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UNITED STATES GEOLOGICAL SURVEY

GEORGE OTIS SMITH, DIRECTOR

BULLETIN 461

RESULTS OF SPIRIT LEVELING
IN
MICHIGAN AND WISCONSIN

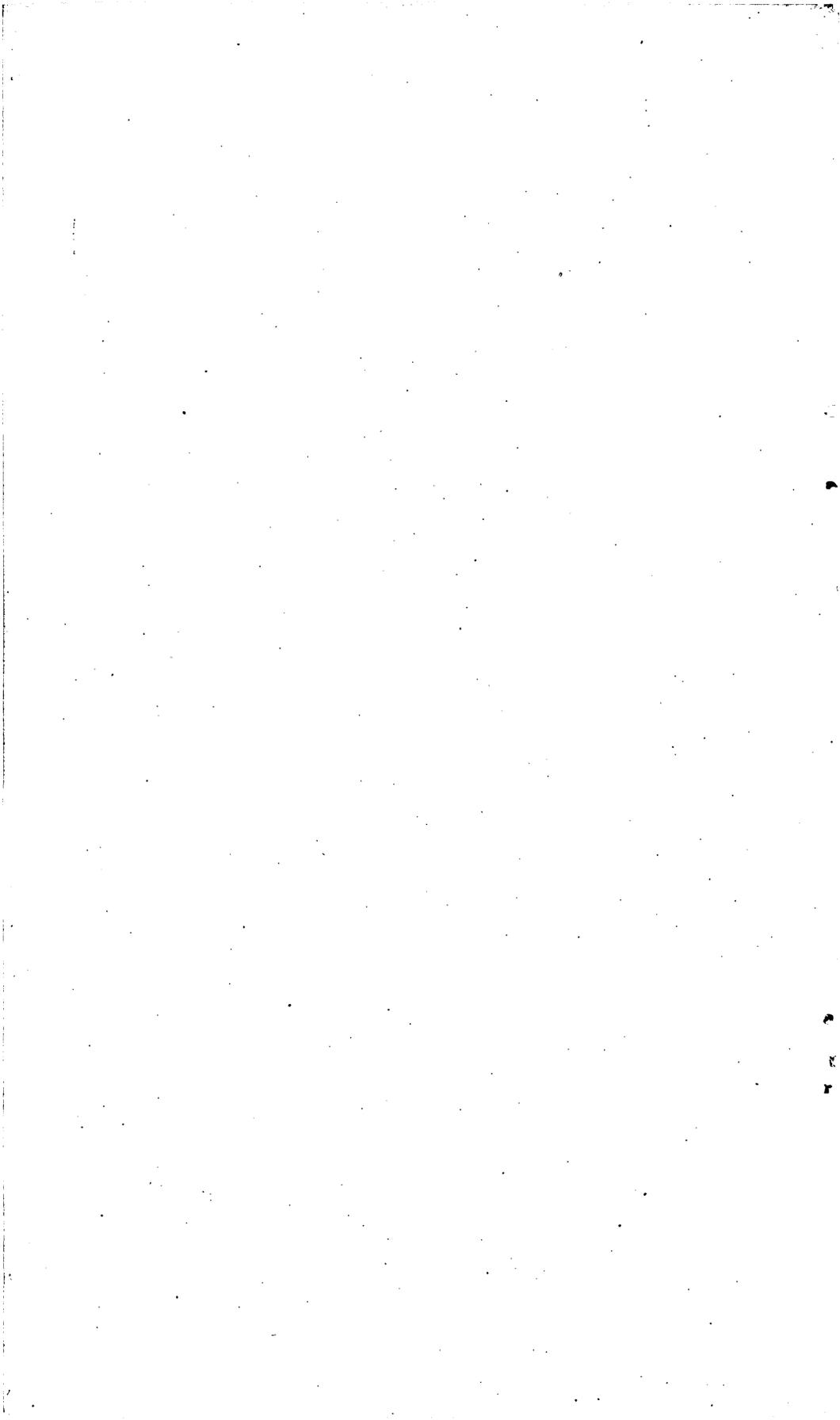
1897 TO 1909, INCLUSIVE

R. B. MARSHALL, CHIEF GEOGRAPHER

WORK IN MICHIGAN FROM 1901 TO 1909, INCLUSIVE, DONE
IN COOPERATION WITH THE STATE



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RESULTS OF SPIRIT LEVELING IN MICHIGAN AND WISCONSIN, 1897 TO 1909, INCLUSIVE.

R. B. MARSHALL, Chief Geographer.

INTRODUCTION.

Scope of the work.—All results of spirit leveling in the States of Michigan and Wisconsin previously published by the United States Geological Survey and all the results of later work are included in this report, rearranged by quadrangles. Unless otherwise stated all elevations are based on the precise level net adjustment of 1907 by the Coast and Geodetic Survey to a common mean sea-level datum. The part of this net which lies within or along the borders of these States comprises the line of the Mississippi River Commission along the western border of Wisconsin and the water leveling done by the Corps of Engineers, United States Army, on Lakes Superior, Huron, and Michigan.

Personnel.—The field work previous to 1903 was done under the general direction of J. H. Renshawe, geographer; that between 1903 and 1906, inclusive, under H. M. Wilson, geographer; and the later work under W. H. Herron, geographer, 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, since 1907, under the general direction of E. M. Douglas, geographer.

Method.—The leveling in Michigan and Wisconsin was executed with Y levels and New York leveling rods modified to suit the special needs of the United States Geological Survey. Lines were run in circuits and sufficient accuracy maintained to insure closing errors not exceeding in feet $0.05\sqrt{D}$, in which formula D represents the length of the circuit in miles. The small outstanding errors by the office adjustment were distributed along the lines in proportion to their length.

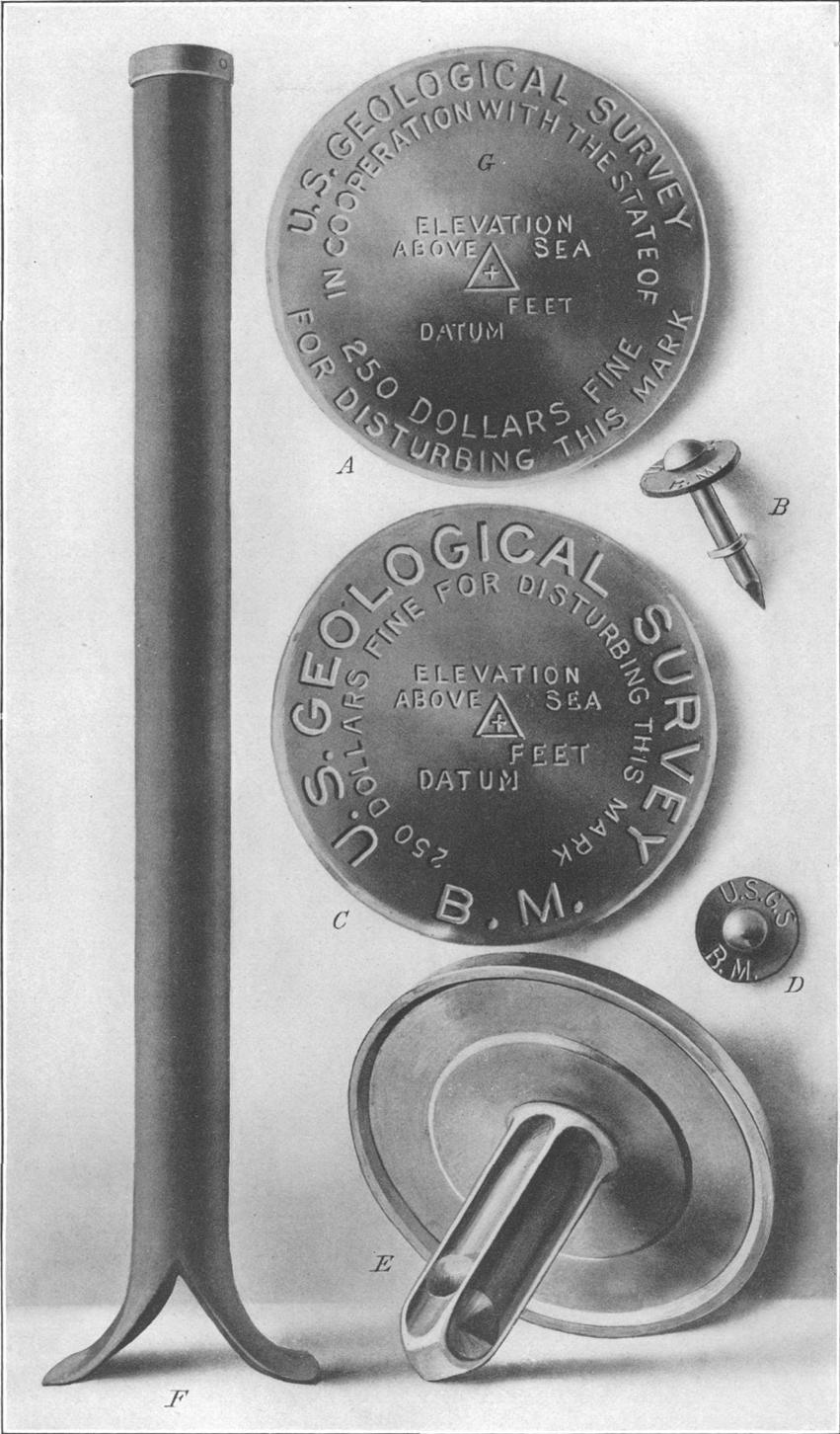
Bench marks.—The standard bench marks are of two forms. The first form is a circular bronze or aluminum tablet (C and E , Pl. I), $3\frac{1}{2}$ inches in diameter and $\frac{1}{4}$ inch thick, having a 3-inch stem, which is cemented in a drill hole in solid rock in the wall of some public building, bridge abutment, or other substantial masonry structure.

The second form (*F*, Pl. I), which is to be set in the ground where no masonry or rock is available, consists of a hollow wrought-iron post $3\frac{1}{2}$ inches outside diameter and 4 feet long. The bottom is spread out to a width of 10 inches in order to give a firm bearing on the earth. A bronze or aluminum-bronze cap is riveted over the top of the post. 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 $1\frac{1}{2}$ inches in length driven through a copper washer $\frac{7}{8}$ inch in diameter. The tablets as well as the caps on the iron posts are appropriately lettered, and where States have cooperated in the leveling 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 are 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 their adjusted values, using the markings as identification numbers only.

Datum.—All Geological Survey elevations are referred to mean sea level, which is the level that the sea would assume if the influence of tides and winds were eliminated. This level is not the elevation determined from the mean of the highest and 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 great accuracy is desired they must extend over several years. At ocean stations the half-tide level and 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, 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



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.

lines of the Geological Survey or of other Government organizations are extended.

Topographic maps.—Maps of the following quadrangles wholly or partly in Michigan and Wisconsin have been published by the United States Geological Survey up to April 20, 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.

Michigan.

Ann Arbor. ¹	Passage Island.
Crystal Falls.	Perch Lake.
Detroit.	Pontiac.
Dexter. ¹	Rochester.
Fowlerville.	Romulus.
Grossepoint.	Sagola.
Howell.	Saline. ¹
Iron River (Mich.-Wis.).	South Lyon. ¹
Marquette.	Toledo (Ohio-Mich.).
Marquette special (50 cents).	Wayne.
Maumee Bay (Ohio-Mich.).	Witbeck.
Menominee special.	Wyandotte.
Milford.	Ypsilanti. ¹
Ned Lake.	

Wisconsin.

Baraboo.	Muskego. ²
Bayview. ²	Neenah.
Briggsville.	Oconomowoc.
Brodhead.	Portage.
Cross Plains.	Port Washington.
Delavan.	Poynette.
Denzer.	Racine. ¹
Eagle. ²	Richland Center.
Elkader (Iowa-Wis.).	St. Croix Dalles (Wis.-Minn.).
Evansville.	Shopiere.
Fond du Lac.	Silver Lake. ²
Geneva-Racine, double sheet (10 cents). ²	Sparta.
Hartford.	Stoughton.
Iron River (Mich.-Wis.).	Sun Prairie.
Janesville.	The Dells.
Koshkonong.	Waterloo.
Lake Geneva. ²	Watertown.
Lancaster (Wis.-Iowa-Ill.).	Waukesha.
Madison.	Waukegan (Ill.-Wis.).
Marathon special.	Waukon (Iowa-Wis.).
Milwaukee.	Wausau special.
Milwaukee special.	West Bend.
Mineral Point (Wis.-Ill.).	Whitewater.

¹ Dexter, Saline, South Lyon, and Ypsilanti maps show Ann Arbor quadrangle on larger scale.

² Bayview, Eagle, Lake Geneva, Muskego, Racine, and Silver Lake sheets, on scale of 1 : 62,500, have been reduced and form Geneva-Racine double sheet, on scale of 1 : 125,000.

MICHIGAN.

PRIMARY LEVELING.

Ann Arbor, Detroit, Grosse Point, and Toledo Quadrangles.

MONROE, WASHTENAW, AND WAYNE COUNTIES.

The elevations in the following list are based on that of permanent bench mark No. 1, of the United States Corps of Engineers, at Edward Hall's residence, Gibraltar. The elevation of this bench mark is accepted as 587.609 feet above mean sea level.

The leveling was done by R. E. Whipple in 1901-2 and by Fulton Pace in 1903. The two standard bench marks in the Grosse Point quadrangle were set in 1904 by C. E. Cooke, and the one in the Toledo quadrangle was set in 1899 by Dean Halford.

ANN ARBOR-QUADRANGLE.

New Boston along road northwest via Ypsilanti to Ann Arbor, thence south to Saline, thence east to New Boston.

	Feet.
Ypsilanti, corner of Summit and Cross streets; top of hydrant.....	713.90
Ypsilanti, in standpipe, north side; bronze tablet stamped "797 GIBRALTAR"	797.443
T. 3 S., R. 6 E., 0.4 mile southeast of corner of sec. 3, northeast side of road; iron post stamped "804 GIBRALTAR"	804.824
Ann Arbor, in south wall of university library; bronze tablet stamped "882 GIBRALTAR"	882.252
Ann Arbor, in southeast corner of courthouse; bronze tablet stamped "842 GIBRALTAR"	843.192
Ann Arbor, at northwest corner of Huron and Fourth Streets; city engineer's bench mark	838.80
Ann Arbor, T. 3 S., R. 5 E., 1,000 feet south of northeast corner of sec. 13, west side of road; iron post stamped "880 GIBRALTAR" ..	880.456
Saline, T. 4 S., R. 5 E., sec. 1, southeast cornerstone of Saline Bank; bronze tablet stamped "825 GIBRALTAR"	825.003
T. 4 S., R. 6 E., at quarter corner north side of sec. 2; iron post stamped "829 GIBRALTAR"	829.924
T. 4 S., R. 6 E., at northeast corner of sec. 1, at crossroads; iron post stamped "692 GIBRALTAR"	692.243
 Ann Arbor north to Whitmore Lake, thence to schoolhouse in sec. 7, T. 1 S., R. 8 E., thence south 6 miles, thence west via Dixboro to Ann Arbor.	
T. 1 S., R. 6 E., 0.25 mile south of northeast corner of sec. 9, at crossroads; iron post stamped "926 GIBRALTAR"	926.181
T. 1 N., R. 6 E., at southeast corner of sec. 36, at crossroads; iron post stamped "918 GIBRALTAR"	918.681
T. 1 N., R. 7 E., at southeast corner of sec. 36, at crossroads; iron post stamped "975 GIBRALTAR"	975.813
T. 1 S., R. 7 E., at southeast corner of sec. 36, at crossroads; iron post stamped "850 GIBRALTAR"	850.657
Dixboro, in front of schoolhouse; iron post stamped "819 GIBRALTAR"	819.411

Ann Arbor along road northwest via Dexter to Dover, thence east to Whitmore Lake.

T. 2 S., R. 5 E., 0.25 mile south of northeast corner of sec. 22, 400 feet west of junction of roads, northeast abutment of bridge on masonry; chisel mark.....	Feet. 848.40
T. 2 S., R. 5 E., 0.12 mile north of north quarter corner of sec. 15, at crossroads; iron post stamped "912 GIBRALTAR".....	911.963
T. 2 S., R. 4 E., junction of roads near east quarter corner of sec. 1; iron post stamped "870 GIBRALTAR".....	870.382
T. 1 S., R. 4 E., near center of SW. $\frac{1}{4}$ sec. 13, at crossroads; iron post stamped "874 GIBRALTAR".....	874.213
T. 1 N., R. 4 E., southeast corner of sec. 36; iron post stamped "885 GIBRALTAR".....	885.782
T. 1 S., R. 5 E., 0.12 mile west of north quarter corner of sec. 11; at crossroads; iron post stamped "950 GIBRALTAR".....	950.286
T. 1 N., R. 5 E., near center of SE. $\frac{1}{4}$ sec. 36, at junction of roads; iron post stamped "910 GIBRALTAR".....	910.193

Saline west to Bridgewater, thence south to northwest corner of sec. 1, T. 5 S., R. 4 E., thence east via Milan and Oakville to southeast corner of sec. 36, T. 4 S., R. 7 E., thence north to southeast corner of sec. 36, T. 3 S., R. 7 E.

T. 3 S., R. 4 E., at southeast corner of sec. 36; iron post stamped "901 GIBRALTAR".....	901.326
T. 4 S., R. 4 E., 0.25 mile west of northeast corner of sec. 14, at junction of roads; iron post stamped "882 GIBRALTAR".....	882.790
T. 5 S., R. 4 E., northwest corner of sec. 1, at junction of roads; iron post stamped "879 GIBRALTAR".....	879.578
T. 5 S., R. 5 E., quarter corner of sec. 3, north side of, at junction of roads; iron post stamped "775 GIBRALTAR".....	775.499
T. 5 S., R. 6 E., west side of west quarter corner of sec. 33, at crossroads; iron post stamped "701 GIBRALTAR".....	701.710
T. 5 S., R. 7 E., sec. 10, 0.8 mile south of Oakville, at crossroads; iron post stamped "671 GIBRALTAR".....	671.585

DETROIT QUADRANGLE.

Gibraltar along old plank road 5 miles southwest, thence west 3 miles, and thence north 5 miles to Flat Rock.

T. 5 S., R. 10 E., in southeast corner of sec. 23, 4 miles southeast of Rockwood, in northeast corner of high bridge over Huron River; on top of bolt.....	581.80
T. 5 S., R. 10 E., in southeast corner of sec. 27, in northeast corner of highway bridge over small stream; top of bolt.....	578.97
Flat Rock west along highway to northeast corner of sec. 1, T. 5 S., R. 8 E.	
T. 5 S., R. 9 E., in northwest corner of sec. 3, 3 miles west of Flat Rock, in front of Feldried's residence, 300 feet west of fork, on south side of road; iron post stamped "616 GIBRALTAR".....	616.143
T. 5 S., R. 8 E., in northeast corner of sec. 1, 1.5 miles west of Waltz, in southwest corner of road forks; iron post stamped "626 GIBRALTAR".....	625.672
T. 4 S., R. 8 E., in southeast corner of sec. 36, in northwest corner of road forks; iron post stamped "625 GIBRALTAR".....	625.104
T. 4 S., R. 8 E., northeast corner of sec 5, at south side of road; iron post stamped "688 GIBRALTAR".....	688.020

10 SPIRIT LEVELING IN MICHIGAN AND WISCONSIN, 1897 TO 1909.

Ecourse along highway 4 miles northwest, thence 2 miles west, thence 6 miles north via Inkster, thence 12 miles west to permanent bench mark in southeast corner of sec. 36, T. 1 S., R. 7 E.

