson's residence.....	49 34.2 west of south
Northeast corner of 3-story brick building of Elk Milling Co.....	70 59.9 west of north
East gable of roof of large warehouse one-third mile distant.....	59 44.0 west of north

WEST VIRGINIA—continued.

*Glenwood, Mason County.*—Observations were made at the fork in the road running southeast from the railroad station and at a point about 250 yards from it. The station is not marked.

*Jacksonburg, Wetzel County.*—Observations were made in a large open field owned by Mr. Lantz. This field is on the west side of the Baltimore & Ohio Railroad tracks and on the north edge of the village. The spot selected was about 250 yards north of the depot and about 150 yards west of the tracks on a small stretch of level ground. The station is not marked.

*Meadow Creek, Summers County.*—Observations were made in the grove on the south side of the New River at a point about 300 feet from the ferry landing and 100 feet south of the river bank. The station was not marked.

*Montgomery, Fayette County.*—Observations were made in the southwest corner of the baseball park, which is about one-fourth mile west of the center of the town, on the south side of the Chesapeake & Ohio Railroad tracks. The point is about 60 feet from the south and west fences. The station was not marked.

*Moundsville, Marshall County.*—The station was inside the race track, lying about 1½ miles east of the town. A large oak tree near the entrance to the track is 87.3 feet west of it, and a line passing through this tree at right angles to the track would pass about 15 feet north of the position of the station. The middle of the track on the east is 316 feet distant and on the west 134 feet. It also lies about 40 feet south of the line of the pike which leads up to the entrance. The exact spot is marked by a limestone post 6 by 6 by 30 inches projecting a few inches above ground and having a bronze disk set in the top. The following true bearings were determined:

South gable of dwelling one-fourth mile distant (mark).....	6 53.8 west of north
Apex of water tank on warehouse one-fourth mile distant.....	18 33.0 east of south
North gable of farmhouse one-fourth mile distant.....	11 03.9 west of south
South gable of dwelling one-third mile distant.....	83 19.2 west of north
South gable of dwelling one-fourth mile due north.....	4 15.4 east of north

*Murraysville, Jackson County.*—Observations were made on the bank of the river on the east side of the road leading from the railroad station to the ferry. The spot selected was about 75 feet east of the road and 250 feet north of the railroad tracks. The station was not marked.

*New Cumberland, Hancock County.*—The station was established on the baseball grounds in the hollow about one-third mile southeast of the railroad station. It is 42 feet from first base, 10 feet outside the first base foul line, and 104 feet from home plate. It is on the edge of the field only a few feet from the thickets on the south side of it. The exact spot is marked by a limestone post 4 by 6 by 28 inches set with a bronze disk and flush with the surface of the ground. The following true bearings were determined:

South gable of residence 450 feet distant (mark).....	14 49.1 west of north
West gable of house 200 yards distant.....	9 20.5 east of north
M. P. Church belfry.....	62 39.5 west of north
Cupola on Presbyterian Church.....	53 16.9 west of north
Spire on old courthouse.....	48 16.4 west of north

The north end of a 315-foot meridian line is marked by a heavy sandstone post projecting about 4 inches above ground and setting near the edge of the field. This stone weighs about 250 pounds and has a small hole drilled in the top to mark the exact center.

*Pennsboro, Ritchie County.*—Observations were made in the southeast section of the baseball park, which is located about one-fourth mile southwest of the center of the town. The spot was about 50 feet north of the creek and 100 feet west of the thick woods at the southeast corner of the park. The station was not marked.

*Point Pleasant, Mason County.*—The station is in the Government park at the "point" in the same locality as the old station, which could not be re-covered. It is in the south central part of the park 6 feet east of the southeast corner post of an old cemetery lot. It is 98 feet from the cement wall on the east, 62 feet from the rock wall on the south, and about 200 feet from an old cabin. The spot is marked by a cement post 8 by 8 by 33 inches, with a bronze disk in the top, which projects about 6 inches above the surface of the ground. The following true bearings were determined:

North gable of barn on south bank of Kanawha River (mark).....	7 55.3 west of south
South gable of bungalow on west side of Ohio River.....	62 56.6 west of north
Head of pin in abutment of Kanawha & Michigan R. R. bridge at east end of largest span (Ohio River).....	4 36.5 west of north
Head of abutment pin over south pier of Baltimore & Ohio R. R. suspension bridge (Kanawha River).....	46 40.2 east of south
North gable of house on summit of hill 1½ miles distant.....	7 26.1 east of south

The north end of a meridian line 368 feet long is marked by a similar post.

