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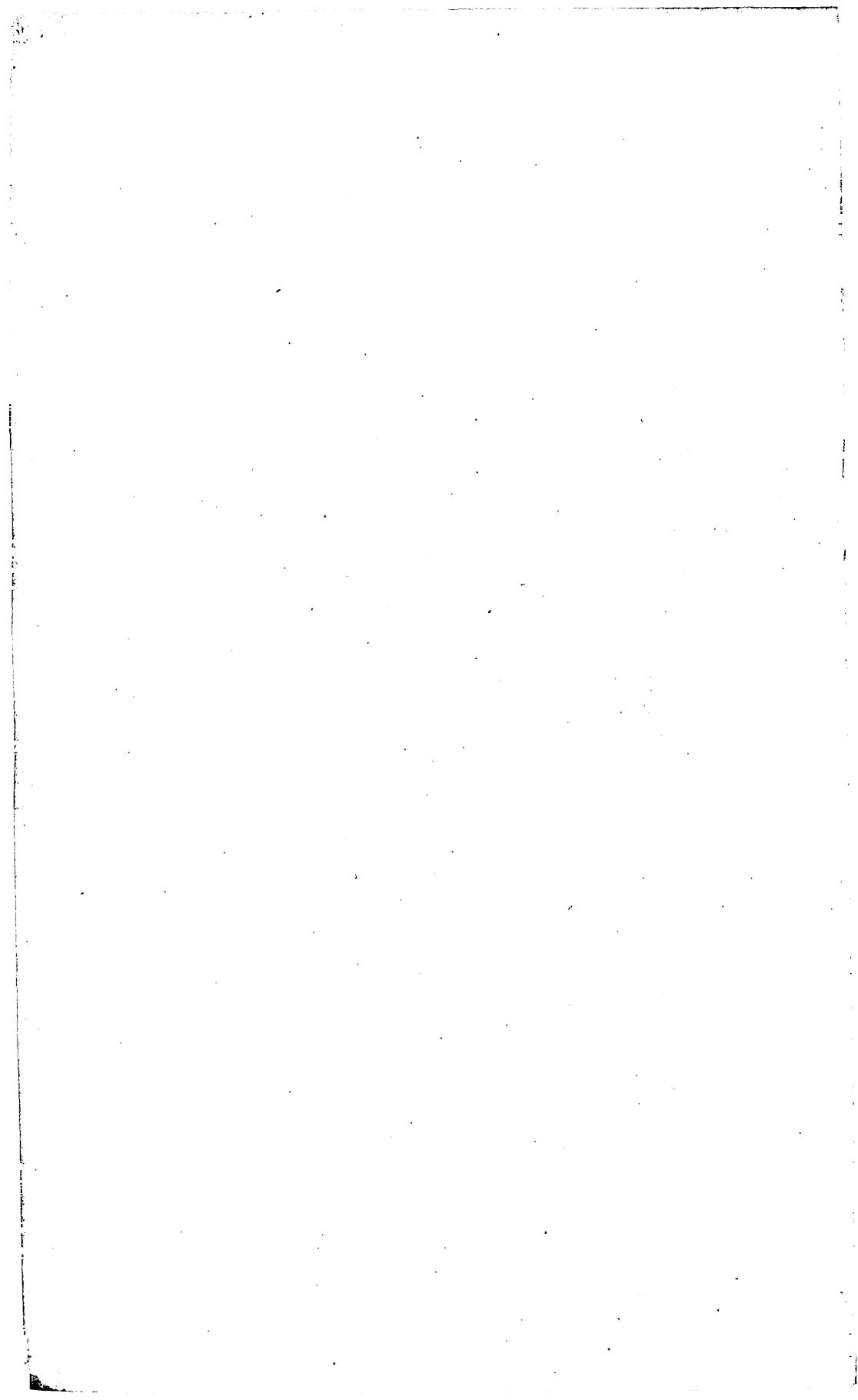
RESULTS OF SPIRIT LEVELING IN NORTH DAKOTA

1897 TO 1910, INCLUSIVE

R. B. MARSHALL, CHIEF GEOGRAPHER



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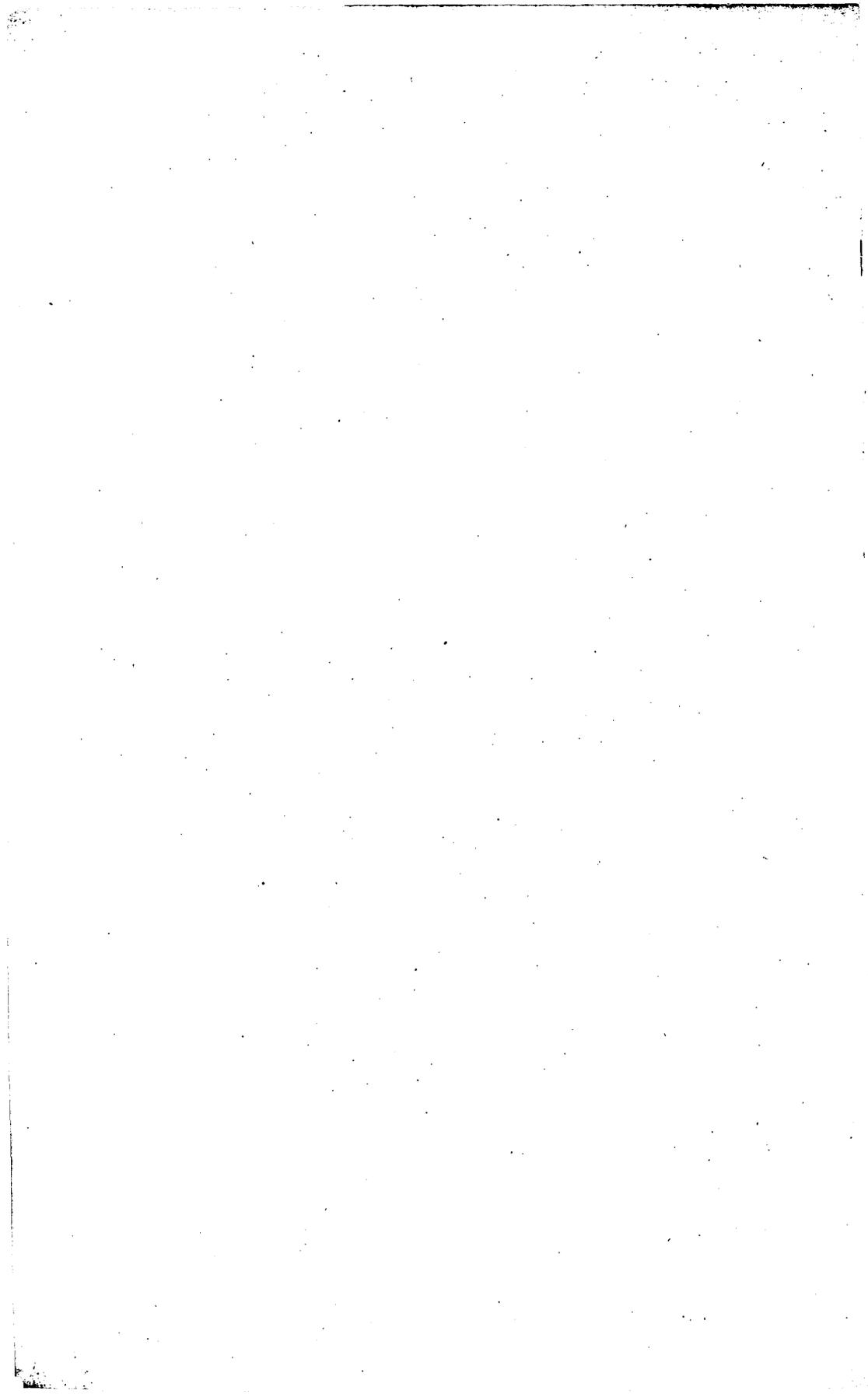