Ecourse, United States Army Engineers' "P. B. M. 5," on east side of river road at foot of Labodie Street, in east face of foundation of W. D. Smith's residence, 10.5 inches from the southeast corner, in the seventh course of brick below the baseboard; brass bolt leaded horizontally -----	Feet. 584. 779
T. 3 S., R. 10 E., northeast corner of sec. 4; 1.5 miles northeast of Hand station, 80 feet west of south house, in southeast corner of crossroads; iron post stamped "616 GIBRALTAR"-----	615. 639
T. 3 S., R. 9 E., northeast corner of sec. 1, in southwest corner of crossroads; iron post stamped "626 GIBRALTAR"-----	625. 721
Inkster; 60 feet from crossing of Michigan Central R. R. and highway, east side of road, in front of post office; iron post stamped "636 GIBRALTAR"-----	636. 127
T. 2 S., R. 9 E., northeast corner of sec. 1, 60 feet from crossing, in southwest corner of crossroads; iron post stamped "639 GIBRALTAR"-----	639. 222
T. 2 S., R. 8 E., in southeast corner of sec. 2, on south side of road and 80 feet west of crossing of Pere Marquette R. R.; iron post stamped "697 GIBRALTAR"-----	697. 349
Plymouth, 1 mile south of, in northeast corner of abutment of highway bridge, 20 feet from crossroads, bridge over road running west; iron plate -----	714. 80
 Southeast corner of sec. 36, T. 1 N., R. 7 E., along highway east via Northville and Clarenceville to Sand Hill, thence south and west to southwest corner of sec. 31, T. 1 S., R. 10 E.	
Northville, north side of base-line road, on east side of prolongation of Center Street, in northeast corner of junction; iron post stamped "853 GIBRALTAR"-----	853. 345
T. 1 S., R. 8 E., northeast corner of sec. 1, south side of road, in front of Walnut ranch; iron post stamped "832 GIBRALTAR"-----	832. 312
T. 1 S., R. 9 E., quarter corner on north side of sec. 4, 2 miles southwest of Farmington, in southeast corner of crossroads at Northrop Corners; iron post stamped "701 GIBRALTAR"-----	701. 116
Clarenceville, 500 feet northwest of junction of base-line road and Grand River Road, 10 feet west of Grand River Road, 300 feet south of post office; iron post stamped "656 GIBRALTAR"-----	656. 106
T. 1 S., R. 10 E., in southeast corner of sec. 4, 1 mile north of Sand Hill, in northwest corner of crossroads; iron post stamped "633 GIBRALTAR"-----	632. 947
 Fort Wayne along Artillery and Holder avenues to northeast corner of west half of sec. 4, T. 2 S., R. 10 E.	
Fort Wayne, United States Army Engineers' bench mark No. 8, in southwest quarter of grounds, on river front of building No. 60, officers' quarters, in center of water-table course, 20 inches east from vertical center line of front of building, 3 feet 5 inches above ground; center of brass bolt marked "U. S. P. B. M."-----	601. 508
Detroit, intersection of Holden and Livernois Avenues; iron post stamped "610 GIBRALTAR"-----	610. 169

T. 2 S., R. 11 E., southwest corner of sec. 5, 2 miles southwest of Greenfield, at junction of Holden Avenue with road north and south; iron post stamped "610 GIBRALTAR"-----	Feet. 609.528
T. 2 S., R. 10 E., northeast corner of sec. 2, 2 miles southwest of Yew, church at crossroads, in seventh row of brick from foundation, second brick from northeast corner; nail-----	617.44
Sand Hill north, thence east along public highway via Ferndale and Halfway to Milk River Point.	
T. 1 N., R. 10 E., in northeast corner of sec. 34, in southwest corner of crossroads, in front of D. Boylan's residence; iron post stamped "668 GIBRALTAR"-----	668.581
T. 1 N., R. 11 E., in southwest corner of sec. 28, at crossroads, 2.5 miles southwest of Royal Oak; iron post stamped "664 GIBRALTAR"-----	664.351
Ferndale, 2 miles south of Royal Oak, at junction of road with Woodward Avenue; iron post stamped "650 GIBRALTAR"-----	649.801
T. 1 N., R. 12 E., southwest corner of sec. 30, at crossroads, 2.7 miles east of Ferndale; iron post stamped "632 GIBRALTAR"-----	632.335
T. 1 N., R. 12 E., northwest corner of sec. 34, intersection of road with Mount Olivet Street; iron post stamped "626 GIBRALTAR"-----	625.910
Milk River Point (Army Engineers' bench mark No. 3S), on prolongation of south line of east-and-west road, on east side of north-and-south road, southeast corner of Lake St. Clair Harbor line, top of knob, southeast corner of stone monument, marked "Harbor Line Reference point C"-----	581.09
Gibraltar west along road to Flat Rock, thence northwest to New Boston, thence east to Trenton, thence south to Gibraltar.	
Gibraltar, Army Engineers' permanent bench mark 1, in rear of Edward Hall's residence on lake front, 75 feet southwest of house, in northeast corner of stone milkhouse, east face; brass bolt leaded horizontally-----	587.609
Gibraltar, 2.5 miles west of, T. 4 S., R. 10 E., near southwest corner of sec. 36, 40 feet east of crossroads, northwest abutment of bridge-----	575.29
Flat Rock, in front of Dr. Lobdell's office; iron post stamped "602 GIBRALTAR"-----	602.228
New Boston, 300 feet north of highway bridge over Huron River, on east side of road leading north, north side of river; iron post stamped "627 GIBRALTAR"-----	627.600
T. 4 S., R. 10 E., southwest corner of sec. 2, in northeast corner of crossroads; iron post stamped "599 GIBRALTAR"-----	598.906
Sibley station, T. 4 S., R. 11 E., northeast corner of sec. 7, at junction of River and Mud Roads; top of stone post stamped "U. S. H. L. 38 A"-----	588.24
GROSSEPOINTE QUADRANGLE.¹	
Halfway, southwest corner of crossroads, in corner of H. Hummerick's dooryard; iron post stamped "ADJ 615"-----	614.968
Milk River Point, 1.5 miles north of, at junction of Defers and Lake Shore wagon roads, north side of Defers Road, and west side of Lake Shore Road, on premises of Frank Streb; iron post stamped "ADJ 579"-----	578.755

¹ These bench marks were set in 1904 by C. E. Cooke from benches along the primary line run in 1903 by level party working under Robert Muldrow.

TOLEDO QUADRANGLE.¹

Lambertville, 2 miles south of; 1 mile northeast of Trilby, Ohio, 0.5 mile north of State line, T. 8 S., R. 7 E., at southeast corner of sec. 32, on Jackman Road, 0.5 mile east of I. J. Jackman's house, in top course of south abutment of highway bridge over Halfway Creek; bronze tablet stamped "607 TOLEDO"-----

Feet.
607.750

Pontiac and Rochester Quadrangles.

MACOMB AND OAKLAND COUNTIES.

The elevations in the following list are based upon the 1907 adjustment datum, through leveling on Detroit quadrangle from permanent bench mark No. 1 of the United States Corps of Engineers, at Edward Hall's residence, Gibraltar, the elevation of which is accepted as 587.609 feet above mean sea level.

Most of the leveling in the Pontiac quadrangle was done in 1905 by H. W. Peabody. The leveling in the Rochester quadrangle was done in 1906 by C. K. Alexander, who also did additional work in the Pontiac quadrangle.

The standard bench marks set in 1905 are stamped "ADJ 1905" in addition to figures of elevation. Those set in 1906 are stamped with figures of elevation to the nearest foot.

PONTIAC QUADRANGLE.

Clarenceville to Franklin and return along public highways.

Franklin, T. 1 N., R. 10 E., northeast corner of sec. 6, 0.2 mile south of crossroads, in southwest corner of Geo. M. Bingham's brick store building on east side of road; aluminum tablet stamped "787 ADJ 1905"-----

Feet.
787.136

Franklin along public roads to Pontiac.

T. 2 N., R. 10 E., southwest corner of sec. 9, 2.5 miles south of Pontiac, 0.25 mile south of crossroads, on northwest corner of painted brick house, east side of road (W. H. Williams farm); aluminum tablet stamped "937 ADJ 1905"-----

937.002

Pontiac, T. 3 N., R. 10 E., southeast corner of sec. 29, north face of northeast corner of Oakland County courthouse, southwest corner of Saginaw and Huron Streets; aluminum tablet stamped "944 ADJ 1905"-----

943.908

Pontiac to Commerce via Four Towns.

T. 2 N., R. 9 E., center of sec. 26, 3.5 miles west of Pontiac, in foundation at about center of east side of Waterford schoolhouse, sub-district No. 1, at southwest corner of crossroads; aluminum tablet stamped "944 ADJ 1905"-----

944.174

¹This bench work was set from levels run in Ohio.

Four Towns, T. 3 N., R. 9 E., southeast corner of sec. 32, 7 miles west of Pontiac, 400 feet east of crossroads, in west face of northwest corner of schoolhouse; aluminum tablet stamped "955 ADJ 1905"-----	Feet. 954. 808
T. 2 N., R. 8 E., north of center of sec. 3, 1.25 miles north of Commerce, west of road, 0.25 mile south of Sugden schoolhouse; iron post stamped "Mich. Prim. Trav. Sta. No. 12, 948 ADJ 1905"-----	947. 761
Commerce, T. 2 N., R. 8 E., northeast part of sec. 10, on southwest corner of cross streets in center of village, on east face of northeast corner of Commerce Hall; aluminum tablet stamped "942 ADJ 1905"-----	941. 813

Commerce to Franklin via Walled Lake.

Walled Lake, T. 2 N., R. 8 E., center of sec. 34, at northwest corner of T road to north by northeast, in east face of southeast corner of store building of C. F. Rose; aluminum tablet stamped "944 ADJ 1905"-----	943. 696
T. 1 N., R. 9 E., northeast corner of sec. 6, 3.75 miles east of Walled Lake, 2 miles west of North Farmington, 800 feet west of corners, southwest corner of crossroads, in north face at northeast corner of schoolhouse; aluminum tablet stamped "896 ADJ 1905"-----	895. 392
T. 2 N., R. 9 E., southeast corner of sec. 34, 1 mile east of North Farmington, in east face of northeast corner of foundation of house at northwest corner of crossroads by North Farmington electric railroad station; aluminum tablet stamped "891 ADJ 1905"-----	891. 144

Commerce to Clarkston via Ox Bowl.

T. 3 N., R. 8 E., center of north side of sec. 27, 3.5 miles north of Commerce, at end of T road north, in north face of northwest corner of house of O. F. Stockwell; aluminum tablet stamped "998 ADJ 1905"-----	997. 768
T. 3 N., R. 8 E., northeast corner of sec. 3, 3.5 miles west by 2 miles south of Clarkston, 150 feet east of T road south, in north face of northeast corner of foundation of barn of A. R. Hubbard; aluminum tablet stamped "1025 ADJ 1905"-----	1, 024. 724
Clarkston, T. 4 N., R. 9 E., about center of sec. 20, near southeast corner of village, at southwest corner of Methodist Episcopal Church; aluminum tablet stamped "1015 ADJ 1905"-----	1, 014. 801

Clarkston to Pontiac.

Sashabaw Plains Church, northwest corner of sec. 35, T. 4 N., R. 9 E., 1 mile south by 3 miles east of Clarkston, 800 feet west of crossroads, on south side of road, in east face of northeast corner of Presbyterian Church; aluminum tablet stamped "991 ADJ 1905"-----	990. 524
T. 3 N., R. 10 E., center of north side of sec. 8, 3.5 miles north of Pontiac, 0.25 mile east of end of road by schoolhouse and 0.25 mile west of Grand Trunk Railway track, in north face of northwest corner of 20 by 20 foot concrete building on south of road; aluminum tablet stamped "965 ADJ 1905"-----	964. 807

Franklin east to Birmingham.

Birmingham, 3 miles west by 1 mile south of, 0.2 mile east of crossroads, in stone door sill or step, front, south face of stone house, residence of Mrs. Buell; aluminum tablet stamped "774"-----	773. 435
---	----------

ROCHESTER QUADRANGLE.

Point 4 miles north of Pontiac east to point near Orion, thence south via Amy to Birmingham.

	Feet.
Pontiac, 3.5 miles northeast of, in northwest corner of north foundation to Phillips schoolhouse; aluminum tablet stamped "948"-----	948.460
Amy, in foundation stone in north front about 5 feet from northwest corner of Free Methodist Church; aluminum tablet stamped "873"-----	873.425
Amy, 1 mile southeast of, 0.1 mile south of crossroads, at east side of road, 10 feet from fence; iron post stamped "Prim. Trav. Sta. No. 1, 903"-----	903.184
Birmingham, 0.5 mile east by 2 miles north of, in top face, west side of south abutment of iron bridge over stream; aluminum tablet stamped "764"-----	764.036
Birmingham, Maple Avenue, 200 feet west of Saginaw Street, in stone water table, front face of brick building belonging to Whitehead & Mitchell; aluminum tablet stamped "784"-----	783.833

Birmingham east to Warren, thence north to Washington.

Closson station, on Detroit & Flint Electric Railway, in brick foundation, front face, 5 feet from southeast corner of house standing in northwest corner of crossroads; aluminum tablet stamped "668"-----	667.911
Birmingham, 5.5 miles east by 1 mile south of, in south abutment, east end of small bridge over county ditch at crossroads; aluminum tablet stamped "636"-----	636.210
Warren, in corner stone at northeast corner of Warren Savings Bank; aluminum tablet stamped "617"-----	617.089
Utica, 2 miles south of, 0.2 mile west of railway crossing, in north end of east abutment of bridge over Plum Brook; aluminum tablet stamped "620"-----	620.141
Utica, east side of, in stone water table of front face near northwest corner of Lutheran Church; aluminum tablet stamped "658"-----	657.862
Disco, 3 miles south of Washington and 5 miles east of Rochester, 100 feet southwest of crossroads, 5 feet from northeast corner of rock foundation of schoolhouse, in east face; aluminum tablet stamped "686"-----	686.480
Washington, 1.2 miles south of, in west side of south abutment of small bridge; aluminum tablet stamped "671"-----	671.239

Washington west via Rochester to point near Orion.

Rochester, southeast corner of Main and Fifth streets, in foundation corner stone at northwest corner brick building of J. W. Smith, in north face of stone; aluminum tablet stamped "756"-----	756.083
Rochester, 2.5 miles west by 3 miles north of, in large granite rock, in front of residence of O. Perry; aluminum tablet stamped "999"-----	998.518
Orion, 4 miles south by 0.5 mile east of, Howarth schoolhouse, in granite rock of foundation about center of north side of schoolhouse; aluminum tablet stamped "1069"-----	1,069.226

Utica west to Amy.

Utica, 2.5 miles northwest of, 1 mile west of Plains, 0.35 mile west of crossroads, in front brick face of schoolhouse, 7 feet from southwest corner; aluminum tablet stamped "710"-----	710.084
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Rochester, 2.6 miles south of, 0.4 mile north of stone shophouse of H. K. McCotter, in front face of foundation, 5 feet from southeast corner; aluminum tablet stamped "766"-----	Feet. 766.068
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Howell and Milford Quadrangles.

LIVINGSTON AND OAKLAND COUNTIES.

The initial point for elevations in the following list is taken from work on adjoining quadrangles based upon the precise level line of the Coast and Geodetic Survey along Detroit River.

The leveling was done in 1907 by F. H. West.

The work was done in cooperation with the State and the bench marks are stamped with the State name.

HOWELL QUADRANGLE.

Sec. 36, T. 1 N., R. 5 E., north along Ann Arbor Railroad to Chilsen, thence along road west to sec. 20, T. 2 N., R. 4 E., north to Four Mile House, and east via Howell to Lemens Corners.

Chilsen station, T. 2 N., R. 5 E., near center of southern boundary of sec. 28, 10 feet north of east and west road, 15 feet from west rail, 20 feet southwest of southwest corner of station; iron post stamped "936"-----	Feet. 936.359
T. 2 N., R. 4 E., northwest part of SE. $\frac{1}{4}$ sec. 25, 3.23 miles west of Chilsen, north side of road just outside of garden fence, 40 feet west of Frank Rozk's house; iron post stamped "990"-----	989.925
T. 2 N., R. 4 E., southeast part of SE. $\frac{1}{4}$ sec. 22, in foundation of Marion Center schoolhouse, at junction of T roads, east side of north and south road; aluminum tablet stamped "964"-----	963.754
T. 2 N., R. 4 E., center of southern boundary of SE. $\frac{1}{4}$ sec. 8, 300 feet north of Smith's schoolhouse, at northeast corner of crossroads; iron post stamped "949"-----	949.057
T. 2 N., R. 4 E., southern central part of NE. $\frac{1}{4}$ sec. 5, 4 feet east of west end of schoolhouse, in stone foundation of schoolhouse at junction of Y roads, north side of schoolhouse; aluminum tablet stamped "928"-----	927.869
T. 3 N., R. 4 E., sec. 33, on east side of road, 0.15 mile north of crossroads at southwest corner of section, primary traverse station No. 18; iron post stamped "910"-----	910.501
T. 3 N., R. 4 E., west side of SW. $\frac{1}{4}$ sec. 21, at southeast corner of crossroads, diagonally opposite old Four Mile House owned by H. Klechler, in foundation of west side of house 18 inches from north front; aluminum tablet stamped "950"-----	949.649
T. 3 N., R. 4 E., southeast part of SW. $\frac{1}{4}$ sec. 27, 1.5 miles northwest Klechler, in foundation of west side of house 18 inches from north "884"-----	884.527
Howell, T. 2 N., R. 4 E., sec. 36, in south face of courthouse, east of south entrance, 2 stones below corner stone of courthouse; aluminum tablet stamped "942"-----	942.301
T. 3 N., R. 5 E., southeast corner of sec. 20, at northwest corner of junction of crossroads, 1.5 miles north by 3 miles east of Howell, just inside of fence corner; iron post stamped "961"-----	961.078

16 SPIRIT LEVELING IN MICHIGAN AND WISCONSIN, 1897 TO 1909.

T. 3 N., R. 5 E., 180 feet west along north border from northeast corner of NE. $\frac{1}{4}$ sec. 26, in west wing of south abutment of small stone and cement bridge over drain ditch 180 feet west of T roads; aluminum tablet stamped "972"-----	Feet. 971. 778
T. 3 N., R. 6 E., northeast corner of sec. 30, on south side of road at junction of T roads, 6 feet south of east and west roads; iron post stamped "1083"-----	1, 083. 021

Lemens Corners along road south to Brighton, thence west to Chilsen.

T. 2 N., R. 6 E., center of NW. $\frac{1}{4}$ sec. 4, in east side of south abutment of bridge over drain between two lakes; aluminum tablet stamped "953"-----	953. 035
T. 2 N., R. 6 E., 0.25 mile east of center of sec. 20, northwest corner of T roads; iron post stamped "924"-----	924. 056
Brighton, T. 2 N., R. 6 E., sec. 31, north side of Main Street, 0.2 mile east of Pere Marquette Railroad crossing, in approach to fire-engine building, west of doors; aluminum tablet stamped "924"-----	924. 293

Four-Mile House along road north to Sprague Corners, thence east via Deerfield to Tyrone Center.

T. 3 N., R. 4 E., quarter corner on east side of sec. 8, at southwest corner of crossroads, just outside of fence line, opposite Marr schoolhouse; iron post stamped "935"-----	934. 734
T. 4 N., R. 4 E., near center of east side of SE. $\frac{1}{4}$ sec. 29, on west side of road, in front of house of R. Autcliff, east of road, 0.15 mile south of T road, primary traverse station No. 17; iron post stamped "902"-----	902. 480
T. 4 N., R. 4 E., center of north side of NW. $\frac{1}{4}$ sec. 16, Sprague Corners, at southeast corner of crossroads opposite United Brethren Church, just outside fence line; iron post stamped "872"-----	871. 669
T. 4 N., R. 4 E., quarter corner on south side of sec. 14, about 75 feet north of church to west, 170 yards south of house of W. D. V. Cook, at northwest corner of T road to east, just outside of fence line; iron post stamped "879"-----	878. 994
T. 4 N., R. 5 E., southwest corner of sec. 20, at northeast corner of crossroads, 80 yards east and north of Jubbs schoolhouse, just outside of fence line; iron post stamped "897"-----	896. 843
T. 4 N., R. 5 E., northeast corner of sec. 29, primary traverse station No. 16, in small grass plot on south side of east and west road, west side of north and south road, 1 mile south by 1 mile west of Deerfield Center; iron post stamped "917"-----	917. 143
Deerfield Center, T. 4 N., R. 5 E., northeast corner of sec. 21, at southwest corner of T road south; iron post stamped "897"-----	897. 732
T. 4 N., R. 5 E., center of north side of NE. $\frac{1}{4}$ sec. 24, 2.75 miles east of Deerfield Center, at junction with T road north, just outside of fence line on south side of east and west road; iron post stamped "913"-----	912. 954
T. 4 N., R. 6 E., 300 feet east along north border from northwest corner of sec. 21, south side of road, 300 feet east of road crossing; primary traverse station No. 14; iron post stamped "1055"-----	1, 055. 351

Lemens Corners north to Hartland.

Hartland, sec. 13, T. 3 N., R. 6 E., 140 feet south of T road to east, east side of street, in north face, 9 inches from west front of store of G. W. Wallace (brick store); aluminum tablet stamped "949"-----
Feet.
948.924

MILFORD QUADRANGLE.**Tyrone Creek by road south to Hartland.**

T. 4 N., R. 6 E., 150 yards south along east border from northeast corner of SE. $\frac{1}{4}$ sec. 28, brick chimney in west face of First Methodist Episcopal Church, west side of road, 4.5 miles north of Hartland; aluminum tablet stamped "985"-----
984.816

At T. 3 N., R. 6 E., sec. 33.

T. 3 N., R. 6 E., northeast part of SW. $\frac{1}{4}$ sec. 33, primary traverse station No. 13, on east side of road, 50 feet south from large barn; iron post stamped "967"-----
967.202

Walled Lake west along road to Brighton.

Wixom, T. 2 N., R. 7 E., southwest corner of sec. 32, at junction of crossroads and railroad, 180 feet east of freight station, in small grass plot; iron post stamped "933"-----
932.827

New Hudson, T. 1 N., R. 7 E., near southeast corner of sec. 3, at railroad crossing, 20 feet west along dirt road from railroad on north side of road crossing, 150 yards east of Grand Trunk Railway station; iron post stamped "931"-----
931.068

T. 1 N., R. 7 E., 0.25 mile south of northeast corner of sec. 6, 2.6 miles west of New Hudson, in west abutment of steel and cement bridge over Huron River, north wing of abutment, 300 feet west of T road south, 1 foot north of east edge of bridge, 3 inches west of edge of abutment; aluminum tablet stamped "883"-----
882.912

Brighton, 3.4 miles east of, T. 1 N., R. 6 E., near northwest corner of NE. $\frac{1}{4}$ sec. 3, at southeast corner of crossroads; iron post stamped "898"-----
898.013

Wixom north along Pere Marquette Railroad to Rose.