*Rainelle, Greenbrier County.*—Observations were made at a point about one-half mile west of the center of the town on land belonging to the Meadow River Lumber Co. It is about 200 yards south of the road leading west from the town and about 300 yards due west of the Brown Hotel. It is near the wagon road leading to a prominent hill on the west side of the town and on the level piece of ground at the base of the ridge. The station was not marked.

## WEST VIRGINIA—continued.

*Sistersville, Tyler County.*—Observations were made over a United States Geological Survey bench mark established on the summit of Smiths knoll, which is about 2 miles southeast of the town and the highest point in the county. The following true bearings were determined:

North gable of dwelling 500 feet distant (mark).....	0 13.3 east of south
South gable of oil warehouse on distant hill.....	79 38.6 west of north
East gable of dwelling across river.....	31 30.4 west of north

Two auxiliary stations, both magnetically disturbed, were also occupied. One was on the grounds of the high school in the south part of the town. The other was west of the town on the Ohio side about one-half mile back from the west bank of the Ohio River.

*Union, Monroe County.*—The station is in the west part of the public-school grounds about one-fourth mile southwest of the center of the town. It is 177 feet from the wire fence on the south side of the grounds and 142 feet from the southwest corner of the brick school building. The station is marked by a marble post 6 by 6 by 24 inches projecting about 2 inches above the ground and having a bronze disk set in the top. The following true bearings were determined:

East gable of residence one-fourth mile distant (mark).....	33 59.1 west of south
East gable of house.....	89 51.3 west of north
Apex of roof on farmhouse one-half mile north.....	0 31.7 east of north
Colored Baptist Church spire.....	31 14.7 east of north
Southeast edge of school.....	84 28.6 east of north

*Walker, Wood County.*—Observations were made at the only available corner of the schoolhouse grounds, which are about one-fourth mile northwest of the railroad station, about 150 feet from the school building. The station was not marked.

*Wallace, Harrison County.*—Observations were made in a pasture on the Hall farm which lies about one-fourth mile north of the town in a narrow valley. The point selected was about 20 feet west of a stream running through the farm and about 75 feet north of the fence marking the south boundary of the farm. The Hall residence is about 500 feet northeast of the station. The station was not marked.

*Wellsburg, Brooke County.*—The station is on the summit of a high ridge about one-third mile east of the center of the town. It is a part of the Hubbard estate. The ridge is almost due east of the town hall and is the first one approached when leaving the town by the road running east. The station is about 75 feet east of the only tree on the west end of the ridge and is on the summit of a little knoll. The exact spot is marked by a limestone post 6 by 8 by 30 inches set with a bronze disk and projecting about 3 inches above ground. A similar post, set on the summit of another ridge, marks the south end of a meridian line about 500 feet long. The following true bearings were determined from the station at the north end of the line:

Southwest corner of Eagle Glass Co.'s works (mark).....	10 56.0 west of north
West gable of barn one-half mile east.....	84 54.3 east of south
Town Hall tower.....	86 43.4 west of north
Episcopal Church spire.....	52 09.2 west of north
Center of ornament over high-school entrance.....	18 11.4 west of north

*Wheeling, Ohio County.*—As the station of 1898 on Zanes Island was no longer suitable for magnetic work, a new station was established on the baseball grounds in Wheeling Park, which is about 4 miles due east of the old station. It is about 12 feet from the corner of the terrace marking the west corner of the field and about 2 feet outside of the right field foul line. The nearest tree northeast of it is 44.9 feet distant; the one on the north 55.2 feet, and the one on the southwest 27.2 feet. It is about 20 feet south of the path leading to the spring. The station is marked by a limestone post 4 by 6 by 24 inches with a small hole drilled in the top and set about 1 inch below the surface of the ground. The following true bearings were determined:

West gable of residence on hill two-thirds mile distant (mark).....	55 52.5 east of south
Flagpole on dining hall.....	58 36.6 west of north
Lower southwest edge of band stand.....	16 03.9 west of north
Base of flagpole on Casino.....	40 00.4 east of north
Southeast corner of row of bathhouses.....	31 45.3 east of north

*Woodland, Marshall County.*—Observations were made on a hillside farm about 200 yards east of the Baltimore and Ohio Railroad tracks and about 100 feet south of the depot. The only level portion of this farm, which is a part of the Miller estate, was selected. The station was not marked.

## WISCONSIN.

*Alma, Buffalo County.*—The station is across the river from Alma (in Minnesota), on ground belonging to Dr. G. H. Linaker, about 300 feet southeast of his summer camp, and separated from it by a slough running in from the river. It is about 20 feet from the bank of the slough and about 35 feet from the bank of the river; a maple tree stands

WISCONSIN—continued.