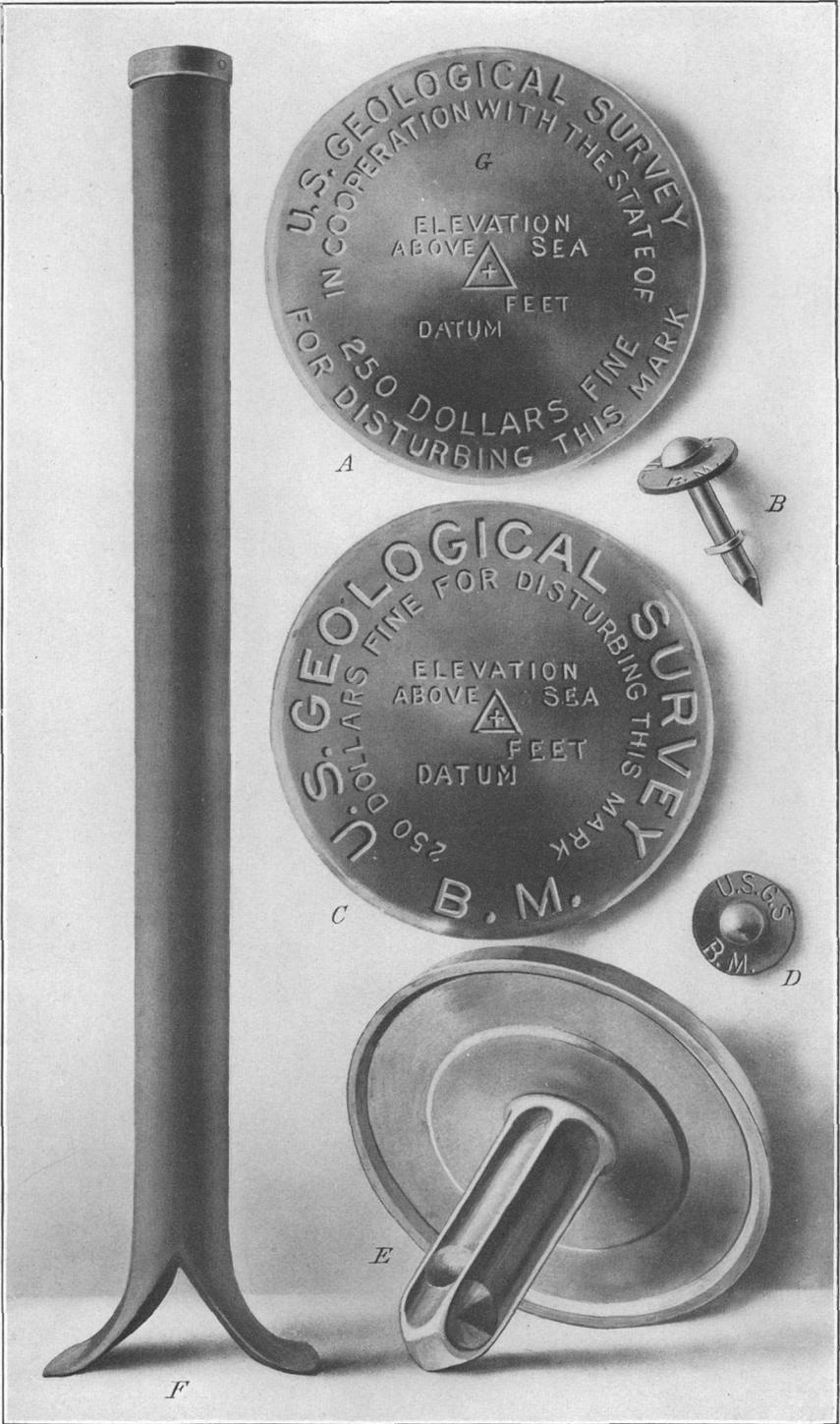
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GEOLOGICAL SURVEY BENCH MARKS.

A, Tablet used in cooperating States. The State name is inserted at G.
 B and D, Copper temporary bench mark, consisting of a nail and copper washer.
 A, C, and E, Tablets for stone or concrete structures.
 F, Iron post used where there is no rock.

RESULTS OF SPIRIT LEVELING IN NORTH DAKOTA, 1897 TO 1910, INCLUSIVE.

R. B. MARSHALL, Chief Geographer.

INTRODUCTION.

Scope of the work.—All results of spirit leveling in North Dakota previously published by the United States Geological Survey and all the results of later work are included in this report, rearranged by quadrangles. Elevations are based on heights of bench marks along precise level lines of the Coast and Geodetic Survey as adjusted in 1907, and on checked primary leveling of the Missouri River Commission. The elevations of bench marks in the Pingree quadrangle are based on railroad datum, and are therefore only approximate.

Personnel.—The field work previous to 1903 was done under the general direction of J. H. Renshawe, geographer; that for 1903 to 1906, inclusive, under H. M. Wilson, geographer; and the later work under E. C. Barnard and Sledge Tatum, geographers, under the general direction of R. B. Marshall, chief geographer. The names of the various levelmen are given in the introduction to each list. The office work of computation, adjustment, and preparation of lists was done mainly by S. S. Gannett, geographer, and D. H. Baldwin, topographer, and since 1907 under the general direction of E. M. Douglas, geographer.

Classification.—No precise leveling has been done by the United States Geological Survey in this State. For primary lines standard Y levels are used; lines are run in circuits or are closed on precise lines, with an allowable closing error in feet represented by $0.05\sqrt{D}$, in which D is the length of the circuit in miles, sufficient care being given the work to maintain this standard. For circuit closures careful office adjustments are made, the small outstanding errors being distributed over the lines.

Bench marks.—The standard bench marks are of two forms. The first form is a circular bronze or aluminum tablet (C and E, Pl. I), 3.5 inches in diameter and one-quarter inch thick, having a 3-inch stem, which is cemented in a drill hole in solid rock in the wall of some public building, a bridge abutment, or other substantial masonry structure. The second form (F, Pl. I), used where masonry

or rock is not available, consists of a hollow wrought-iron post 3.5 inches in outer diameter and 4 feet in length. The bottom is spread out to a width of 10 inches, in order to give a firm bearing on the earth. A bronze or aluminum-bronze cap is riveted over the top of the post, which is set about 3 feet in the ground. A third style of bench mark with abbreviated lettering (*B* and *D*, Pl. I), is used for unimportant points. This consists of a special copper nail 1.5 inches in length driven through a copper washer seven-eighths inch in diameter. The tablets, as well as the caps on the iron posts, are appropriately lettered, and for cooperating States the fact of such cooperation is indicated by the addition of the State name (*G*, Pl. I).

The numbers stamped on the bench marks described in the following pages represent the elevations to the nearest foot as determined by the levelman. These numbers are stamped with $\frac{3}{16}$ -inch steel dies on the tablets or post caps, to the left of the word "FEET." The office adjustment of the notes and the reduction to mean sea level datum may so change some of the figures that the original markings are 1 or 2 feet in error. It is assumed that engineers and others who have occasion to use the bench-mark elevations will apply to the Director of the United States Geological Survey, at Washington, D. C., for the adjusted values, and will use the markings as identification numbers only.

Datum.—All United States Geological Survey elevations are referred to mean sea level, which is the level that the sea would assume if the influence of winds and tides were eliminated. This level is not the elevation determined from the mean of the highest and the lowest tides, nor is it the half sum of the mean of all the high tides and the mean of all the low tides, which is called the half-tide level. *Mean sea level is the average height of the water, all stages of the tide being considered.* It is determined from observations made by means of tidal gages placed at stations where local conditions, such as long, narrow bays, rivers, and like features, will not affect the height of the water. To obtain even approximately correct results these observations must extend over at least one lunar month, and if accuracy is desired they must extend over several years. At ocean stations the half-tide level and the mean sea level usually differ but little. It is assumed that there is no difference between the mean sea level as determined from observations in the Atlantic Ocean, the Gulf of Mexico, or the Pacific Ocean.

The connection with tidal stations for bench marks in certain areas that lie at some distance from the seacoast is still uncertain, and this fact is indicated by the addition of a letter or word to the right of the word "DATUM" on tablets or posts. For such areas corrections for published results will be made from time to time as the precise-level lines of the United States Geological Survey or other Government organizations are extended.

Topographic maps.—Maps of the following quadrangles wholly or partly in North Dakota have been published by the United States Geological Survey up to May 1, 1911. They may be obtained, except as noted, for 5 cents each or \$3 a hundred, on application to the Director of the Survey, at Washington, D. C.

Bismarck.	Jamestown.
Casselton.	Lamoure 30'. ⁴
Columbia (S. Dak.-N. Dak.). ¹	Lamoure 15'. ⁴
Eckelson.	Monango. ²
Edgeley. ²	Oakes. ⁴
Ellendale 30' (S. Dak.-N. Dak.). ³	Pingree.
Ellendale 15' (N. Dak.-S. Dak.). ³	*Savo (S. Dak.-N. Dak.). ¹
Fargo (N. Dak.-Minn.).	Tower.
Fullerton. ⁴	Wahpeton (N. Dak.-Minn.).
Glendive (Mont.-N. Dak.).	Wyndmere.
Hecla (S. Dak.-N. Dak.). ¹	

PRIMARY LEVELING.

Wahpeton and Wyndmere Quadrangles.

RANSOM, RICHLAND, AND SARGENT COUNTIES.

The elevations in the following list are based on three bench marks in the vicinity of Fairmount, determined by precise leveling of the Coast and Geodetic Survey.

The leveling in the Wahpeton quadrangle was done in 1902 by W. R. Saxton; that in the Wyndmere quadrangle was done in 1904 by J. G. Staack and M. A. Steel.

WAHPETON QUADRANGLE

Wahpeton west 1 mile, thence north to south boundary of T. 134 N., thence west to east boundary of R. 51 W., thence north to sec. 6, T. 135 N., R. 46 W., thence south to Wahpeton.