Wixom, T. 2 N., R. 8 E., southwest corner of sec. 32, in small grass plot at junction of crossroads and railroad, 180 feet east of station; iron post stamped "933"-----
932.827

T. 2 N., R. 7 E., southwest part of SE. $\frac{1}{4}$ sec. 24, 2.25 miles northwest of Wixom, north side of road, 30 paces west of railroad crossing, near brick house; iron post stamped "941"-----
940.738

T. 2 N., R. 7 E., sec. 10, in small grass plot at north end of principal street directly east 100 yards from Milford Roller Mills, Yerkes & Son, proprietors; iron post stamped "946"-----
946.105

Highland, T. 3 N., R. 7 E., northwest corner of NE. $\frac{1}{4}$ sec. 27, 50 feet east of railroad, directly east of station, 15 feet south of road east and west; iron post stamped "1010"-----
1,010.386

Clyde, T. 3 N., R. 7 E., southeast part of SW. $\frac{1}{4}$ sec. 3, on south side of dirt road, 15 feet east of railroad, 270 feet north of station; iron post stamped "1029"-----
1,029.555

18 SPIRIT LEVELING IN MICHIGAN AND WISCONSIN, 1897 TO 1909.

Rose, T. 4 N., R. 7 E., near center of sec. 22, in grass plot at junction of T road with east and west road, 100 yards west along east and west road from railroad crossing; iron post stamped "980"-----	Feet. 980.042
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Clyde along highway to sec. 3, T. 3 N., R. 8 E.

White Lake, T. 3 N., R. 8 E., near northeast corner of SE. ¼ sec. 16, southeast corner of T road, 60 feet north and east from Presbyterian Church, inside of fence corner; iron post stamped "1041"-----	1,041.266
T. 3 N., R. 8 E., northeast corner of sec. 3, in north face of northeast corner of stone foundation of barn of A. B. Hubbard, Huron Valley Farm; aluminum tablet stamped "1025 ADJ 1905"-----	1,024.724

Rose along road west to Tyrone Creek.

T. 4 N., R. 7 E., near northeast corner of sec. 20, primary traverse station No. 15, 70 yards west of crossroads; iron post stamped "1011"-----	1,011.469
T. 4 N., R. 7 E., southwest corner of sec. 17, 2.4 miles west of Rose, northeast corner of crossroads, inside of fence corner; iron post stamped "1023"-----	1,023.134
Tyrone Creek, 1 mile east of, T. 4 N., R. 6 E., northeast corner of sec. 22, south side of road, just west of crossroads; iron post stamped "1050"-----	1,050.246

Chelsea, Fowlerville, and Mason Quadrangles.

INGHAM AND LIVINGSTON COUNTIES.

The elevations in the following list are from leveling done in 1908 by F. H. West.

FOWLERVILLE QUADRANGLE.

Sprague Corners west 16 miles.

T. 4 N., R. 3 E., center of boundary line between secs. 13 and 14, directly in front of J. B. Fuller's house, in small grass plot at junction with T road; iron post stamped "907"-----	Feet. 906.815
T. 4 N., R. 3 E., northwest corner of sec. 14, 20 yards south of corners with T road south, at west side of north abutment of iron bridge over county ditch; on iron plate-----	882.53
T. 4 N., R. 3 E., southeast corner of sec. 8, at northwest corner of crossroads, 3 feet south of fence line, 3 feet west of small ditch; iron post stamped "887"-----	887.376
T. 4 N., R. 2 E., center of west boundary of NW. ¼ sec. 13, at southeast corner of T road east, 0.25 mile north of William Arnold's house, in field just inside fence corner; iron post stamped "898"-----	897.600
T. 4 N., R. 2 E., northwest corner of NE. ¼ sec. 16, at southwest corner junction of crossroads, just outside fence line, near telegraph pole; iron post stamped "897"-----	897.195

Point 2 miles southwest of Leroy east via Fowlerville to Four-Mile House.

	Feet.
T. 3 N., R. 2 E., northeast corner of sec. 20, at southwest corner of crossroads, just outside fence line; iron post stamped "908"-----	908.018
T. 3 N., R. 2 E., center of sec. 24, 0.5 mile north of schoolhouse east of road, in center of small grass plot at junction with T road south; iron post stamped "901"-----	900.615
T. 3 N., R. 3 E., southeast corner of sec. 21, 2 miles south by 1 mile west of Fowlerville, at north corner of T road north, just inside fence corner; iron post stamped "893"-----	892.382
Fowlerville, 0.05 mile east of station, at southeast corner of Pere Marquette Railroad and Brand Avenue crossing, 30 feet south of railroad, 5 feet east of road; iron post stamped "898"-----	897.605
T. 3 N., R. 4 E., center of southern boundary of NE. $\frac{1}{4}$ sec. 19, 3 miles southeast of Fowlerville, at northwest corner of Pere Marquette Railroad and dirt road crossing; iron post stamped "924"-----	923.961

Point 2 miles southwest of Leroy south 8 miles, thence east via Plainfield post office to Smith schoolhouse.

T. 3 N., R. 2 E., northeast corner of sec. 29, southwest corner of crossroads, near old panel fence corner, on highest point of large stone; painted circle-----	923.52
T. 2 N., R. 2 E., northwest corner of sec. 4, Vantown, at southeast corner of crossroads, in northwest corner of brick Memorial Church aluminum tablet stamped "935"-----	935.102
T. 2 N., R. 2 E., center of east boundary of NE. $\frac{1}{4}$ sec. 20, at southwest corner of crossroads, opposite house of E. M. Kimball, in field just inside barbed-wire fence; iron post stamped "950"-----	949.982
T. 2 N., R. 2 E., southwest part of NW. $\frac{1}{4}$ sec. 28, at northwest corner of crossroads, at foot of corner post in fence, on large stone; painted circle-----	961.83
T. 2 N., R. 2 E., near southeast corner of NE. $\frac{1}{4}$ sec. 35, at southeast corner of crossroads, just inside fence in field; iron post stamped "949"-----	948.387
T. 1 N., R. 3 E., center of west boundary of sec. 4, at northeast corner of T road east, on highest point of large boulder on edge of road; painted circle-----	947.09
T. 2 N., R. 3 E., near center of NE. $\frac{1}{4}$ sec. 34, at southeast corner of T road east, just outside of fence at foot of 14-inch oak tree; iron post stamped "948"-----	947.780
T. 2 N., R. 3 E., center of east boundary of sec. 24, at junction with T road west, 60 yards north of T road east, in grass plot; iron post stamped "948"-----	947.757
T. 2 N., R. 4 E., center of south boundary of NE. $\frac{1}{4}$ sec. 20, at northeast corner of road junction; top of large stone-----	952.90

MASON QUADRANGLE.

Williamston north 4 miles, thence west 12 miles, thence south 9 miles, thence northeast to Williamston.

Williamston, at southeast corner of Cedar Street and Grand River Road, across pavement from deserted warehouse, across street from Glaser's blacksmith shop, near telegraph pole between south edge of road and street, pavement marked "868"; iron post stamped "868"-----	868.300
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20 SPIRIT LEVELING IN MICHIGAN AND WISCONSIN, 1897 TO 1909.

	Feet.
T. 4 N., R. 1 E., near southwest corner of sec. 12, 4 miles north of Williamston, 5 feet from north edge of road, 60 yards east of T road south; iron post stamped "890"-----	889. 812
T. 4 N., R. 1 E., southwest corner of sec. 9, in grass plot at corner of T road north; iron post stamped "881"-----	880. 530
Haslett, 0.25 miles west of, in grass plot at T road east; iron post stamped "862"-----	861. 414
T. 4 N., R. 1 W., southwest part of sec. 8, at southwest corner of interurban railway and road crossing at Raby's crossing, just inside fence in field; iron post stamped "851"-----	851. 363
T. 4 N., R. 2 W., center of section 13, 2.5 miles east of Lansing, north of road, 10 yards west of junction with T road south, diagonally opposite large deserted brick building at northwest corner of Michigan Agricultural College Experiment Station grounds, 72 feet southwest of southwest corner of house of Mr. Greary, 10 yards from north edge of road, in field; iron post stamped "837"-----	837. 306
T. 4 N., R. 2 W., center of north boundary of SW. $\frac{1}{4}$ sec. 25, at southwest corner of T road south, on large white granite boulder; painted circle-----	874. 48
T. 3 N., R. 2 W., northeast corner of sec. 2, at southwest corner of T road south, 15 feet from either road, inside lot; iron post stamped "869"-----	868. 850
T. 3 N., R. 2 W., northwest corner of SW. $\frac{1}{4}$ sec. 12; at southeast corner of crossroads, at edge of road, on shelf formed in large boulder, highest point-----	872. 72
Holt, 30 yards west of west end of station, 15 yards north of north track of Michigan Central Railroad, 7 yards south of south edge of east and west road; iron post stamped "882"-----	882. 108
T. 3 N., R. 1 W., near northeast corner of sec. 31, at southwest corner of crossing of Michigan Central Railroad and dirt road running east and west, just inside fence corners of right-of-way fence and fence of private lot; iron post stamped "874"-----	874. 324
T. 3 N., R. 1 W., center of south boundary of SW. $\frac{1}{4}$ sec. 29, at center of junction of crossroads, in root on east side of maple tree 16 inches in diameter; nail-----	891. 03
T. 3 N., R. 1 W., northwest corner of NE. $\frac{1}{4}$ sec. 28, at southeast corner of crossroads. 25 yards from northwest corner of deserted cabin, just inside fence corner; iron post stamped "894"-----	894. 229
T. 3 N., R. 1 W., southeast corner of sec. 14, at northwest corner of crossroads, in field just inside fence corners; iron post stamped "911"-----	910. 857
T. 3 N., R. 1 E., southwest corner of sec. 4, 3 miles west by 1 mile south of Williamston, at northeast corner of crossroads, diagonally opposite schoolhouse, in field just inside fence; iron post stamped "895"-----	894. 609
T. 2 N., R. 1 E., northeast corner of sec. 10, south of road at junction with T road north, on large stone; painted circle-----	875. 53

Williamston south 3 miles, thence east 8 miles.

T. 3 N., R. 1 E., southwest corner of sec. 2, 1 mile south of Williamston, at northeast corner of crossroads, at edge of road junction; top of large stone-----	888. 07
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T. 3 N., R. 1 E., southeast corner of sec. 14, 3 miles south of Williamston, at northwest corner of crossroads, in field just inside of fence; iron post stamped "908"-----	Feet. 907.370
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Mason via Eden to Dansville, thence east 4 miles.

Mason, 200 yards south and 100 yards east of station, across road, 50 yards north of Phoenix Roller Mills, in east end of east abutment of cement bridge over Cedar River; aluminum tablet stamped "895"-----	894.351
T. 2 N., R. 2 W., northeast corner of SE. $\frac{1}{4}$ sec. 13, at southwest corner of crossroads, diagonally opposite schoolhouse, in field just inside fence corner; iron post stamped "912"-----	912.402
Eden station, Michigan Central Railroad, 300 feet north of, on opposite side of tracks, 45 feet east of railroad, 24 feet south of dirt road at crossing, diagonally opposite general store; iron post stamped "971"-----	970.973
T. 1 N., R. 1 W., southeast corner of section 36, at northwest corner of crossroads opposite house of Morse Blakely, just outside of fence corner; iron post stamped "Prim. Trav. Sta. No. 16-975"-----	975.088
T. 2 N., R. 1 E., sec. 34, east of road, 0.10 mile south of house of H. V. Wemple, 0.25 mile north of T road north, in field inside of fence corner; iron post stamped "981"-----	980.406
Dansville, 0.25 mile east of principal street crossing, at northwest corner of Fairview Cemetery, just in corner of cement walk around cemetery; iron post stamped "951"-----	950.437

CHELSEA QUADRANGLE.

At Plainfield.

Plainfield, in stone in southwest corner of foundation of Plainfield Presbyterian Church; aluminum tablet stamped "958"-----	958.238
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Lansing Quadrangle.

EATON AND INGHAM COUNTIES.

The elevations in the following list were determined by primary level lines extending west from the Coast and Geodetic Survey precise line from Detroit to Cincinnati.

The leveling was done by L. D. Townsend in 1909.

Lansing along highway to North Holt, thence west 13 miles via Dimondale.

Lansing, Grand River, surface of water under Kalamazoo Street bridge, August 17, 1909-----	Feet. 818
Lansing, in southeast corner of abutment of South Washington Avenue concrete bridge over Grand River; aluminum tablet stamped "845 MICH"-----	844.496
Holt, 3.5 miles northwest of, at T road west, at Town Line station of Pere Marquette Railroad, inside of fence at southwest corner of road crossing; iron post stamped "869 1909"-----	869.284
North Holt, 1 mile south of, at east side of road, in line with right of way high tension wire poles, between road and fence, at head of T road west; iron post stamped "894 1909"-----	893.439

22 SPIRIT LEVELING IN MICHIGAN AND WISCONSIN, 1897 TO 1909.

	Feet.
T. 3 N., R. 2 W., northeast corner of section 28, in southeast wing of abutment of crossway, just north of road crossing, at T road west, on stone; chiseled cross marked "880.3"-----	879.99
T. 3 N., R. 2 W., northeast corner of section 30, in corner of field at southwest corner of crossroads, inside fence; iron post stamped "868 1909"-----	867
T. 3 N., R. 2 W., northwest corner of section 30 (county line), at northeast corner of crossroads, edge of track as road turns north, in square on highest point of large stone; chiseled cross marked "868.9"-----	868.65
T. 3 N., R. 3 W., southeast corner of section 23, in road curving west to T road west, 15 feet west of road crossing, on stone marking section corner; chiseled cross marked "885.6"-----	885.29
T. 3 N., R. 3 W., northwest corner of section 26, at southeast corner of crossroad, on roadside; iron post stamped "Prim. Trav. Sta. No. 4 913"-----	913.014
Dimondale, at crossroads to southwest of bridge over Grand River, at north corner, in corner of walks, in square on top of boulder; chiseled cross marked "859.6"-----	859.31
Grand River, under bridge at Dimondale, surface of water August 26, 1909-----	841.00
Dimondale, at four corners northeast of Grand River bridge, in southwest wall of brick block on north corner, 4.2 feet up from walk and 1.3 feet from front side of building, 12 feet south of town pump; aluminum tablet stamped "866 1909"-----	865.829
West Windsor, near southwest corner of NW. $\frac{1}{4}$ sec. 17, T. 3 N., R. 3 W., at crossroads, 8 feet from fence on southeast side of road called "the State road," under walnut tree; iron post stamped "944 1909"-----	943.281
Sec. 13, T. 3 N., R. 4 W., north 6 miles, thence east to Lansing along highway.	
T. 3 N., R. 4 W., northwest corner of sec. 13, southeast corner of crossroads, outside fence; iron post stamped "881 1909"-----	880.708
T. 3 N., R. 4 W., southeast corner of NE. $\frac{1}{4}$ sec. 2, at northwest corner of T road west, in square on highest point of largest stone in pile of stones; chiseled cross marked "858.9"-----	858.65
T. 4 N., R. 4 W., northeast corner of sec. 35, at northwest corner of "Canada Settlement" school yard, on south side of east-west road which Ts with north-south road, 150 feet east of school yard; iron post stamped "885 1909"-----	884.282
T. 4 N., R. 4 W., southeast corner of sec. 14, on northeast corner of bottom step of concrete steps of schoolhouse, district No. 6, at northwest corner of crossroads, in square; chiseled cross marked "879.1"-----	878.85
Grand Ledge, 1 mile south of, northwest corner of sec. 13, T. 4 N., R. 4 W., southeast corner of crossroads, in fence corner inside field; iron post stamped "860 1909"-----	859.853
T. 4 N., R. 3 W., southeast corner of sec. 9, at northwest corner of crossroads, in back wall of brick schoolhouse, district No. 6 Delta, about 3 feet from ground and in center of wall; aluminum tablet stamped "864 1909"-----	863.868

T. 4 N., R. 3 W., southeast corner of sec. 12, on county line between Ingham and Eaton counties, at northwest corner of cross roads, inside of fence; iron post stamped "862 1909"-----	Feet. 861. 820
Grand River, surface of water in under Saginaw Street bridge September 3, 1909; marked "815"-----	815

Point 2 miles south of North Holt south to Aurelius Center, thence west to Eaton Rapids, thence west and north to Potterville along highway.

T. 3 N., R. 2 W., southeast corner of sec. 34, at northwest corner of T road west (town-line road), 2 feet from and along north-south road, outside fence; iron post stamped "932 1909"-----	931. 351
T. 2 N., R. 2 W., center of west border of sec. 14, at head of T road from west, in right of way, 5 feet east of fence; iron post stamped "924 1909"-----	924. 117
Aurelius Center, 600 feet west of crossroads, 4 feet from fence, in right of way, north of east-west road; iron post stamped "963 1909"-----	962. 757
T. 2 N., R. 2 W., southwest corner of sec. 28, at northeast corner of crossroads, 45 feet from crossing, near fence, diagonally opposite schoolhouse, in square on stone; chiseled cross marked "947.6"-----	947. 31
Aurelius Center, 4 miles west of, on northeast corner of crossroads, on Ingham-Eaton county line, inside and 3 feet from either fence; iron post stamped "943 1909"-----	942. 260
Eaton Rapids, Knight Street East, on southeast abutment of bridge across Grand River, 2 feet from sidewalk, on level with same; aluminum tablet stamped "874 1909"-----	873. 515
Grand River, surface of water under Knight Street East bridge at Eaton Rapids; September 10, 1909-----	862
T. 2 N., R. 3 W., 0.25 mile north of southeast corner of sec. 30, at southwest corner of crossroads, 2 feet outside of north fence to school yard; iron post stamped "920 1909"-----	919. 382
T. 2 N., R. 4 W., southeast corner of sec. 12, west side of road, 10 feet from fence, at northeast corner of school yard, 160 feet north of road crossing, on range line between Eaton and Eaton Rapids townships; iron post stamped "896 1909"-----	896. 169
Potterville, 2 miles south of, at crossroads at northwest corner of "Fast" school yard, in line with road fence, at southwest corner of road, 150 feet from road crossing; iron post stamped "921 1909"-----	920. 473
Potterville, 0.5 mile south of, at head of T road east, on west side of road, in root on south side of maple tree; copper nail with washer marked "890.4"-----	890. 22

Bench mark set by F. H. West in 1908; corrected by Townsend, 1909.

T. 2 N., R. 2 W., southeast corner of section 26, at northwest corner of crossroads, in schoolhouse yard, 100 yards east of southeast corner of schoolhouse; Prim. Trav. Sta. No. 15; iron post stamped "981"-----	980. 529
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Marquette Quadrangle.

MARQUETTE COUNTY.

The elevations in the following list are based upon the United States Corps of Engineers bench mark No. 11, at Marquette, the accepted elevation of which is 620.678 feet above mean sea level.

The leveling was done in 1905 by J. N. Williamson.

MARQUETTE QUADRANGLE.

Marquette west along Duluth, South Shore & Atlantic Railway (northern line) to Morgan Furnace.

Marquette, new pump house, city waterworks, on water table 10 inches from southwest corner, United States Corps of Engineers bench mark, No. 11.....	Feet. 620. 678
Marquette, at foot of Ridge Street, 4 feet 8 inches north of base of Pere Marquette monument, in outcrop of gray trap rock, aluminum tablet stamped "625 ADJ".....	624. 870
Marquette, northwest corner Third and Washington streets, on east side of Government building, in south end of doorsill; aluminum tablet stamped "674 ADJ".....	673. 702
Valley Mills, 90 feet west of road crossing, in east end of outcrop of rock; aluminum tablet stamped "991 ADJ".....	991. 134
Whitman, 0.25 mile south of; 315 feet south of trestle over Duluth, South Shore & Atlantic Railway, east-bound track, on east side of Lake Superior & Ishpeming Railway, at south end of rock cut and opposite milepost 9, in outcrop of rock; aluminum tablet stamped "1260 ADJ".....	1, 260. 520

Morgan Furnace east along Duluth, South Shore & Atlantic Railway (southern line) to Marquette.

Freeman's crossing, 200 feet west of; 37 feet south of west-bound track, in large flat rock; aluminum tablet stamped "1218 ADJ"....	1, 217. 661
Marquette, 2.5 miles southwest of; 42 feet south of west-bound track in large pink marble on sidehill above Carp River; aluminum tablet stamped "863 ADJ".....	862. 871

Marquette via Lake Superior & Ishpeming Railway to Presque Isle.

Presque Isle, 2 miles west of; 45 feet north of center of track, 25 feet east of milepost 2, in granite outcrop; aluminum tablet stamped "679 ADJ".....	679. 207
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Calumet Special Quadrangle.

HOUGHTON AND KEWEENAW COUNTIES.

The elevations in the following list were determined by primary leveling extended from the United States Army Engineers' bench marks of the Lake Survey at Houghton and Hancock, Mich. The Lake Superior low-water datum plane is accepted as 601.750 feet above mean sea level, as determined at Duluth, Minn.

The leveling was done in 1908 by F. H. West.