36.9 feet southeast; three elms growing from a single root stand 21 feet to the northeast. The station is marked by a bronze disk in the top of a cement post 6 by 7 by 30 inches, projecting about 5 inches above the ground. The following true bearings were determined:

	° /	
Ball on top of Chicago, Burlington & Quincy water tank (mark).....	40	27.1 east of north
West gable of R. E. Jones Co.'s grain elevator.....	67	21.5 east of north
Steeple on Catholic Church.....	76	25.4 east of south
Steeple on white church.....	63	04.7 east of south

*Clear Lake, Polk County.*—The station is about 450 feet north of the railroad track on property belonging to Mrs. Carl Fitzer, about 200 feet northeast of her residence in a corner lot adjacent to property of Andrew Jewel. It is 20.8 feet from a wire fence to the north and 56.1 feet from the fence to the east, the two fences being parts of the fences inclosing the Andrew Jewel property. The station is unmarked.

*East End (Superior), Douglas County.*—The station is on Wisconsin Point about a mile northeast of the center of East End, and about a quarter mile west of the living quarters of the keepers of the Wisconsin Point Light. The station is 334.8 feet from the south end of the mole leading out to the lighthouse, in the prolongation of the center line of the breakwater, at the point where it is intersected by the line joining the two pier-head lights, about halfway between the shore of the lake and the woods. The station is marked by a cement post 8 by 8 by 30 inches projecting 4 inches above the sand and having a bronze disk in the top. The following true bearings were determined:

	° /	
Cross on Catholic Church, east end (mark).....	86	43.8 west of south
Point on top of lighthouse on south breakwater.....	25	15.4 east of north
South pier-head light.....	35	02.6 west of north
East gable of Government storehouse on Minnesota Point.....	69	48.0 west of north

*Ellsworth, Pierce County.*—The station is about a third of a mile northeast of the courthouse at the northeast corner of lot 4 of the E. C. Ames addition to the Ellsworth town site; it is 264 feet from the east line of the street running north from the main street past Mr. Ames's residence, and is in the south edge of a cross street which has not yet been opened. It is 119.4 feet southeast from Mr. Ames's silo. It is marked by a bronze disk in the top of a cement block 8 by 8 by 30 inches, set flush with the surface of the ground. The following true bearings were determined:

	° /	
Steeple of Methodist Church (mark).....	24	53.7 west of south
Center of ball on courthouse dome.....	37	20.3 west of south
North gable of high-school building.....	10	37.5 west of south
Gable of residence half mile east.....	86	30.8 east of south

*Lavalle, Sauk County.*—The station is a little south of the village, across the creek, in a pasture lot belonging to W. R. Hyslop, about 300 feet from the road and about 200 feet from the creek. It is 32 feet north 53° east from an oak tree 15 inches in diameter. The station is unmarked.

*Madison, Dane County.*—The station of 1907 was reoccupied. It is on the grounds of the State agricultural farm, in a pasture lot about 600 feet north of the horse barn. It is 277.5 feet from the wire fence along the east side of the pasture and 97.6 feet from the wire fence along the south side of the lot. The station is marked by a Bedford limestone post 8 inches square, set 6 inches below the surface. The following true bearings were determined in 1907:

	° /	
Cupola on dairy barn (mark).....	18	39.9 west of south
Cupola on horse barn.....	16	57.7 east of south
Tower of C. E. Buell's residence.....	7	26.9 west of south

*Washburn, Bayfield County.*—The station is about one-fourth mile north of the town, or about one-half mile from the bay, on property belonging with the City Water Co.'s reservoir. It is 99 feet east of the northeast corner of the fence surrounding the reservoir, about 14.5 feet north of the continuation of the line of the north boundary fence, about 50 feet west of the center of the road, and 68.8 feet from a telephone pole near the road to the south. The station is marked by a bronze disk set in the top of a cement post 8 by 8 by 30 inches, projecting 4 inches above the ground. The following true bearings were determined:

	° /	
Spire of Congregational Church (mark).....	1	01.8 east of south
Top of lighthouse on breakwater.....	17	13.8 east of south
Top of courthouse dome.....	16	02.5 east or south
Base of flag pole on armory building.....	9	08.2 east of south
Weather vane on public-school building.....	6	33.3 east of south

*Webster, Burnett County.*—The station is a little west of the village in a large open field west of the railroad tracks and belonging to the railroad. It is 432.1 feet from the middle of the west rail of the side track, in line with the north end of the station. It is 245.2 feet from a fence to the north. The station is unmarked.