	Feet.
Wahpeton, in front of Northern Pacific Ry. station; top of rail	960. 0
Wahpeton, southeast corner of courthouse yard; iron post, stamped "964 W"	964. 930
T. 132 N., R. 48 W., quarter corner on east side of sec. 12, about 1 mile west of Wahpeton, north side of road, 170 yards east of Northern Pacific Ry. tracks; iron post stamped "958 W"	959. 244
Lehigh, T. 133 N., R. 47 W., northwest corner of sec. 18, east side of road, 50 feet south of Chicago, Milwaukee & St. Paul Ry. track, at intersection with range line; iron post stamped "955 W"	955. 869
T. 133 N., R. 48 W., northwest corner of sec. 6, southeast corner of cross-roads; iron post stamped "949 W"	948. 813
T. 133 N., R. 49 W., northwest corner of sec. 4, southeast corner of cross-roads, at fence corner; iron post stamped "970 W"	971. 078

* Out of print.

¹ Hecla and Savo sheets, on scale of 1 : 62500, have been reduced and form parts of Columbia sheet, on scale of 1 : 125000.

² Monango sheet, on scale of 1 : 62500, has been reduced and forms part of Edgeley sheet, on scale of 1 : 125000.

³ Ellendale 15' sheet, on scale of 1 : 62500, has been reduced and forms part of Ellendale 30' sheet, on scale of 1 : 125000.

⁴ Oakes, Fullerton, and Lamoure 15' sheets, on scale of 1 : 62500, have been reduced and form parts of Lamoure 30' sheet, on scale of 1 : 125000.

	Feet.
T. 133 N., R. 50 W., northwest corner of sec. 6, southeast corner of crossroads; iron post stamped "1046 W"	1,046.467
T. 134 N., R. 50 W., southwest corner of sec. 7, about 50 feet northeast of crossroads; iron post stamped "1043 W"	1,043.692
T. 135 N., R. 50 W., 10 rods west of quarter corner on north side of sec. 17, south side of road; iron post stamped "1037 W"	1,037.940
T. 135 N., R. 49 W., north side of sec. 19, 50 feet south of section line, west side of railroad crossing on Great Northern Ry. track; iron post stamped "960 W"	961.338
T. 134 N., R. 49 W., north township line, 20 feet south of Great Northern Ry. crossing, on west side of track; iron post stamped "957 W"	958.390
NOTE.—This bench mark is on a single spur line 3 miles south of the preceding bench mark.	
T. 135 N., R. 48 W., north side of sec. 20, south of railroad crossing, west side of Chicago, Milwaukee & St. Paul track, 20 feet south of section line; iron post stamped "934 W"	934.972
T. 134 N., R. 48 W., northeast corner of sec. 5, southwest corner of crossroads; iron post stamped "933 W"	934.016
NOTE.—This bench mark is on a single spur line 3 miles south of the preceding bench mark.	
Wahpeton west to sec. 7, T. 132 N., R. 49 W., thence south to southwest corner of sec. 31, thence east to northeast corner of sec. 1, T. 131 N., R. 48 W., thence south 6 miles to northeast corner of sec. 1, T. 130 N., R. 48 W.	
T. 132 N., R. 48 W., quarter corner on west side of sec. 7, southeast side of crossroads; iron post stamped "963 W"	964.102
T. 132 N., R. 50 W., quarter corner on east side of sec. 12; iron post stamped "974 W"	974.522
T. 131 N., R. 50 W., northeast corner of sec. 1, southwest corner of crossroads; iron post stamped "979 W"	979.830
T. 131 N., R. 49 W., northeast corner of sec. 1, southwest corner of crossroads; iron post stamped "966 W"	967.481
T. 131 N., R. 48 W., northeast corner of sec. 1, southwest side of crossroads; iron post stamped "965 W"	966.131
T. 130 N., R. 48 W., northeast corner of sec. 1, southwest corner of crossroads; iron post stamped "979 W" (redetermined by Coast and Geodetic Survey)	980.101
Breckenridge south along section line 2 miles west of east side of R. 47 W. to north side of T. 130 N., thence west to northwest corner of sec. 6, T. 130 N., R. 49 W., thence south 6 miles west to sec. 34, T. 130 N., R. 47 W., thence north to T. 131 N.	
T. 130 N., R. 49 W., southeast corner of crossroads, sec. 2; iron post stamped "985 W"	986.245
T. 130 N., R. 50 W., northeast corner of sec. 1, southwest side of crossroads; iron post stamped "1028 W"	1,028.600

WYNDMERE QUADRANGLE.

Northeast corner of sec. 1, T. 130 N., R. 50 W., via Minneapolis, St. Paul & Sault Ste. Marie and Great Northern Rys. to Cayuga.

Lidgerwood, 5.5 miles east of, 12 feet west of section line between secs. 13 and 14, T. 130 N., R. 50 W., 12 feet west of Minneapolis, St. Paul & Sault Ste. Marie Ry. track; iron post	1,108.177
Lidgerwood, 2.5 miles east of, northwest corner of sec. 16, T. 130 N., R. 51 W., 15 feet east of county road, 30 feet south of Minneapolis, St. Paul & Sault Ste. Marie Ry.; iron post	1,133.971
Lidgerwood, in front of station; top of rail	1,091.0

Point 1 mile west of Ligerwood south on section line to Great Northern Ry.

	Feet.
T. 130 N., R. 52 W., secs. 14 and 15, 12 feet east of road on section line, 12 feet north of Great Northern Ry.; iron post stamped "Sta. 30-1115".....	1, 116. 356
Geneseo, 2 miles east of, 0.5 mile east of center of sec. 15, T. 130 N., R. 52 W., on east side of county road, 48 feet north of Great Northern Ry.; iron post.....	1, 136. 592
T. 130 N., R. 52 W., 8 feet west of road on line between secs. 14 and 15, 1 mile west from Geneseo, 10 feet north of Great Northern Ry.; iron post..	1, 166. 590

Cayuga north on range line to northwest corner of sec. 7, T. 131 N., R. 53 W., thence east 1 mile and north 1 mile, thence east on line between Tps. 131 and 132 N., to northeast corner of sec. 1, R. 51 W.

T. 130 N., R. 54 W., northeast corner of sec. 1, 1 mile north of Ransom, southwest corner crossroads; iron post.....	1, 142. 096
T. 131 N., R. 54 W., southeast corner of sec. 1, 6 miles north of Ransom, northwest corner crossroads; iron post.....	1, 105. 526
T. 132 N., R. 53 W., southwest corner of sec. 34, 5 miles south of Delamere, 40 feet northeast of center of crossroads; iron post.	1, 081. 855
T. 131 N., R. 53 W., northeast corner of sec. 1, 4.5 miles south and 6 miles west of Wyndmere, southwest corner of crossroads; iron post.....	1, 076. 365
T. 131 N., R. 52 W., northwest corner of sec. 3, 4.5 miles south and 3 miles west of Wyndmere; iron post.....	1, 089. 457
T. 132 N., R. 52 W., southeast corner of sec. 36, 4.5 miles south of Wyndmere, northwest corner of crossroads; iron post.....	1, 066. 494
T. 131 N., R. 51 W., northwest corner of sec. 3, 4.5 miles south and 3 miles east of Wyndmere, 40 feet south of bridge across Rice River, on east side of county road; iron post.....	1, 017. 439
T. 132 N., R. 51 W., southeast corner of sec. 36, 4.5 miles south and 6 miles east of Wyndmere, northwest corner of crossroads; iron post.....	1, 035. 365

Northeast corner of sec. 1, T. 131 N., R. 51 W., north on range line to bench mark at northeast corner of sec. 19, T. 133 N., R. 51 W.

T. 132 N., R. 51 W., southeast corner of sec. 13, 1.5 miles south of and 6 miles east of Wyndmere; iron post.	1, 037. 053
T. 133 N., R. 50 W., northwest corner of sec. 19, 5 miles east and 4 miles north of Wyndmere, southeast corner of crossroads; iron post.....	1, 046. 105

Ransom west on section line 1 mile south of township line to southwest corner of sec. 6, T. 130 N., R. 54 W., thence north on range line to Milnor.

T. 131 N., R. 55 W., southeast corner of sec. 36, 6 miles west and 1 mile north of Ransom, northwest corner of crossroads; iron post.....	1, 200. 852
T. 131 N., R. 55 W., 100 feet south of northeast corner of sec. 24, 7 miles south and 2 miles west of Milnor, northwest corner of crossroads; iron post.....	1, 196. 897
T. 132 N., R. 55 W., southeast corner of sec. 36, 4 miles south and 2 miles west of Milnor, northwest corner of crossroads; iron post.	1, 078. 952
T. 132 N., R. 54 W., 600 feet south of northwest corner of sec. 19, 2 miles west and 1.5 miles south of Milnor, east side of north-south road, north side of east-west road; iron post.....	1, 176. 670
Milnor, T. 132 N., R. 54 W., center of sec. 9, west corner of bank of Sargent Co., northwest end of second step; tablet.....	1, 098. 799

Milnor, east along Northern Pacific Ry. and highways to southeast corner of sec. 36, T. 133 N., R. 51 W.