The work was done in cooperation with the State, and the standard bench marks are stamped with the State name:

	Feet.
Hancock north along Copper Range Railroad to Boston, thence northeast along highways to Calumet Junction.	
Hancock, southwest corner brick office building at Detroit & Lake Superior Smelting Works, on beveled edge of sandstone water table about midway of bevel; small horizontal surface cut (United States Army Engineers' bench mark No. 2, established 1893)-----	609.829
Hancock, Lake View station, 0.85 mile west of, at northeast corner Duluth, South Shore & Atlantic Railway and dirt road crossing, one block south of Houghton County Electric Co. car barn, on top of large stone; chiseled circle-----	817.46
Swedetown, 300 feet east of road crossing, west of Duluth, South Shore & Atlantic Railway main line and siding into buildings, 3 feet above ground and 6 feet from northwest corner of brick magazine of Du Pont Powder Co.; aluminum tablet stamped "965"-----	965.062
Swedetown, 0.65 mile northeast of, 30 feet south of Franklin dirt road crossing, west side of east rail, on joining panel between two rails; chiseled square-----	1,007.72
Franklin Junction, in east end of cement base of elevated road trestle over which Houghton County Electric Co. line crosses, south of railroad, 1.5 feet from east end in center of base; aluminum tablet stamped "1069"-----	1,068.739
Boston, 100 yards directly east of station, at road crossing, 8 feet from north end of 18-inch drain pipe crossing road east of north-and-south road; chiseled square-----	1,097.45
Highway, 0.55 mile east of, at Y roads, on oblique face of stone, 5 feet from either road, halfway up oblique edge; chiseled square-----	1,159.75
Highway, at north side of road midway between T road north and Duluth South Shore & Atlantic Railway, on highest point of large boulder; chiseled cross-----	1,156.75
Highway, 0.97 mile east of, at northeast corner of crossroads, just inside barbed-wire fence line; iron post stamped "1162"-----	1,162.130
Osceola, 25 yards east of, at southwest corner crossroads, center of top of large boulder; chiseled square-----	1,176.07
Osceola, in northwest corner of lot 165 feet north of electric railroad crossing, 263 feet southwest of Duluth, South Shore & Atlantic Railway cattle guard, in concrete post; aluminum tablet stamped "Prim. Trav. Sta. No. 2-1173"-----	1,172.788
Duluth, South Shore & Atlantic Railway crossing; north rail-----	1,176.2
Between Hecla and Ramey, at southeast corner of road and railroad crossing, diagonally opposite large church, in old brownstone engine house of Calumet & Hecla Mining Co., on sill of lowest north window in east front of building at south edge of window; chiseled square-----	1,236.58
Calumet, near center of west edge of lot with office buildings of Calumet & Hecla Mining Co., about 3 feet from wagon shed to north, 60 feet north of northwest corner of president's lodge, 35 feet northwest of flagstaff, just inside picket fence; iron post stamped "1241"-----	1,240.671
Calumet, southeast corner of junction of Calumet and Pine streets, on $\frac{3}{4}$ -inch nut in west face of fire plug, 1 foot from bottom; chiseled cross-----	1,228.85

26 SPIRIT LEVELING IN MICHIGAN AND WISCONSIN, 1897 TO 1909.

Calumet Junction east along Copper Range Railroad to St. Louis Hill, thence east and southwest along highway and Copper Range Railroad near west shore of Torch Lake to Hancock.

	Feet.
Calumet, 3.1 miles northeast of, at southeast corner of road and railroad crossing, in joining panel on east side of east rail at south edge of road crossing; chiseled square-----	1,099.50
Calumet, 1.5 miles east of, at northeast corner of crossing of Copper Range Railroad and dirt road, on top of St. Louis Hill, in field about 30 feet from either side of angle formed by railroad and dirt road; iron post stamped "1008"-----	1,008.386
Calumet, 2.5 miles east of, at northeast corner of road north, 25 yards west of Trap Rock schoolhouse; iron post stamped "639"-----	639.553
Lake Linden, northeast end of town, east end of bridge over Trap Rock River, south of road, on base stone for end of bridge; chiseled cross-----	609.16
Lake Linden, surface of Trap Rock River under bridge, July 20, 1908.	604
Lake Linden, surface of Torch Lake, July 20, 1908-----	603.3
Lake Linden, docks at foot of Lake Street, south of St. Joseph's Church, in telegraph pole south of street and east of railroad, 10 feet northwest of northwest corner of standard scales; top of 60-penny spike-----	607.82
Lake Linden, south end of town, about 100 yards north of terminal of Duluth, South Shore & Atlantic Railway, east of Lake Linden-Hancock pike, just north of Copper Range Railroad crossing, in cement post in southwest corner of Calumet & Hecla Smelter Co.'s grounds; aluminum tablet stamped "623"-----	622.989
Lake Linden, south end of town, at southeast corner of T Street east, one block north and one block west of Calumet & Hecla smelter, opposite Methodist Episcopal Church, 50 yards south of Congregational Church, on north side of telegraph pole on spike projecting 1½ inches, used as step in climbing pole; chiseled cross-----	634.30
Hubbell, 750 feet north of station, 300 feet north of sign "Mills 1 mile," 300 feet north of Duncan Avenue, opposite Schwermann's brewery, 75 yards northwest of northwest corner of Opal's store, at southeast corner railroad and street crossing, 2.5 feet east of east rail of Duluth, South Shore & Atlantic Railway, 1 foot south of board walk, top of 1-inch square bolt; chiseled cross-----	628.83
Mills station, in front of; top of east rail-----	634.09
Quincy Stamp Mills, 3,400 feet northeast of, west of Hancock pike, in concrete post; aluminum tablet stamped "Prim. Trav. Sta. No. 15-630"-----	630.522
May, 0.25 mile south of, 100 yards west of Duluth, South Shore & Atlantic Railway, 2 inches from either side of angle formed by south and east sides of top of concrete base for north pillar of railroad overhead bridge, west of road; chiseled square-----	630.31
Dollar Bay station, on Copper Range Railroad, in plot back of station, at northeast corner of T road about 75 yards west of station, opposite saloon; iron post stamped "634"-----	634.242
Ripley, at road crossing directly in front of northwest corner of Standard Oil Co.'s building, west of road north of Duluth, South Shore & Atlantic Railway, on southeast corner of base plate of switch signal; chiseled cross-----	607.22

Calumet Junction northeast along highway to Cliff (run twice).

	Feet.
Centennial, in southwest corner of stone foundation of Centennial Methodist Episcopal Church; aluminum tablet stamped "1189"-----	1,189.748
Kearsarge, at T road east to Kearsarge mine, west side of Calumet-Cliff pike, nearly highest point; chiseled circle-----	1,130.48
Allouez, 470 yards south of T road at north end of town, west of road, 100 yards south of blacksmith shop, in cement post; aluminum tablet stamped "1027"-----	1,027.089
Mohawk, 1 mile west of, at southeast corner of junction of Mohawk Road with Calumet-Cliff pike, on top of stone; chiseled circle-----	898.09
Sarica Lake, at Y road running west through fields, at angle in road as it runs around Sarica Lake, on southwest corner of stone; chiseled mark (old survey mark)-----	939.09
Frank Charrier's road house, 900 feet southwest of road, 100 yards north of wood road to west, at summit, in cement post set flush with ground; aluminum tablet stamped "1028"-----	1,028.161
Winfred Gagrón's Halfway House, directly opposite, west of road, in shelf of large bowlder; chiseled square U. S. B. M.-----	1,132.62
Cliff, at southeast corner of T road east, 100 yards southwest of Cliff mine shaft, just outside fence line of lot around large frame house on hill to east, in cement post; aluminum tablet stamped "987"-----	986.701

Allouez northwest to old Calumet & Hecla stamp mill (run twice).

Banneelltown, 20 yards south of red house, last house west in town, 54 yards south of Y road southwest to lake shore, west of road, on shelf in east face of bowlder; chiseled square-----	1,132.02
Old Calumet & Hecla stamp mill, 1.25 miles north and west of, on road to Gratiot River and Lake Shore, 30 feet west of Allouez road, at forks of roads at south edge of distinct clearing; iron post-----	811.531

Boston northwest to Hancock Township (run twice).

Boston, 0.55 mile west of, at Y roads, on large stone south of road, 20 paces west of house; chiseled cross-----	1,091.27
Boston, 1.25 miles west of, at southeast corner of T road south to Franklin, on large stone; chiseled cross-----	1,045.82
Boston, 1.75 miles west of, in southeast corner of Hancock Township, 10 feet north of road near wire fence; iron post stamped "1025"-----	1,025.480

At Houghton.

Houghton, on west line of Huron Street, about 275 feet north of Sheldon Street, 5 feet from corner, 1.5 feet above sidewalk, in stone foundation wall of brick store building of L. Hennes & Co.; top of 60-penny cut spike (U. S. Lake Survey bench mark, established 1883)-----	608.747
Houghton, in stone foundation wall of brick store building of L. Hennes & Co., north face of wall, about 3 feet from northeast corner, 5 feet above ground; aluminum tablet stamped "612"-----	611.568
Houghton, Michigan School of Mines, in lawn directly in front of main building, 18 feet east of walk leading directly east from main building, 54 feet from walk running in front of building; iron post stamped "695"-----	694.523

Menominee Special Quadrangle.

DICKINSON COUNTY.

The elevations in the following list are approximate. They are based on the top of rail of the Chicago, Milwaukee & St. Paul Railway track in front of the station at Iron Mountain, the elevation of which is accepted as 1,135 feet above sea level. The elevations are not on the 1907 adjustment datum.

The leveling was done in 1898 by Jesse L. Holman.

Iron Mountain.

T. 40 N., R. 30 W., NW. $\frac{1}{4}$ sec. 31, in northwest corner of courthouse, 10 feet north of west entrance; aluminum bolt, marked "IM 1155"-----	Feet. 1,155.33
T. 40 N., R. 31 W., SW. $\frac{1}{4}$ sec. 1, in large trap rock 300 feet north of east end of bridge over Menominee River; aluminum tablet, marked "IM 1108"-----	1,108.07
Quinneseec, T. 39 N., R. 30 W., NE. $\frac{1}{4}$ sec. 3, in southwest corner of large brick building owned by Capt. John Buell; aluminum tablet, marked "IM 1040"-----	1,039.77
Norway, T. 39 N., R. 29 W., NE. $\frac{1}{4}$ sec. 8, northeast corner of foundation of schoolhouse; aluminum tablet marked "IM 946"-----	945.61
Waucedah, T. 39 N., R. 28 W., NE. $\frac{1}{4}$ sec. 22, northwest corner of foundation of schoolhouse; aluminum tablet marked "IM 904"---	904.44

WISCONSIN.

PRIMARY LEVELING.

Evansville, Koshkonong, Madison, Milwaukee, Oconomowoc, Sun Prairie, Waterloo, Watertown, Waukesha, and Whitewater Quadrangles.

DANE, DODGE, GREEN, JEFFERSON, MILWAUKEE, ROCK, WALWORTH, WASHINGTON, AND WAUKESHA COUNTIES.

The elevations in the following list were determined by primary leveling extended from bench mark No. 2 of the United States Lake Survey at Milwaukee, and adjusted with those in Poynette quadrangle to agree with the elevation at Portage derived by leveling of the Army engineers, also from Milwaukee.

The leveling was done in the Milwaukee, Watertown, Waukesha, Whitewater, and Koshkonong quadrangles in 1903 by G. M. Dimmick; in the Oconomowoc quadrangle in 1903 by Dimmick, and in 1906 by L. P. Gerrard; in the Waterloo quadrangle in 1903 by Dimmick, in 1904 by M. A. Steele, in 1905 by H. Bücher, and in 1908 by E. M. Bandli; in the Sun Prairie quadrangle in 1904 by Steele and in 1905 by Bücher; and in the Evansville and Madison quadrangles in 1904 by Steele. Two bench marks were established in the Watertown quadrangle in 1908 by E. M. Bandli.

MILWAUKEE QUADRANGLE.

Milwaukee west along Chicago & Northwestern Railway to Layton Park
(double-rodged line).

Milwaukee, in seventh ward, near southeast corner of courthouse square; top of stone monument (United States Lake Survey bench mark No. 2)-----	Feet. 636. 056
Milwaukee, 4.3 miles south of courthouse, south end of east abutment of railroad bridge; chiseled square-----	623. 11
Layton Park, 5.9 miles west of Milwaukee, in foundation wall of school building No. 17, center of front face; bronze tablet stamped "669 MILWAUKEE 1903"-----	669. 070

WAUKESHA QUADRANGLE.

Layton Park west along Chicago & Northwestern Railway to Waukesha
(double-rodged line).

North Greenfield, 3.5 miles west of Layton Park, in foundation wall of store of R. Polzin, center of east face; bronze tablet stamped "738 MILWAUKEE 1903"-----	738. 223
County line, 3.1 miles west of North Greenfield, in center of east abutment of highway bridge 50 feet south of railway track; bronze tablet stamped "776 MILWAUKEE 1903"-----	776. 494
Calhoun, 0.5 mile west of, top of south abutment of railroad bridge 1057; aluminum tablet stamped "844 MILWAUKEE"-----	844. 371
Waukesha, 300 feet east of Chicago & Northwestern Railway station, north face of office of Milwaukee-Waukesha Mining Co., in water table; aluminum tablet stamped "822 MILWAUKEE 1903"-----	821. 889

OCONOMOWOC QUADRANGLE.

Waukesha west along Chicago & Northwestern Railway to Dousman (double-rodged line).

Waukesha, 2.1 miles west of, west end of south abutment of railroad bridge 1074, point on top of; square-----	826. 99
Waukesha, 5.05 miles west of, in south abutment of railroad culvert 1080; aluminum tablet stamped "861 MILWAUKEE 1903"-----	861. 084
Wales, 300 feet east of station, north abutment of railroad bridge 1088; aluminum tablet stamped "1003 MILWAUKEE 1903"-----	1, 002. 594
Wales, 3.6 miles west of, in wooden support of railroad trestle 1098, east end, south side; iron pin-----	891. 45
Dousman, 5 miles west of Wales, in south end of railroad culvert 1,000 feet west of railroad station; aluminum tablet stamped "866 MILWAUKEE 1903"-----	866. 298

Waukesha north via Pewaukee and near Morton to sec. 5, T. 9 N., R. 19 E.

Pewaukee, road crossing at middle of north line of sec. 33, 35 feet north by 25 feet west of road intersection; iron post stamped "951"-----	951. 465
Pewaukee village, where Main Street crosses Chicago, Milwaukee & St. Paul Railway tracks, NE. $\frac{1}{4}$ sec. 8, 30 feet north by 90 feet west of road intersection; iron post stamped "855"-----	855. 683

30 SPIRIT LEVELING IN MICHIGAN AND WISCONSIN, 1897 TO 1909.

Lisbon, east of middle of north line of sec. 29, 20 feet north by 60 feet west of road intersection; iron post stamped "1046"-----	1,046.385
Lisbon, middle of north line of sec. 18, 35 feet west by 25 feet south of intersection of roads; iron post stamped "996"-----	995.893
Merton, center of W. $\frac{1}{2}$ sec. 1, 20 feet south by 35 feet east of road intersection; iron post stamped "1058.7"-----	1,058.733
Richfield, road crossing at northeast corner of sec. 30, 20 feet north by 30 feet east of road intersection; iron post stamped "1093"-----	1,092.559

Dousman north via Giffords, Mapleton, and near Alderly to sec. 25, T. 10 N., R. 17 E.

Summit, road crossing at northeast corner of sec. 21, 30 feet north by 40 feet east of road intersection; iron post stamped "880"-----	880.350
Summit, road intersection just north of center of N. $\frac{1}{2}$ sec. 3, 90 feet south by 20 feet west of; iron post stamped "866"-----	866.083
Oconomowoc, middle of east line of sec. 22, 75 feet south by 30 feet east of road crossing; iron post stamped "892"-----	892.224
Oconomowoc, northeast corner of sec. 10, road crossing, 35 feet west by 20 feet south of; iron post stamped "922"-----	921.473
Ashippun, road crossing at northeast corner of sec. 27, 50 feet east by 20 feet south of; iron post stamped "939"-----	939.757
Alderly, 3 miles northeast of, northeast corner of sec. 30, 15 feet south by 40 feet west of road crossing; iron post stamped "985"-----	984.824

Pewaukee west along Chicago, Milwaukee & St. Paul Railway to Gifford.

Delafield, road crossing Chicago, Milwaukee & St. Paul Railway tracks near middle of west line of sec. 2, 20 feet east by 40 feet north of intersection; iron post stamped "928"-----	927.707
Richfield; village of Nashota, where road crosses Chicago, Milwaukee & St. Paul Railway tracks, on west line of sec. 5, 70 feet east of center of road, 45 feet north of tracks; iron post stamped "940"-----	939.960

Nagawicka 3 miles north.

Merton, middle of north line of sec. 28, 25 feet north by 40 feet west of road intersection; iron post stamped "935"-----	935.043
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WATERLOO QUADRANGLE.

Loudon north along highways to Waterloo, thence east and north to point near Hubbleton.

T. 7 N., R. 13 E., near center of section 8, 42 feet southeast of road intersection, 2.9 feet north of fence, 18 feet east of southeast corner fence post, in southeast corner of crossroads; iron post stamped "870"-----	870.040
T. 7 N., R. 13 E., near north center of section 5, in southeast corner of T road intersection from southeast, in tree; nail marked "851.7"-----	851.77
T. 8 N., R. 13 E., 0.25 mile south of the northeast corner of section 30, 3.2 miles south of Waterloo station, 38 feet east of T road intersection from west, 3 feet west of fence; iron post stamped "Prim. Trav. Sta. No. 3, 875"-----	874.998

T. 8 N., R. 13 E., near south center of section 5, 0.8 mile east of center of town of Waterloo, 3 feet north of telephone pole, in northeast corner of T road intersection from north, 45 feet northeast of road intersection; iron post stamped "819"-----	Feet. 819.194
T. 9 N., R. 13 E., near center of section 34, 3.5 miles northeast of Waterloo, 3.8 feet south of telephone pole, 69 feet northwest of road forks, in northwest angle of fork road from north; iron post stamped "859"-----	859.027
T. 9 N., R. 13 E., center of section 26, 6 feet southeast of intersection of crossroads, 4.3 feet west of fence; iron post stamped "852"-----	852.210
Hubbleton, near northwest corner of sec. 6, T. 8 N., R. 14 E., at road crossing west of station; top of north rail, marked "795.4"-----	795.32
Hubbleton, 1 mile east of, near northeast corner of sec. 5, T. 8 N., R. 14 E., 4 feet east of corner fence post opposite T road from south, 25 feet northeast of road forks; iron post stamped "816"-----	815.769
Point near Hubbleton east along Chicago, Milwaukee & St. Paul Railway to point near Watertown, thence south by road 3 miles, east to Chicago & Northwestern Railway and along track to Jefferson Junction.	
T. 8 N., R. 13 E., at northeast corner of section 3, 3.5 miles east of Hubbleton, 2 feet north of fence, 36 feet southwest of road intersection, 12 feet west of southwest corner fence post; iron post stamped "831"-----	830.954
T. 9 N., R. 14 E., northeast corner of section 27, 2.5 feet west of fence, 30 feet southeast of forks of road, 6 feet south of southeast corner fence post at T roads; iron post stamped "829"-----	828.819
T. 8 N., R. 14 E., southeast corner of section 13, 42 feet south of road, 2.3 feet west of porch, 3.6 feet north of building, at northwest corner of schoolhouse; iron post stamped "819"-----	819.192
T. 7 N., R. 15 E., center of section 31, 55 feet east of track, 3.6 feet north of fence in southeast angle of road crossing; iron post stamped "819.6"-----	819.474
T. 7 N., R. 14 E., near east center of section 13, 200 feet west of track at Johnsons Creek station, 15 feet north of road, 3 feet south of fence, 3 feet from telephone pole at forks of road; iron post stamped "799.3"-----	799.106
Jefferson Junction, near south center of sec. 25, T. 7 N., R. 14 E., opposite water tower; top of rail-----	804.46
Helenville west along Chicago & Northwestern Railway to Lake Mills (double-rodged line).	
Helenville, 3.3 miles west of, point on top of south end of railroad culvert 114 ² -----	805.79
Jefferson Junction, 5.1 miles west of Helenville, 200 feet east of station, in top of east stone railroad culvert, east of "Y"; aluminum tablet stamped "813 MILWAUKEE 1903"-----	812.787
T. 7 N., R. 14 W., northeast corner sec. 29, 3.4 miles west of Jefferson Junction, on east abutment of railroad bridge across Crawfish River; aluminum tablet stamped "802 ADJ 1903"-----	801.830
Lake Mills, in front of station; top of rail-----	859.6
Lake Mills, northeast corner of sec. 23, T. 7 N., R. 13 E., 117 feet south by 81 feet east of southeast corner of station; iron post stamped "862 ADJ 1903"-----	862.236

Jefferson Junction south along Chicago & Northwestern Railway to Jefferson (double-rodde line).

Jefferson, in foundation wall of courthouse, 10 feet north of center of west face; aluminum tablet stamped "S15 MILWAUKEE 1903"	Feet. 814. 720
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WATERTOWN QUADRANGLE.

Dousman west along Chicago & Northwestern Railway to Helenville (double-rodde line).