## WYOMING.

*Bitter Creek, Sweetwater County.*—The station is in the open country north of the Union Pacific Railroad tracks and north of the depot. It is 350 feet north of the north side of the west water tank, 440 feet north of the northwest corner of the depot, 520 feet northwest of the northwest corner of the section house, and 485 feet north of the nearest railroad track. The station is not marked.

*Cheyenne, Laramie County.*—The station of 1910 was reoccupied. It is on the south edge of the target range just north of Fort D. A. Russell. It is 425 feet west of the northwest corner of the hospital, 225 feet west of the grand stand, 41 feet north of the fence on the south side of the range, and 57.5 feet northeast of the east gate post where the road leads from the range. It is marked by a Bedford post 3 by 6 by 20 inches, projecting 1 inch above the ground, and lettered U. S. The following true bearings were determined in 1910 and 1915:

Distant windmill (mark).....	12 06.6 east of north
Tip of Fort Russell water tank.....	68 07.9 west of south
Left edge of distant cement house.....	36 54.3 west of north
Right edge of brick chimney at junction with roof on hospital.....	57 12.8 east of south
Apex of ventilator on apex of hospital annex.....	32 41.9 east of south

*Evanston, Uinta County.*—The station is near the northwest corner of the fair grounds between the race track and the fence, about one-fourth mile northeast of the town's center. It is 69 feet south of the board fence on the north, 163.8 feet east of the east side of the exhibition hall, and 39 feet east of a wire fence. The station is marked by a cement post 12 by 12 by 20 inches projecting 1 inch above ground and having a bronze disk in the top. The following true bearings were determined:

Flagpole on cupola of insane asylum (mark).....	27 22.2 east of south
Flagpole on front of east ward school.....	48 08.1 west of south
Flagpole on cupola of west ward school.....	62 30.6 west of south
Gen. Fremont's monument of 1848 on Medicine Butte.....	24 47.5 east of north
Left edge of east building at asylum.....	35 51.2 east of south

*Fox Park, Albany County.*—The station is in the yard on the south side of the Fox Park Ranger Station. It is 60.7 feet southwest of the southwest corner of the main office building, 84.3 feet southwest of the southeast corner of the same building, 71.6 feet north of the south fence, 63.1 feet east of the west fence. It is marked by a cement post 12 by 12 by 20 inches, with bronze disk in top, which projects 1 inch above the ground. The following true bearings were determined:

Apex of railroad water tank (mark).....	57 33.5 east of north
Left edge of base of above tank.....	55 23.2 east of north
Southeast corner of seed extracting plant.....	46 47.8 west of north

*Green River, Sweetwater County.*—The station of 1905 was reoccupied. It is on Government land about one-fourth mile north of the center of the town in a V-shaped piece of land between two hills, and east of a peculiar rock formation of nearly cylindrical form, on which stands a flagpole. It is about 60 feet from a hill to the west, 120 feet from a hill to the east, and 350 feet from hills to the north. It is 434.5 feet north of the northwest corner of the fence surrounding the cemetery and almost in line with this corner and the chimney of the second house east on the south side of the cemetery. It is marked by an oak stake 4 by 6 inches, showing about 4 inches above ground and having a cross sawed in the top. The location is known to Joseph Payne, a local surveyor. The following true bearings were determined:

Flagstaff on front of schoolhouse (mark).....	24 12.7 west of south
Northwest point on courthouse cupola.....	54 38.2 west of south
Flagstaff on southeast corner of brewhouse.....	50 38.0 west of south
Large smokestack at factory south of town.....	0 56.7 west of south
Flagpole on castle rock.....	52 13.3 west of north

*Kemmerer, Lincoln County.*—The station is on the hill west of town and one-fourth mile west of the town's center. It is 114.5 feet east of the east edge of the north water tank, 135 feet northeast of the northeast side of the south water tank, 60 feet east of the road passing east of the tanks, and 51 feet west of the brow of the hill. It is in line with a church spire and the south tank. The station is marked by a cement post 12 by 12 by 18 inches projecting 1 inch above ground and having a bronze disk in the top. The following true bearings were determined:

Northeast corner of hospital (mark).....	51 02.0 east of south
Cross on church spire.....	60 50.2 east of north
Spire on railroad water tank.....	54 58.0 east of north
Southeast corner of brick high school.....	43 51.0 east of north
Spire on south tank near magnetic station.....	59 52.2 west of south

WYOMING—continued.