T. 132 N., R. 53 W., northwest corner of sec. 8, 11 miles west of Wyndmere, north side of track, east side of county road; iron post.....	1, 078. 751
Delamere, sec. 4, T. 132 N., R. 53 W., 60 feet north and 33 feet west of northeast corner of station; iron post.....	1, 066. 847

	Feet.
T. 132 N., R. 52 W., northwest corner of sec. 7, 6 miles west of Wyndmere, 10 feet south of track, east side of county road; iron post.....	1, 063. 770
T. 132 N., R. 52 W., northwest corner of sec. 10, 3 miles west of Wyndmere, 40 feet south of track, west of county road; iron post.....	1, 062. 303
Wyndmere, Earl school building, south end door sill, main entrance; tablet.....	1, 065. 259
T. 133 N., R. 51 W., southeast corner of sec. 36, 1 mile north and 5 miles east of Wyndmere, northwest corner of crossroads; iron post.....	1, 046. 489
T. 130 N., R. 54 W., 3 miles west of Ransom, near large pile of rocks, 130 paces west of northeast corner of sec. 9; iron post.....	1, 171. 049
T. 132 N., R. 51 W., 160 paces west of northeast corner of sec. 4, 2.8 miles east and 1 mile north of Wyndmere, south side of road; iron post.....	1, 058. 011
Northeast corner of sec. 6, T. 133 N., R. 50 W., along township line west to point 0.5 mile west of northeast corner of sec. 4, T. 133 N., R. 54 W., thence north to line of T. 135 N., thence east to northeast corner of sec. 1, T. 134 N., R. 51 W., thence south to southwest corner of sec. 7, T. 134 N., R. 50 W.	
T. 133 N., R. 51 W., northwest corner of sec. 3, 7 miles north and 2 miles east of Wyndmere, southeast corner of crossroads; iron post.....	1, 055. 406
T. 134 N., R. 52 W., southeast corner of sec. 36, 7 miles north and 1 mile west of Wyndmere, northwest corner of crossroads; iron post.....	1, 072. 156
T. 133 N., R. 52 W., southwest corner of sec. 3, 7 miles north and 4 miles west of Wyndmere, southeast corner of crossroads; iron post.....	1, 072. 878
T. 133 N., R. 52 W., northeast corner of sec. 6, 7 miles north and 5 miles west of Wyndmere, south side of county road, west side of railroad, at fence corner; iron post.....	1, 083. 718
T. 134 N., R. 53 W., 300 feet north of township line, near southwest corner of sec. 34, 7 miles north and 8 miles west of Wyndmere, east side of north-south road; iron post.....	1, 076. 136
T. 134 N., R. 53 W., southeast corner of sec. 32, south side of east-west road; iron post.....	1, 075. 853
T. 133 N., R. 54 W., northeast corner of sec. 1, 30 feet west of range line; iron post.....	1, 076. 724
T. 134 N., R. 54 W., 0.5 mile south of center of sec. 33, 10 feet north of corner fence post; iron post.....	1, 079. 372
T. 134 N., R. 54 W., southeast corner of sec. 16, northwest corner of cross- roads; iron post.....	1, 070. 296
T. 134 N., R. 54 W., northeast corner of sec. 4, southwest corner of cross- roads; iron post.....	1, 072. 029
T. 134 N., R. 53 W., west side of railroad where it cuts township line between Tps. 134 and 135 N., 0.4 mile east of northwest corner of sec. 6; iron post.....	1, 072. 749
T. 135 N., R. 53 W., southeast corner of sec. 33, 10 feet north of corner fence post, northwest corner of crossroads; iron post.....	1, 070. 276
T. 135 N., R. 53 W., at southeast corner of sec. 36, 221 feet north of cross- roads; iron post.....	1, 072. 836
T. 134 N., R. 52 W., northwest corner of sec. 4, 10 feet west of corner fence post, southeast corner of crossroads; iron post.....	1, 066. 440
T. 134 N., R. 51 W., northwest corner of sec. 3, southeast corner of cross- roads; iron post.....	1, 052. 872
T. 135 N., R. 51 W., southeast corner of sec. 36, northwest corner of cross- roads; iron post.....	1, 043. 177
T. 135 N., R. 52 W., southeast corner of sec. 35, northwest corner of cross- roads; iron post.....	1, 066. 558

Pingree Quadrangle.

FOSTER AND STUTSMAN COUNTIES.

The elevations in the following list are based on the top of the rail of the Northern Pacific Ry. track in front of Jamestown station, the railroad company's elevation for which, 1,407.5 feet, was accepted.

The leveling was done in 1897 by Alfred Tyler.

PINGREE QUADRANGLE.

Bench marks established at land corners by lines of leveling which follow highways, mostly along section lines.

	Feet.
T. 141 N., R. 62 W., northwest corner of sec. 30; iron post stamped "JMTN 1455"	1,454.842
T. 141 N., R. 63 W., northwest corner of sec. 30; iron post stamped "JMTN 1435"	1,434.524
T. 141 N., R. 64 W., southwest corner of sec. 19; iron post stamped "JMTN 1529"	1,529.436
T. 141 N., R. 65 W., southwest corner of sec. 19; iron post stamped "JMTN 1645"	1,644.770
T. 141 N., R. 62 W., northwest corner of sec. 6; iron post stamped "JMTN 1511"	1,511.248
T. 142 N., R. 63 W., southwest corner of sec. 31; iron post stamped "JMTN 1465"	1,465.183
T. 142 N., R. 64 W., southwest corner of sec. 31; iron post stamped "JMTN 1550"	1,550.337
T. 142 N., R. 65 W., southwest corner of sec. 31; iron post stamped "JMTN 1646"	1,645.786
T. 142 N., R. 62 W., northwest corner of sec. 6; iron post stamped "JMTN 1541"	1,540.995
T. 143 N., R. 63 W., southwest corner of sec. 31; iron post stamped "JMTN 1522"	1,521.976
T. 143 N., R. 64 W., southwest corner of sec. 31; iron post stamped "JMTN 1533"	1,533.092
T. 143 N., R. 65 W., southwest corner of sec. 31; iron post stamped "JMTN 1515"	1,514.751
T. 143 N., R. 62 W., northwest corner of sec. 6; iron post stamped "JMTN 1525"	1,524.545
T. 144 N., R. 63 W., southwest corner of sec. 31; iron post stamped "JMTN 1523"	1,522.739
T. 144 N., R. 65 W., southwest corner of sec 35; iron post stamped "JMTN 1574"	1,574.348
T. 144 N., R. 66 W., southeast corner of sec. 36; iron post stamped "JMTN 1605"	1,605.235
T. 144 N., R. 62 W., northwest corner of sec. 6; iron post stamped "JMTN 1507"	1,507.490
T. 145 N., R. 63 W., southwest corner of sec. 31; iron post stamped "JMTN 1523"	1,523.393
T. 145 N., R. 64 W., northwest corner of sec. 6; iron post stamped "JMTN 1526"	1,525.686
T. 145 N., R. 64 W., southwest corner of sec. 32; iron post stamped "JMTN 1526"	1,525.908
T. 145 N., R. 65 W., southwest corner of sec. 32; iron post stamped "JMTN 1569"	1,569.172

T. 146 N., R. 62 W., northwest corner of sec. 6; iron post stamped "JMTN 1475".....	Feet. 1, 474. 761
T. 146 N., R. 63 W., northwest corner of sec. 6; iron post stamped "JMTN 1497".....	1, 497. 127
T. 146 N., R. 64 W., northwest corner of sec. 6; iron post stamped "JMTN 1578".....	1, 578. 112
T. 146 N., R. 65 W., northwest corner of sec. 5; iron post stamped "JMTN 1521".....	1, 520. 948

Bismarck and New Salem Quadrangles.

BURLEIGH AND MORTON COUNTIES.

The elevations in the following list are based upon bench marks of the Missouri River Commission as given in the report of the Chief of Engineers, United States Army, for 1894, pages 1761-1765, corrected by the 1907 adjustment of the Coast and Geodetic Survey. The orthometric correction has also been applied to these elevations.

The leveling was done in 1905 by T. R. Lynch.

BISMARCK QUADRANGLE.

Bismarck east along township line to Menoken, thence north through range 76 to corner of secs. 8, 9, 16, and 17, T. 140 N., R. 78 W., thence west along section line to Missouri River.