Golden Lake station, 3.8 miles west of Dousman, 225 feet east of station, 35 feet south of highway crossing, 15 feet south of track; iron post stamped "S64 MILWAUKEE 1903"	863. 886
Sullivan, 1.6 miles west of, 0.3 mile west of Golden Lake, in south end of railroad culvert; aluminum tablet stamped "S50 MILWAUKEE 1903"	850. 411
Sullivan, 3.5 miles west of, on top of south end of railroad culvert 1124; square	836. 87
Helenville, in north abutment of railroad culvert 1131, 500 feet west of station; aluminum tablet stamped "S52 MILWAUKEE 1903"	851. 929

Bench marks established in the Watertown quadrangle in connection with levels of the Waterloo quadrangle.

T. 8 N., R. 15 E., east center of sec. 6, 12 feet southwest of fork road to south, 2.2 feet north and 2 feet west of southwest corner fence post, 1 mile east of Watertown; iron post stamped "S55.7"	855. 645
T. 8 N., R. 15 E., in southern part of sec. 17, 55 feet west of track, 3 feet east of fence, 3 miles south of Watertown, at private road crossing; iron post stamped "S01"	801. 168

KOSHKONONG QUADRANGLE.

Jefferson south along Chicago & Northwestern Railway to Milton Junction.

Fort Atkinson, 6 feet south of railroad water tank; iron post stamped "796 MILWAUKEE 1903"	795. 895
Fort Atkinson, 5.1 miles south of, top of west end of south abutment of railroad bridge 164; chiseled square	821. 96
Koshkonong, 10 feet from southeast corner of station; iron post stamped "S21 MILWAUKEE 1903"	820. 949
Milton Junction, 100 feet north of intersection of Chicago & Northwestern and Chicago, Milwaukee & St. Paul railways, 25 feet east of tracks; iron post stamped "S81 MILWAUKEE 1903"	881. 258

Milton Junction east along Chicago, Milwaukee & St. Paul Railway to White-water, thence along highway northwest to Fort Atkinson.

Milton, 2.2 miles east of, top of west end of south abutment of railroad bridge 114; square	885. 33
Lima, 150 feet east of station, 15 feet north of track, near highway crossing; iron post stamped "S94 MILWAUKEE 1903"	894. 335
Lima, 3 miles east of, in north end of railroad sluiceway 96; square	884. 62
Jefferson, 7 miles southwest of, Oakland Township, in southeast corner of school yard (district No. 7); iron post stamped "S88 MILWAUKEE 1903"	888. 253

Jefferson, 10.4 miles southwest of, Sumner Township, northeast corner of school yard (district No. 7); iron post stamped "S10 MILWAUKEE 1903" ----- Feet. 809. 925

WHITEWATER QUADRANGLE.

At Whitewater.

Whitewater, 45 feet southwest of southwest corner of freight house, 18 feet south of track; iron post stamped "S24 MILWAUKEE 1903" ----- 823. 885

SUN PRAIRIE QUADRANGLE.

Lake Mills west along Chicago & Northwestern Railway to point 2.3 miles west of Cottage Grove (double-rodged line).

London, stone culvert, north side of track just east of station; aluminum tablet stamped "868 ADJ 1903" ----- 868. 481

London, in front of station; top of rail ----- 868

Deerfield, in front of station; top of rail ----- 860. 9

Deerfield, sec. 21, T. 7 N., R. 12 E., 165 feet north by 69 feet east of station, north side of railroad, west side of highway; iron post stamped "859 ADJ 1903" ----- 859. 618

T. 7 N., R. 12 E., 0.25 mile east by 0.1 mile south of northwest corner of sec. 20, east side of county road, 30 feet south of track, at crossing; iron post stamped "871 ADJ 1903" ----- 871. 113

Cottage Grove, 0.3 mile east of, on northeast corner of stone bridge 1205; aluminum tablet stamped "878 ADJ 1903" ----- 877. 984

Cottage Grove, in front of station; top of rail ----- 889. 4

Cottage Grove, 2.3 miles west of, near center of sec. 18, T. 7 N., R. 11 E., 1,830 feet east of county road, in bridge 1213; aluminum tablet stamped "874 ADJ 1903" ----- 873. 842

Cottage Grove north via Sun Prairie to T. 9 N., R. 11 E., thence east to R. 12 E., thence south to Deerfield.

T. 7 N., R. 11 E., 0.25 mile south of north quarter corner of sec. 4, on west side of road, 2 feet east of fence, 5 feet north of fence corner, crossroads, at southeast corner of schoolhouse grounds; iron post stamped "935 ADJ 1903" ----- 934. 640

T. 8 N., R. 11 E., near west quarter corner of sec. 21, at intersection of east-west road with road to north, on south side of road; iron post stamped "926 ADJ 1903" ----- 925. 672

Sun Prairie, T. 8 N., R. 11 E., in SE. $\frac{1}{4}$ sec. 5 on south side of lawn around water tower, 1 foot north of fence; iron post stamped "991 ADJ 1903" ----- 991. 291

T. 9 N., R. 11 E., 0.1 mile north of southwest corner of sec. 26, 15 feet north of fence corner at road intersection, west side of road; iron post stamped "959 ADJ 1903" ----- 959. 407

T. 9 N., R. 11 E., southeast corner of sec. 24, 0.25 mile north of intersection, 2 feet south of fence, 12 feet east of fence corner, north side of road; iron post stamped "881 ADJ 1903" ----- 881. 105

T. 9 N., R. 12 E., southeast corner of sec. 20, 25 feet west of fence corner at crossroads, 1.5 feet south of fence, north side of road; iron post stamped "892 ADJ 1903" ----- 892. 394

T. 8 N., R. 12 E., north quarter corner of sec. 3, 10 feet west of fence corner at road intersection, south side of road; iron post stamped "916 ADJ 1903"-----	Feet. 915.690
Marshall district schoolhouse, near southeast corner of grounds, between two large maples; iron post stamped "859 ADJ 1903"-----	858.840
T. 8 N., R. 12 E., 0.25 mile south of northeast corner of sec. 28, 13 feet east of fence corner at road intersection, north side of road; iron post stamped "867 ADJ 1903"-----	867.045
T. 8 N., R. 12 E., near center of sec. 33, at southwest corner of road intersection, 2 feet east of fence; iron post stamped "922 ADJ 1903"-----	922.122
T. 7 N., R. 12 E., SE. $\frac{1}{4}$ sec. 9, 10 feet north of fence corner at cross-roads, east side of road; iron post stamped "877 ADJ 1903"-----	876.846

MADISON QUADRANGLE.

Point 2.3 miles west of Cottage Grove west along Chicago & Northwestern Railway to Madison (double-rodged line).

T. 7 N., R. 10 E., 0.25 mile south of northeast corner of sec. 16, 200 yards east of road crossing, bridge 1225; aluminum tablet stamped "896 ADJ 1903"-----	895.994
T. 7 N., R. 10 E., 0.25 mile north by 0.25 mile west of southeast corner of sec. 6, in stone culvert near road crossing; aluminum tablet stamped "864 ADJ 1903"-----	864.081
Madison, university grounds, between east pillars of south entrance of Engineering Building, 79 feet west from southeast corner, 96.1 feet east of southwest corner of building; aluminum tablet stamped "924 ADJ 1903"-----	924.239
Madison, university grounds, in water table, south end of east arch of main hall, 2.3 feet north of south end of arch; aluminum tablet stamped "961 ADJ 1903"-----	961.298

Point northeast of Madison northwest along Chicago & Northwestern Railway via Mendota to Waunakee (forward and backward spur line).

Mendota, 0.5 mile south of, sec. 26, T. 8 N., R. 9 E., in stone abutment of railroad bridge 259; tablet stamped "886 ADJ 1903"-----	886.270
Waunakee, in front of station; top of rail-----	926
Waunakee, 1,300 feet north of, on west end of south abutment of railroad bridge 274; aluminum tablet stamped "925 ADJ 1903"-----	925.274
Waunakee, 0.8 mile northwest of road crossing, 0.25 mile northeast of center of sec. 6, T. 8 N., R. 9 E., in west abutment of railroad bridge 280; tablet stamped "938 ADJ 1903"-----	938.509

Point northeast of Madison north along Chicago, Milwaukee & St. Paul Railway to sec. 5, T. 9 N., R. 10 E. (forward and backward spur line).

T. 8 N., R. 10 E., 0.25 mile east of center of sec. 30, 30 feet south of county road, on east side of track; iron post stamped "885 ADJ 1903"-----	885.215
Windsor, 0.5 mile south of station at, T. 9 N., R. 10 E., sec. 29, in stone culvert; tablet stamped "887 ADJ 1903"-----	886.927

Madison southwest along Illinois Central Railroad and Chicago & Northwestern Railway and return.

T. 7 N., R. 9 E., 0.25 mile east of southwest corner of sec. 32, 30 feet east of track at road crossing, south of county road; iron post stamped "1003 ADJ 1903"----- 1,002.944 Feet.

Madison south to Syene and return along Chicago & Northwestern Railway.

Syene, 1,500 feet north of station, sec. 11, T. 6 N., R. 9 E., in stone culvert; tablet stamped "895 ADJ 1903"----- 894.917
 Syene, in front of station; top of rail----- 896.8

EVANSVILLE QUADRANGLE.

Syene south along Chicago & Northwestern Railway to Oregon and return.

T. 6 N., R. 9 E., sec. 26, 800 feet north of crossing of section line between secs. 26 and 35 and railroad, in stone abutment of bridge 217; tablet stamped "939 ADJ 1903"----- 939.581
 T. 5 N., R. 9 E., 0.4 mile west of center of sec. 1, 0.5 mile north of Oregon, in stone abutment of railroad bridge just north of road crossing; tablet stamped "944 ADJ 1903"----- 943.795

Oregon along highway east 6 miles, thence south to Evansville, thence west to Attica, thence north and east to Oregon.

T. 6 N., R. 10 E., 0.25 mile east of southwest corner of sec. 35, north side of east-west road opposite intersection of north-south road; iron post stamped "935 ADJ 1903"----- 935.302
 T. 5 N., R. 10 E., 0.25 mile north of southeast corner of sec. 15, north side of east-west road, opposite intersection by a road north-south; iron post stamped "910 ADJ 1903"----- 910.303
 Union, 0.25 mile west of center of sec. 10, T. 4 N., R. 10 E., at northwest corner of crossroads; iron post stamped "944 ADJ 1903"----- 944.219
 Evansville, sec. 27, T. 4 N., R. 10 E., in water table of city hall, 3 feet south of northeast corner; tablet stamped "918 ADJ 1903"----- 918.117
 T. 3 N., R. 9 E., northeast corner of sec. 1, at south corner of two formed by intersection of east-west and north-south roads, 10 feet west of corner post; iron post stamped "985 ADJ 1903"----- 985.432
 T. 3 N., R. 9 E., northwest corner sec. 5, on south side of east-west road and opposite intersection of north-south road; iron post stamped "829 ADJ 1903"----- 828.729
 T. 4 N., R. 9 E., 0.25 mile west of southeast corner of sec. 7, 15 feet west of fence corner, the west corner of two corners formed by intersection of east-west and north-south roads; iron post stamped "912 ADJ 1903"----- 912.597
 T. 5 N., R. 9 E., northwest corner of sec. 33, 60 feet east of diagonal road at junction of three roads, in northwest corner of schoolhouse yard; iron post stamped "898 ADJ 1903"----- 898.353
 T. 5 N., R. 9 E., 0.5 mile north of center of sec. 9, 54 feet south of crossroads, east side of north-south road; iron post stamped "954 ADJ 1903"----- 954.592

Hartford, Juneau, and West Bend Quadrangles.

DODGE, OZAUKEE, AND WASHINGTON COUNTIES.

The elevations in the following list were determined by primary levels extended from United States Lake Survey bench mark No. 2, a stone monument near the southeast corner of the courthouse square in Milwaukee, the accepted elevation of which is 636.056 feet above mean sea level.

The leveling was done in 1901 by I. C. Sunderland.

WEST BEND QUADRANGLE.

Milwaukee northwest along Chicago & Northwestern Railway to Rockfield, thence east to sec. 23, T. 10 N., R. 21 E., thence north 1.5 miles north of Horns Corners (double-rodged line).		
T. 10 N., R. 20 E., southeast corner of, 30 feet west by 25 feet north of center of road intersection, on line between Washington and Ozaukee Counties; iron post stamped "875.95 MIL"-----		Feet. 876.201
T. 10 N., R. 21 E., northeast corner of section 17, 37 feet southwest of section stone, in center of roads; iron post stamped "847.900 MIL"-----		848.168
Point near Horns Corners west along north side of Jackson Township to northwest corner, thence south and southeast to Rockfield.		
T. 10 N., R. 20 E., 0.1 mile east of northwest closing corner of section 1, 2 feet south of section stone, at southeast corner of sec. 35, T. 11 N., R. 20 E.; iron post stamped "879.270 MIL"-----		879.536
T. 11 N., R. 19 E., southwest corner of section 36, West Bend Township, 20 feet north of road going east; iron post stamped "1006.906 MIL"-----		1,007.167
T. 10 N., R. 20 E., at southwest corner of, 20 feet east by 50 feet north of center of intersection of roads; iron post stamped "899.819 MIL"-----		900.092
Northwest corner of Jackson Township north along public road via West Bend and Barton to sec. 24, T. 12 N., R. 19 E., thence east to Fillmore and south via Newburg to Horns Corners.		
West Bend, in front face of courthouse, at right of entrance, aluminum tablet stamped "942.80 MIL"-----		943.089
T. 12 N., R. 19 E., near center of NW. $\frac{1}{4}$ sec. 24, 2 miles east by 8 miles south of Kewaskum; iron post stamped "968.474 MIL"-----		968.749
T. 12 N., R. 20 E., northwest corner of section 24, 55 feet south by 16 feet east of center of road; iron post stamped "847.716 MIL"-----		847.971
Newburg, sec. 12, T. 11 N., R. 20 E., on front corner of brick saloon opposite mill, in stone above water table; bronze tablet stamped "850.278 MIL"-----		850.525
HARTFORD QUADRANGLE.		
West Bend along public road west via Horseshoe Hill and Aurora to Kohlsville.		
Aurora, southwest corner of sec. 12, T. 11 N., R. 18 E., in southwest corner of brick building at northeast corner of intersection of road; bronze tablet stamped "1146.169 MIL"-----		1,146.577

Kohlsville, at northwest corner of sec. 35, T. 12 N., R. 18 E., at southeast corner of intersection of roads; iron post stamped "1013.153 MIL"----- Feet. 1,013.640

Horseshoe south along public road west of Cedar Lake to Schleisingerville, thence east to Jackson Township.

Schleisingerville, sec. 18, T. 10 N., R. 19 E., 300 feet southwest of post office, in butcher shop, in brick; bronze tablet stamped "1068.964 MIL"----- 1,069.192

Southwest corner of Jackson Township west along public road via Oil Spring Farm, thence north via Hartford to Aurora.

T. 9 N., R. 19 E., northwest corner of section 5, 2 miles south by 1 mile west of Ackerville, 15 feet south and east from center of intersection of roads; iron post stamped "1093.033 MIL"----- 1,093.394

Kohlsville west along public road to sec. 30, Theresa Township, thence southwest to Woodland.

T. 12 N., R. 17 E., southeast corner of section 24, at northwest corner of intersection of road; iron post stamped "1025.785"----- 1,026.072

T. 11 N., R. 17 E., 190 feet south by 17 feet west of northeast corner of section 6; iron post stamped "1060.005 MIL"----- 1,060.422

T. 11 N., R. 17 E., northeast corner of section 36, 3 miles east of Hullsburg; iron post stamped "1072.070 MIL"----- 1,072.464

Hartford southwest along public road via Saylesville to southwest corner of sec. 32, Rubicon Township, thence north via Neosho to Woodland.

Hartford, southeast corner of city hall, in limestone water table; bronze tablet stamped "982.977 MIL"----- 983.345

T. 10 N., R. 17 E., sec. 25, at intersection of roads; iron post stamped "976.856 MIL"----- 977.233

JUNEAU QUADRANGLE.

Neosho north along highways to Woodland.

Neosho, 1 mile south of, at southeast corner of sec. 30, T. 10 N., R. 17 E.; iron post stamped "922.984 MIL"----- 923.366

Woodland, east of southwest corner of sec. 31, T. 11 N., R. 17 E.; iron post stamped "946.069 MIL"----- 946.460

Appleton, Fisk, Fond du Lac, Kiel, Menasha, and Oshkosh Quadrangles.

CALUMET, FOND DU LAC, OUTAGAMIE, AND WINNEBAGO COUNTIES.

The elevations in the following list were determined by primary leveling extended from United States Army engineers' bench marks at Fond du Lac, Oshkosh, Appleton, and Menasha.

The leveling was done in 1908 by E. M. Bandli.

KIEL QUADRANGLE.

Sec. 29, T. 16 N., R. 19 E., north along highways to sec. 8, T. 16 N., R. 19 E.

T. 16 N., R. 19 E., sec. 29, 10.5 feet from northeast corner of road intersection, 3.6 feet north of tree 48 feet northwest of road intersection at east center of section 29; iron post stamped "993"-----	Feet. 992.553
T. 16 N., R. 19 E., near southeast corner of section 20, opposite T road intersection from south; on top of rock-----	963.10.
T. 16 N., R. 19 E., near southwest corner of section 8, opposite T road intersection from west, 15 feet east of road intersection and 12 feet northwest of oak tree, in large stone; aluminum tablet stamped "967"-----	966.627

FOND DU LAC QUADRANGLE.

Fond du Lac east along highways to Dotyville, thence north along highways to sec. 32, T. 16 N., R. 19 E.

Fond du Lac, in top of surface of top course of stone, north wing of right abutment of Scott Street bridge, 28.8 feet from face of abutment; copper bolt-----	753.966
Fond du Lac, in northeast corner of courthouse, in sill of second window from east, leading under step entrance from east; aluminum tablet stamped "764"-----	764.034
T. 15 N., R. 18 E., near center of section 18, township of Empire, 100 feet west of center of crossroads, 1.5 feet north of fence, 6.5 feet from northwest corner of school yard; iron post stamped "852"-----	851.692
T. 15 N., R. 18 E., at center of section 15, township of Empire, in southeast corner of T road intersection, on top of rock; marked "1005"-----	1,004.50.
T. 15 N., R. 18 E., near east center of section 15, township of Empire, 100 feet southeast of road intersection from north (T road), 4 feet from telephone pole, 2 feet north of fence; iron post stamped "1014"-----	1,014.082
T. 15 N., R. 18 E., near center of section 14, township of Empire, in southeast corner of T road intersection, on stone; marked "1,019"-----	1,019.09
Dotyville, in Catholic Church, 2 feet above ground, 0.6 foot from northwest corner in highest course of stone masonry, near southeast corner of sec. 19, T. 15 N., R. 19 E.; aluminum tablet stamped "1041"-----	1,040.806
T. 15 N., R. 19 E., at northeast corner of section 19, township of Forest, at southeast corner of intersection of T road from east, in root of tree; nail marked "1044"-----	1,044.06
T. 15 N., R. 19 E., at east center of section 7, township of Forest, 5 feet south of southeast corner fence post under fence in school yard, in large stone 56 feet from road intersection from southeast; aluminum tablet stamped "966"-----	966.407

Sec. 5, T. 16 N., R. 19 W., to a point 2 miles north of Brothertown.

T. 16 N., R. 19 E., near southwest corner of section 6, township of Marshfield, 0.5 mile east of Hinesburg, opposite T road from north, chisel mark on large rock, marked "981"-----	980.37
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T. 16 N., R. 19 E., in northeast corner of sec. 6, township of Marshfield, 54 feet northwest of road intersection, 2.5 feet east of fence, 40 feet north of northwest corner fence post, in northwest corner of T road intersection; iron post stamped "971"-----	Feet. 970.624
T. 17 N., R. 19 E., in northeast corner of sec. 24, 45 feet southeast of T road intersection, in southeast corner, 2.2 feet from fence, 8 feet north of tree; iron post stamped "894"-----	893.473
Brothertown, 2 miles southeast of, in northwest corner of T road intersection from west, in root of large tree; nail marked "906"-----	906.20
Brothertown, 96 feet northwest of road intersection, opposite T road intersection from east, 1 foot east of fence; iron post stamped "813"-----	813.070

Sec. 17, T. 16 N., R. 17 E., to Fond du Lac.

T. 16 N., R. 17 E., near southeast corner of sec. 17, 100 feet east of street car line, 2.2 feet south of fence, north of road; iron post stamped "783"-----	782.601
North Fond du Lac, 45 feet southwest of intersection of crossroads, in southwest corner, 7 feet west of sidewalk and 3 feet north; across from McGivern Hotel; iron post stamped "767"-----	766.424

FISK QUADRANGLE.

Sec. 12, T. 17 N., R. 16 E., south along Chicago & Northwestern Railway to sec. 8, T. 16 N., R. 17 E., about 1 mile south of Vandyne.

T. 17 N., R. 16 E., near north center of sec. 12, 5 miles north of Vandyne, 50 feet from railroad tangent west, 1.6 feet north of Chicago & Northwestern Railway fence, 3 feet east of fence; iron post stamped "774"-----	773.599
T. 17 N., R. 17 E., northeast corner of sec. 24, 2.3 feet north of northeast corner schoolhouse at Black Wolf; iron post stamped "799"-----	798.760
T. 17 N., R. 17 E., near south center of sec. 31, 33 feet southwest of Wisconsin Central Railway crossing, 2.3 feet north of fence; iron post stamped "790"-----	790.022

OSHKOSH QUADRANGLE.