*Laramie, Albany County.*—The station of 1878 was found to be of no further use for magnetic observations; therefore a new station was located near the south edge of the city park about one-half mile south of the town's center. It is 42.2 feet east of the row of trees on the east side of the main north and south walk, 13 feet north of the row of trees which is inside of the circular drive to the south, 28.7 feet southwest of a small hydrant, 82.5 feet southwest of a lone poplar tree, and 181 feet south of the drinking fountain. It is marked by a cement post 6 by 6 by 24 inches, with a bronze disk in the top which sets flush with the ground. The following true bearings were determined:

	° /	
Spire on elevated tank at cement plant (mark).....	23	53.2 east of south
Apex of roof of band stand.....	20	01.5 west of north
Left edge of top of drinking fountain.....	4	49.3 west of north
Right edge of park office building.....	47	14.8 east of north
Northwest corner of cottage 2 blocks southeast of park.....	37	08.6 east of south

*Lusk, Niobrara County.*—The station is on the high-school grounds one-fourth mile south of the town's center. It is about in line with the cement walk (produced) on the west side of the street east of the school building, 77 feet east of the walk (produced) on the east side of this street, 113.5 feet southeast of the southeast corner of the school building, 165.2 feet southeast of the northeast corner of the building, and 64.7 feet south of the south side of the building produced eastward. It is marked by a cement post 14 by 14 by 24 inches, with a bronze disk in the top, projecting 2 inches above the ground. The following true bearings were determined:

	° /	
Church spire (mark).....	0	58.4 east of north
Center of cupola on distant farmhouse.....	33	40.7 west of south
Southwest corner of high school on bricks.....	71	34.6 west of north
East gable of east building at reservoir on hill.....	29	09.4 west of north
Southwest corner of county jail.....	10	24.8 west of north

*Medicine Bow, Carbon County.*—The station is near the north side of the school yard on the north edge of the town. It is 149 feet north of the northwest corner of the school building, 148 feet north of the northeast corner of the school building, 78 feet west of the middle of the alley to the east, and 84 feet south of the south side of the street to the north. It is marked by a cement post 10 by 10 by 20 inches, setting flush with the surface of the ground, and having a bronze disk in the top. The following true bearings were determined:

	° /	
Apex of east railroad water tank.....	25	05.1 east of south
Right edge of high school.....	4	45.6 west of south
Ball at apex of city water tower.....	54	22.4 east of south
Cross on church steeple.....	41	33.3 east of south
Northeast corner of Hotel Virginian.....	20	53.1 east of south

*Rawlins, Carbon County.*—The station is near the northwest corner of the fair grounds three-fourths mile northeast of the town's center. It is 184.6 feet west of the west corner of the grand stand, 123 feet from the fence around the race track, 58.7 feet south of a board fence, 64.5 feet east of a fence corner. The station is marked by a cement post 12 by 12 by 18 inches, projecting 1 inch above ground, and having a bronze disk set in the top. The following true bearings were determined:

	° /	
Apex of railroad water tank (mark).....	14	24.7 west of south
Spire on cupola of ward school.....	31	37.9 west of south
Spire on cupola of southeast corner of penitentiary.....	73	14.9 west of south

*Torrington, Goshen County.*—The station is near the northeast corner of the courtyard one-eighth mile northeast of the town's center. It is 90 feet northeast of the northeast corner of the courthouse, 45 feet west of the east fence, 16 feet southeast of the curb along the drive leading from the northeast corner of the yard to the courthouse. It is marked by a cement post 12 by 12 by 20 inches, with a bronze disk in the top, which sets flush with the ground. The following true bearings were determined:

	° /	
Right edge of Mr. Coy's cement house (mark).....	28	16.1 east of south
Southeast corner of courthouse foundation.....	31	07.2 west of south
Northwest corner of courthouse foundation.....	67	27.1 west of south
Northeast corner of high-school foundation.....	13	23.1 west of north
South gable of distant house on hill.....	42	21.9 east of north

## CANADA.

*Buffalo Point, Manitoba (Lake of the Woods).*—The station is near the southeast corner of Buffalo Point, 12 miles northeast of Warroad, Minn., and reached by boat from Warroad. It is 50 feet from the bank on the shore to the east and 65 feet from the bank on the shore to the south. The station is not marked. The following true bearings were determined:

Water tower in Warroad, Minn. (mark).....	29	59.8	west of south
Cupola of barn northeast of Warroad.....	16	21.4	west of south
North gable of a house across lake.....	16	36.1	west of south
Left edge of a house to the west.....	81	49.8	west of south