Bismarck, about 1 mile below Bismarck Bridge, on east bank of Missouri River, 850 feet from river on bench north of Northern Pacific track; Missouri River Commission bench mark 186/2, plotted on chart 116 of Missouri River.....	Feet. 1, 667. 636
T. 138 N., R. 80 W., northwest corner of sec. 2; iron post stamped "1734".....	1, 733. 276
T. 139 N., R. 79 W., southwest corner of sec. 31; iron post stamped "1655".....	1, 654. 345
T. 139 N., R. 79 W., southeast corner of sec. 33; 10 paces south and 10 paces east of section mound; iron post stamped "1683".....	1, 682. 166
T. 139 N., R. 78 W., southwest corner of sec. 31; iron post stamped "1680".....	1, 679. 337
T. 139 N., R. 78 W., southwest corner of sec. 33; iron post stamped "1759".....	1, 758. 100
T. 139 N., R. 78 W., near northwest corner of sec. 21; iron post stamped "1695".....	1, 694. 181
T. 139 N., R. 78 W., northwest corner of sec. 4; 5 paces southeast of; iron post stamped "1770".....	1, 768. 859
T. 140 N., R. 78 W., southwest corner of sec. 9; 10 paces southwest of; iron post stamped "1999".....	1, 998. 009
T. 140 N., R. 79 W., 15 paces northwest of southeast corner of sec. 10; iron post stamped "2063".....	2, 062. 417
T. 140 N., R. 80 W., 15 paces northwest of southeast corner of sec. 12; iron post stamped "1985".....	1, 983. 879
T. 140 N., R. 80 W., sec. 10, 1,850 paces west of southwest corner, on section line; iron post stamped "1843".....	1, 842. 557
T. 140 N., R. 81 W., 15 paces west of southeast corner of sec. 12; iron post stamped "1927".....	1, 926. 596
Square Butte Creek, 3.5 miles north of mouth of, on east bank of Missouri River, on high point in front of butte 1,400 feet from river, 750 feet east of wagon road; Missouri River Commission bench mark 183/2, plotted on chart 114 of Missouri River.....	1, 802. 955

Missouri River Commission bench mark 188/1 near corner of seces. 4, 5, 8, and 9, T. 137 N., R. 80 W., southwest to southwest corner of sec. 31, T. 137 N., R. 81 W.

Fort Lincoln, 3.5 miles south of, by road, on west bank of Missouri River about 1,400 feet back from high-cut bank of river, 700 feet from wagon road and northwest from Riverside Ranch; Missouri River Commission bench mark 188/1, plotted on chart 117.....	Feet. 1, 728. 202
T. 137 N., R. 81 W., quarter corner on south side of sec. 13; iron post stamped "1702".....	1, 701. 346
T. 137 N., R. 81 W., 10 paces north of southeast corner of sec. 16; iron post stamped "1765".....	1, 764. 342
T. 136 N., R. 82 W., 15 paces southeast from northwest corner of sec. 2, on standard parallel; iron post stamped "1759".....	1, 757. 706

Corner of Tps. 135 and 136 N., Rs. 81 and 82 W., east along township line to Missouri River.

Tps. 135 and 136 N., Rs. 81 and 82 W., 10 paces south of corner; iron post stamped "1944".....	1, 943. 467
T. 136 N., R. 81 W., 15 paces northwest of southwest corner of sec. 34; iron post stamped "1902".....	1, 902. 244
T. 136 N., R. 80 W., 10 paces south and 20 paces west of southwest corner of sec. 31; iron post stamped "2040".....	2, 038. 810
T. 136 N., R. 80 W., 20 paces east and 10 paces south of southwest corner of sec. 34; iron post stamped "1914".....	1, 912. 772
T. 135 N., R. 80 W., 270 paces south and 115 paces west of northeast corner of sec. 1, on north bank of large coulee; iron post stamped "1802".....	1, 801. 393
T. 136 N., R. 70 W., southwest corner of sec. 33, between section mound pits; iron post stamped "1746".....	1, 744. 970
Glencoe, 4 miles south of, on right bank of Missouri River, 800 feet from river, south side of lower of two small coulees; Missouri River Commission bench mark 194/2, plotted on chart 120.....	1, 638. 925

Rockhaven along Missouri River northwest 5 miles.

Rockhaven, on right bank of Missouri River, 200 feet above mouth of coulee, 350 feet from river, 400 feet from log house, on west side of wire fence; Missouri River Commission bench mark 184/1, plotted on chart 114.....	1, 658. 412
T. 140 N., R. 81 W., sec. 31, southwest corner; iron post stamped "2021".....	2, 020. 046

Southwest corner of T. 138 N., R. 81 W., east along section line to Missouri River at old Fort Lincoln.

T. 138 N., R. 81 W., 10 paces east and 10 paces north of southwest corner of sec. 18; iron post stamped "1918".....	1, 916. 791
T. 138 N., R. 81 W., 10 paces west and 10 paces south of southwest corner of sec. 16; iron post stamped "1939".....	1, 938. 253
T. 138 N., R. 81 W., 275 paces west of quarter corner of secs. 14 and 23, on Creamery Road, near corner fence post; iron post stamped "1763".....	1, 762. 367

NEW SALEM QUADRANGLE.

Corner of secs. 8, 9, 16, and 17, T. 136 N., R. 82 W., south along section line to corner of secs. 32 and 33, T. 136 N., R. 82 W., and secs. 4 and 5, T. 135 N., R. 82 W.

T. 136 N., R. 82 W., 10 paces west and 10 paces north of southeast corner of sec. 8; iron post stamped "1815".....	1, 814. 265
T. 136 N., R. 82 W., 370 paces north of southwest corner of sec. 33; iron post stamped "2226".....	2, 225. 014

Corner of secs. 2 and 3, T. 139 N., R. 82 W., and secs. 34 and 35, T. 140 N., R. 82 W., south
9 miles along section line.

T. 139 N., R. 82 W., 300 paces north of northeast corner of sec. 3; iron post stamped "1956".....	Feet. 1,955.252
T. 139 N., R. 82 W., 12 paces east and 7 paces south of northwest corner of sec. 14; iron post stamped "1897".....	1,896.614
T. 139 N., R. 82 W., 75 paces east of southwest corner of sec. 23, on high bluff north of Heart River and Northern Pacific Ry.; iron post stamped "1829".....	1,828.334
T. 139 N., R. 82 W., 725 paces south of sec. 35, 190 paces south of east-west public road, 40 paces east of north-south road; iron post stamped "2001".....	1,999.688
T. 138 N., R. 82 W., southwest corner of sec. 14, 6 paces south and 4 paces west of section stone; iron post stamped "1863".....	1,862.242

Blue Butte, Elbowoods, and Ryder Quadrangles—Fort Berthold Indian Reservation.

McLEAN, WALLACE, AND WARD COUNTIES.

The elevations in the following list are based on Missouri River Commission levels plus 0.755 foot, in accord with the 1907 adjustment at Elk Point, S. Dak., and minus 0.700 foot orthometric correction, leaving a total correction of +0.055 foot.

The work was done by the General Land Office. The iron posts at township corners are similar to those of the Geological Survey but are 1 foot shorter. They are 3.5 inches in diameter and 3 feet long; the bottoms are split and expanded to 10 inches, the tops are capped with brass plates appropriately lettered, and the interiors are filled with concrete. The iron section corner posts, which are pointed, are 3 feet long and 1 inch in diameter. They are filled with cement, capped, and driven 28 inches in the ground. Elevations are in general stamped on the brass caps.

The leveling was done in 1910 by H. L. Baldwin.

ELBOWOODS QUADRANGLE.

Missouri River Commission bench mark 153/2 southeast 3 miles to line between Tps. 149 and 150 N., thence east along township line to quarter corner between secs. 3 and 34.

Missouri River, east bank, at upper end of "The Slide," on high point 150 feet southeast from wagon road; Missouri River Commission bench mark 153/2.....	Feet. 1,799.020
T. 150 N., R. 90 W., quarter corner of secs. 30 and 31; temporary bench mark on top of stone.....	2,026.16
T. 150 N., R. 90 W., quarter corner of secs. 31 and 32; on top of stone....	2,034.34
Tps. 149 and 150 N., R. 90 W., corner of secs. 4, 5, 32, and 33; top of stone..	2,000.74
Tps. 149 and 150 N., R. 90 W., quarter corner of secs. 4 and 33; top of stone..	1,958.33
Tps. 149 and 150 N., R. 90 W., corner of secs. 3, 4, 33, and 34; on stone...	2,006.61
Tps. 149 and 150 N., R. 90 W., quarter corner of secs. 3 and 34; on stone..	2,034.73
Tps. 149 and 150 N., R. 90 W., corner of secs. 2, 3, 34, and 35; on stone...	2,019.49
Tps. 149 and 150 N., Rs. 89 and 90 W., standard township corner; iron post stamped "1979".....	1,977.913
Tps. 149 and 150 N., R. 89 W., quarter corner of secs. 6 and 31; top of stone..	1,989.93
Tps. 149 and 150 N., R. 89 W., corner of secs. 5, 6, 31, and 32; top of stone..	1,970.28

	Feet.
Tps. 149 and 150 N., R. 89 W., quarter corner of secs. 5 and 32; top of stone..	1,954.09
Tps. 149 and 150 N., R. 89 W., corner of secs. 4, 5, 32, and 33; top of stone..	1,962.20
Tps. 149 and 150 N., R. 89 W., quarter corner of secs. 4 and 33; top of stone..	1,974.08
Tps. 149 and 150 N., R. 89 W., corner of secs. 3, 4, 33, and 34; top of stone..	1,955.65

Point 0.5 mile east of secs. 9 and 10, T. 152 N., R. 89 W., west along north boundary of Fort Berthold Indian Reservation and section line to corner of Tps. 152 and 153 N., Rs. 89 and 90 W., thence south to corner Tps. 151 and 152 N., Rs. 89 and 90 W.