Sec. 18, T. 19 N., R. 17 W. south along Chicago & Northwestern Railway to sec. 36, T. 18 N., R. 16 E., about 2.8 miles south of Oshkosh.

State Hospital station, 1 mile north of, in northern part of sec. 30, T. 19 N., R. 17 E., 0.7 foot from northwest corner of foundation, in northwest corner of bridge 352; aluminum tablet stamped "771"-----	771.144
T. 18 N., R. 16 E., near center of sec. 1, 1.2 feet from northwest corner of foundation of bridge 345, 0.6 foot from edge; aluminum tablet stamped "754"-----	753.934
Oshkosh, Chicago & Northwestern Railway bridge at Broad Street (United States Army engineers' bench mark)-----	751.716

Oshkosh, corner of Otter and State streets, in south end of stone threshold of east entrance of city hall; copper bolt (United States Army engineers' bench mark)-----	Feet. 755.389
Oshkosh, one block east of city hall, in west side of county jail, 2 feet south of door in highest course of stone; aluminum tablet stamped "758"-----	758.314

MENASHA QUADRANGLE.

Quinney schoolhouse north along highway to sec. 5, T. 20 N., R. 18 E.

Quinney, 2 feet east of northeast corner of schoolhouse, 2.5 feet south of same corner; iron post stamped "871"-----	870.428
Stockbridge, 1 mile south of, 66 feet northwest of T road intersection, 25 feet north of northwest corner and 2 feet east of fence; iron post stamped "849"-----	848.778
Stockbridge, 1.6 miles north of, 400 feet west of road back of schoolhouse, 15 feet north of southwest corner of tree, 2.8 feet east of fence, in ledge of rock in southwest corner of school yard; aluminum tablet erroneously stamped "960"-----	985.808
T. 19 N., R. 19 E., southeast corner of sec. 6, township of Harrison, in southeast corner of school yard, 2 feet north of fence and 9 feet southwest of tree at corner; iron post stamped "980"-----	979.894
T. 20 N., R. 19 E., in northwest corner of Church schoolhouse at Sherwood, 4.2 feet above ground and 0.5 foot from corner; aluminum tablet stamped "904,"-----	904.155
T. 20 N., R. 18 E., east center of sec. 12, township of Harrison, in southeast corner of crossroads, 18 feet from southeast corner fence post, 63 feet west of road intersection and 1.7 feet north of fence; iron post stamped "778"-----	777.984
T. 20 N., R. 18 E., at north center of sec. 2, on north line of Calumet County, 2.5 feet from fence corner, 33 feet from road intersection from south, 15 feet west of tree; iron post stamped "766"-----	765.485
T. 20 N., R. 18 E., near northeast corner of sec. 3, on north line of Calumet County, at T road intersection from south, on stone culvert; marked "748"-----	747.64
Appleton, 3 miles southeast of, T. 20 N., R. 18 E., at northeast corner of sec. 5, on Calumet County line, 46 feet south of road intersection, 2.5 feet from fence; iron post stamped "789"-----	788.308

Sec. 12, T. 20 N., R. 17 E., south along Chicago & Northwestern Railway to road crossing at Snell, sec. 8, T. 19 N.; R. 17 E.

Menasha, in northeast pillar in front entrance of Menasha High School, 4 feet from ground, set in support of pillar 2 inches from east edge; aluminum tablet stamped "766"-----	766.511
T. 20 N., R. 17 E., near north center of sec. 33, 2 miles south of Nee-nah, in third course of stone in northeast corner of Chicago & Northwestern Ry. bridge 360, 1.2 feet from northeast corner of foundation; aluminum tablet stamped "749"-----	749.475
T. 19 N., R. 17 E., near southeast corner of sec. 5, in southwest corner of bridge 357, of Chicago & Northwestern Ry., 1 foot north of southwest corner, 6 inches from west corner; aluminum tablet stamped "760"-----	760.353

APPLETON QUADRANGLE.

Point about 1.7 miles southeast of Appleton to Appleton, thence southwest along Chicago, Milwaukee & St. Paul Railway to point about 2.9 miles south of Appleton.

Appleton, Lock No. 1, in upper left-hand corner of the right hand wall of lock, 4 inches from edge of stone; copper plug (United States Army engineers' bench mark)-----	Feet. 741. 841
Appleton, near southeast corner of county jail, in stone step of porch, 3 inches from pillar and 3 inches from east edge; aluminum tablet stamped "790"-----	790. 394
Appleton, 2.5 miles southwest of, 23 feet south of middle of road, 2.5 feet north of fence, about 30 feet east of Chicago, Milwaukee & St. Paul Railway, tangent in northeast corner of Winnebago County on county line; iron post stamped "786"-----	785. 873

Briggsville, Portage, and Poynette Quadrangles.

ADAMS, COLUMBIA, DANE, MARQUETTE, AND SAUK COUNTIES.

The elevations in the following list were determined by primary leveling extended from the United States Army engineers' bench mark at Portage, 25 feet to the right of the face of right wall of old Lock No. 1, 84.6 feet above the upper end of upper gate recess of new lock, a copper bolt in tile under a hollow iron post sunk 4 feet in ground. The elevation of this is accepted as 787.273 feet above mean sea level, as determined by the United States Army engineers' leveling from Milwaukee.

The leveling in the Briggsville quadrangle was done in 1900 by R. E. Wipfler, and that in the Portage and Poynette quadrangles in 1899 by L. E. Granke.

Nearly all the standard bench marks are stamped 4 feet high.

POYNETTE QUADRANGLE.

Portage south along highways to point 0.25 mile south of northwest corner of sec. 11, T. 9 N., R. 9 E., thence east to southeast corner of sec. 5, T. 9 N., R. 10 E., thence north to point 0.25 mile east of center of sec. 20, T. 11 N., R. 10 E.

Arlington, 1 mile west of, southeast corner of sec. 15, T. 10 N., R. 9 E., 5 feet west by 2.5 feet south of fence corner; iron post stamped "1066 PRTG"-----	Feet. 1, 061. 832
T. 9 N., R. 9 E., 0.25 mile south of northwest corner of sec. 11, 38 feet east by 2 feet south of most easterly fence corner at intersection of roads; iron post stamped "984 PRTG"-----	980. 358
T. 9 N., R. 10 E., at southeast corner of sec. 5, 4.4 feet east by 16 feet north of northwest fence corner at crossroads; iron post stamped "961 PRTG"-----	957. 318
T. 10 N., R. 10 E., 0.25 mile north of southeast corner of sec. 17, 5 feet north by 3 feet west of northeast corner of Leeds schoolhouse (district No. 7); iron post stamped "1092 PRTG"-----	1, 088. 362

42 SPIRIT LEVELING IN MICHIGAN AND WISCONSIN, 1897 TO 1909.

Poynette east along highways to point 0.25 mile east of center of sec. 20, T. 11 N., R. 10 E., thence north to center of sec. 21, T. 12 N., R. 10 E.

Poynette, 2.5 feet east by 4.5 feet north of northwest corner of Presbyterian Church at corner of Main and Tomlinson streets; iron post stamped "857 PRTG"-----	Feet. 853.061
T. 11 N., R. 10 E., 0.25 mile east of center of sec. 20, 2.5 feet west by 10 feet north of fence corner at northeast corner of crossroads; iron post stamped "966 PRTG"-----	962.242
T. 12 N., R. 10 E., center of sec. 21, 9.9 feet north by 2.8 feet west of fence corner, the most northerly of the two formed by intersection of roads; iron post stamped "830 PRTG"-----	826.276

PORTAGE QUADRANGLE.

Portage north along highways to point 0.25 mile east of southwest corner of sec. 27, T. 15 N., R. 9 E.

Portage, on old Lock No. 1, 25 feet to right of face of old lock, 84.6 feet above the upper end of upper gate recess of new lock; a copper bolt in tile under a hollow iron post sunk 4 feet in ground-----	787.273
Portage, 28.5 feet west by 49.5 feet south of south end of wagon bridge over Wisconsin River, 2 feet east of fence on west side of road; iron post stamped "803 PRTG"-----	799.148
Portage, 182 feet south by 8.5 feet west of southeast corner of high school building, in United States Geological Survey meridian stone; copper bolt stamped "804 PRTG"-----	800.130
T. 13 N., R. 9 E., 0.5 mile north of center of sec. 15, 15.5 feet east by 9.5 feet north of southeast fence corner at crossroads; iron post stamped "837 PRTG"-----	833.429
T. 14 N., R. 9 E., 0.3 mile west by 0.05 mile south of northeast corner of sec. 14, 2 feet west of fence post at forks of roads, east of road; iron post stamped "804 PRTG"-----	800.377
T. 15 N., R. 9 E., 0.25 mile east of southwest corner of sec. 27, 2.2 feet east by 2 feet 7 inches north of southeast corner of school-house; iron post stamped "822 PRTG"-----	818.104

Wycocena north along highways to southeast corner of sec. 33, T. 15 N., R. 10 E.

T. 13 N., R. 13 E., northeast corner of sec. 21, 4 feet east by 1 foot south of fence corner, south corner of two formed by intersection of roads; iron post stamped "889 PRTG"-----	884.579
T. 14 N., R. 10 E., 0.5 mile south of center of sec. 22, 11.1 feet west by 18.3 feet south of the most easterly fence corner formed by intersection of roads; iron post stamped "922 PRTG"-----	918.306
T. 15 N., R. 10 E., at southeast corner of sec. 33, 17.9 feet by 2.5 feet east of intersection of fences on west side of road; iron post stamped "798 PRTG"-----	794.457

BRIGGSVILLE QUADRANGLE.

Portage west and north along highways to quarter corner on west side of sec. 6, T. 13 N., R. 7 E.

T. 12 N., R. 8 E., near center of sec. 10, near forks of road; iron post stamped "800 PRTG"-----	795.664
T. 12 N., R. 7 E., about 0.25 mile east of northwest corner of sec. 11, at intersection of roads; iron post stamped "929 PRTG"-----	925.573

T. 13 N., R. 7 E., near quarter corner on west side of sec. 6, east side of road; iron post stamped "1016 PRTG"-----	Feet. 1, 011. 448
Quarter corner on west side of sec. 6, T. 13 N., R. 7 E., east along highways to southwest corner of sec. 33, T. 14 N., R. 8 E., thence southeast to Portage.	
T. 14 N., R. 7 E., near center of sec. 33, north side of road; iron post stamped "941 PRTG"-----	937. 235
T. 14 N., R. 8 E., at southwest corner of sec. 33, at northeast corner of intersecting roads; iron post stamped "813 PRTG"-----	808. 674
T. 13 N., R. 8 E., near center of west half of sec. 21, at forks of roads; iron post stamped "801 PRTG"-----	797. 334

Marathon and Wausau Quadrangles.

LANGLADE, LINCOLN, MARATHON, AND TAYLOR COUNTIES.

The elevations in the following list are not on the 1907 adjustment datum, and are only approximate. They were determined by primary leveling extended from Wausau, the initial point being the top of rail in front of the Chicago, Milwaukee & St. Paul Railway station, the elevation of which is accepted as 1,216 feet.

The leveling was done by Robert Wipfler in the Marathon quadrangle during 1899 and in the Wausau quadrangle during 1899 and 1900.

WAUSAU QUADRANGLE.

Wausau east along highways to Sunset, thence north and west to Merrill.

Wausau, at point opposite center of Chicago & Northwestern Railway station; top of rail-----	Feet. 1, 167. 0
Wausau, opposite Chicago, Milwaukee & St. Paul Railway station; top of east rail-----	1, 216. 0
T. 29 N., R. 8 E., sec. 23; stone abutment northwest corner iron bridge over Big Sandy Creek-----	1, 282. 05
T. 29 N., R. 8 E., northeast corner of sec. 24, opposite Sunset saloon, 15 feet southwest of south end of culvert, south side of road; iron post stamped "1355 W"-----	1, 354. 708
T. 30 N., R. 9 E., northeast corner of intersection of roads at southwest corner of sec. 31; iron post-----	1, 458. 665
T. 31 N., R. 7 E., sec. 22, in top of northwest pier of bridge over Pine River; top of bolt-----	1, 268. 23
T. 31 N., R. 7 E., about 0.2 mile east of corner secs. 15, 16, 21, and 22, at northwest corner of intersection of roads, at schoolhouse; iron post stamped "1305 W"-----	1, 305. 935
Merrill, Chicago, Milwaukee & St. Paul Railway crossing, River Street; top of rail-----	1, 257. 0
T. 31 N., R. 6 E., southeast corner of South Center and First streets, Merrill; iron post stamped "1267 W"-----	1, 267. 046
Southwest corner of sec. 31, T. 30 N., R. 9 E., east along township line to southwest corner of sec. 31, T. 30 N., R. 10 E. (spur line).	
T. 30 N., R. 10 E., southwest corner of sec. 31, 10 feet north of center of road; iron post stamped "1465 W"-----	1, 465. 046

Merrill northeast along highways to Heller, thence east to Morley.

T. 31 N., R. 8 E., east side of road at northwest corner of intersection of roads at northwest corner of sec. 7.....	Feet. 1, 307. 520
T. 31 N., R. 9 E., northeast corner of sec. 1, 12 feet west of center of road, 50 feet south of bearing tree; iron post.....	1, 528. 703

Mosinee north along highways to Wausau.

Mosinee, T. 27 N., R. 7 E., southeast corner of Desserts public library; iron post stamped "1159 W".....	1, 159. 491
Mosinee, in front of Chicago, Milwaukee & St. Paul Railway station; top of rail.....	1, 153. 9
Schofield, east side of Mosinee-Schofield road, 1 foot from board fence, T. 28 N., R. 7 E.; iron post.....	1, 163. 213

Point 1 mile south of Dessert Junction east along highways to range line,
Rs. 7 and 8 E., T. 27 N. (spur line).

T. 27 N., R. 8 E., northwest corner of sec. 19, north side of road, at corner of wire fence, 20 feet northeast of intersection of roads; iron post.....	1, 280. 123
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Schofield east via Kelly to point near Birnamwood, thence south to point south
of Elderon, thence west to point west of Bevent, thence north to Callon.¹

Kelly, west side of road, 10 feet west of corner of fence diagonally opposite station; iron post stamped "1220 W".....	1, 220. 045
T. 28 N., R. 9 E., north side of road, 1 foot from log fence about 10 feet east of corner of fence and about 300 feet west of house on north side of road; iron post.....	1, 236. 266
T. 29 N., R. 9 E., on top of bolt of east pier of Eau Claire River bridge.....	1, 250. 42
T. 29 N., R. 9 E., near quarter corner of sec. 33, on south side of road, 50 feet west of west end of Eau Claire bridge, corner of intersection of road; iron post.....	1, 248. 925
T. 29 N., R. 10 E., southwest corner of sec. 31, 20 feet north of center of road, 50 feet northeast of intersection of roads; iron post.....	1, 452. 271
T. 28 N., R. 10 E., east side of road running north-south, at corner of fence at Norrie, at intersection of roads 0.1 mile north of railroad crossing; iron post.....	1, 293. 125
T. 27 N., R. 10 E., near quarter corner of sec. 3, south side of road in front of school; iron post.....	1, 252. 233
T. 27 N., R. 9 E., sec. 34, Bevent post office, southeast corner of bridge over Plover River; top of bolt.....	1, 192. 93
T. 27 N., R. 9 E., sec. 6, east side of road, 100 feet from corner of fence, 200 feet north of house; iron post.....	1, 301. 432

Point 1 mile west of Emmerich east along highways to range line, Rs. 6 and
7 E., T. 30 N. (spur line).

T. 30 N., R. 7 E., northwest corner of sec. 18, at corner of fence; iron post stamped "1460 W".....	1, 459. 304
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¹This circuit is based upon a single line from Wausau.

MARATHON QUADRANGLE.

Mosinee northwest along highways to point 3 miles west of Wein.

T. 27 N., R. 6 E., 200 feet east of northwest corner of NE. $\frac{1}{4}$ sec. 29; iron post stamped "1293 W"-----	Feet. 1, 293. 198
T. 27 N., R. 5 E., northwest corner sec. 19, northeast corner of intersection of roads, 10 feet from corner of fence; iron post stamped "1182 W"-----	1, 182. 003
T. 27 N., R. 4 E., at northwest corner of NE. $\frac{1}{4}$ sec. 22, at northeast corner of intersection of roads, 40 feet east of corner of rail fence, north side of road; iron post stamped "1243 W"-----	1, 242. 927
T. 27 N., R. 3 E., at northeast corner of sec. 1, southwest corner of intersection of roads, 15 feet west of center of road opposite corner of fence on east side; iron post stamped "1324 W"-----	1, 324. 442
T. 28 N., R. 4 E., northwest corner of sec. 19, southeast corner of intersection of roads, 2 feet from corner of fence; iron post stamped "1381 W"-----	1, 381. 480

Mosinee northwest along highways to northwest corner of sec. 24, T. 28 N., R. 5 E., thence west to Cherokee, thence north to point about 3 miles southwest of Milan.

T. 28 N., R. 6 E., southwest corner of sec. 19, at corner of fence; iron post stamped "1412 W"-----	1, 412. 143
T. 28 N., R. 5 E., 930 feet east of northwest corner of sec. 24, south side of road; iron post stamped "1404 W"-----	1, 403. 727
T. 28 N., R. 4 E., secs. 13-24, top of Chicago, Milwaukee & St. Paul Railway rail at Colby-Edgar road crossing-----	1, 294. 3
T. 28 N., R. 4 E., corner of secs. 15, 16, 21, and 22; top of corner stone_	1, 321. 14
T. 28 N., R. 3 E., corner of secs. 14, 15, 22, and 23; top of corner stone_	1, 328. 79
T. 28 N., R. 3 E., corner of secs. 17, 18, 19, and 20; top of corner stone_	1, 325. 74
T. 28 N., R. 3 E., southwest corner of sec. 18, northeast corner of intersection of roads; iron post stamped "1281 W"-----	1, 280. 966
T. 28 N., R. 2 E., corner of secs. 2, 3, 10, and 11; top of corner stone_	1, 345. 07
T. 29 N., R. 2 E., sec. 34, on top of Minneapolis, St. Paul & Sault Ste. Marie Railway rail at crossing-----	1, 339. 23

Merrill southwest along highways via Corning, Barney, Athens, and Corinth to point 3 miles southwest of Milan.

T. 31 N., R. 5 E., corner of secs. 15, 16, 21, and 22, on top of corner stone-----	1, 427. 72
T. 31 N., R. 5 E., corner of secs. 26, 27, 34, and 35; top of corner stone_	1, 401. 22
T. 31 N., R. 5 E., northeast corner of SE. $\frac{1}{4}$ sec. 34, at corner of fence; iron post stamped "1461 W"-----	1, 459. 305
T. 30 N., R. 5 E., northwest corner of sec. 33, 10 feet east of corner of church fence; iron post stamped "1398 W"-----	1, 398. 126
T. 30 N., R. 5 E., quarter corner of secs. 29 and 32; on top of stone_	1, 310. 10
Athens, near sawmill, at crossing; top of Minneapolis, St. Paul & Sault Ste. Marie Railway rail-----	1, 333. 74
Athens, in front of Athens Hotel, sec. 31, T. 30 N., R. 4 E.; iron post stamped "1386 W"-----	1, 386. 223
T. 29 N., R. 4 E., corner of secs. 7, 8, 17, and 18; top of corner stone_	1, 448. 91
T. 29 N., R. 3 E., corner of secs. 11, 12, 13, and 14, at intersection of roads; on top of nail in north end of culvert-----	1, 416. 78

46 SPIRIT LEVELING IN MICHIGAN AND WISCONSIN, 1897 TO 1909.

T. 29 N., R. 3 E., northwest corner of sec. 13, northwest corner of inter-section of roads, at corner of fence; iron post stamped "1417 W"-----	Feet. 1, 417. 266
T. 29 N., R. 3 E., near corner of secs. 9, 10, 15, and 16, top of Minneapolis, St. Paul & Sault Ste. Marie Railway rail-----	1, 436. 86

Wausau west along highway to T. 29 N., R. 4 E., thence south to Edgar.

T. 29 N., R. 5 E., 800 feet east of northwest corner of NE. $\frac{1}{4}$ sec. 25; iron post stamped "1381 W"-----	1, 380. 851
Rib Falls, southwest corner of sec. 22, T. 29 N., R. 5 E., on top of rivet in southwest slope (bed) plate of bridge over Rib River-----	1, 234. 87
T. 28 N., R. 4 E., secs. 1 and 12, on bolt in southeast corner of bridge--	1, 291. 90
Edgar, sec. 25, T. 28 N., R. 4 E., on top of Chicago, Milwaukee & St. Paul Railway rail at crossing-----	1, 246. 6

Point 2 miles south of Corning south along highways to southeast corner of sec. 24, T. 29 N., R. 5 E.

T. 30 N., R. 6 E., secs. 18 and 19, and T. 30 N., R. 5 E., secs. 13 and 24, top of corner stone-----	1, 291. 72
T. 30 N., R. 6 E., secs. 19 and 30, and T. 31 N., R. 5 E., secs. 24 and 25, top of corner stone-----	1, 271. 80
Ziegler post office, T. 30 N., R. 6 E., northwest corner of sec. 31, at southwest corner of blacksmith shop; iron post marked "1276 W"-----	1, 275. 758

Athens northwest along highways to point near quarter corner on north side of sec. 4, T. 30 N., R. 3 E. (spur line).