T. 152 N., R. 89 W., secs. 9 and 10, on reservation boundary at intersection with section line; top of stone.....	2,079.76
T. 152 N., R. 89 W., secs. 8 and 9, at intersection of section line with reservation boundary; top of stone.....	2,078.40
T. 152 N., R. 89 W., secs. 7 and 8, at intersection of section line with reservation boundary; top of stone.....	2,108.19
T. 152 N., Rs. 89 and 90 W., intersection of range line with north boundary of reservation; stone marker.....	2,115.65
T. 152 N., Rs. 89 and 90 W., 1 foot south of stone marking intersection of range line with north boundary of reservation; iron post stamped "2117".....	2,115.798
T. 152 N., Rs. 89 and 90 W., corner of secs. 7, 12, 13, and 18; iron section post stamped "2129".....	2,128.24
T. 152 N., Rs. 89 and 90 W., quarter corner of secs. 13 and 18; iron section post stamped "2117".....	2,115.92
T. 152 N., Rs. 89 and 90 W., corner of secs. 13, 18, 19, and 24; iron section post stamped "2109".....	2,108.41
T. 152 N., Rs. 89 and 90 W., quarter corner between secs. 19 and 24; iron section post stamped "2047".....	2,046.23
T. 152 N., Rs. 89 and 90 W., corner of secs. 19, 24, 25, and 30; iron section post stamped "2002".....	2,000.78
T. 152 N., Rs. 89 and 90 W., quarter corner between secs. 25 and 30; iron section post stamped "1943".....	1,941.91
T. 152 N., Rs. 89 and 90 W., corner of secs. 25, 30, 31, and 36; iron section post stamped "1938".....	1,937.68
Tps. 151 and 152 N., Rs. 89 and 90 W., corner of; iron post stamped "1994".....	1,993.811

Tps. 150 and 151 N., Rs. 88 and 89 W., west along township line to corner of Tps. 150 and 151, Rs. 89 and 90 W., thence north along range line to corner of Tps. 151 and 152 N., Rs. 89 and 90 W., thence west along township line to corner of secs. 3, 4, 33, and 34, R. 91 W., thence west along township line to quarter corner between secs. 5 and 32, Tps. 151 and 152 N., R. 92 W.

Tps. 150 and 151 N., Rs. 88 and 89 W.; iron post stamped "2079".....	2,078.397
Tps. 150 and 151 N., R. 89 W., corner of secs. 1, 2, 35, and 36; iron section post stamped "2063".....	2,062.07
Tps. 150 and 151 N., R. 89 W., quarter corner between secs. 2 and 35; iron section post stamped "2064".....	2,063.21
Tps. 150 and 151 N., R. 89 W., corner of secs. 2, 3, 34, and 35; iron section post stamped "2093".....	2,092.86
Tps. 150 and 151 N., R. 89 W., corner of secs. 3, 4, 33, and 34; iron section post stamped "2131".....	2,130.78
Tps. 150 and 151 N., R. 89 W., quarter corner between secs. 4 and 33; iron section post stamped "2157".....	2,155.96
Tps. 150 and 151 N., R. 89 W., corner of secs. 4, 5, 32, and 33; iron section post stamped "2149".....	2,148.16
Tps. 150 and 151 N., Rs. 89 and 90 W., 2 feet north of township corner; iron post stamped "2181".....	2,180.830

	Feet.
T. 151 N., Rs. 89 and 90 W., quarter corner between secs. 31 and 36; iron section post stamped "2182".....	2, 181. 37
T. 151 N., Rs. 89 and 90 W., corner of secs. 25, 30, 31, and 36; iron section post stamped "2196".....	2, 195. 59
T. 151 N., Rs. 89 and 90 W., quarter corner between secs. 25 and 30; iron section post stamped "2204".....	2, 203. 85
T. 151 N., R. 89 W., secs. 19 and 24; iron section post stamped "2156".....	2, 155. 66
T. 151 N., R. 89 W., corner of secs. 13, 18, 19, and 24; iron section post stamped "2151".....	2, 150. 20
T. 151 N., R. 89 W., quarter corner between secs. 13 and 18; top of iron section post stamped "2137".....	2, 136. 31
T. 151 N., R. 89 W., corner of secs. 7, 12, 13, and 18; iron section post.....	2, 117. 36
T. 151 N., R. 89 W., quarter corner between secs. 7 and 12; iron section post stamped "2083".....	2, 082. 15
T. 151 N., R. 89 W., corner of secs. 1, 6, 7, and 12; iron section post.....	2, 062. 71
T. 151 N., R. 89 W., quarter corner between secs. 1 and 6; iron section post stamped "2025".....	2, 024. 26
Tps. 151 and 152 N., Rs. 89 and 90 W., corner of; iron post stamped "1994".....	1, 993. 811
Tps. 151 and 152 N., R. 90 W., quarter corner between secs. 1 and 36; iron section post stamped "2025".....	2, 024. 51
Tps. 151 and 152 N., R. 90 W., corner of secs. 1, 2, 35, and 36; iron section post stamped "2014".....	2, 013. 77
Tps. 151 and 152 N., R. 90 W., quarter corner between secs. 2 and 35; iron section post stamped "1977".....	1, 976. 36
Tps. 151 and 152 N., R. 90 W., corner of secs. 2, 3, 34, and 35; iron section post stamped "1989".....	1, 988. 92
Tps. 151 and 152 N., R. 90 W., quarter corner between secs. 3 and 34; iron section post stamped "1991".....	1, 990. 32
Tps. 151 and 152 N., R. 90 W., corner of secs. 3, 4, 33, and 34; iron section post.....	1, 993. 29
Tps. 151 and 152 N., R. 90 W., quarter corner between secs. 4 and 33; iron section post stamped "1983".....	1, 982. 24
Tps. 151 and 152 N., R. 90 W., corner of secs. 4, 5, 32, and 33; iron section post stamped "1992".....	1, 991. 94
Tps. 151 and 152 N., R. 90 W., quarter corner between secs. 5 and 32; iron section post stamped "1945".....	1, 944. 71
Tps. 151 and 152 N., R. 90 W., corner of secs. 5, 6, 31, and 32; iron section post stamped "1959".....	1, 958. 74
Tps. 151 and 152 N., R. 90 W., quarter corner between secs. 6 and 31; iron section post stamped "1903".....	1, 902. 18
Tps. 151 and 152 N., Rs. 90 and 91 W., witness corner 16 inches north of township corner stone; iron post stamped "1874".....	1, 873. 777
Tps. 151 and 152 N., R. 91 W., witness corner to corner of secs. 1, 2, 35, and 36; iron section post stamped "1887".....	1, 886. 87
Tps. 151 and 152 N., R. 91 W., witness corner to corner of secs. 2, 3, 34, and 35; iron section post stamped "1832".....	1, 831. 71
Tps. 151 and 152 N., R. 91 W., witness corner to corner of secs. 3, 4, 33, and 34; iron post stamped "1842".....	1, 842. 00
Tps. 151 and 152 N., R. 91 W., witness corner to corner of secs. 4, 5, 32, and 33; iron section post stamped "1837".....	1, 835. 50
Tps. 151 and 152 N., R. 91 W., corner of secs. 5, 6, 31, and 32; iron section post stamped "1806".....	1, 805. 00
Tps. 151 and 152 N., Rs. 91 and 92 W., witness corner to corner of; iron post stamped "1805".....	1, 804. 171

Tps. 150 and 151 N., R. 92 W., witness corner to corner of secs. 1, 2, 36, and 35; iron section post stamped "1813".....	1, 812. 40
Tps. 150 and 151 N., R. 92 W., witness corner to corner of secs. 2, 3, 34, and 35; iron section post stamped "1845".....	1, 844. 54
Tps. 151 and 152 N., R. 92 W., quarter corner between secs. 3 and 34; top of stone.....	1, 890. 52
Tps. 151 and 152 N., R. 92 W., witness corner to corner of secs. 3, 4, 33, and 34; iron section post.....	1, 912. 39
Tps. 151 and 152 N., R. 92 W., witness corner to corner of secs. 4, 5, 32, and 33; iron section post stamped "1890".....	1, 889. 07
Tps. 151 and 152 N., R. 92 W., quarter corner between secs. 5 and 32; stone.....	1, 903. 17

RYDER QUADRANGLE.

Corner of secs. 2, 3, 34, and 35, Tps. 149 and 150 N., R. 89 W., east along township line to east boundary of reservation, thence north along reservation line to Minneapolis, St. Paul & Sault Ste. Marie Ry., thence northwest to north boundary of reservation, thence west along boundary to line between secs. 10 and 11, T. 152 N., R. 89 W.

Tps. 149 and 150 N., R. 89 W., corner of secs. 2, 3, 34, and 35; top of stone..	1, 942. 49
Tps. 149 and 150 N., R. 89 W., quarter corner between secs. 2 and 35; top of stone.....	1, 930. 56
Tps. 149 and 150 N., R. 89 W., corner of secs. 1, 2, 35, and 36; top of stone..	1, 913. 10
Tps. 149 and 150 N., R. 89 W., quarter corner between secs. 1 and 36; top of stone.....	1, 935. 69
Tps. 149 and 150 N., Rs. 88 and 89 W., corner of townships; top of stone..	1, 936. 96
Tps. 149 and 150 N., Rs. 88 and 89 W., witness corner to corner of; iron post stamped "1937".....	1, 936. 400
Tps. 149 and 150 N., R. 88 W., at corner of secs. 5, 6, 31, and 32; top of stone.....	1, 952. 59
Tps. 149 and 150 N., R. 88 W., quarter corner between secs. 5 and 32; top of stone.....	1, 968. 84
Tps. 149 and 150 N., R. 88 W., corner of secs. 4, 5, 32, and 33; top of stone..	1, 982. 18
Tps. 149 and 150 N., R. 88 W., quarter corner between secs. 4 and 33; top of stone.....	1, 996. 01
Tps. 149 and 150 N., R. 88 W., corner of secs. 3, 4, 33, and 34; top of stone.....	2, 016. 49
Tps. 149 and 150 N., R. 88 W., quarter corner between secs. 3 and 34; top of stone.....	2, 041. 94
Tps. 149 and 150 N., R. 88 W., corner of secs. 2, 3, 34, and 35; top of stone..	2, 040. 83
Tps. 149 and 150 N., R. 88 W., quarter corner between secs. 2 and 35; top of stone.....	2, 040. 37
Tps. 149 and 150 N., R. 88 W., corner of secs. 1, 2, 35, and 36; top of stone..	2, 040. 47
Tps. 149 and 150 N., R. 88 W., quarter corner between secs. 1 and 36; top of stone.....	2, 056. 06
Tps. 149 and 150 N., Rs. 87 and 88 W.; top of stone.....	2, 087. 16
Tps. 149 and 150 N., Rs. 87 and 88 W., at witness corner to corner of; iron post stamped "2088".....	2, 087. 563
Tps. 149 and 150 N., R. 87 W., quarter corner between secs. 6 and 31; top of stone.....	2, 070. 29
Tps. 149 and 150 N., R. 87 W., corner of secs. 5, 6, 31, and 32; top of stone..	2, 097. 43
Tps. 149 and 150 N., R. 87 W., quarter corner between secs. 5 and 32; top of stone.....	2, 101. 36
Reservation boundary, third fence post north of gate where Northern Pacific Ry. location survey enters reservation fence; doubled nail, evidently a bench mark of the Northern Pacific Ry.....	2, 099. 47

	Feet.
Reservation boundary mile post 18, on east boundary of reservation; 3-inch iron post stamped "2102".....	2, 100. 720
Milepost 19, 212 feet north of, 8 feet west of fence; point on boulder.....	2, 129. 59
Milepost 19½, 450 feet south of, 30 feet west of fence; point on boulder.....	2, 145. 74
Milepost 24, 0.2 miles south of, west of reservation fence; point on rock....	2, 175. 66
Milepost 24, 0.7 mile north of, in north edge of dry lake bed; point on granite boulder 0.5 by 2 by 2.5 feet.....	2, 149. 69
Milepost 27, 0.5 mile north of, near southwest edge of dry pond; point on white granite rock.....	2, 133. 58
Milepost 28, in vicinity of, 100 feet east of reservation fence on point of hill; top of white granite boulder 3 by 1 by 2 feet.....	2, 162. 88
Milepost 30, iron post stamped "2114".....	2, 112. 762
Reservation boundary, intersection with Great Northern Ry. location survey; top of rail.....	2, 103. 5
Reservation boundary, 950 feet west of, opposite station 5177; Great Northern Ry. bench mark stamped "2095.97," railway corrected elevation 2,096.71 feet.....	2, 099. 92
Reservation, east boundary, 3.8 miles northwest of, close to south side of right of way of Minneapolis, St. Paul & Sault Ste. Marie Ry.; point on large boulder.....	2, 087. 02
Reservation, north boundary, 0.3 mile southeast of, top of boulder 1 by 1 by ½ foot, 200 feet south 30° east of Minneapolis, St. Paul & Sault Ste. Marie Ry. milepost 500 and south of east end of snow fence.....	2, 056. 01
T. 152 N., R. 88 W., 70 feet southeast of intersection of section line between secs. 8 and 9 with reservation boundary, south of Plaza; top of gray boulder.....	2, 084. 22
T. 152 N., R. 88 W., north boundary of reservation, at intersection of secs. 7 and 8; top of stone.....	2, 076. 02
T. 152 N., Rs. 88 and 89 W., intersection of range line with reservation boundary; top of stone marker.....	2, 056. 26
T. 152 N., Rs. 88 and 89 W., intersection of range line with reservation boundary; top of post marked "2058".....	2, 057. 137
T. 152 N., R. 89 W., intersection of secs. 11 and 12 with reservation boundary; top of stone marker.....	2, 053. 77
Tps. 150 and 151 N., on east boundary of reservation, west along township line to R. 88 W., quarter corner between secs. 6 and 31.	
Milepost 24, at point on Indian reservation boundary; iron post stamped "2173".....	2, 172. 053
Tps. 150 and 151 N., R. 87 W., quarter corner between secs. 5 and 32; iron section post stamped "2166".....	2, 165. 45
Tps. 150 and 151 N., R. 87 W., quarter corner between secs. 6 and 31; iron section post stamped "2175".....	2, 174. 15
Tps. 150 and 151 N., Rs. 87 and 88 W., corner of; iron post stamped "2172".....	2, 171. 637
Tps. 150 and 151 N., R. 88 W., quarter corner between secs. 6 and 31; iron section post stamped "2166".....	2, 165. 25
Tps. 150 and 151 N., R. 88 W., corner of secs. 1, 2, 35, and 36; iron section post.....	2, 158. 04
Tps. 150 and 151 N., R. 88 W., quarter corner between secs. 2 and 35; iron section post stamped "2154".....	2, 153. 71
Tps. 150 and 151 N., R. 88 W., quarter corner between secs. 3 and 34; iron section post stamped "2105".....	2, 104. 19
Tps. 150 and 151 N., R. 88 W., corner of secs. 3, 4, 33, and 34; iron section post stamped "2102".....	2, 101. 316

Tps. 150 and 151 N., R. 88 W., quarter corner between secs. 4 and 33; iron section post stamped "2120"	Feet. 2, 118. 85
Tps. 150 and 151 N., R. 88 W., corner of secs. 4, 5, 32, and 33; iron section post.....	2, 112. 23
Tps. 150 and 151 N., R. 88 W., quarter corner between secs. 5 and 32; iron section post stamped "2079"	2, 078. 38
Tps. 150 and 151 N., R. 88 W., corner of secs. 5, 6, 31, and 32; iron section post.....	2, 088. 57
Tps. 150 and 151 N., R. 88 W., quarter corner between secs. 6 and 31; iron section post stamped "2081"	2, 080. 81

BLUE BUTTE QUADRANGLE.

T. 152 N., R. 92 W., corner of secs. 5, 6, 31, and 32, northeast and northwest to Missouri River Commission bench mark 148/2.

Tps. 151 and 152 N., R. 92 W., witness corner to corner of secs. 5, 6, 31, and 32; iron section post stamped "1940"	1, 939. 16
Tps. 151 and 152 N., Rs. 92 and 93 W., 18 inches north of corner of townships; iron post stamped "1975"	1, 974. 451
T. 152 N., R. 92 W., quarter corner of secs. 30 and 31; iron section post....	1, 980. 19
Little Knife River, 0.25 mile below mouth of, on east bank of Missouri River, 525 feet from Missouri River; Missouri River Commission bench mark 148/2; top of cap of post.....	1, 885. 346
Subsurface mark at bottom of post.....	1, 881. 390

Missouri River Commission bench mark 148/2 to and across the Missouri River, thence southwest to bench mark at closing corner of secs. 12 and 13, T. 151 N., R. 95 W.

Fort Berthold Reservation line, 2,000 feet south of; Missouri River, surface of water, Oct. 17, 1910	1, 766
Bad Lands Bluffs, 0.25 mile east of foot of, 25 feet south of reservation boundary fence, 150 feet west of brush on river bottom, in southwest root of partly dead 18-inch cottonwood tree; wire fence staple.....	1, 788. 18
T. 152, Rs. 93 and 94, corner secs. 19, 24, 25, and 30; north edge of stone....	2, 034. 71
Tps. 151 and 152 N., R. 94 W., 0.5 mile northeast of witness corner to corner of secs. 3, 4, 33, and 34, 0.25 mile east of small clay butte on north side of canyon 150 feet deep; rock	2, 096. 66
Tps. 151 and 152 N., R. 94 W., 3.35 chains east of corner of secs. 3, 4, 33, and 34; iron post stamped "2136"	2, 135. 444
T. 151 N., R. 95 W., at point 1 foot east of stone marking closing corner between secs. 12 and 13, on west boundary of Fort Berthold Indian Reservation; iron post stamped "2067"	2, 065. 898
T. 151 N., R. 95 W., at closing corner secs. 12 and 13; top of stone marked "2067"	2, 065. 79

Ray and White Earth Quadrangles.

WALLACE, WARD, AND WILLIAMS COUNTIES.

The elevations in the following list are based upon levels of the Missouri River Commission to which the orthometric correction has been applied, and are in agreement with the 1907 adjusted elevation at Sioux City, Iowa, as made by the Coast and Geodetic Survey.