T. 30 N., R. 3 E., southeast corner of sec. 27, at corner of rail fence, north of north end of culvert, at intersection of roads; iron post stamped "1437 W"-----	1, 436. 486
T. 31 N., R. 2 E., southeast corner of sec. 36, 20 feet west of center of road, 150 feet east of culvert; iron post stamped "1459 W"-----	1, 459. 022

Baraboo, Crossplains, and Mazomanie Quadrangles.

DANE, IOWA, AND SAUK COUNTIES.

The elevations in the following list were determined by primary leveling extended from Portage, Wis., Dubuque, Iowa, and Milwaukee, Wis.

The leveling was done in 1905 by H. Bücher.

CROSSPLAINS QUADRANGLE.

Waunakee west along highways to Mazomanie.

T. 8 N., R. 7 E., 0.2 mile east by 0.1 mile south of northwest corner of sec. 9, 110 feet west of center of junction of roads, on south side of road, 20 feet east of telephone pole; iron post stamped "887 ADJ 1903"-----	Feet. 886. 694
T. 8 N., R. 6 E., 0.3 mile north of southwest corner of sec. 12, south side of road, 27 feet west of fence corner at southwest corner of junction; iron post stamped "828 ADJ 1903"-----	827. 574
T. 8 N., R. 6 E., 0.2 mile west of center of sec. 2, at junction of roads, east side of Chicago, Milwaukee & St. Paul Railway track, 100 feet north of telegraph guy pole; iron post stamped "759 ADJ 1903"-----	758. 920

Mazomanie northeast to sec. 18, T. 9 N., R. 7 E.

T. 9 N., R. 7 E., 0.1 mile north of southwest corner of sec. 18, north side of public road, 400 feet east of Chicago, Milwaukee & St. Paul Railway track, 1 foot south of fence; iron post stamped "Prim. Trav. Sta. No. 11, 751 ADJ 1903"-----	Fect. 751.000
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Mount Horeb east along railroad and highway to sec. 32, T. 7 N., R. 9 E.

Mount Horeb, fence corner north of creamery on west side of road, 6.5 feet west of road and 2.5 feet south of fence; iron post stamped "Prim. Trav. Sta. No. 9, 1223 ADJ 1903"-----	1, 223.368
Klevenville, 1.3 miles west of, on east side of north-south road, at crossing, 16 feet south of track; iron post stamped "1049 ADJ 1903"-----	1, 048.879
T. 7 N., R. 6 E., 0.2 mile east of southwest corner of sec. 27, on north side of crossroads at northeast corner of crossroads, 16 feet east of west fence line; iron post stamped "985 ADJ 1903"-----	985.334
T. 7 N., R. 6 E., 0.2 mile south by 0.2 mile east of northwest corner of sec. 36, at junction of roads, northeast corner, 24 feet north of fence corner; iron post stamped "1011 ADJ 1903"-----	1, 011.344
T. 7 N., R. 8 E., 0.2 mile west of southeast corner of sec. 32, at northwest corner of junction of roads; iron post stamped "1073 ADJ 1903"-----	1, 073.473
T. 7 N., R. 8 E., 0.3 mile west of southeast corner of sec. 35, northwest corner of junction of roads; iron post stamped "1051 ADJ 1903"-----	1, 050.837

MAZOMANIE QUADRANGLE.

Blackhawk along highway south to sec. 5, T. 8 N., R. 5 E., thence west to Spring Green.

T. 9 N., R. 5 E., 0.1 mile south by 0.2 mile east of northwest corner of sec. 29, opposite center of junction of north-south road with road to southeast, on west side of road, 7 feet south of telephone pole; iron post stamped "973 ADJ 1903"-----	973.065
T. 8 N., R. 5 E., 0.2 mile east by 0.3 mile south of northwest corner of sec. 5, on east side of road, 43 feet north of fence corner at northeast corner of junction of roads; iron post stamped "736 ADJ 1903"-----	735.518
T. 8 N., R. 4 W., 0.1 mile east by 0.2 mile south of northwest corner of sec. 2, northwest corner of junction of roads, west of road, 30 feet north of fence corner; iron post stamped "728 ADJ 1903"-----	728.289
Sec. 17, T. 7 N., R. 4 E., along highway southeasterly to Barneveld, thence along railroad east to Mount Horeb.	
T. 7 N., R. 4 E., 0.1 mile north by 0.1 mile west of southeast corner of sec. 14, on north side of road at junction; iron post stamped "771 ADJ 1903"-----	771.003
T. 7 N., R. 5 E., 0.2 mile north of south quarter corner of sec. 19, in north side of road, 90 feet west of center of junction; iron post stamped "810 ADJ 1903"-----	810.374
T. 7 N., R. 5 E., SW. $\frac{1}{4}$ sec. 32, at junction of east-west road, with road to north, on south side of road opposite center of junction; iron post stamped "887 ADJ 1903"-----	887.115

Barneveld, 0.8 mile east of, east side of public road 90 feet south of point where east cattle guard leaves track at southeast corner of crossing; iron post stamped "1252 ADJ 1903"-----	Feet. 1,252.475
Blue Mounds, 0.1 mile west of station, road crossing, 60 feet south of track; iron post stamped "1301 ADJ 1903"-----	1,301.507
Mount Horeb, 2.3 miles west of station, 0.2 mile north by 0.2 mile east of southeast corner of sec. 9, T. 6 N., R. 6 E.; iron post stamped "1260 ADJ 1903"-----	1,260.243

Lodi along highway southwest to T. 9 N., R. 5 E., thence northwest to Blackhawk.

T. 9 N., R. 5 E., northwest corner of sec. 24, at junction of east-west road with road to south, on north side of road opposite junction, 4.2 feet east of fence corner; iron post stamped "893 ADJ 1903"---	892.757
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Blue Mounds north to sec. 29, T. 7 N., R. 6 E. (mean of direct and reverse lines).

T. 7 N., R. 6 E., SE. $\frac{1}{4}$ sec. 29, on east side of road at crossroads, opposite road to west and south of road to east, 15 feet east of oak; iron post stamped "1114 ADJ 1903"-----	1,114.050
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BARABOO QUADRANGLE.

Sec. 18, T. 9 N., R. 7 E., northwest across Wisconsin River, thence west to Lodi.

T. 9 N., R. 6 E., at northwest corner of sec. 13, at northeast corner of crossroads, 8 feet north of fence corner; iron post stamped "762 ADJ 1903"-----	762.146
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At Baraboo.

Baraboo, in front of Chicago & Northwestern Railway station; top of rail-----	863.8
Baraboo, in northeast corner of courthouse; bronze tablet stamped "890 B" (destroyed in 1904 in destruction of building)-----	892.981

Denzer, Lavelle, and The Dells Quadrangles.

ADAMS, JUNEAU, AND SAUK COUNTIES.

The elevations in the following list were determined by primary leveling extended from Portage, Wis., and Dubuque, Iowa.

The leveling was done in 1898-99 by D. C. Wray.

The standard bench marks are stamped with the letter "B" in addition to the figures of elevation, which, as they are stamped, are nearly all 3 feet too low.

DENZER QUADRANGLE.

Leland north along highways and east along Chicago & Northwestern Railway via North Freedom to Baraboo.

Leland, near quarter corner on north side of sec. 19, T. 10 N., R. 5 E.; iron post stamped "787 B"-----	Feet. 790.089
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T. 11 N., R. 4 E., SE. $\frac{1}{4}$ sec. 14, near stone church; iron post stamped "1261 B"-----	Feet. 1,264.527
North Freedom; T. 11 N., R. 5 E., near center of sec. 2, 100 feet north of railroad track; iron post stamped "886 B"-----	889.141

North Freedom south along highways via Denzer and Witwen to Lodi Mill.

Denzer, T. 10 N., R. 5 E., near center of sec. 15, crossroads; iron post stamped "803 B"-----	806.476
Lodi Mill, 200 feet south of, NW. $\frac{1}{4}$ sec. 16, T. 9 N., R. 6 E.; iron post stamped "734 B"-----	737.565

Leland south and east via Anderson's cheese factory to Blackhawk.

T. 9 N., R. 4 E., quarter corner on north side of sec. 11, west side of road, 200 feet northeast of Anderson's cheese factory; iron post stamped "815 B"-----	817.955
Blackhawk, in sec. 8, T. 9 N., R. 5 E.; iron post stamped "772 B"-----	774.883

Lodi Mill north along highways to Lyons.

T. 10 N., R. 6 E., quarter corner on south side of sec. 9; iron post stamped "846 B"-----	848.847
T. 11 N., R. 6 E., northwest corner of sec. 27; iron post stamped "1200 B"-----	1,202.973

THE DELLS QUADRANGLE.

Reedsburg north along highways via Lyndon to southwest corner of sec. 36, T. 15 N., R. 5 E., thence south and east to starting point.

T. 13 N., R. 4 E., NW. $\frac{1}{4}$ NW. $\frac{1}{4}$ sec. 23, 150 feet north of east-west road, opposite Winfield creamery; iron post stamped "948 B"-----	951.109
T. 14 N., R. 4 E., E. $\frac{1}{2}$ NE. $\frac{1}{4}$ sec. 23, in northeast corner of schoolhouse yard; iron post stamped "1039 B"-----	1,042.187
T. 15 N., R. 5 E., in southwest corner of sec. 36, in northwest corner of schoolhouse yard; iron post stamped "857 B"-----	860.483
T. 14 N., R. 5 E., quarter corner between secs. 34 and 35, 400 feet southeast of church, 600 feet northwest of red tavern; iron post stamped "943 B"-----	945.986
T. 13 N., R. 5 E., 660 feet west of center of sec. 27, in southwest corner of schoolhouse yard, in southwest corner of cemetery; iron post stamped "887 B"-----	890.500
T. 12 N., R. 5 E., 0.25 mile west of center of sec. 10, northeast of crossroads; iron post stamped "946 B"-----	949.671
Reedsburg, 2 miles east, T. 12 N., R. 4 E., northeast corner of NW. $\frac{1}{4}$ sec. 12, southwest of road crossing; iron post stamped "938 B"-----	940.899

Quarter corner between secs. 34 and 35, T. 14 N., R. 5 E., east and north via Kilbourn to northwest corner sec. 32, T. 15 N., R. 6 E.

Kilbourn, in west side of northwest corner of schoolhouse foundation; iron post stamped "903 B"-----	906.045
T. 14 N., R. 6 E., SE. $\frac{1}{4}$ sec. 28, in northeast corner of schoolyard, west side of river road; iron post stamped "924 B"-----	927.107
T. 15 N., R. 6 E., in northwest corner of sec. 32, in northwest corner of schoolhouse yard; iron post stamped "904 B"-----	907.686

LAVALLE QUADRANGLE.

Point 0.25 mile north of center of sec. 34, T. 15 N., R. 4 E.

T. 15 N., R. 4 E., 0.25 mile north of center of sec. 34, in southeast corner of schoolhouse yard; iron post stamped "897 B"-----	Feet. 900.001
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Elkader, Lancaster, Mineral Point, Richland Center, and Waukon Quadrangles.

GRANT, IOWA, LAFAYETTE, RICHLAND, AND SAUK COUNTIES.

The elevations in the following list were determined by primary leveling, which, together with work on adjacent quadrangles, forms a belt extending from Milwaukee to the Mississippi River, adjusted and in agreement at these points and at Portage with the 1907 adjustment elevation of bench marks of the United States Army Engineers. For additional elevations in the Elkader, Lancaster, and Waukon quadrangles see Iowa lists.

The leveling was done in the Lancaster quadrangle in 1897 by C. E. Hewitt; in the Mineral Point quadrangle in 1897 by Hewitt and in 1900 by G. Stubblefield; in the Elkader quadrangle in 1898 by C. B. Zorn; in the Richland Center quadrangle in 1901 by C. B. Zorn, in 1901-2-3 by M. A. Steele, and in 1905 by Henry Bucher; and in the Waukon quadrangle in 1900 by T. Burns.

Elevations as stamped are, as a rule, 1 foot too low. Many elevations in the Lancaster quadrangle are stamped about 11 feet too low.

WAUKON QUADRANGLE.

Victory east and south along highway to Freeman, thence west to Desota.

T. 12 N., R. 7 W., sec. 34 (fourth prime meridian), 50 feet northeast of fifth post west of the fence corner west of Meddic's house, north of road; iron post stamped "853 DUBQ"-----	Feet. 854.813
T. 12 N., R. 6 W., near east-west quarter line of sec. 29, just north of forks of road, north of schoolhouse No. 1, in yard; iron post stamped "1165 DUBQ"-----	1,166.966
T. 11 N., R. 6 W., 0.25 mile north of center of sec. 14, 10 feet north of north gate post in front of house on east side of road; iron post stamped "1107 DUBQ"-----	1,108.241

Freeman southwest along highway to Ferryville.

T. 10 N., R. 6 W., southwest of center of sec. 10, 20 feet north of first post south of small gate in front of O. H. Olson's house, in side of fence; iron post stamped "696 DUBQ"-----	697.328
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Prairie du Chien east and north along highway to Eastman, thence west to river.

T. 7 N., R. 6 W., SW. $\frac{1}{4}$ of sec. 22, road junction commonly called "White Corner," 10 feet north of guide post at northwest corner of; iron post stamped "1211 DUBQ"-----	1,212.620
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Eastman, SW. $\frac{1}{4}$ of sec. 18, T. 8 N., R. 5 W., about 800 feet north of building of F. H. Harvats & Co., blacksmiths and wagon makers, in southwest corner of schoolhouse yard; iron post stamped "1216 DUBQ"----- Feet.
1, 217. 354

Eastman north to Lynxville.

Lynxville, sec. 23, T. 9 N., R. 6 W., in southwest corner of northeast schoolhouse yard; iron post stamped "681 DUBQ"----- 682. 933

ELKADER QUADRANGLE.

Bradtville south along highways to southwest corner of sec. 2, T. 3 N., R. 6 W.

Bradtville, 0.1 mile east of center of sec. 35, T. 6 N., R. 6 W., at crossroads; iron post stamped "1105"----- 1, 105. 625
T. 5 N., R. 6 W., quarter corner on south side of sec. 16, 40 yards north of, 375 feet south of crossroads; iron post stamped "641"--- 641. 136
T. 4 N., R. 6 W., southwest corner of sec. 24, at junction of roads; iron post stamped "1009"----- 1, 010. 750
T. 3 N., R. 6 W., southwest corner of sec. 2, in southwest corner of school yard; iron post stamped "634"----- 636. 150

LANCASTER QUADRANGLE.

Lancaster Junction south along Chicago & Northwestern Railway to Lancaster, thence south along highways to Potosi Station.

Lancaster Junction, sec. 21, T. 6 N., R. 2 W., 50 feet south of switch; iron post stamped "1166 DBQ"----- 1, 177. 275.
Stitzer, sec. 9, T. 5 N., R. 2 W., southeast corner of block opposite station, in foundation of store; bronze tablet stamped "1166 DBQ"----- 1, 177. 712
T. 5 N., R. 3 W., NW. $\frac{1}{4}$ sec. 36, crossing of north-south wagon road and railroad, end of right of way fence; iron post stamped "1133 DBQ"----- 1, 144. 649
T. 4 N., R. 3 W., near northwest corner of sec. 14, west end of south abutment of bridge over Pigeon Creek; bronze tablet stamped "946 DBQ"----- 956. 867
T. 3 N., R. 3 W., SW. $\frac{1}{4}$ sec. 26, northeast of Potosi; iron post stamped "986 DBQ"----- 997. 354
Potosi station, sec. 4, T. 2 N., R. 3 W., 400 feet south of brewery, west side of road; iron post stamped "635 DBQ"----- 645. 842

Fairplay north along highways to quarter corner on east side of sec. 11, T. 3 N., R. 2. W., thence east to Platteville.

Fairplay, NW. $\frac{1}{4}$ sec. 25, T. 1 N., R. 2 W., 50 feet southeast of bridge at east edge of town; iron post stamped "862 DBQ"----- 863. 212
Dickeyville, SW. $\frac{1}{4}$ sec. 22, T. 2 N., R. 2 W., in foundation stone of southwest corner of hotel; bronze tablet stamped "955 DBQ"--- 956. 726
T. 3 N., R. 2 W., quarter corner on east side of sec. 11, southwest corner of T roads; iron post stamped "1014 DBQ"----- 1, 014. 892

Platteville north along highways to Preston.

T. 4 N., R. 1 W., SW. $\frac{1}{4}$ sec. 8, crossroads at Bailey's creamery; iron post stamped "1090 DBQ"----- 1, 100. 710

Annaton, sec. 18, T. 5 N., R. 1 W., bridge over Big Platte, in stone east end of north abutment; bronze tablet stamped "859 DBQ"---	Feet. 870. 057
T. 6 N., R. 1 W., sec. 10, 0.8 mile east of Preston, near center of road crossing; iron post stamped "1128 DBQ"-----	1, 139. 293

Point northeast of Potosi Station northwest along highways to Beetown.

T. 3 N., R. 4 W., SE. $\frac{1}{4}$ sec. 10, north side of wagon road; iron post stamped "980 DBQ"-----	991. 816
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Cassville north and east along highways via Beetown, Bloomington, and Mount Hope to Lancaster Junction.

T. 3 N., R. 5 W., near northwest corner of sec. 15; iron post stamped "967 DBQ"-----	978. 769
Beetown, sec. 30, T. 4 N., R. 4 W., in northwest corner of foundation to post-office building; bronze tablet stamped "793 DBQ"-----	804. 510
T. 4 N., R. 5 W., near quarter corner on south side of sec. 14, 2 miles east of North Andover, in north end of east abutment of bridge; bronze tablet stamped "873 DBQ"-----	884. 764
Bloomington, sec. 26, T. 5 N., R. 5 W., east side of foundation of building opposite Bloomington Hotel; bronze tablet stamped "901 DBQ"-----	912. 825
T. 5 N., R. 4 W., near quarter corner on west side of sec. 16; iron post stamped "1092 DBQ"-----	1, 103. 945
Mount Hope, center of sec. 28, T. 6 N., R. 4 W., in east side of foundation of post-office building; bronze tablet stamped "1076 DBQ"---	1, 037. 738
T. 6 N., R. 3 W., sec. 29, Mount Ida cheese factory, in east end of foundation; bronze tablet stamped "1200 DBQ"-----	1, 211. 485

Lancaster southeast along highways to Platteville.

Ellenboro, near center of sec. 33, T. 4 N., R. 2 W., south end of west abutment of bridge over Big Platte River; bronze tablet stamped "712 DBQ"-----	723. 648
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At point 4 miles west of Mount Hope.

T. 6 N., R. 5 W., sec. 26, quarter corner on south side of; iron post stamped "1137 DBQ"-----	1, 148. 366
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MINERAL POINT QUADRANGLE.

Platteville southeast along highways via Shullsburg to Gratiot.

Platteville, sec. 15, T. 3 N., R. 1 W., northwest corner of city hall, in stone foundation; bronze tablet stamped "992 DBQ"-----	993. 175
T. 2 N., R. 2 E., northeast corner of sec. 29, 46.5 feet east by 36 feet north of northeast corner of O'Brien schoolhouse, in yard; iron post stamped "1082 DUBQ"-----	1, 083. 596
Shullsburg, about 60 feet west by 102 feet north of northwest corner of high school, in yard; iron post stamped "1019 DUBQ"-----	1, 020. 213
T. 1 N., R. 3 E., at northwest corner of sec. 11, 2 feet west by 6 feet south of northwest corner of churchyard; iron post stamped "988 DUBQ"-----	989. 370
Gratiot post office, about 0.25 mile west of, about 312 feet west by 556 feet south of quarter corner north side of sec. 9, T. 1 N., R. 4 E., on north side of road; iron post stamped "796 DUBQ"-----	797. 148

Gratiot north along Chicago, Milwaukee & St. Paul Railway and highways to Mineral Point.

Red Rock, 0.25 mile south by 60 rods west of center of sec. 17, T. 2 N., R. 4 E., 1.2 feet north by 4.5 feet south of southeast fence corner formed by intersection of east-west road with track of Chicago, Milwaukee & St. Paul Railway; iron post stamped "814 DUBQ"-----	Feet. 815. 263
Darlington, 195.7 feet north of northeast corner of courthouse; iron post stamped "866 DUBQ"-----	867. 335
T. 3 N., R. 3 E., 0.25 mile east of center of sec. 23, 1.6 feet west by 11.5 feet north of southwest fence corner at schoolhouse yard; iron post stamped "1026 DUBQ"-----	1, 027. 293
Fayette, 334 feet south of northwest corner of sec. 9, T. 3 N., R. 4 E., 4.7 feet north by 0.7 foot west of northeast fence corner at cross-roads; iron post stamped "1042 DUBQ"-----	1, 043. 341
T. 4 N., R. 4 E., 0.25 mile south of northeast corner of sec. 30, 1.2 feet north by 13.2 feet west of west fence corner, at junction of road south with east-west road; iron post stamped "1106 DUBQ"-----	1, 107. 382
T. 4 N., R. 3 E., 0.25 mile west of northeast corner of sec. 21, 0.6 foot east by 15.6 feet south of south fence corner formed by junction of road with north-south roads; iron post stamped "1065 DUBQ"---	1, 066. 125
Mineral Point, 34 feet west of water tower, 1.7 feet east by 16.6 feet north of southwest corner of park; iron post stamped "1134 DUBQ"-----	1, 135. 308

Mineral Point north along highways to Edmund, thence east via Dodgeville to quarter corner on north side of sec. 29, T. 6 N., R. 4 E., thence southwest to starting point.