The leveling in the Ray quadrangle was done in 1906 by W. A. Gelbach and in 1909 by J. H. Van Wagener and C. A. Leonard, and that in the White Earth quadrangle in 1909 by Van Wagener.

RAY QUADRANGLE.

Point near Missouri River near southwest corner of T. 153 N., R. 99 W., north along township line to Great Northern Ry.

T. 153 N., R. 100 W., northeast corner of SE. $\frac{1}{4}$ sec. 36, 0.8 mile slightly east of north from John Kjorstad's house, 25 feet south of trail to house; iron post stamped "No. 135-2 of Missouri River Commission;" bolt underground.....	Feet. 1, 892. 693
T. 153 N., R. 99 W., northwest corner of, 25 feet north of corner stone; iron post stamped "2249".....	2, 248. 048
T. 154 N., R. 99 W., northwest corner of sec. 19; iron post stamped "2233".....	2, 232. 375
T. 154 N., R. 99 W., northwest corner of, 8 feet north of corner stone; iron post stamped "2211".....	2, 210. 263

Springbrook along Great Northern Ry. to Ray.

Springbrook, 5 feet from northwest corner of Graichen's hardware store; iron post stamped "2072".....	2, 070. 553
T. 155 N., R. 99 W., northwest corner of sec. 3, 5 feet west of corner stone; iron post stamped "2135".....	2, 133. 570
Epping, between First State Bank and Torgerson, Aaberg & Swenson Co.'s store, flush with front of buildings; iron post stamped "2224".....	2, 222. 543
Wheelock, Lofgren Bros.' store, 20 feet from southwest corner, 2 feet south of store; iron post stamped "2395".....	2, 393. 777
T. 156 N., R. 97 W., northwest corner of sec. 30, 35 feet northeast of, east of track, north of railroad crossing; iron post stamped "2345".....	2, 344. 159
Ray, Smith Hotel, 6 feet from southwest corner, on south side, in foundation wall; tablet stamped "2277".....	2, 275. 689

Ray south through ranges 97 and 96 west to Missouri River.

T. 155 N., R. 97 W., 1,000 feet west of northwest corner of sec. 2, where Nesson trail crosses section line; iron post stamped "2260".....	2, 258. 904
T. 154 N., R. 96 W., 25 feet northwest of northwest corner of sec. 5; iron post stamped "1922".....	1, 921. 232
Nesson, 3.5 miles southeast of, 1,000 feet southeast along foot of bluff from Edward Richard's house; Missouri River Commission bench mark 142-2; underground mark.....	1, 815. 404

Northwest corner of sec. 20, T. 154 N., R. 96 W., west along Williston Road to west boundary of range 99 W.¹

Cussick Springs, 30 feet east of road south of trail; iron post stamped "2298".....	2, 296. 916
T. 155 N., R. 98 W., 70 feet north of quarter corner on west side of sec. 2; iron post stamped "2437".....	2, 436. 268
T. 154 N., R. 98 W., 25 feet north of quarter corner on west side of sec. 18; iron post stamped "2387".....	2, 385. 798
T. 154 N., R. 99 W., 15 feet south of quarter corner on west side of sec. 21; iron post stamped "2264".....	2, 263. 289

Point on Great Northern Ry. 2.5 miles east of Epping north and east via Angle post office and south to Ray.²

T. 156 N., R. 99 W., 30 feet south of northwest corner of sec. 15; iron post stamped "2353".....	2, 351. 770
T. 157 N., R. 98 W., 300 feet west and across creek from sec. 30; iron post stamped "2121".....	2, 119. 773

¹An excessive error of 1.2 feet has been distributed in this line.

²An excessive error of 0.82 foot has been distributed in this line.

T. 157 N., R. 98 W., 35 feet north by 35 feet east of northwest township corner; iron post stamped "2285"	Feet. 2, 284. 203
T. 157 N., R. 98 W., 35 feet north by 30 feet east of northwest corner of sec. 3; iron post stamped "2306"	2, 304. 414
T. 157 N., R. 97 W., 35 feet north by 35 feet west of northwest corner of sec. 5; iron post stamped "2229"	2, 227. 747
T. 157 N., R. 97 W., 45 feet north by 40 feet west of northwest corner of sec. 1; iron post stamped "2274"	2, 273. 081
T. 157 N., R. 97 W., 35 feet south by 30 feet west of northwest corner of sec. 25; iron post stamped "2316"	2, 314. 809
Frische's ranch (formerly Banks post office) west along highways 1.1 miles, thence south 7 miles, thence west to Missouri River Commission bench mark 138-2.	
Frische's ranch (formerly Banks post office), about 0.4 mile west of, 30 feet south of road leading up coulee; highest point of large white stone 3 feet in diameter marked "U. S. 1896.8 B. M."	1, 895. 94
Frische's ranch, 1.1 miles west of, 250 feet west of point where road comes up out of coulee on ridge, 105 feet south of road, 100 feet north of brush in small coulee; center of top of white stone 1.5 feet in diameter marked "U. S. 2094.1 B. M."	2, 093. 26
Frische's ranch, Tobacco triangulation station (Missouri River Commission); top of triangle on cap of iron post marked $\begin{array}{c} M & R \\ U & \Delta & S \\ C & O & M & M \end{array}$	2, 140. 163
Frische's ranch, about 3 miles southwest of, 1.2 miles south of Tobacco triangulation station, 200 feet east of road on ridge, 150 feet north of small trees in head of coulee, 40 feet west of stone 2.5 feet in diameter and 2.5 feet high; highest point on west end of triangular pink stone 3 feet across and 1 foot high marked "U. S. 2142.9 B. M."	2, 142. 09
T. 153 N., R. 96 W., 40 feet northeast of southwest corner of sec. 17; iron post stamped "2288"	2, 287. 266
T. 153 N., R. 96 W., near east-west section line between secs. 29 and 20, 16 feet west of road, 500 feet north of black shanty, top of stone 5 feet long, projecting out of ground about 1 foot, marked "U. S. 2318.2 B. M."	2, 317. 40
T. 152 N., R. 97 W., NW. $\frac{1}{4}$ sec. 1, 40 feet southwest of township corner between secs. 32 and 33, T. 153 N., R. 96 W.; iron post stamped "2380"	2, 379. 314
T. 153 N., R. 97 W., SW. $\frac{1}{4}$ sec. 36, near standard parallel about 0.5 mile east of southwest corner of sec. 36, in saddle between two knolls, 700 feet north of ditch, 200 feet northeast of large stone on side of hill; top of pink rock 2 feet in diameter, projecting about 1 foot from ground, marked "U. S. 2152.8 B. M."	2, 152. 17
T. 153 N., R. 97 W., 40 feet east of township line, secs. 35 and 36; iron post stamped "1994"	1, 993. 135
T. 153 N., R. 97 W., SE. $\frac{1}{4}$ sec. 34, 1,000 feet west of Tobacco Garden Creek, 700 feet northwest of old sod house on north side of coulee; rock about 2 feet in diameter, projecting 1 foot from ground, marked "U. S. 1953.5 B. M."	1, 952. 877
T. 153 N., R. 97 W., secs. 32 and 33, township line; top of stone marked "U. S. 2121.6 B. M."	2, 120. 99
T. 153 N., R. 97 W., 30 feet west of standard corner of secs. 31 and 32, 400 feet north of house; iron post stamped "2061"	2, 060. 15
T. 153 N., R. 97 W., 1.5 miles southeast of standard corner of secs. 31 and 32, in saddle between two knolls near top of divide; large boulder marked "2228.4"; cut in stone \bigcirc	2, 227. 85
T. 152 N., R. 98 W., 2 feet north of closing corner of secs. 4 and 5. 200 feet south of road down coulee; iron post stamped "2237"	2, 236. 81

T. 153 N., R. 98 W., NE. $\frac{1}{4}$ sec. 34, at mouth of coulee, 50 feet east of road, on top of first bench above river; iron post stamped "1852".....	Feet. 1, 851. 275
T. 153 N., R. 97 W., in sec. 21, Missouri River Commission bench mark No. 138-2, on north bank, 250 feet from river, in mouth of double coulee just above the beginning of willows; top of cap of iron post.....	1, 852. 795

WHITE EARTH QUADRANGLE.

Missouri River Commission bench mark 144-1 west along highways to Frische's ranch
(formerly Banks post office).

Grinnel's Landing, 2.4 miles below, 1,750 feet from river; nearly south of mouth of small coulee, on a mound; top of cap of iron post (Missouri River Commission bench mark No: 144-1).....	1, 994. 108
Missouri River Commission bench mark 144-1, 0.7 mile west of, on west bank of first coulee, about 500 feet south of mouth and 400 feet south of road, 18 feet north of black and white speckled stone about 2 feet in diameter; light pink stone 14 inches in diameter marked "U. S. 1858.4 B. M.".....	1, 857. 38
T. 154 N., R. 96 W., NE. $\frac{1}{4}$ sec. 33, 3 feet southeast of 2-foot elm tree, 8 feet north of road, 50 feet south of log house about halfway between Grier's house and Frische's house, in river bottom; iron post stamped "1820".....	1, 818. 640