T. 5 N., R. 2 E., 0.25 mile west of northeast corner of sec. 16, 1 mile east of Linden, 1.4 feet north by 7.3 feet east of south fence corner formed by junction of east road with north-south road; iron post stamped "1128 DUBQ"-----	1, 129. 230
T. 6 N., R. 2 E., quarter corner on west side of sec. 27, 0.8 mile east of Edmund, 2 feet north by 16.6 feet east of east fence corner formed by junction of road south with east-west road; iron post stamped "1189 DUBQ"-----	1, 190. 245
Dodgeville, 10.3 feet north by 8.7 feet east of northeast corner of courthouse; iron post stamped "1220 DUBQ"-----	1, 221. 268
T. 6 N., R. 4 E., quarter corner on north side of sec. 32, 2 feet west by 4.2 feet south of southeast fence corner formed by intersection of north-south road and east-west road; iron post stamped "1199 DUBQ"-----	1, 200. 364
T. 5 N., R. 4 E., 0.25 mile east of center of sec. 18, 3.5 feet north by 1 foot west of corner of railroad fence, north of crossing and north-east of railroad; iron post stamped "947 DUBQ"-----	948. 313

Belmont south along highways to Benton.

Belmont, 0.5 mile west of, quarter corner on east side of sec. 15, T. 3 N., R. 1 E., 1 foot north of west fence corner formed by junction of road south and east-west road; iron post stamped "1113 DUBQ"---	1, 114. 231
T. 2 N., R. 1 E., near quarter corner on east side of sec. 16, 1.5 feet north by 0.5 feet west of southeast corner of schoolhouse yard; iron post stamped "973 DUBQ"-----	974. 122
Benton, 22 feet north by 24 feet east of northeast corner of school-house; iron post stamped "921 DUBQ"-----	922. 178

Belmont north along highways to Montford.

Rewey, 2.4 feet south by 11.2 feet west of northeast corner of public schoolhouse yard; iron post stamped "1129 DUBQ"-----	Feet. 1, 130. 170
T. 5 N., R. 1 E., 0.25 mile east of southwest corner of sec. 17, about 1.5 feet north by 7.8 feet west of southeast corner of schoolhouse yard; iron post stamped "1094 DUBQ"-----	1, 095. 114
T. 6 N., R. 1 E., center of sec. 29, 3.4 feet east by 3.8 feet south of northwest corner of schoolhouse yard, at junction of north and south with east-west roads; iron post stamped "1201 DUBQ"-----	1, 202. 124

Belmont northeast along highways to Mineral Point.

T. 3 N., R. 2 E., quarter corner on east side of sec. 15, 1 mile north of Truman, 14 feet east by 15 feet south of north fence corner formed by junction of east-west road and road from south; iron post stamped "1056 DUBQ"-----	1, 057. 283
T. 4 N., R. 2 E., 0.4 mile west by 300 feet south of center of sec. 11, at crossroads, 3.5 feet south by 2.7 feet east of northwest corner of schoolhouse yard; iron post stamped "1101 DUBQ"-----	1, 102. 199

Fairplay northeast along highways via Lewisburg and Georgetown to Platteville.

T. 1. N., R. 1 W., quarter corner on north side of sec. 21, corner of Val Wichterholt's field; iron post stamped "DBQ 913"-----	913. 744
Georgetown, sec. 27, T. 2 N., R. 1 W., northwest corner of Georgetown Hall, in foundation stone; bronze tablet stamped "994 DBQ"-----	995. 632

RICHLAND CENTER QUADRANGLE.

Dodgeville along highways north to Lato, thence west via Vine Knob to sec. 15, T. 7 N., R. 1 E., thence south to point near Cobb.

Dodgeville, 10.3 feet north by 8.7 feet east of northeast corner of courthouse; iron post stamped "1220 DBQ"-----	1, 221. 268
T. 7 N., R. 2 E., 0.25 mile west of northeast corner of sec. 16, southwest corner of intersection of east-west road with north-south road; iron post stamped "739 DBQ"-----	739. 318
Highland, in schoolhouse yard, 7 feet east of front wall of lot, on north side of walk; iron post stamped "1182 DBQ"-----	1, 181. 627
T. 6 N., R. 1 E., in northwest corner of schoolhouse yard, sec. 29; iron post stamped "1201 DBQ"-----	1, 202. 124

Lato north to sec. 28, T. 8 N., R. 3 E., thence west to center of sec. 25, T. 8 N., R. 2 E.

T. 7 N., R. 3 E., NE. $\frac{1}{4}$ sec. 8, in southwest corner of schoolhouse yard; iron post stamped "799 DBQ"-----	798. 847
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Sec. 15, T. 7 N., R. 1 E., north along highway to Muscodia, thence east via Avoca to Lone Rock, thence south to center of sec. 25, T. 8 N., R. 2 E.

Muscodia, in front of station; top of rail-----	693
Avoca, in front of station; top of rail-----	698
Avoca, Wisconsin House, 18 inches north and in line with northeast corner of; iron post stamped "699 DBQ"-----	698. 690

Lone Rock, south of station, blacksmith shop, northwest corner, 2 feet east by 2 feet north; iron post stamped "705 DBQ"----- Feet.
704.773
T. 8 N., R. 2 E., sec. 25, at northwest corner of bridge over Otter Creek, northeast corner of stone abutment; point----- 709.16

Sec. 28, T. 8 N., R. 3 E., along highway north, thence east to Hillside schoolhouse, 0.25 mile east of northwest corner of sec. 31, T. 8 N., R. 4 E., thence south to Barnveld, thence southwest to sec. 27, T. 6 N., R. 3 E.

T. 8 N., R. 3 E., 0.5 mile west of center of sec. 22, intersection of roads, southeast corner of, 4 feet south of fence post; iron post stamped "706 DBQ"----- 706.537

T. 8 N., R. 4 E., 0.5 mile north of center of sec. 31, northwest corner of Unity Chapel yard; iron post stamped "728 DBQ"----- 727.948

T. 7 N., R. 4 E., 3 feet west of corner stone at southeast corner of sec. 17; iron post stamped "1062 DBQ"----- 1,062.141

Lone Rock northwest along highway via Twin Bluffs to Richland Center, thence north along highway to Buck Creek post office, thence east via Lloyd and Logansville to Denzer quadrangle.

T. 9 N., R. 2 E., NW. $\frac{1}{4}$ sec. 26, southeast corner of house lot on west side of road, 400 feet north of turn of road; iron post stamped "720 DBQ"----- 719.387

Twin Bluffs, in front of Chicago, Milwaukee & St. Paul Railway station; top of rail----- 703.4

Twin Bluffs, sec. 12, T. 9 N., R. 1 E., on east side of road opposite road from west; iron post stamped "707 DBQ"----- 706.730

Richland Center, sec. 22, T. 10 N., R. 1 E., on window sill of courthouse basement; aluminum tablet stamped "737 DBQ"----- 736.874

T. 11 N., R. 1 E., sec. 22, 0.25 mile east of Black Creek, in southeast corner of schoolhouse yard; iron post stamped "764 DBQ"----- 763.361

Lloyd, sec. 22, T. 11 N., R. 2 E., on east side of road, 150 feet south of crossroads; iron post stamped "810 DBQ"----- 809.927

T. 11 N., R. 3 E., in southeast corner of sec. 17, in southeast corner of schoolhouse yard; iron post stamped "1182 DBQ"----- 1,181.651

Logansville south and southwest, connecting near Plain with side lines west from Leland and from Blackhawk, thence southwest to Lone Rock.

T. 9 N., R. 4 E., sec. 5, east corner of two corners formed by intersection of roads at Plain; iron post stamped "800 DBQ"----- 799.334

T. 9 N., R. 3 E., southwest corner of sec. 23, at southwest corner of church lot; iron post stamped "772 DBQ"----- 771.156

Lloyd southwest 4 miles (direct and reverse line).

Neptune, sec. 4, T. 10 N., R. 4 E., in southwest corner of school yard; iron post stamped "752 DBQ"----- 752.048

T. 10 N., R. 4 E., northwest to Loretta (direct and reverse line).

Loretta, sec. 14, T. 10 N., R. 3 E., opposite crossroad from church; iron post stamped "1156 DBQ"----- 1,164.047

Bench marks near Spring Green set in 1905 on circuit from Mazomanie quadrangle.

T. 8 N., R. 4 E., 0.25 mile west of, northeast corner of sec. 8, 1.3 feet north of fence, 6.5 feet west of fence corner, at southwest corner of crossroads; iron post stamped "727 ADJ 1903"-----	Feet. 726. 677
T. 8 N., R. 4 E., near south quarter corner of sec. 7, on east side of village of Spring Green, road crossing of Chicago, Milwaukee & St. Paul Railway, on east side of public road, 26 feet north of track, 1.2 feet west of fence; iron post stamped "728 ADJ 1903"__	727. 726
T. 8 N., R. 4 E., near south quarter corner of sec. 18, in field on east side of road, stone monument marking southeast end of base line for triangulation of Wisconsin, United States Coast and Geodetic Survey, on top of large square stone, point is center of upper loop of east figure 8, in chiseled date "1878"-----	716. 88

La Crosse and Sparta Quadrangles.

LA CROSSE AND MONROE COUNTIES.

The elevations in the following list were determined by primary leveling extended from a bench mark of the Mississippi River Commission at La Crosse.

The leveling was done in 1905 by H. Bücher.

LA CROSSE QUADRANGLE.

La Crosse to North La Crosse, thence along Chicago, Milwaukee & St. Paul Railway to Bangor (mean of direct and reverse lines).	
North La Crosse station, south abutment of Chicago, Burlington & Quincy Railroad overhead bridge, in north face of, 11.2 feet east of west end and 3 feet above ground; aluminum tablet stamped "649 ADJ 1903"-----	Feet. 649. 234
North La Crosse, 3.4 miles east of, at northwest corner of bridge 514, in top of abutment; aluminum tablet stamped "659 ADJ 1903"-----	658. 952
North La Crosse, 6.6 miles east, on Chicago & Northwestern Railway, at west corner of bridge 640, in top of abutment; aluminum tablet stamped "671 ADJ 1903"-----	671. 028
West Salem, 1.1 miles west of, 100 feet west of overhead bridge, in top at northwest corner of concrete culvert; aluminum tablet stamped "706 ADJ 1903"-----	706. 014
West Salem, 1.7 miles east of, in top at northwest corner of stone culvert 625, 3.4 feet east of west edge, 1.2 feet south of north edge; aluminum tablet stamped "763 ADJ 1903"-----	763. 576

SPARTA QUADRANGLE.

Bangor along highways southeast to Portland, thence northeast to Melvina, thence north along railroad to Leon, thence north along highway to Sparta.

Bangor, northeast abutment of railroad bridge over Dutch Creek, in top of first course of masonry below coping; aluminum tablet stamped "740 ADJ 1903"-----	740. 247
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	Feet.
T. 16 N., R. 5 W., SE. $\frac{1}{4}$ sec. 16, schoolhouse on northeast side of road, at southwest corner of school ground; iron post stamped "794 ADJ 1903"-----	794.167
T. 16 N., R. 5 W., 0.2 mile east of southwest corner of sec. 26, junction of roads, southeast corner, on east side of road, 5 feet south of fence corner; iron post stamped "877 ADJ 1903"-----	877.022
T. 15 N., R. 5 W., 0.1 mile east by 0.2 mile south of northwest corner of sec. 12, junction of roads, on north side of road, 3.8 feet west of fence corner, 0.5 foot south of fence; iron post stamped "1,336 ADJ 1903"-----	1,336.162
T. 15 N., R. 4 W., 0.25 mile south by 0.25 mile east of northwest corner of sec. 8, at southeast corner of junction of roads, on south side of road, 3.5 feet east of fence corner, 1 foot north of fence; iron post stamped "1,340 ADJ 1903"-----	1,339.730
T. 15 N., R. 4 W., 0.2 mile east of south quarter corner of sec. 16, at southwest corner of Portland schoolhouse, at junction of roads, 2.5 feet north of corner, 1.5 feet west of wall; iron post stamped "1,312 ADJ 1903"-----	1,312.390
T. 15 N., R. 4 W., 0.3 mile west of southeast corner of sec. 12, crossing of Chicago, Milwaukee & St. Paul Railway (Viroqua branch), on south side of road in railroad right of way, 35 feet east of center of track, 1.6 feet north of cattle guard fence; iron post stamped "945 ADJ 1903"-----	945.185
Melvina station, at northeast corner of platform; top of rail-----	863.8
T. 16 N., R. 3 W., SW. $\frac{1}{4}$ sec. 32, on west side of wagon road, opposite signboard "station 1 mile," at southeast corner of Ray Richmond's yard; iron post stamped "863 ADJ 1903"-----	863.627
Leon station, at northeast corner of road crossing, in railroad right of way; iron post stamped "793 ADJ 1903"-----	793.100
T. 17 N., R. 3 W., 0.3 mile north of southwest corner of sec. 32, 70 feet north of junction of roads, on west side of road, 6 feet south of last of a north-and-south row of butternut trees; iron post stamped "879 ADJ 1903"-----	879.378
Sparta, bridge C-428, northeast of station, at south corner of top of concrete abutment; aluminum tablet stamped "790 ADJ 1903"-----	790.276
Sparta, Monroe County courthouse, at southeast corner of grounds of; iron post stamped "793.393 SPARTA B. M."-----	792.390
T. 17 N., R. 4 W., 0.2 mile south by 0.2 mile east of northwest corner of sec. 14, junction of road, on south side of road opposite junction, 8 feet east of fence corner; iron post stamped "811 ADJ 1903"-----	810.848
T. 17 N., R. 4 W., 0.2 mile west by 0.3 mile north of southeast corner of sec. 8, south of junction of roads, 80 feet from east side of road; iron post stamped "834 ADJ 1903"-----	834.683
T. 17 N., R. 4 W., 0.25 mile west of center of sec. 18, junction of roads, east of schoolhouse, on south side of road, 40 feet east of northwest corner of schoolhouse grounds; iron post stamped "795 ADJ 1903"-----	794.836
T. 17 N., R. 5 W., 0.2 mile south of north quarter corner of sec. 25, at southwest corner of junction of roads, in masonry foundation of north wall of schoolhouse; aluminum tablet stamped "787 ADJ 1903"-----	786.984
T. 17 N., R. 5 W., north quarter corner of sec. 33, junction of roads on west side of road, 12 feet north of fence corner, at northwest corner of junction; iron post stamped "778 ADJ 1903"-----	777.863

Arkansaw, Chippewa Falls, Durand, Elkmound, and Wabasha Quadrangles.

BUFFALO, CHIPPEWA, DUNN, EAU CLAIRE, AND PEPIN COUNTIES.

The elevations in the following list were determined by primary leveling extended from bench mark "Bottom" of the Mississippi River Commission, opposite Reeds, Minn., the elevation of which is accepted as 672.625 feet above mean sea level.

The leveling was done in 1903 by J. R. Ellis.

WABASHA QUADRANGLE.

Reeds, Minn., northeast along Chicago, Milwaukee & St. Paul Railway to Maxwell.

Reeds, Minn., opposite (Mississippi River Commission bench mark "Bottom"), tile and iron pipe in low, flat ground, 721.6 feet (220 meters) from left bank of river in property of Mrs. G. S. Richards, 147.6 feet (45 meters) west of Chicago, Milwaukee & St. Paul Railway trestle, 672.4 feet (205 meters) southwest of end of trestle, near small pond-----	Feet. 672. 625
Trevin's, at grade crossing of Chicago, Burlington & Quincy Railroad and Chicago, Milwaukee & St. Paul Railway; top of rail-----	684. 6
Maxwell, 180 feet southwest of platform, in sandstone post 8 by 12 by 30 inches, set 27 inches in ground; bronze tablet stamped "691 E. C."-----	691. 466

ARKANSAW QUADRANGLE.

Maxwell northeast along Chicago, Milwaukee & St. Paul Railway to Durand.

T. 24 N., R. 13 W., 0.25 mile due west of center of sec. 6, just outside of Chicago, Milwaukee & St. Paul Railway right of way, left bank of river, in sandstone post 12 by 6 by 30 inches; bronze tablet stamped "733 E. C."-----	733. 148
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DURAND QUADRANGLE.

Durand northeast along Chicago, Milwaukee & St. Paul Railway to Meridian.

Durand, county jail building, water table at southwest corner; bronze tablet stamped "724 E. C."-----	724. 631
Red Cedar, 0.3 mile south of, quarter corner on north side of sec. 6, T. 25 N., R. 12 W., in ground at T road east, in sandstone post 6 by 12 by 30 inches; bronze tablet stamped "755 E. C."-----	755. 940
Meridian, north part of sec. 14, T. 26 N., R. 12 W., at southeast corner of Iver Brock's residence, in stone foundation; bronze tablet stamped "740 E. C."-----	740. 193

ELK MOUND QUADRANGLE.

Meridian northeast along Chicago, Milwaukee & St. Paul Railway to Eau Claire.

Caryville, east part of sec. 11, T. 26 N., R. 11 W., at northwest corner of post office, in stone foundation of Strand's general store; bronze tablet stamped "760 E. C."-----	760. 414
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Coolies Lake, near outlet, at southwest corner of B. A. Churchville's residence, in foundation; bronze tablet stamped "779 E. C."-----	Feet. 779. 626
Shawton, 1 mile south of, northeast corner of sec. 36, T. 27 N., R. 10 W., in stone foundation at northwest corner of Henry Trimble's residence; bronze tablet stamped "781 E. C."-----	781. 11

CHIPPEWA FALLS QUADRANGLE.

Eau Claire north along highway to Chippewa Falls.

Eau Claire, southwest corner of courthouse; bronze tablet stamped "797 E. C."-----	797. 743
Eau Claire, Chicago, Milwaukee & St. Paul and Chicago & Northwestern Railways, grade crossing; top of rail-----	880. 5
Badger Mills, in lawn of summer hotel, 50 feet due west of front window, in sandstone post 10 by 8 by 30 inches; bronze tablet stamped "827 E. C."-----	827. 986
Chippewa Falls, northeast corner of foundation of city building containing quarters of fire department and city jail; bronze tablet stamped "840 E. C."-----	840. 738

St. Croix Dalles Quadrangle.

POLK COUNTY.

The elevations in the following list are based upon permanent bench mark 29-A of the United States Army Engineers' precise leveling at Wyoming Village, Minn., the accepted elevation of which is 892.119 feet above mean sea level. From this point elevations were carried by a double-rodged line of primary leveling to Taylors Falls. The leveling in Minnesota is given in Bulletin 453.

The leveling was done in 1897 by S. P. Connor.

The letters "T F" stamped upon the bench marks refer to Taylors Falls, Minn. Points marked with asterisk are on spur line.

ST. CROIX DALLES QUADRANGLE.

St. Croix Falls north and east to northeast corner of sec. 1, T. 34 N., R. 18 W.; thence southwest along highways to St. Croix Falls.

St. Croix Falls, Minneapolis, St. Paul, & Sault Ste. Marie Railway station in front of; top of rail-----	Feet. 922. 7
St. Croix Falls, NW. $\frac{1}{4}$ sec. 30, T. 34 N., R. 18 W., southeast corner of Kentucky and Washington streets; iron post stamped "812 T F"-----	813. 829
T. 35 N., R. 18. W., southwest corner of sec. 35; iron post stamped "1242 T F"-----	1, 243. 464
T. 34 N., R. 18 W., northeast corner of sec. 1; iron post stamped "1232 T F"-----	1, 233. 820

St. Croix Falls along highways via Thaxter Lake, Poplar Lake, Bear Lake, Big Lake, Alden, and Farmington to Osceola.

T. 34 N., R. 18 W., SW. $\frac{1}{4}$ sec. 30, on rock bluff across river from Taylors Falls boat landing between St. Croix River and Thaxter Lake; bronze tablet stamped "848 T F"-----	849. 544
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60 SPIRIT LEVELING IN MICHIGAN AND WISCONSIN, 1897 TO 1909.

	Feet.
*Dresser Junction, in front of station; top of rail.....	955. 2
*Dresser Junction postoffice, 75 feet west of, near southeast corner of sec. 7, T. 33 N., R. 18 W.; iron post stamped "969 T F".....	970. 890
*T. 33 N., R. 17 W., quarter corner on north side of sec. 7; iron post stamped "1114 T F".....	1, 115. 763
*T. 32 N., R. 17 W., northwest corner of sec. 6; iron post stamped "1019 T F".....	1, 020. 755
Alden post office, T. 32 N., R. 18 W., SW. $\frac{1}{4}$ sec. 15; iron post stamped "953 T F".....	955. 026
*East Farmington, SE. $\frac{1}{4}$ sec. 15, T. 32 N., R. 19 W., in front of town hall; iron post stamped "1038 T F".....	1, 039. 530
Osceola, southeast corner of county jail building, NW. $\frac{1}{4}$ sec. 27, T. 33 N., R. 19 W.; bronze tablet stamped "810 T F".....	811. 996
Osceola, in front of station; top of rail.....	810
Osceola east along highways to Nye.	
Nye, in front of station; top of rail.....	968. 8
Nye, SW. $\frac{1}{4}$ sec. 27, T. 33 N., R. 18 W.; iron post stamped "966 F F".....	967. 477

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